

8300100482

VBH0280CSNGS

Model LU-220543-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100482	
Motor	E07430-35	
Phase		1~
Nominal voltage	VAC	230
Nominal voltage range	VAC	200 .. 277
Frequency	Hz	50/60
Method of obtaining data		ml
Status		prelim.
Speed (rpm)	min <sup>-1</sup>	3130
Power consumption	W	500
Current draw	A	2.2
Min. ambient temperature	°C	-25
Max. ambient temperature	°C	60

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	71.4	48.3	09 Power consumption $P_{ed}$	kW	0.49
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	2105
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	553
04 Efficiency grade N		85.1	62	10 Speed (rpm) n	min <sup>-1</sup>	3125
05 Variable speed drive		Yes		11 Specific ratio*		1.01

Data obtained at optimum efficiency level.

\* Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-220543

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).

The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.

The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

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Model LU-220543-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	8.13 kg
<b>Size</b>	280 mm
<b>Motor size</b>	74
<b>Rotor surface</b>	Thick-film passivated
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP54
<b>Insulation class</b>	"B"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"> <li>- Output 10 VDC, max. 10 mA</li> <li>- Operation and alarm display</li> <li>- Alarm relay</li> <li>- Integrated PID controller</li> <li>- Power limiter</li> <li>- Motor current limitation</li> <li>- PFC, active</li> <li>- RS-485 MODBUS-RTU</li> <li>- Soft start</li> <li>- Control input 0-10 VDC / PWM</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage / phase failure detection</li> </ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC circuit feedback</b>	According to EN 61000-3-2/3
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment)
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Motor protection</b>	Thermal switch auto reset, internally connected
<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.

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Model LU-220543-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Conformity with standards</b>	EN 60034-1; EN 60204-1; EN 60335-1; CE; UKCA
<b>Approval</b>	UL 1004-7 + 60730-1; EAC; CSA C22.2 No. 77 + CAN/CSA-E60730-1

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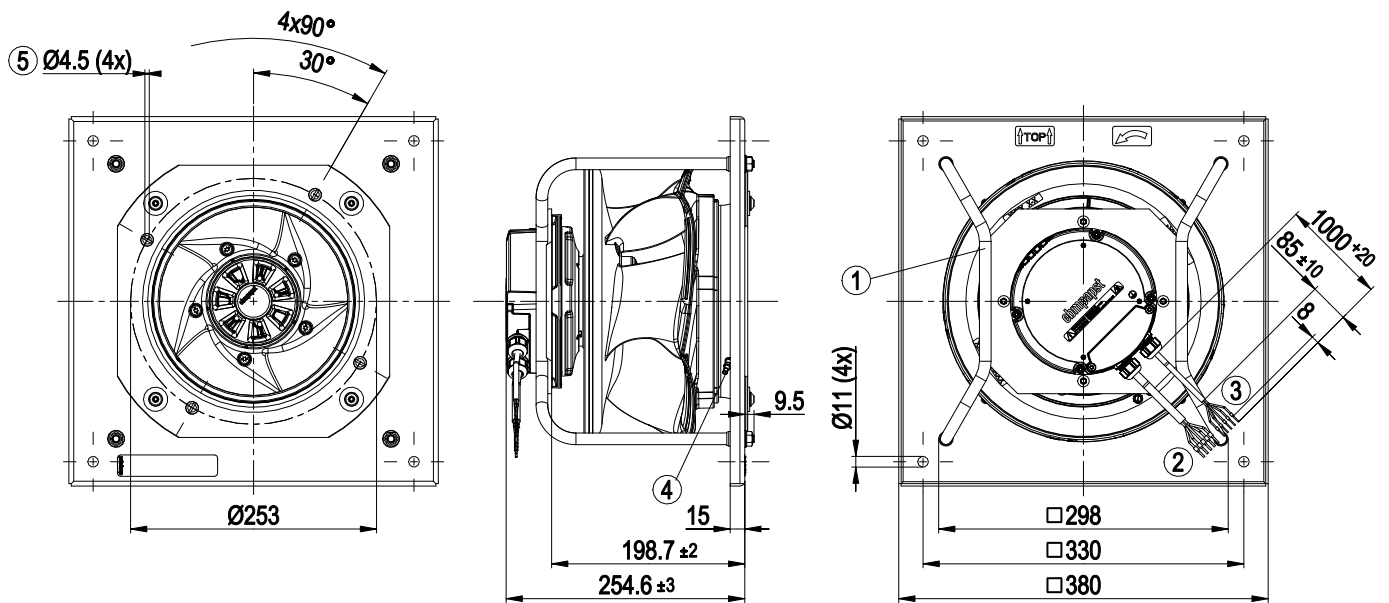
Model LU-220543-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable PVC AWG18 5x wire-end ferrule
3	Cable PVC AWG22 5x wire-end ferrule
4	Inlet ring with pressure tap (k-factor: 98)
5	Fastening holes for FlowGrid 20280-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

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VBH0280CSNGS

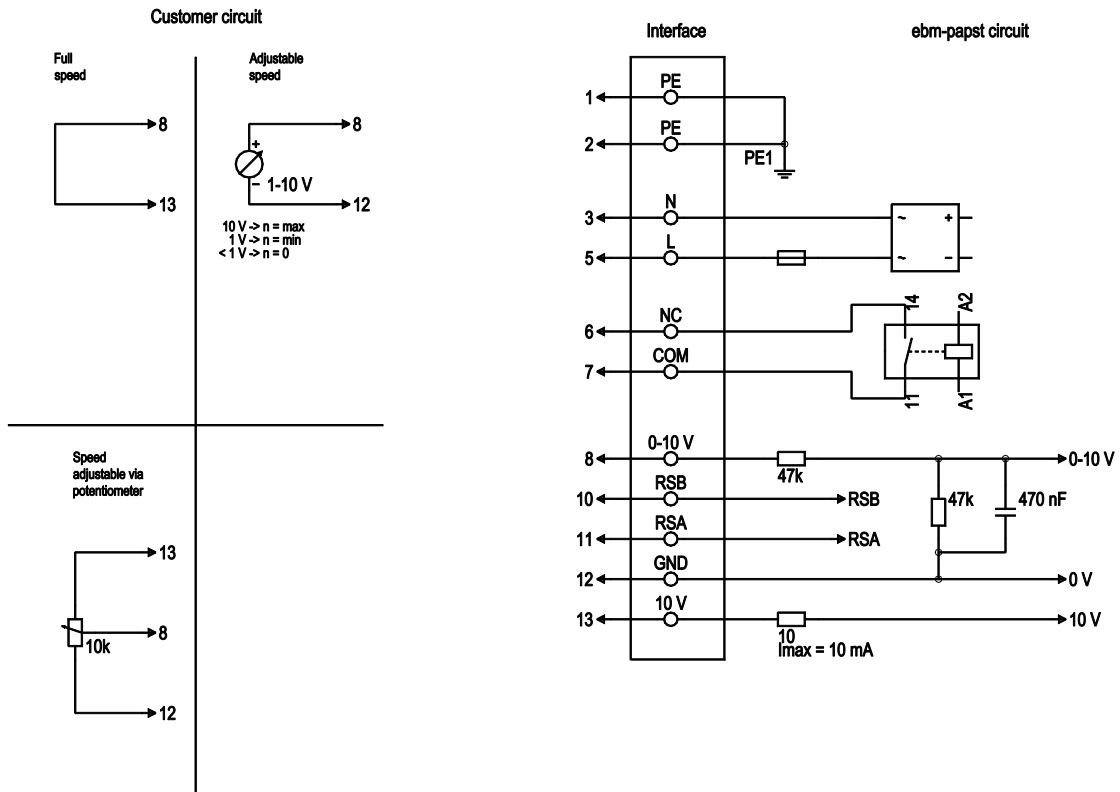
Model LU-220543-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



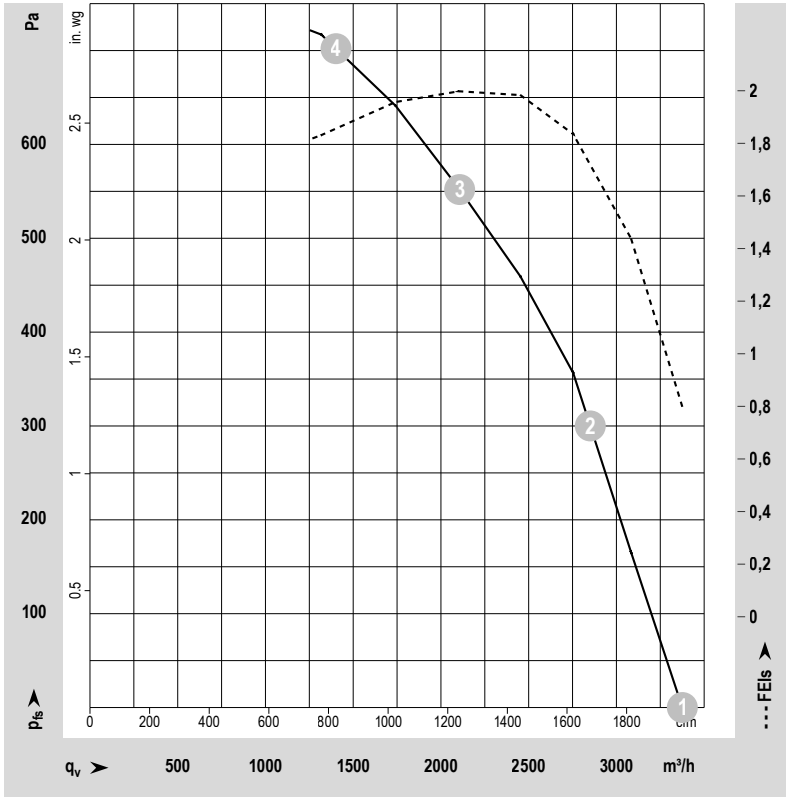
No.	Conn.	Designation	Color	Function/assignment
1	1, 2	PE	green/yellow	Protective earth
1	3	N	blue	Power supply, neutral conductor, 50/60 Hz
1	5	L	black	Power supply, phase, 50/60 Hz
1	6	NC	white 1	Status relay, floating status contact; break for failure, contact rating 250 VAC / 2A (AC1) / min. 10 mA, basic insulation on supply side and reinforced insulation on control interface side
1	7	COM	white 2	Status relay, floating status contact; common connection, contact rating 250 VAC / 2A (AC1) / min. 10 mA, basic insulation on supply side and reinforced insulation on control interface side
2	8	0-10V	yellow	Analog input (set value); 0-10 V; $R_i = 100\text{ k}\Omega$ ; adjustable curve
2	10	RSB	brown	RS485 interface for MODBUS, RSB
2	11	RSA	white	RS485 interface for MODBUS, RSA
2	12	GND	blue	Reference ground for control interface, SELV
2	13	+10V	red	Fixed voltage output 10 VDC, +10 V $\pm 3\%$ ; max. 10 mA; short-circuit-proof; power supply for external devices (e.g. pot)

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 Model LU-220543-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Curves: Air performance 50 Hz



$$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$$

Measurement: LU-220543-1  
 Date: 2022-03-24  
 Nozzle: 8217102502

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	LwA	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	dB	m <sup>3</sup> /h	Pa	cfm	in. wg
1	1~	230	50	3130	349	1.54	73	81	84	86	3375	0	1985	0.00
2	1~	230	50	3130	464	2.03	65	74	78	79	2850	300	1680	1.20
3	1~	230	50	3130	500	2.20	61	69	74	75	2105	550	1240	2.21
4	1~	230	50	3130	482	2.11	65	73	77	78	1400	700	825	2.81



Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
 LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LWA, LwA<sub>in</sub> and LwA<sub>out</sub>)  
 The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
 Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.

8300100755  
VBH0280CSPFS  
Model LU-219800-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
with support bracket

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Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

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Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100755	
Motor	E09002-28	
Phase		1~
Nominal voltage	VAC	230
Nominal voltage range	VAC	200 .. 277
Frequency	Hz	50/60
Method of obtaining data		ml
Status		prelim.
Speed (rpm)	min <sup>-1</sup>	3120
Power consumption	W	500
Current draw	A	2.2
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	60

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	72.2	48.3	09 Power consumption $P_{ed}$	kW	0.49
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	2130
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	549
04 Efficiency grade N		85.9	62	10 Speed (rpm) n	min <sup>-1</sup>	3125
05 Variable speed drive		Yes		11 Specific ratio <sup>*</sup>		1.01

Data obtained at optimum efficiency level.

<sup>\*</sup> Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-219800

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).  
The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.  
The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

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VBH0280CSPFS

Model LU-219800-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

Size	280 mm
Motor size	90
Rotor surface	Painted black
Electronics housing material	Die-cast aluminum
Impeller material	PP plastic
Support plate material	Sheet steel, galvanized
Support bracket material	Steel, painted black
Inlet nozzle material	ABS plastic
Number of blades	5
Direction of rotation	Clockwise, viewed toward rotor
Degree of protection	IP55
Insulation class	"F"
Moisture (F) / Environmental (H) protection class	H1
Ambient temperature note	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
Max. permitted ambient temp. for motor (transport/storage)	+80 °C
Min. permitted ambient temp. for motor (transport/storage)	-40 °C
Installation position	See legend on product drawing
Condensation drainage holes	On rotor side
Mode	S1
Motor bearing	Ball bearing
Technical features	<ul style="list-style-type: none"><li>- Output 10 VDC, max. 10 mA</li><li>- Operation and alarm display with LED</li><li>- Locked-rotor detection</li><li>- Speed control</li><li>- External 15-30 VDC input (parameterization)</li><li>- Alarm relay</li><li>- Configurable inputs/outputs (I/O)</li><li>- Power limiter</li><li>- MODBUS V7.0</li><li>- Motor current limitation</li><li>- PFC, active</li><li>- RS-485 MODBUS-RTU</li><li>- Soft start</li><li>- Control interface with SELV potential safely disconnected from the mains</li><li>- Temperature derating</li><li>- Thermal overload protection for electronics/motor</li><li>- Line undervoltage / phase failure detection</li></ul>
Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)	<= 3.5 mA
Motor protection	Electronic motor protection
With cable	Lateral



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Model LU-219800-1

## EC centrifugal module - RadiPac

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with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 60335-1; EN 61800-5-1; UKCA; CE
<b>Approval</b>	UL 1004-7 + 60730-1; CSA C22.2 No. 77 + CAN/CSA-E60730-1

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VBH0280CSPFS

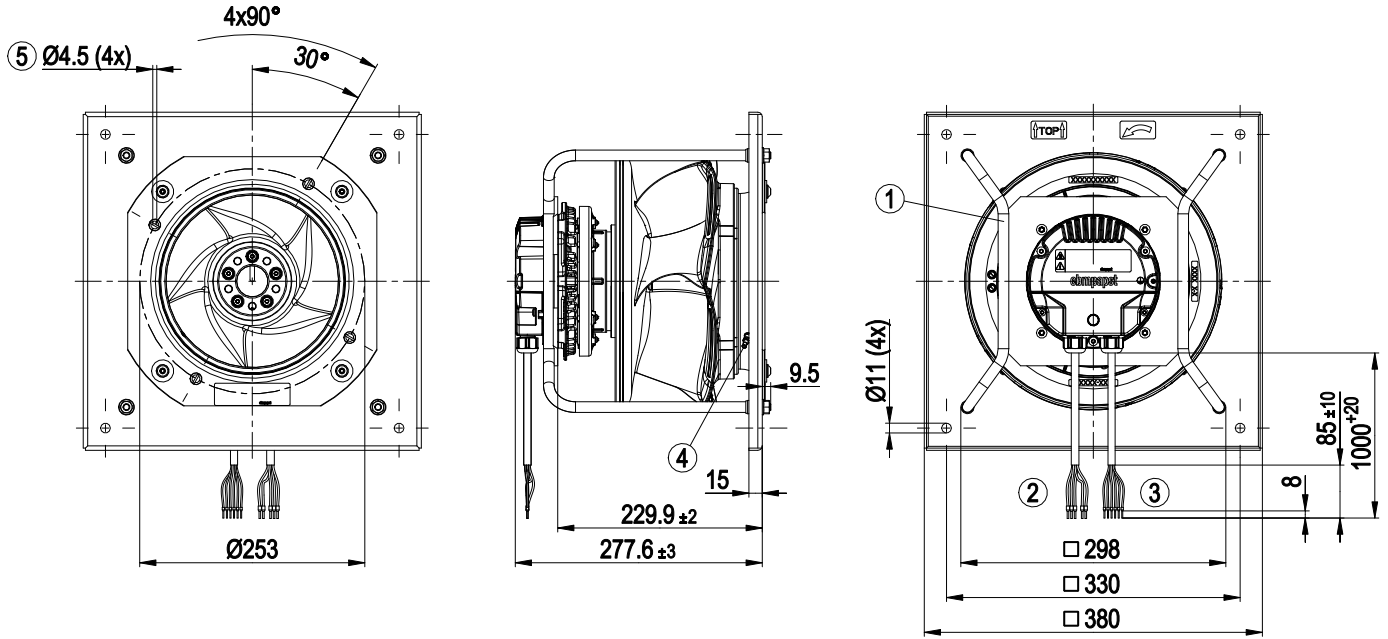
Model LU-219800-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Supply line (PWR) PVC AWG18 5x wire-end ferrule
3	Control wire (CTRL) PVC AWG22 6x wire-end ferrule
4	Inlet ring with pressure tap (k-factor: 98)
5	Fastening holes for FlowGrid 20280-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

8300100755

VBH0280CSPFS

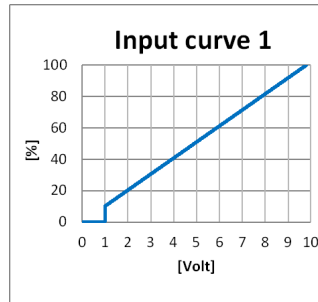
Model LU-219800-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Color	Function/assignment
	PWR	PE	green/yellow	Protective earth
	PWR	L	black	Power supply, phase, see nameplate for voltage range
	PWR	N	blue	Power supply, neutral conductor, see nameplate for voltage range
	PWR	COM	orange	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	PWR	NC	orange	Status relay, floating status contact, break for failure
	CTRL	GND	blue	Reference ground for control interface, SELV
	CTRL	Vout	red	Voltage output 10 VDC +/-3%, I <sub>max</sub> =10 mA Short-circuit-proof, power supply for external devices, SELV alternative: 15-30 VDC input for parameterization via MODBUS without line voltage
	CTRL	IO1	yellow	Factory setting: Analog input 0-10 V / PWM, R <sub>i</sub> =100 kΩ, function: set value Characteristic curve parameterizable (see input characteristic curve "Input curve 1"), SELV Function parameterizable (see table Optional interface functions)
	CTRL	IO2	white	Factory setting: Open collector output, U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, function:Tacho output 1 pulse/revolution, SELV Function parameterizable (see table Optional interface functions)
	CTRL	RSA	gray	RS-485 interface for MODBUS RSA, SELV dielectric strength to MODBUS RSB +/-14 V, dielectric strength to GND +/-7 V
	CTRL	RSB	brown	RS-485 interface for MODBUS RSB, SELV dielectric strength to MODBUS RSA +/-14 V, dielectric strength to GND +/-7 V
		LED		green: status = good, ready for operation orange: status = warning red: status = failure

# EC centrifugal module - RadiPac

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## Terminal/plug assignment

Terminal / Plug	Signal / Function	Selection via IO
D145	signal: status	
D130 [5]	signal: run monitoring	
D130 [2]	signal: remote control output 0-10 V	
D130 [1]	signal: system modulation level %	
D130 [0]	signal: actual speed 1/min	
D61B	signal: fan modulation level %	
D130 [4]	signal: DCI out	
D130 [4]	signal: output pulses autoaddressing	
	signal: alarm out	
	signal: diagnostics out	
	signal: tach out	
D638 [...]	source: DCI in	
D00C [1]	source: input pulses autoaddressing	
D16A [...]	switch: fan enable / disable	
D16C [...]	switch: set value source	
D148 [...]	switch: direction of rotation: cw / ccw	
D12E [...]	switch: control function: heating (pos.) / cooling (neg.)	
D104 [...]	switch: parameter set: #1 / #2	
D147 [...]	source: sensor value	
D101 [...]	source: set value	

configurable IO functions: normal / inverse

### MODBUS Register for IO mode configuration

CON2	configurable IO mode	electrical specification	MODBUS Register for IO mode configuration
101	Dim1 (active high): digital input	active: applied voltage 3,5-50 VDC, SELV not active: pin open or applied voltage < 1,5 VDC SELV	D158 [0]
	Dim1 (active low): digital input	active: applied voltage < 1,5 VDC, SELV not active: pin open or applied voltage 3,5-50 VDC SELV	D158 [1]
	Air1 0-10 V/PWM: analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D158 [2]
	Air1 0-10 V/PWM (with pull up): analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D158 [3]
102	Dim1 (active high): digital input	active: applied voltage 3,5-50 VDC, SELV not active: pin open or applied voltage < 1,5 VDC SELV	D159 [0]
	Air1 0-10 V/PWM: analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D159 [2]
	Tach out (open collector)	U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, SELV	D159 [5]
	Diagnostics out (open collector)	U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, SELV	D159 [6]
	Alarm out (open collector)	U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, SELV	D159 [10]
	Test pulse output addressing (open collector)	U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, SELV	D159 [11]
RSA RSB	DCI-output (open collector)	U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, SELV	D159 [12]
	RS485 bus connection	MODBUS RTU, parameter specification V7, SELV	
COM NC	Relay	250 VAC / 2 A (AC1)	
Vout	Voltage output	Voltage 10 VDC, SELV	
	Alternatively: input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...30 VDC	

### Medium (M2)

Functions and parameter description  
 MODBUS V7.0

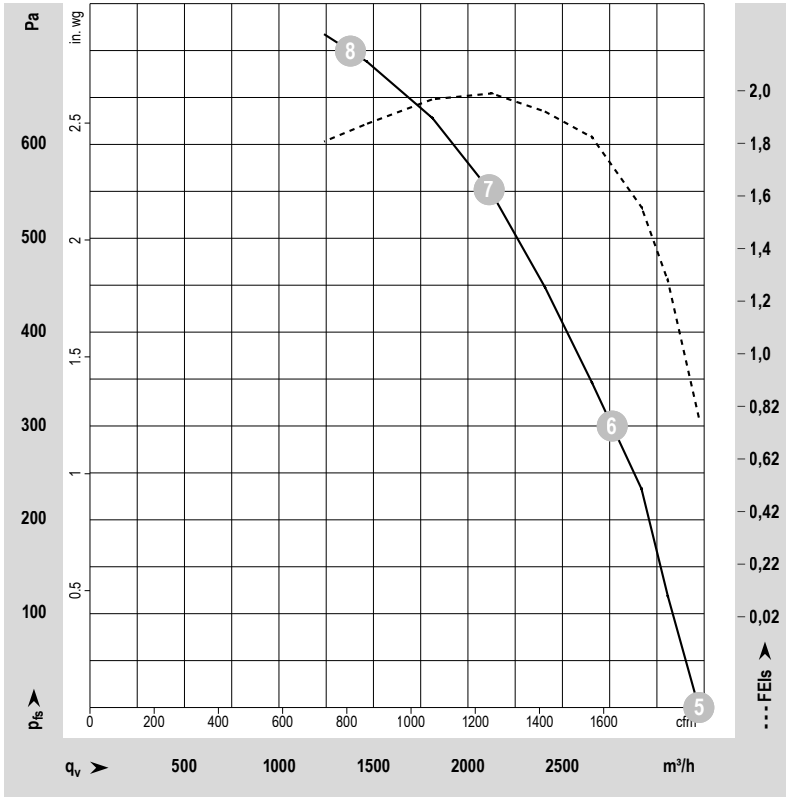
- configurable function
- (○) function to be activated via IO Mode

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 VBH0280CSPFS  
 Model LU-219800-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Curves: Air performance 50 Hz



$$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$$

Measurement: LU-219800-1  
 Date: 2023-03-21  
 Nozzle: 8217102502

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	m <sup>3</sup> /h	Pa	cfm	in. wg
1	1~	230	50	3120	343	1.54	74	82	3220	0	1895	0.00
2	1~	230	50	3120	452	2.00	68	76	2765	300	1625	1.20
3	1~	230	50	3120	500	2.20	65	72	2110	550	1240	2.21
4	1~	230	50	3120	472	2.09	70	76	1380	700	810	2.81

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
 LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LWA, LwA<sub>in</sub> and LwA<sub>out</sub>)  
 The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
 Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.



8300100543  
 VBH0310CSNGS  
 Model LU-230679-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen  
 Phone +49 7938 81-0  
 Fax +49 7938 81-110  
 info1@de.ebmpapst.com  
 www.ebmpapst.com

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General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen  
 Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100543	
Motor	E07430-35	
Phase		1~
Nominal voltage	VAC	230
Nominal voltage range	VAC	200 .. 277
Frequency	Hz	50/60
Method of obtaining data		ml
Status		prelim.
Speed (rpm)	min <sup>-1</sup>	2500
Power consumption	W	475
Current draw	A	2.1
Min. ambient temperature	°C	-25
Max. ambient temperature	°C	45

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
 Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	71	48.1	09 Power consumption $P_{ed}$	kW	0.47
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	2490
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	437
04 Efficiency grade N		84.9	62	10 Speed (rpm) n	min <sup>-1</sup>	2500
05 Variable speed drive		Yes		11 Specific ratio <sup>*</sup>		1.00

Data obtained at optimum efficiency level.

<sup>\*</sup> Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-230679

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).  
 The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.  
 The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100543

VBH0310CSNGS

Model LU-230679-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Size</b>	310 mm
<b>Motor size</b>	74
<b>Rotor surface</b>	Thick-film passivated
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP54
<b>Insulation class</b>	"B"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"> <li>- Output 10 VDC, max. 10 mA</li> <li>- Operation and alarm display</li> <li>- Alarm relay</li> <li>- Integrated PID controller</li> <li>- Power limiter</li> <li>- Motor current limitation</li> <li>- PFC, active</li> <li>- RS-485 MODBUS-RTU</li> <li>- Soft start</li> <li>- Control input 0-10 VDC / PWM</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage / phase failure detection</li> </ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC circuit feedback</b>	According to EN 61000-3-2/3
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment)
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Motor protection</b>	Thermal switch auto reset, internally connected
<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 60034-1; EN 60204-1; EN 60335-1; UKCA; CE

8300100543

VBH0310CSNGS

Model LU-230679-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Approval

UL 1004-7 + 60730-1; EAC; CSA C22.2 No. 77 + CAN/CSA-E60730-1



8300100543

VBH0310CSNGS

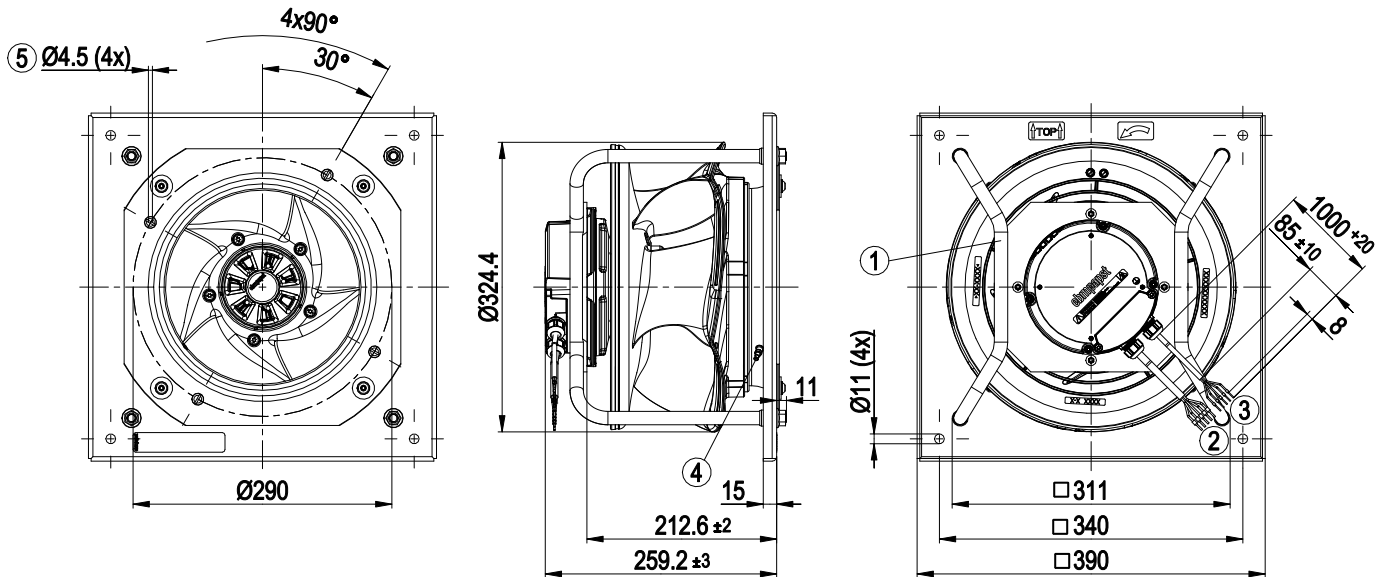
Model LU-230679-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable PVC AWG18
	5x wire-end ferrule
3	Cable PVC AWG22
	5x wire-end ferrule
4	Inlet ring with pressure tap (k-factor: 115)
5	Fastening holes for FlowGrid 25310-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

8300100543

VBH0310CSNGS

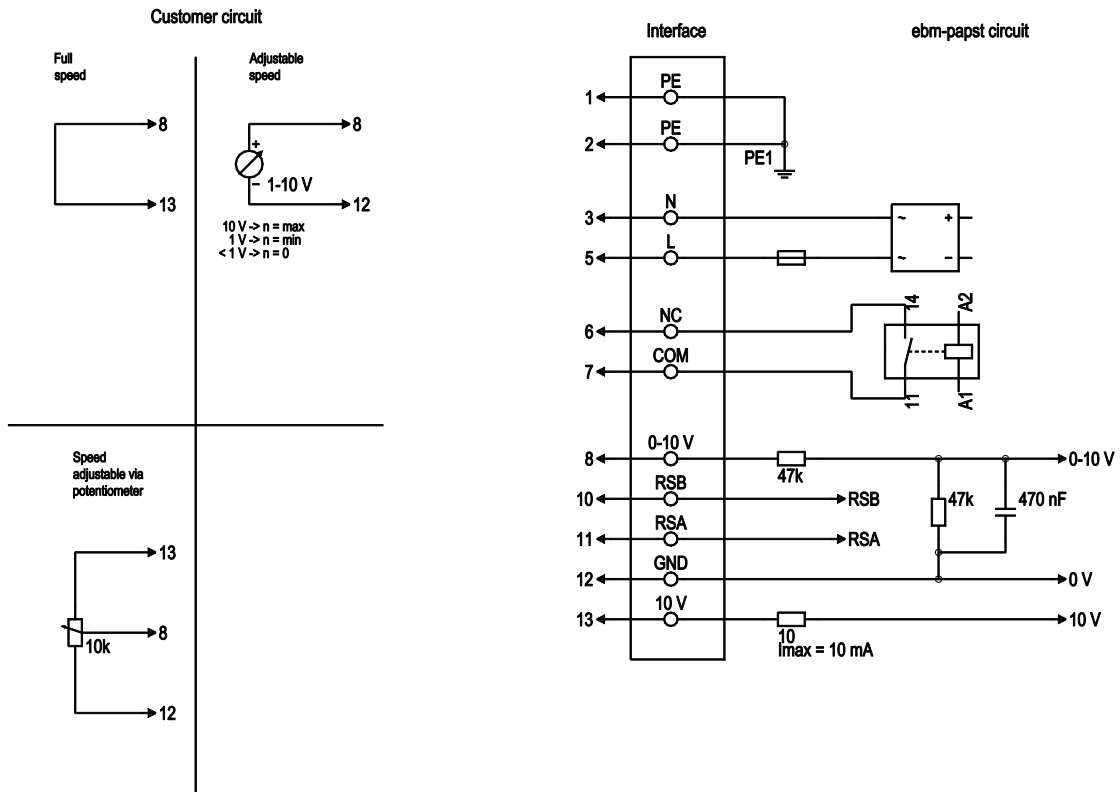
Model LU-230679-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



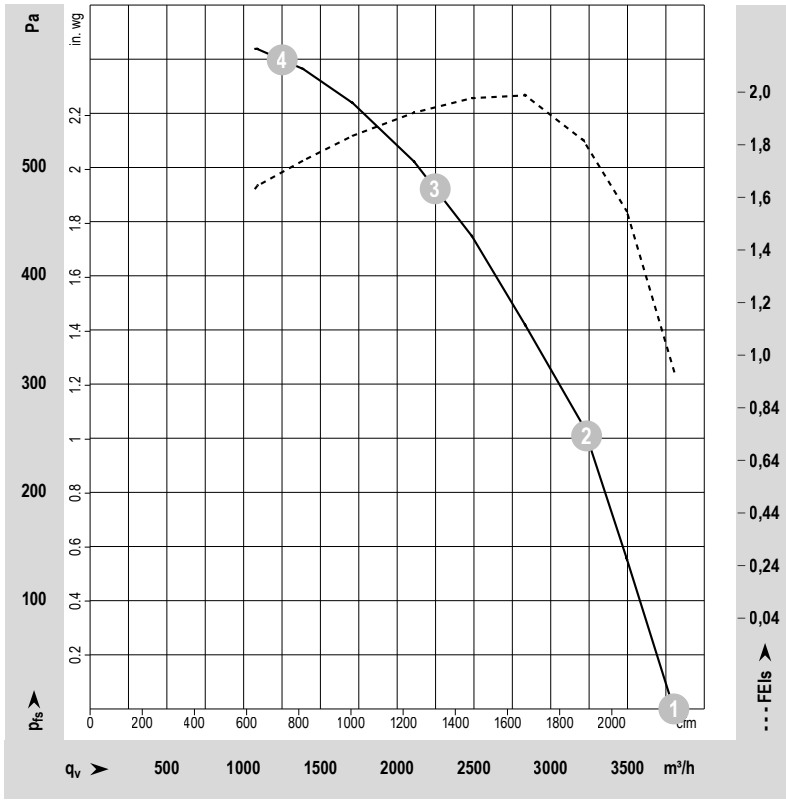
No.	Conn.	Designation	Color	Function/assignment
1	1, 2	PE	green/yellow	Protective earth
1	3	N	blue	Power supply, neutral conductor, 50/60 Hz
1	5	L	black	Power supply, phase, 50/60 Hz
1	6	NC	white 1	Status relay, floating status contact; break for failure, contact rating 250 VAC / 2A (AC1) / min. 10 mA, basic insulation on supply side and reinforced insulation on control interface side
1	7	COM	white 2	Status relay, floating status contact; common connection, contact rating 250 VAC / 2A (AC1) / min. 10 mA, basic insulation on supply side and reinforced insulation on control interface side
2	8	0-10V	yellow	Analog input (set value); 0-10 V; $R_i = 100\text{ k}\Omega$ ; adjustable curve
2	10	RSB	brown	RS485 interface for MODBUS, RSB
2	11	RSA	white	RS485 interface for MODBUS, RSA
2	12	GND	blue	Reference ground for control interface, SELV
2	13	+10V	red	Fixed voltage output 10 VDC, +10 V $\pm 3\%$ ; max. 10 mA; short-circuit-proof; power supply for external devices (e.g. pot)

8300100543  
 VBH0310CSNGS  
 Model LU-230679-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Curves: Air performance 50 Hz



$$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$$

Measurement: LU-230679-1  
 Date: 2022-03-08  
 Nozzle: 8217101930

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	LwA	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	dB	m <sup>3</sup> /h	Pa	cfm	in. wg
1	1~	230	50	2500	308	1.37	72	81	84	86	3800	0	2240	0.00
2	1~	230	50	2500	436	1.92	63	72	76	77	3220	250	1895	1.00
3	1~	230	50	2500	475	2.10	59	67	71	72	2245	480	1325	1.93
4	1~	230	50	2500	423	1.87	65	72	75	77	1250	600	735	2.41



Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
 LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LWA, LwA<sub>in</sub> and LwA<sub>out</sub>)  
 The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
 Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.

8300100875

VBH0310CSPFS

Model LU-224424-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100875	
Motor	E09002-28	

Phase		1~
Nominal voltage	VAC	230
Nominal voltage range	VAC	200 .. 277
Frequency	Hz	50/60
Method of obtaining data		ml
Speed (rpm)	min <sup>-1</sup>	2590
Power consumption	W	500
Current draw	A	2.2
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	60

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment

Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	68.8	48.3	09 Power consumption $P_{ed}$	kW	0.49
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	2495
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	448
04 Efficiency grade N		82.5	62	10 Speed (rpm) n	min <sup>-1</sup>	2590
05 Variable speed drive		Yes		11 Specific ratio*		1.00

Data obtained at optimum efficiency level.

\* Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-224424

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings). The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.

The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100875

VBH0310CSPFS

Model LU-224424-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

Size	310 mm
Motor size	90
Rotor surface	Painted black
Electronics housing material	Die-cast aluminum
Impeller material	PP plastic
Support plate material	Sheet steel, galvanized
Support bracket material	Steel, painted black
Inlet nozzle material	ABS plastic
Number of blades	5
Direction of rotation	Clockwise, viewed toward rotor
Degree of protection	IP55
Insulation class	"F"
Moisture (F) / Environmental (H) protection class	H1
Ambient temperature note	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
Max. permitted ambient temp. for motor (transport/storage)	+80 °C
Min. permitted ambient temp. for motor (transport/storage)	-40 °C
Installation position	See legend on product drawing
Condensation drainage holes	On rotor side
Mode	S1
Motor bearing	Ball bearing
Technical features	<ul style="list-style-type: none"> <li>- Output 10 VDC, max. 10 mA</li> <li>- Operation and alarm display with LED</li> <li>- Locked-rotor detection</li> <li>- Speed control</li> <li>- External 15-30 VDC input (parameterization)</li> <li>- Alarm relay</li> <li>- Configurable inputs/outputs (I/O)</li> <li>- Power limiter</li> <li>- MODBUS V7.0</li> <li>- Motor current limitation</li> <li>- PFC, active</li> <li>- RS-485 MODBUS-RTU</li> <li>- Soft start</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Temperature derating</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage / phase failure detection</li> </ul>
Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)	<= 3.5 mA
Motor protection	Electronic motor protection
With cable	Lateral

8300100875

VBH0310CSPFS

Model LU-224424-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected by the customer This component for installation may have several local protection classes. This information relates to this component's basic design. The final protection class is based on the component's intended installation and connection.
<b>Conformity with standards</b>	EN 60335-1; EN 61800-5-1; UKCA; CE
<b>Approval</b>	UL 1004-7 + 60730-1; CSA C22.2 No. 77 + CAN/CSA-E60730-1

8300100875

VBH0310CSPFS

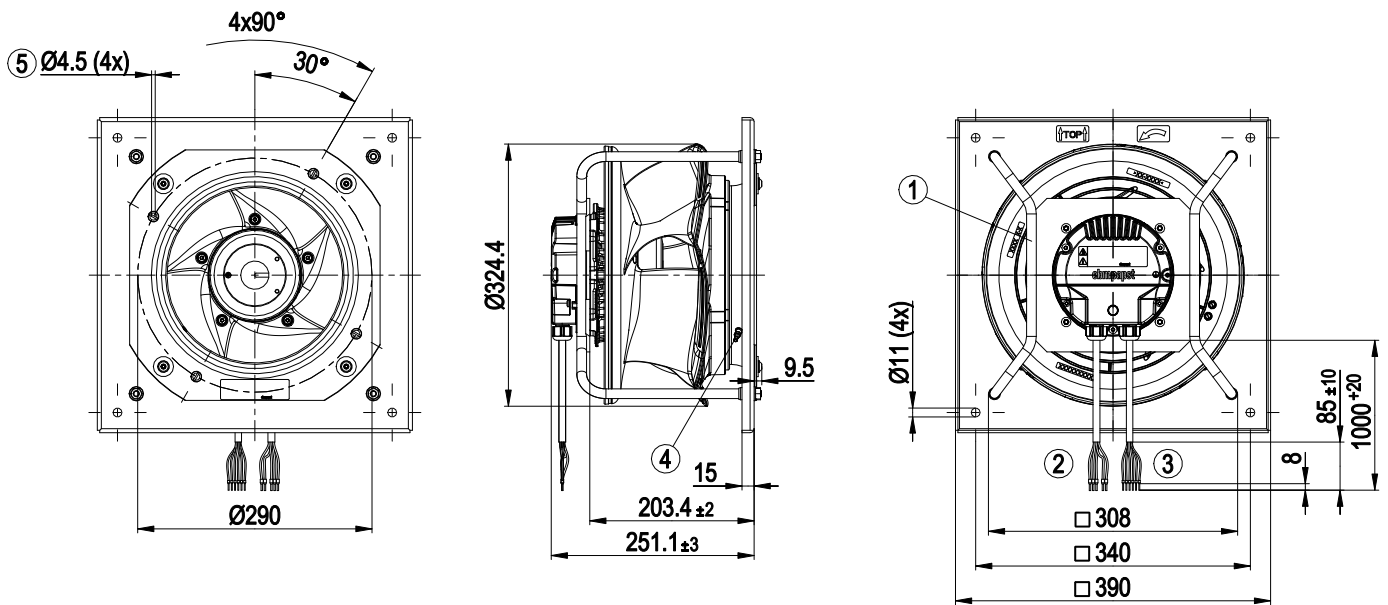
Model LU-224424-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Supply line (PWR) PVC AWG18 5x wire-end ferrule
3	Control wire (CTRL) PVC AWG22 6x wire-end ferrule
4	Inlet ring with pressure tap (k-factor: 115)
5	Fastening holes for FlowGrid 25310-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

8300100875

VBH0310CSPFS

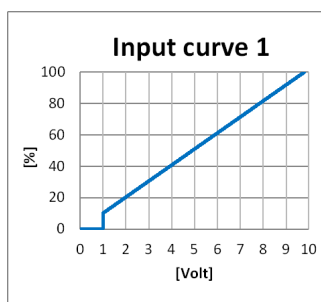
Model LU-224424-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Color	Function/assignment
	PWR	PE	green/yellow	Protective earth
	PWR	L	black	Power supply, phase, see nameplate for voltage range
	PWR	N	blue	Power supply, neutral conductor, see nameplate for voltage range
	PWR	COM	orange	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	PWR	NC	orange	Status relay, floating status contact, break for failure
	CTRL	GND	blue	Reference ground for control interface, SELV
	CTRL	Vout	red	Voltage output 10 VDC +/-3%, I <sub>max</sub> =10 mA Short-circuit-proof, power supply for external devices, SELV alternative: 15-30 VDC input for parameterization via MODBUS without line voltage
	CTRL	IO1	yellow	Factory setting: Analog input 0-10 V / PWM, R <sub>i</sub> =100 kΩ, function: set value Characteristic curve parameterizable (see input characteristic curve "Input curve 1"), SELV Function parameterizable (see table Optional interface functions)
	CTRL	IO2	white	Factory setting: Open collector output, U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, function:Tacho output 1 pulse/revolution, SELV Function parameterizable (see table Optional interface functions)
	CTRL	RSA	gray	RS-485 interface for MODBUS RSA, SELV dielectric strength to MODBUS RSB +/-14 V, dielectric strength to GND +/-7 V
	CTRL	RSB	brown	RS-485 interface for MODBUS RSB, SELV dielectric strength to MODBUS RSA +/-14 V, dielectric strength to GND +/-7 V
		LED		green: status = good, ready for operation orange: status = warning red: status = failure



# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Terminal/plug assignment

CON2	configurable IO mode	electrical specification	MODBUS Register for IO mode configuration	configurable IO functions: normal / inverse
101	Dim1 (active high): digital input	active: applied voltage 3,5-50 VDC, SELV not active: pin open or applied voltage < 1,5 VDC SELV	D158 [0]	source: set value
	Dim1 (active low): digital input	active: applied voltage < 1,5 VDC, SELV not active: pin open or applied voltage 3,5-50 VDC SELV	D158 [1]	source: sensor value
	Air1 0-10 V/PWM: analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D158 [2]	switch: parameter set: #1 / #2
	Air1 0-10 V/PWM (with pull up): analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D158 [3]	switch: control function: heating (pos.) / cooling (neg.)
	Dim1 (active high): digital input	active: applied voltage 3,5-50 VDC, SELV not active: pin open or applied voltage < 1,5 VDC SELV	D159 [0]	switch: direction of rotation: cw / ccw
102	Air1 0-10 V/PWM: analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D159 [2]	source: input pulses autoaddressing
	Tach out (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [5]	switch: fan enable / disable
	Diagnostics out (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [6]	switch: set value source
	Alarm out (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [10]	switch: control function: heating (pos.) / cooling (neg.)
RSA RSB	Test pulse output addressing (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [11]	switch: tach out
	DCl-output (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [12]	source: alarm out
COM NC	RS485 bus connection	MODBUS RTU, parameter specification V7, SELV		signal: diagnostics out
Vout	Relay	250 VAC / 2 A (AC1)		signal: tach out
	Voltage output	Voltage 10 VDC, SELV		signal: diagnosis out
	Alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...30 VDC		signal: alarm out

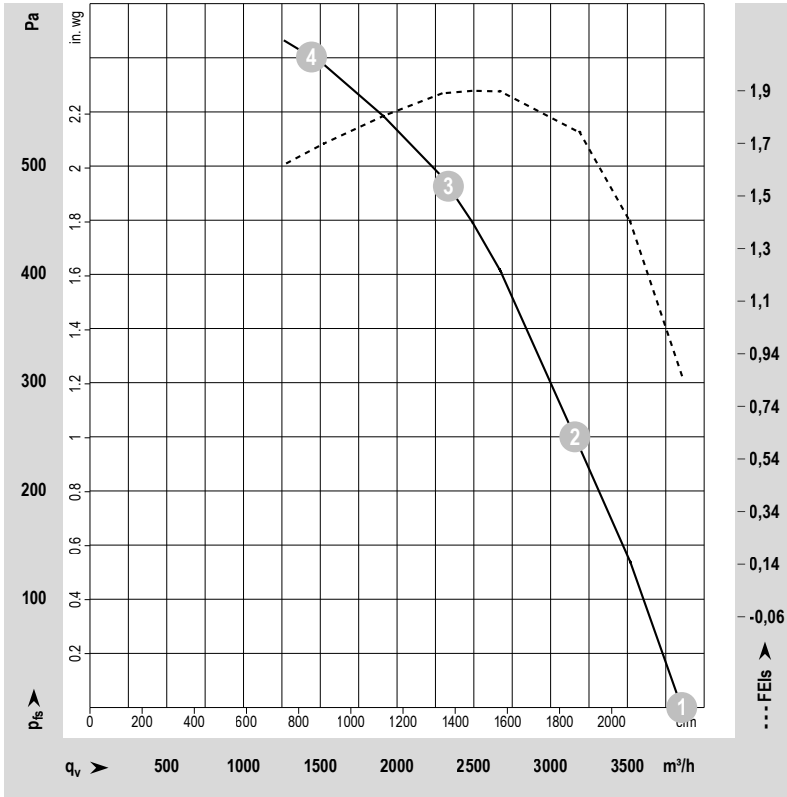


8300100875  
 VBH0310CSPFS  
 Model LU-224424-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Curves: Air performance 50 Hz



$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$

Measurement: LU-224424-1  
 Date: 2022-12-08  
 Nozzle: 8217101930

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	LwA	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	dB	m <sup>3</sup> /h	Pa	cfm	in. wg
1	1~	230	50	2590	353	1.57	73	81	85	87	3855	0	2270	0.00
2	1~	230	50	2590	432	1.91	66	74	79	80	3160	250	1860	1.00
3	1~	230	50	2590	500	2.20	63	70	77	77	2330	480	1370	1.93
4	1~	230	50	2590	471	2.08	68	75	79	81	1440	600	850	2.41



Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
 LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LWA, LwA<sub>in</sub> and LwA<sub>out</sub>)  
 The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
 Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.

8300100104

VBH0310CTRLS

Model LU-215838-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100104	
Motor	E11233-60	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Speed (rpm)	min <sup>-1</sup>	4560
Power consumption	W	2750
Current draw	A	4.3
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	70.9	56.1	09 Power consumption $P_{ed}$	kW	2.75
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	4370
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	1533
04 Efficiency grade N		76.8	62	10 Speed (rpm) $n$	min <sup>-1</sup>	4560
05 Variable speed drive		Yes		11 Specific ratio <sup>*</sup>		1.02

Data obtained at optimum efficiency level.

<sup>\*</sup> Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-215838

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings). The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again. The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100104

VBH0310CTRLS

Model LU-215838-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	20.7 kg
<b>Size</b>	310 mm
<b>Motor size</b>	112
<b>Rotor surface</b>	Painted black
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"> <li>- Operation and alarm display with LED</li> <li>- External 15-50 VDC input (parameterization)</li> <li>- Alarm relay</li> <li>- Integrated PI controller</li> <li>- Configurable inputs/outputs (I/O)</li> <li>- MODBUS V6.3</li> <li>- Motor current limitation</li> <li>- RS-485 MODBUS-RTU</li> <li>- Soft start</li> <li>- Voltage output 3.3-24 VDC, Pmax = 800 mW</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage / phase failure detection</li> <li>- Vibration sensor</li> </ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Electronic motor protection

8300100104

VBH0310CTRLS

Model LU-215838-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; UKCA; CE
<b>Approval</b>	UL 1004-7 + 60730-1; EAC; CSA C22.2 No. 77 + CAN/CSA-E60730-1

8300100104

VBH0310CTRLS

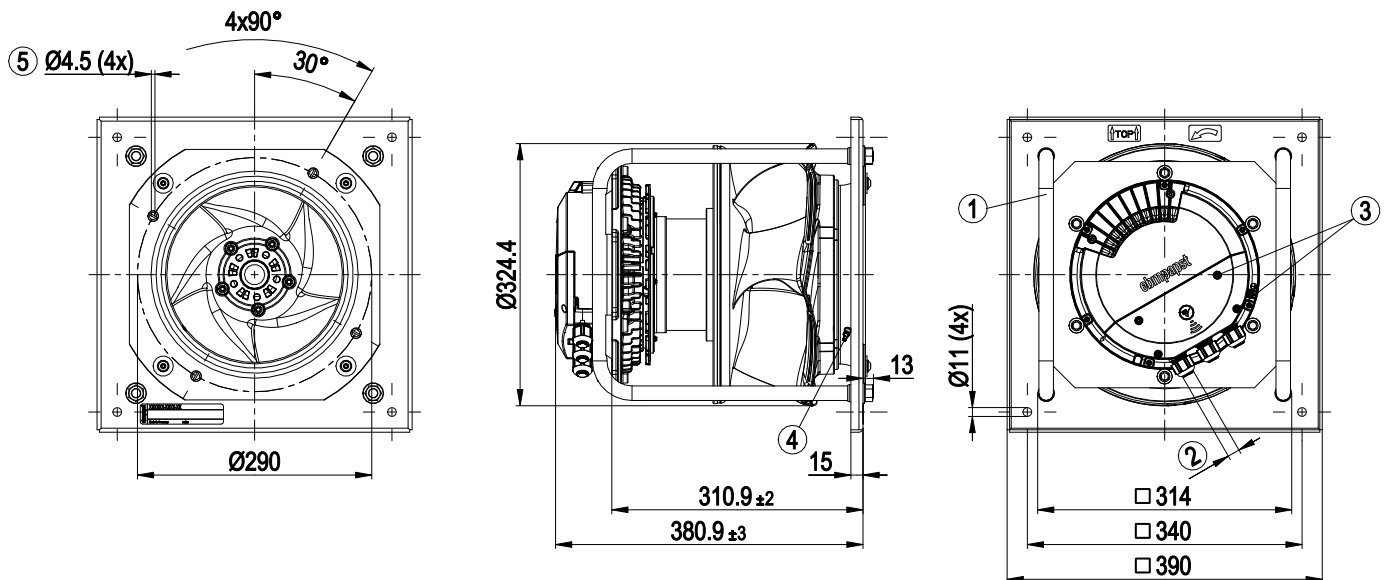
Model LU-215838-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque $4 \pm 0.6$ Nm (The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
3	Tightening torque $1.5 \pm 0.2$ Nm
4	Inlet ring with pressure tap (k-factor: 115)
5	Fastening holes for FlowGrid 25310-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

8300100104

VBH0310CTRLS

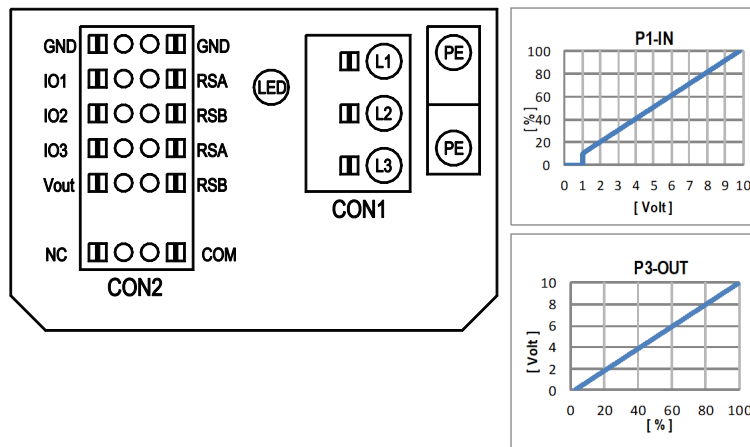
Model LU-215838-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
	CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function parameterizable (see "Optional interface functions" table) Factory setting: Digital input - high active, function: Disable input, SELV - inactive: Pin open or applied voltage < 1.5 VDC - active: applied voltage 3.5-50 VDC Reset function: Triggering of error reset on change of state from "enabled" to "disabled"
	CON2	IO2	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog input 0-10 V/PWM, Ri=100 kΩ, function: Set value Characteristic curve parameterizable (see input characteristic curve P1-IN), SELV
	CON2	IO3	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog output 0-10 V, max. 5 mA, function: Actual speed Characteristic curve parametrizable (see output characteristic curve P3-OUT), SELV
	CON2	Vout	Voltage output 3.3-24 VDC ±5%, Pmax=800 mW, voltage parameterizable Factory setting: 10 VDC short-circuit-proof, supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage
	CON2	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	CON2	NC	Status relay, floating status contact, break for failure
		LED	green: status = good, ready for operation orange: status = warning red: status = failure
		P1-IN	Input characteristic curve
		P3-OUT	Output characteristic curve

## Terminal/plug assignment

CON2	configurable IO mode	electrical specification	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	
				selected directly via IO mode)	selected directly via IO mode)
IO1	○ Din1 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D158 [0]	
	○ Ain1 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, f <sub>PWM</sub> = 1k...10kHz, SELV		D158 [2]	
	○ Tach out (open collector output)	U <sub>max</sub> = 50VDC, I <sub>max</sub> = 20mA, SELV		D158 [5]	
	○ Diagnostics out (open collector output)	U <sub>max</sub> = 50VDC, I <sub>max</sub> = 20mA, SELV		D158 [6]	
IO2	○ Din2 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D159 [0]	
	○ Ain2 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, f <sub>PWM</sub> = 1k...10kHz, SELV		D159 [2]	
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV		D159 [3]	
	○ Din3 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D15A [0]	
IO3	○ Din3 (active low), digital input	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage 3.5-50VDC		D15A [1]	
	○ PWMIn3: digital input, idle level high	PWM = 40Hz - 10kHz, characteristics parameterizable		D15A [7]	
	○ PWMIn3: digital input, idle level low	active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV		D15A [8]	
	○ Aout3 0-10V: analog output	function parameterizable, max. 5mA, max output frequency 300Hz, SELV		D15A [4]	
RSA	○ Tacho out (pulses), analog output	0-10V/max. 5mA, max output frequency 300Hz, SELV		D15A [5]	
	○ Diagnostics out (pulses)	0-10V/max. 5mA, max output frequency 300Hz, SELV		D15A [6]	
	○ RSA/RSB bus connection,	MODBUS RTU, specification V6.3, SELV			
Vout	voltage output	voltage parameterizable 3.3...24VDC +/- 5%, P <sub>max</sub> =800mW, short-circuit-proof, supply for external devices, SELV		D16E [..]	
	alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...50VDC			



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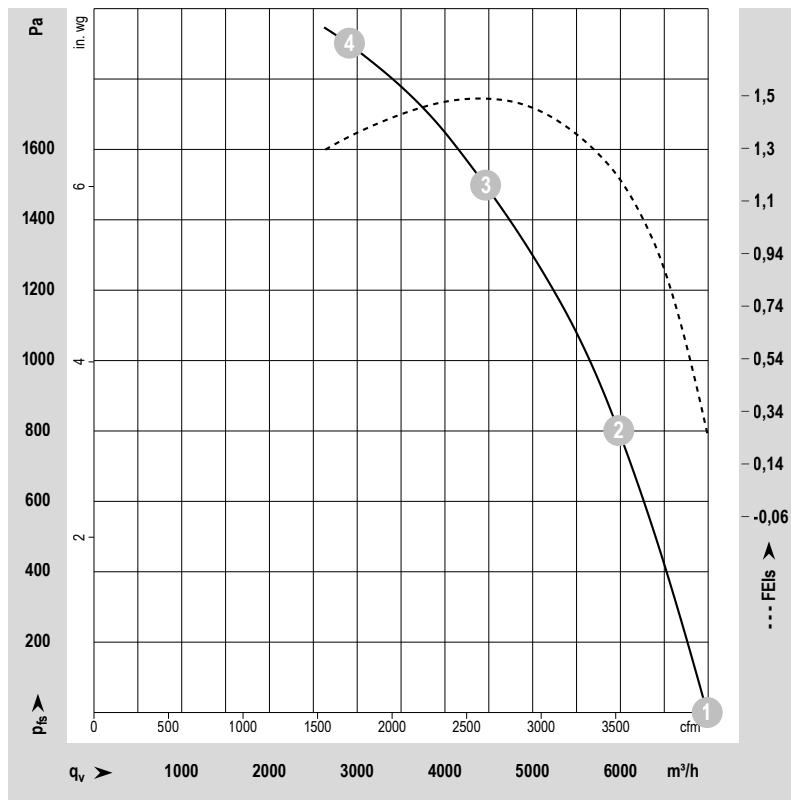
Model LU-215838-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Curves: Air performance 50 Hz



$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$

Measurement: LU-215838-1  
Date: 2021-08-23  
Nozzle: 8217101930

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	LwA	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	dB	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	4560	1855	2.94	89	97	100	102	6990	0	4115	0.00
2	3~	400	50	4560	2549	3.96	82	90	94	96	5975	800	3520	3.21
3	3~	400	50	4560	2750	4.30	77	84	92	93	4465	1500	2630	6.02
4	3~	400	50	4560	2618	4.06	80	89	94	95	2910	1900	1715	7.63



Wire = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side · LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LwA, LwA<sub>in</sub> and LwA<sub>out</sub>) is for installation type A - Free inlet, Free outlet. The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet. Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.

8300100540  
VBH0355CSNGS

# EC centrifugal module - RadiPac

backward-curved, single-intake  
with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100540	
Motor	E07430-35	
Phase		1~
Nominal voltage	VAC	230
Nominal voltage range	VAC	200 .. 277
Frequency	Hz	50/60
Method of obtaining data		ml
Status		prelim.
Speed (rpm)	min <sup>-1</sup>	1785
Power consumption	W	300
Current draw	A	1.35
Min. ambient temperature	°C	-25
Max. ambient temperature	°C	55

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	68.8	46.1	09 Power consumption $P_{ed}$	kW	0.3
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	2395
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	281
04 Efficiency grade N		84.7	62	10 Speed (rpm) n	min <sup>-1</sup>	1785
05 Variable speed drive		Yes		11 Specific ratio <sup>*</sup>		1.00

Data obtained at optimum efficiency level.

<sup>\*</sup> Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-230682

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).

The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.

The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100540

VBH0355CSNGS

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

Size	355 mm
Motor size	74
Rotor surface	Thick-film passivated
Electronics housing material	Die-cast aluminum
Impeller material	PP plastic
Support plate material	Sheet steel, galvanized
Support bracket material	Steel, painted black
Inlet nozzle material	ABS plastic
Number of blades	5
Direction of rotation	Clockwise, viewed toward rotor
Degree of protection	IP54
Insulation class	"B"
Moisture (F) / Environmental (H) protection class	H1
Ambient temperature note	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
Max. permitted ambient temp. for motor (transport/storage)	+80 °C
Min. permitted ambient temp. for motor (transport/storage)	-40 °C
Installation position	See legend on product drawing
Condensation drainage holes	On rotor side
Mode	S1
Motor bearing	Ball bearing
Technical features	<ul style="list-style-type: none"> <li>- Output 10 VDC, max. 10 mA</li> <li>- Operation and alarm display</li> <li>- Alarm relay</li> <li>- Integrated PID controller</li> <li>- Power limiter</li> <li>- Motor current limitation</li> <li>- PFC, active</li> <li>- RS-485 MODBUS-RTU</li> <li>- Soft start</li> <li>- Control input 0-10 VDC / PWM</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage / phase failure detection</li> </ul>
EMC immunity to interference	According to EN 61000-6-2 (industrial environment)
EMC circuit feedback	According to EN 61000-3-2/3
EMC interference emission	According to EN 61000-6-3 (household environment)
Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)	<= 3.5 mA
Motor protection	Thermal switch auto reset, internally connected
Protection class assignment	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
Conformity with standards	EN 60034-1; EN 60204-1; EN 60335-1; UKCA; CE

8300100540  
VBH0355CSNGS

## EC centrifugal module - RadiPac

backward-curved, single-intake  
with support bracket

Approval

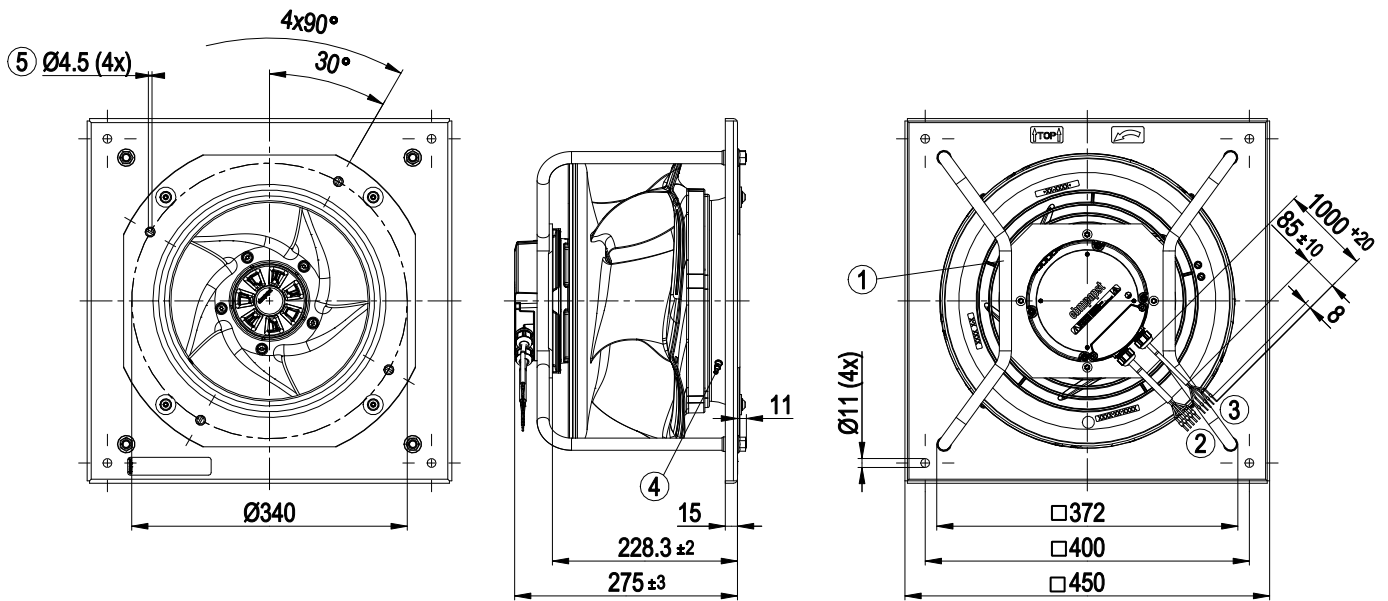
CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

8300100540  
VBH0355CSNGS

## EC centrifugal module - RadiPac

backward-curved, single-intake  
with support bracket

### Product drawing

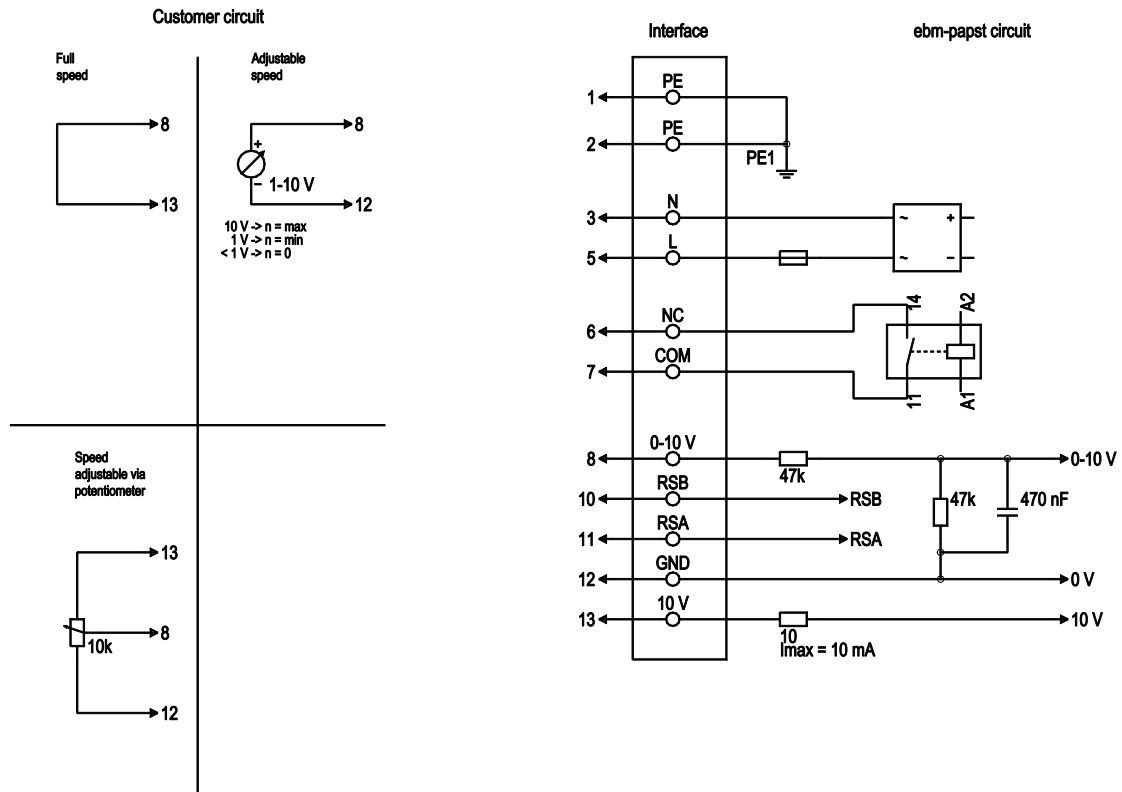


1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable PVC AWG18 5x wire-end ferrule
3	Cable PVC AWG22 5x wire-end ferrule
4	Inlet ring with pressure tap (k-factor: 145)
5	Fastening holes for FlowGrid 00400-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

# EC centrifugal module - RadiPac

backward-curved, single-intake  
with support bracket

## Connection diagram



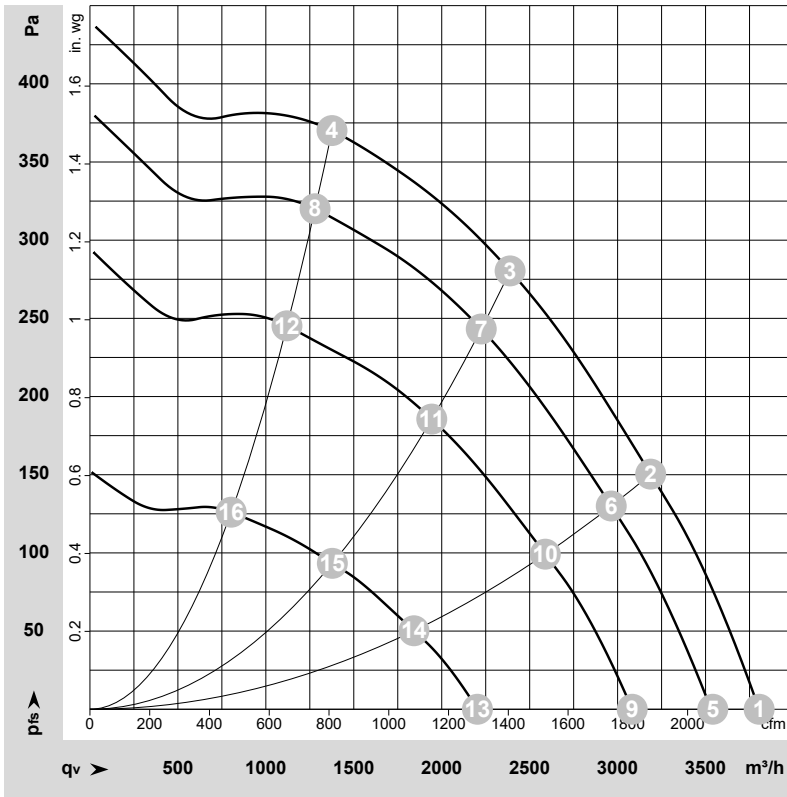
No.	Conn.	Designation	Color	Function/assignment
1	1, 2	PE	green/yellow	Protective earth
1	3	N	blue	Power supply, neutral conductor, 50/60 Hz
1	5	L	black	Power supply, phase, 50/60 Hz
1	6	NC	white 1	Status relay, floating status contact; break for failure, contact rating 250 VAC / 2A (AC1) / min. 10 mA, basic insulation on supply side and reinforced insulation on control interface side
1	7	COM	white 2	Status relay, floating status contact; common connection, contact rating 250 VAC / 2A (AC1) / min. 10 mA, basic insulation on supply side and reinforced insulation on control interface side
2	8	0-10V	yellow	Analog input (set value); 0-10 V; R <sub>i</sub> = 100 kΩ; adjustable curve
2	10	RSB	brown	RS485 interface for MODBUS, RSB
2	11	RSA	white	RS485 interface for MODBUS, RSA
2	12	GND	blue	Reference ground for control interface, SELV
2	13	+10V	red	Fixed voltage output 10 VDC, +10 V ±3%; max. 10 mA; short-circuit-proof; power supply for external devices (e.g. pot)

8300100540  
VBH0355CSNGS

# EC centrifugal module - RadiPac

backward-curved, single-intake  
with support bracket

## Curves: Air performance 50 Hz



$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$

Measurement: LU-230682-1  
Date: 2022-04-29  
Nozzle: 8217101928

Air performance measured according to ISO 5801 installation category A. For detailed information on the measurement setup, contact ebm-papst. Intake sound level: Sound power level according to ISO 13347 / sound pressure level measured at 1 m distance from fan axis. The values given are valid under the specified measuring conditions and may vary due to conditions of installation. For deviations from the standard configuration, the parameters have to be checked on the installed unit.

## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	LwA	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	dB	m <sup>3</sup> /h	Pa	cfm	in. wg
1	1~	230	50	1785	203	0.91	67	75	79	80	3805	0	2240	0.00
2	1~	230	50	1785	262	1.16	60	68	73	74	3190	150	1875	0.60
3	1~	230	50	1785	300	1.35	56	64	68	69	2390	280	1405	1.12
4	1~	230	50	1785	280	1.24	59	66	70	71	1375	370	810	1.49
5	1~	230	50	1660	167	0.75	65	73	77	78	3540	0	2085	0.00
6	1~	230	50	1665	215	0.97	58	67	71	73	2965	130	1745	0.52
7	1~	230	50	1665	246	1.10	54	62	67	68	2225	244	1310	0.98
8	1~	230	50	1665	227	1.02	56	64	68	69	1280	320	755	1.28
9	1~	230	50	1460	114	0.53	62	71	74	76	3085	0	1815	0.00
10	1~	230	50	1460	147	0.66	56	64	68	70	2590	99	1525	0.40
11	1~	230	50	1460	167	0.75	51	59	64	65	1945	186	1145	0.75
12	1~	230	50	1455	153	0.69	52	60	64	65	1120	245	660	0.98
13	1~	230	50	1050	49	0.26	56	63	67	69	2205	0	1295	0.00
14	1~	230	50	1050	61	0.31	49	56	61	63	1840	50	1085	0.20
15	1~	230	50	1040	66	0.34	44	52	56	57	1380	93	810	0.37
16	1~	230	50	1045	64	0.33	42	50	55	56	805	126	475	0.51

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
LwA<sub>out</sub> = Sound power level outlet side · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

8300100540

VBH0355CSNGS

Model LU-230682-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100540	
Motor	E07430-35	
Phase		1~
Nominal voltage	VAC	230
Nominal voltage range	VAC	200 .. 277
Frequency	Hz	50/60
Method of obtaining data		ml
Status		prelim.
Speed (rpm)	min <sup>-1</sup>	1785
Power consumption	W	300
Current draw	A	1.35
Min. ambient temperature	°C	-25
Max. ambient temperature	°C	55

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	68.8	46.1	09 Power consumption $P_{ed}$	kW	0.3
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	2395
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	281
04 Efficiency grade N		84.7	62	10 Speed (rpm) n	min <sup>-1</sup>	1785
05 Variable speed drive		Yes		11 Specific ratio <sup>*</sup>		1.00

Data obtained at optimum efficiency level.

<sup>\*</sup> Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-230682

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).

The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.

The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).



8300100540

VBH0355CSNGS

Model LU-230682-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Size</b>	355 mm
<b>Motor size</b>	74
<b>Rotor surface</b>	Thick-film passivated
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP54
<b>Insulation class</b>	"B"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"><li>- Output 10 VDC, max. 10 mA</li><li>- Operation and alarm display</li><li>- Alarm relay</li><li>- Integrated PID controller</li><li>- Power limiter</li><li>- Motor current limitation</li><li>- PFC, active</li><li>- RS-485 MODBUS-RTU</li><li>- Soft start</li><li>- Control input 0-10 VDC / PWM</li><li>- Control interface with SELV potential safely disconnected from the mains</li><li>- Thermal overload protection for electronics/motor</li><li>- Line undervoltage / phase failure detection</li></ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC circuit feedback</b>	According to EN 61000-3-2/3
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment)
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Motor protection</b>	Thermal switch auto reset, internally connected
<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 60034-1; EN 60204-1; EN 60335-1; UKCA; CE

8300100540

VBH0355CSNGS

Model LU-230682-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

Approval

CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

8300100540

VBH0355CSNGS

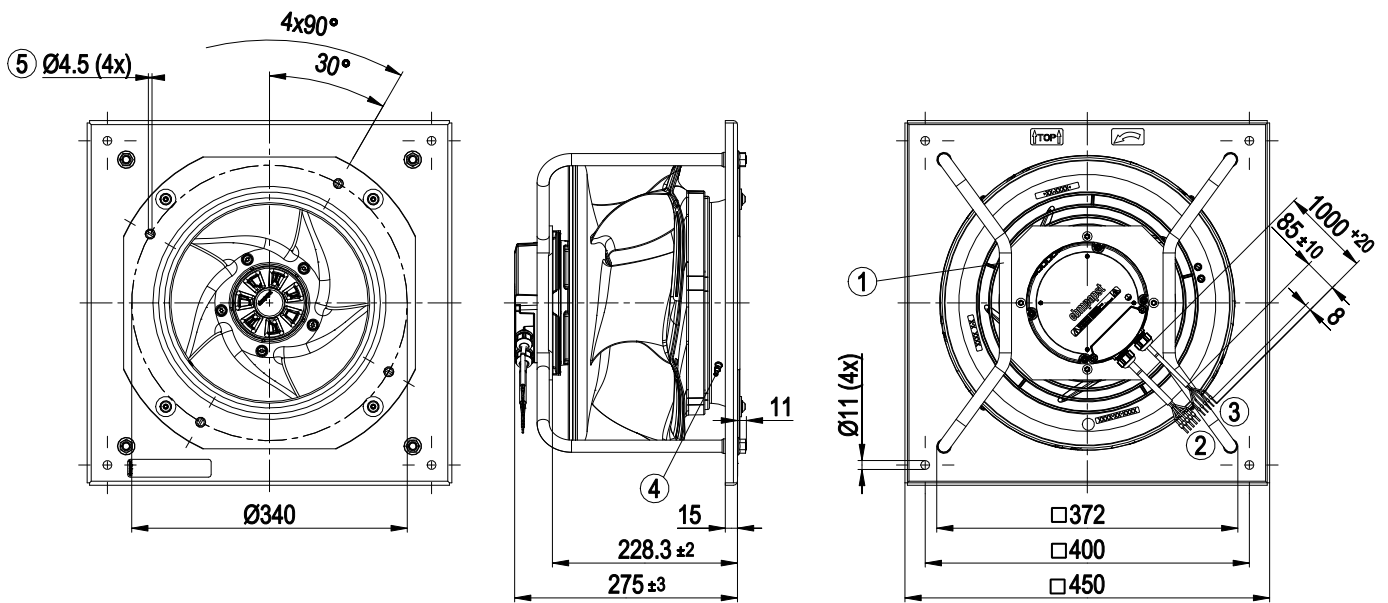
Model LU-230682-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable PVC AWG18 5x wire-end ferrule
3	Cable PVC AWG22 5x wire-end ferrule
4	Inlet ring with pressure tap (k-factor: 145)
5	Fastening holes for FlowGrid 00400-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

8300100540

VBH0355CSNGS

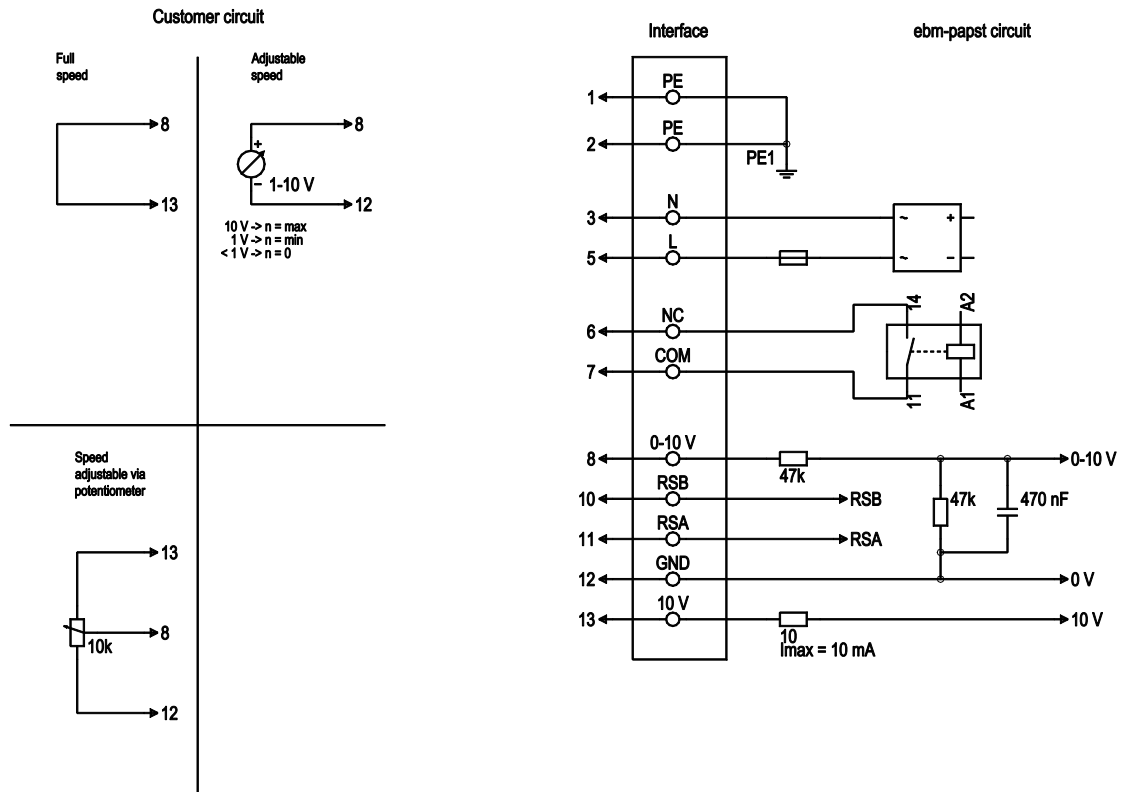
Model LU-230682-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



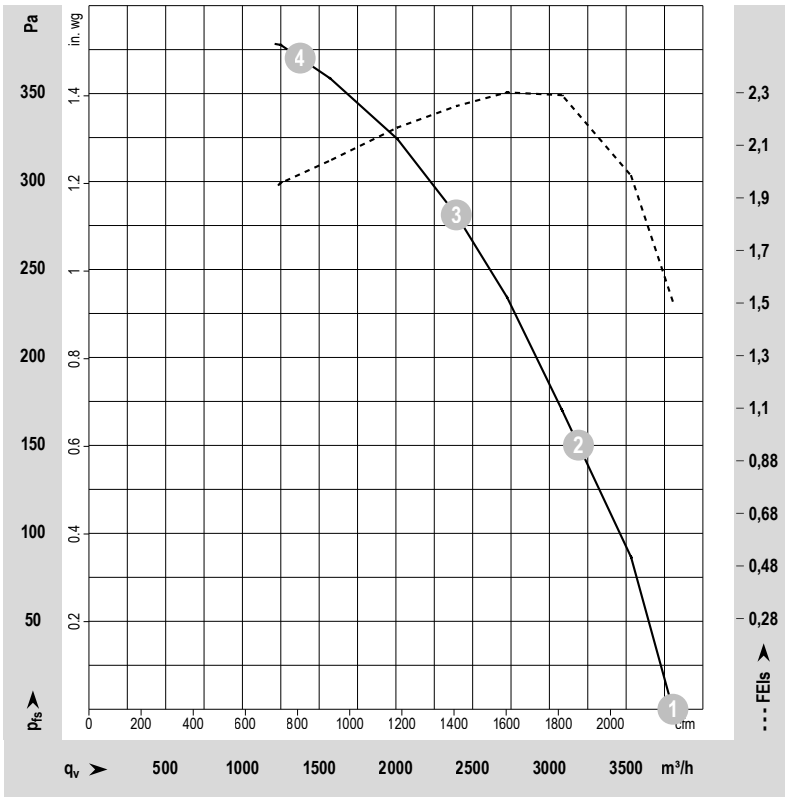
No.	Conn.	Designation	Color	Function/assignment
1	1, 2	PE	green/yellow	Protective earth
1	3	N	blue	Power supply, neutral conductor, 50/60 Hz
1	5	L	black	Power supply, phase, 50/60 Hz
1	6	NC	white 1	Status relay, floating status contact; break for failure, contact rating 250 VAC / 2A (AC1) / min. 10 mA, basic insulation on supply side and reinforced insulation on control interface side
1	7	COM	white 2	Status relay, floating status contact; common connection, contact rating 250 VAC / 2A (AC1) / min. 10 mA, basic insulation on supply side and reinforced insulation on control interface side
2	8	0-10V	yellow	Analog input (set value); 0-10 V; $R_i = 100 \text{ k}\Omega$ ; adjustable curve
2	10	RSB	brown	RS485 interface for MODBUS, RSB
2	11	RSA	white	RS485 interface for MODBUS, RSA
2	12	GND	blue	Reference ground for control interface, SELV
2	13	+10V	red	Fixed voltage output 10 VDC, +10 V $\pm 3\%$ ; max. 10 mA; short-circuit-proof; power supply for external devices (e.g. pot)

8300100540  
 VBH0355CSNGS  
 Model LU-230682-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Curves: Air performance 50 Hz



$$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$$

Measurement: LU-230682-1  
 Date: 2022-04-29  
 Nozzle: 8217101928

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	$P_e$	I	$LpA_{in}$	$LwA_{in}$	$LwA_{out}$	LwA	$q_v$	$P_{fs}$	$q_v$	$P_{fs}$
		V	Hz	$\text{min}^{-1}$	W	A	dB(A)	dB(A)	dB(A)	dB	$\text{m}^3/\text{h}$	Pa	cfm	in. wg
1	1~	230	50	1785	203	0.91	67	75	79	80	3805	0	2240	0.00
2	1~	230	50	1785	262	1.16	60	68	73	74	3190	150	1875	0.60
3	1~	230	50	1785	300	1.35	56	64	68	69	2390	280	1405	1.12
4	1~	230	50	1785	280	1.24	59	66	70	71	1375	370	810	1.49



Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) ·  $P_e$  = Power consumption · I = Current draw ·  $LpA_{in}$  = Sound pressure level intake side ·  $LwA_{in}$  = Sound power level intake side  
 $LwA_{out}$  = Sound power level outlet side · LwA = Sound power level total ·  $q_v$  = Air flow ·  $p_{fs}$  = Pressure increase

Values for sound power levels (total LwA,  $LwA_{in}$  and LwA)  
 The  $LpA$  levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
 Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.

8300100741

VBH0355CSPFS

Model LU-223773-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100741	
Motor	E09002-28	
Phase		1~
Nominal voltage	VAC	230
Nominal voltage range	VAC	200 .. 277
Frequency	Hz	50/60
Method of obtaining data		ml
Speed (rpm)	min <sup>-1</sup>	2140
Power consumption	W	490
Current draw	A	2.2
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	60

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	69.1	48.3	09 Power consumption $P_{ed}$	kW	0.49
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	2805
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	394
04 Efficiency grade N		82.8	62	10 Speed (rpm) n	min <sup>-1</sup>	2140
05 Variable speed drive		Yes		11 Specific ratio*		1.00

Data obtained at optimum efficiency level.

\* Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-223773

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings). The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again. The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100741

VBH0355CSPFS

Model LU-223773-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Technical description

Size	355 mm
Motor size	90
Rotor surface	Painted black
Electronics housing material	Die-cast aluminum
Impeller material	PP plastic
Support plate material	Sheet steel, galvanized
Support bracket material	Steel, painted black
Inlet nozzle material	ABS plastic
Number of blades	5
Direction of rotation	Clockwise, viewed toward rotor
Degree of protection	IP55
Insulation class	"F"
Moisture (F) / Environmental (H) protection class	H1
Ambient temperature note	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
Max. permitted ambient temp. for motor (transport/storage)	+80 °C
Min. permitted ambient temp. for motor (transport/storage)	-40 °C
Installation position	See legend on product drawing
Condensation drainage holes	On rotor side
Mode	S1
Motor bearing	Ball bearing
Technical features	<ul style="list-style-type: none"><li>- Output 10 VDC, max. 10 mA</li><li>- Operation and alarm display with LED</li><li>- Locked-rotor detection</li><li>- Speed control</li><li>- External 15-30 VDC input (parameterization)</li><li>- Alarm relay</li><li>- Configurable inputs/outputs (I/O)</li><li>- Power limiter</li><li>- MODBUS V7.0</li><li>- Motor current limitation</li><li>- PFC, active</li><li>- RS-485 MODBUS-RTU</li><li>- Soft start</li><li>- Control interface with SELV potential safely disconnected from the mains</li><li>- Temperature derating</li><li>- Thermal overload protection for electronics/motor</li><li>- Line undervoltage / phase failure detection</li></ul>
Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)	<= 3.5 mA
Motor protection	Electronic motor protection
With cable	Lateral

8300100741

VBH0355CSPFS

Model LU-223773-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 60335-1; EN 61800-5-1; UKCA; CE
<b>Approval</b>	UL 1004-7 + 60730-1; CSA C22.2 No. 77 + CAN/CSA-E60730-1



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VBH0355CSPFS

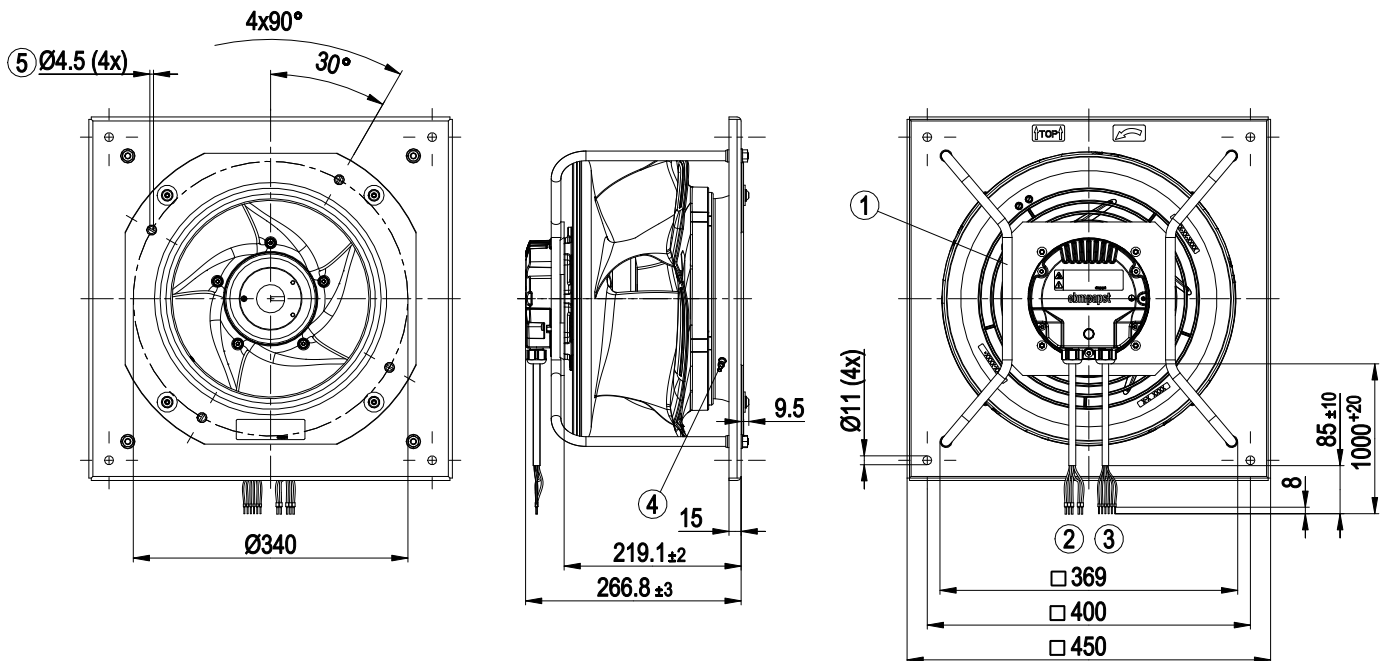
Model LU-223773-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Supply line (PWR) PVC AWG18 5x wire-end ferrule
3	Control wire (CTRL) PVC AWG22 6x wire-end ferrule
4	Inlet ring with pressure tap (k-factor: 145)
5	Fastening holes for FlowGrid 00400-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

8300100741

VBH0355CSPFS

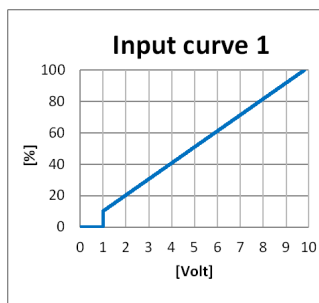
Model LU-223773-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Color	Function/assignment
	PWR	PE	green/yellow	Protective earth
	PWR	L	black	Power supply, phase, see nameplate for voltage range
	PWR	N	blue	Power supply, neutral conductor, see nameplate for voltage range
	PWR	COM	orange	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	PWR	NC	orange	Status relay, floating status contact, break for failure
	CTRL	GND	blue	Reference ground for control interface, SELV
	CTRL	Vout	red	Voltage output 10 VDC +/-3%, I <sub>max</sub> =10 mA Short-circuit-proof, power supply for external devices, SELV alternative: 15-30 VDC input for parameterization via MODBUS without line voltage
	CTRL	IO1	yellow	Factory setting: Analog input 0-10 V / PWM, R <sub>i</sub> =100 kΩ, function: set value Characteristic curve parameterizable (see input characteristic curve "Input curve 1"), SELV Function parameterizable (see table Optional interface functions)
	CTRL	IO2	white	Factory setting: Open collector output, U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, function:Tacho output 1 pulse/revolution, SELV Function parameterizable (see table Optional interface functions)
	CTRL	RSA	gray	RS-485 interface for MODBUS RSA, SELV dielectric strength to MODBUS RSB +/-14 V, dielectric strength to GND +/-7 V
	CTRL	RSB	brown	RS-485 interface for MODBUS RSB, SELV dielectric strength to MODBUS RSA +/-14 V, dielectric strength to GND +/-7 V
		LED		green: status = good, ready for operation orange: status = warning red: status = failure

8300100741

VBH0355CSPFS

Model LU-223773-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Terminal/plug assignment

Terminal / Plug	Signal / Function	Direction	Notes
D101 [..]	source: set value	INPUT	
D147 [..]	source: sensor value	INPUT	
D104 [..]	switch: parameter set: #1 / #2	INPUT	
D12E [..]	switch: control function: heating (pos.) / cooling (neg.)	INPUT	
D148 [..]	switch: direction of rotation: cw / ccw	INPUT	
D16C [..]	switch: set value source	INPUT	
D16A [..]	switch: fan enable / disable	INPUT	
D00C [1]	source: input pulses autoaddressing	INPUT	
D638 [..]	source: DCI in	INPUT	
D130 [4]	signal: output pulses autoaddressing	OUTPUT	
D61B	signal: DCI out	OUTPUT	
D130 [0]	signal: fan modulation level %	OUTPUT	
D130 [1]	signal: actual speed 1/min	OUTPUT	
D130 [2]	signal: system modulation level %	OUTPUT	
D130 [5]	signal: remote control output 0-10 V	OUTPUT	
D145	signal: run monitoring	OUTPUT	
	signal: status	OUTPUT	

configurable IO functions: normal / inverse

CON2	configurable IO mode	electrical specification	MODBUS Register for IO mode configuration
101	Dim1 (active high): digital input	active: applied voltage 3,5-50 VDC, SELV not active: pin open or applied voltage < 1,5 VDC SELV	D158 [0]
	Dim1 (active low): digital input	active: applied voltage < 1,5 VDC, SELV not active: pin open or applied voltage 3,5-50 VDC SELV	D158 [1]
	Air1 0-10 V/PWM: analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D158 [2]
	Air1 0-10 V/PWM (with pull up): analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D158 [9]
	Dim1 (active high): digital input	active: applied voltage 3,5-50 VDC, SELV not active: pin open or applied voltage < 1,5 VDC SELV	D159 [0]
102	Air1 0-10 V/PWM: analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D159 [2]
	Tach out (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [5]
	Diagnostics out (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [6]
	Alarm out (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [10]
	Test pulse output addressing (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [11]
RSA RSB	DCI-output (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [12]
	RS485 bus connection	MODBUS RTU, parameter specification V7, SELV	
COM NC	Relay	250 VAC / 2 A (AC1)	
Vout	Voltage output	Voltage 10 VDC, SELV	
	Alternatively: input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...30 VDC	

- configurable function
- (○) function to be activated via IO Mode

### Medium (M2)

Functions and parameter description  
MODBUS V7.0

8300100741

VBH0355CSPFS

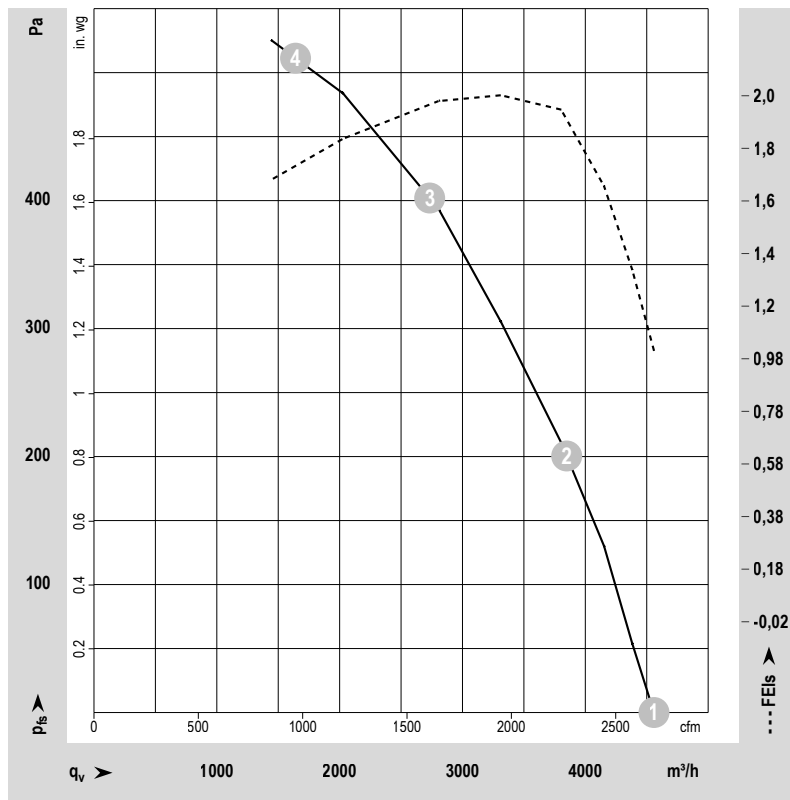
Model LU-223773-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Curves: Air performance 50 Hz



$$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$$

Measurement: LU-223773-1  
Date: 2022-11-04  
Nozzle: 8217101928

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	LwA	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	dB	m <sup>3</sup> /h	Pa	cfm	in. wg
1	1~	230	50	2140	337	1.51	72	80	84	85	4560	0	2685	0.00
2	1~	230	50	2140	416	1.86	66	74	78	79	3845	200	2260	0.80
3	1~	230	50	2140	490	2.20	62	70	76	77	2725	400	1605	1.61
4	1~	230	50	2140	454	2.02	66	73	78	79	1640	510	965	2.05



Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LWA, LwA<sub>in</sub> and LwA<sub>out</sub>)  
The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.

8300100881

VBH0355CTPHS

Model LU-226730-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100881	
Motor	E09004-40	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Status		prelim.
Speed (rpm)	min <sup>-1</sup>	3080
Power consumption	W	1500
Current draw	A	2.3
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	45

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	70.2	53.4	09 Power consumption $P_{ed}$	kW	1.51
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	4185
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	857
04 Efficiency grade N		78.8	62	10 Speed (rpm) n	min <sup>-1</sup>	3085
05 Variable speed drive		Yes		11 Specific ratio <sup>*</sup>		1.01

Data obtained at optimum efficiency level.

<sup>\*</sup> Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-226730

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).

The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.

The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100881

VBH0355CTPHS

Model LU-226730-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Size</b>	355 mm
<b>Motor size</b>	90
<b>Rotor surface</b>	Painted black
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"> <li>- Output 10 VDC, max. 10 mA</li> <li>- Operation and alarm display with LED</li> <li>- Locked-rotor detection</li> <li>- Speed control</li> <li>- External 15-30 VDC input (parameterization)</li> <li>- Alarm relay</li> <li>- Configurable inputs/outputs (I/O)</li> <li>- Power limiter</li> <li>- MODBUS V7.0</li> <li>- Motor current limitation</li> <li>- RS-485 MODBUS-RTU</li> <li>- Soft start</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Temperature derating</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage / phase failure detection</li> </ul>
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Motor protection</b>	Electronic motor protection
<b>With cable</b>	Lateral
<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; CE

8300100881

VBH0355CTPHS

Model LU-226730-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Comment

Maximum permissible operating altitude 4000 m above sea level according to DIN 61800-5-1\_2008\_Sec. 4.3.6.4.1 overvoltage category II.  
Up to 2000 m above sea level, overvoltage category III applies.

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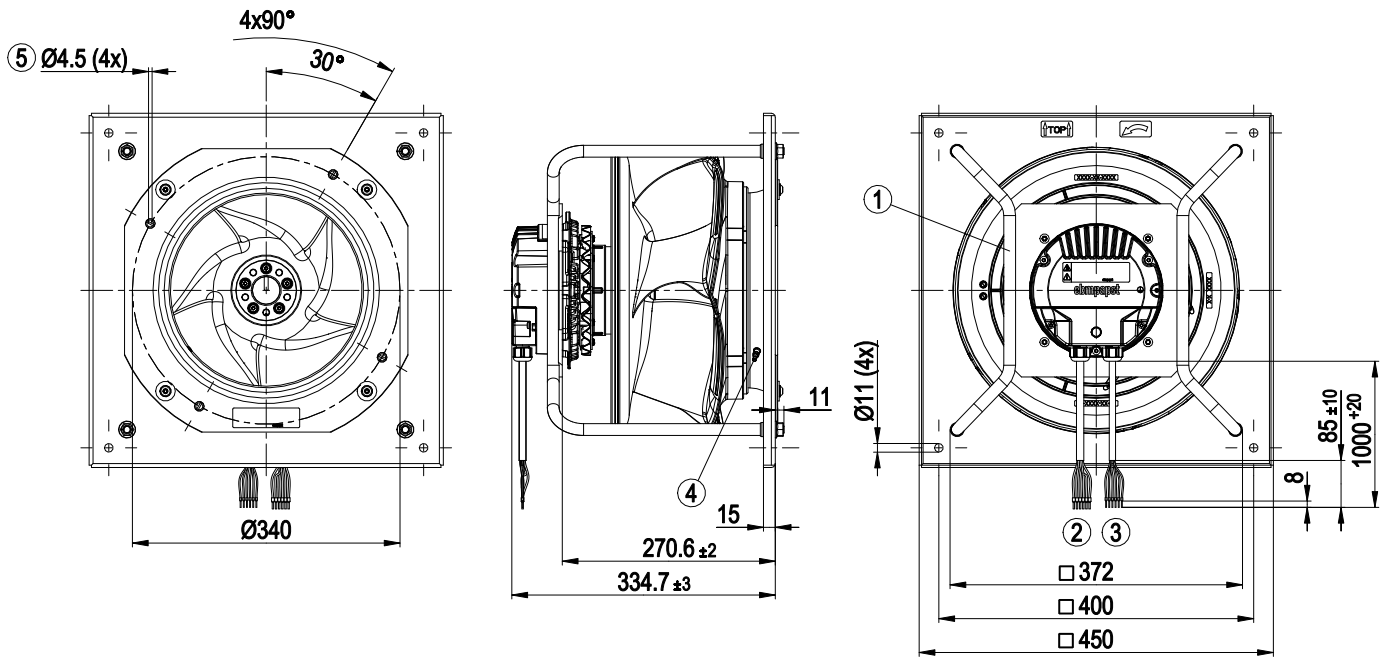
Model LU-226730-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Supply line (PWR) PVC AWG18 6x wire-end ferrule
3	Control wire (CTRL) PVC AWG22 6x wire-end ferrule
4	Inlet ring with pressure tap (k-factor: 145)
5	Fastening holes for FlowGrid 00400-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required



8300100881

VBH0355CTPHS

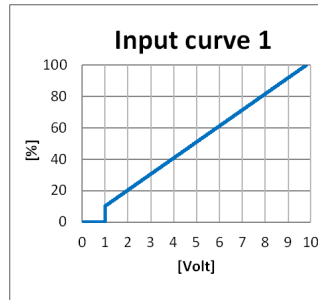
Model LU-226730-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Color	Function/assignment
	PWR	PE	green/yellow	Protective earth
	PWR	L1, L2, L3	black 1-3	Power supply, phase, see nameplate for voltage range
	PWR	COM	orange	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	PWR	NC	orange	Status relay, floating status contact, break for failure
	CTRL	GND	blue	Reference ground for control interface, SELV
	CTRL	Vout	red	Voltage output 10 VDC +/-3%, I <sub>max</sub> =10 mA Short-circuit-proof, power supply for external devices, SELV alternative: 15-30 VDC input for parameterization via MODBUS without line voltage
	CTRL	IO1	yellow	Factory setting: Analog input 0-10 V / PWM, R <sub>i</sub> =100 kΩ, function: set value Characteristic curve parameterizable (see input characteristic curve "Input curve 1"), SELV Function parameterizable (see table Optional interface functions)
	CTRL	IO2	white	Factory setting: Open collector output, U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, function:Tacho output 1 pulse/revolution, SELV Function parameterizable (see table Optional interface functions)
	CTRL	RSA	gray	RS-485 interface for MODBUS RSA, SELV dielectric strength to MODBUS RSB +/-14 V, dielectric strength to GND +/-7 V
	CTRL	RSB	brown	RS-485 interface for MODBUS RSB, SELV dielectric strength to MODBUS RSA +/-14 V, dielectric strength to GND +/-7 V
		LED		green: status = good, ready for operation orange: status = warning red: status = failure

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Terminal/plug assignment

Terminal	Signal	Direction	Notes
D101	source: set value	INPUT	
D147	source: sensor value	INPUT	
D104	switch: parameter set: #1 / #2	INPUT	
D12E	switch: control function: heating (pos.) / cooling (neg.)	INPUT	
D148	switch: direction of rotation: cw / ccw	INPUT	
D16C	switch: set value source	INPUT	
D16A	switch: fan enable / disable	INPUT	
D00C	source: input pulses autoaddressing	INPUT	
D638	source: DCI in	INPUT	
D130	signal: tach out	OUTPUT	
D130	signal: diagnostics out	OUTPUT	
D130	signal: alarm out	OUTPUT	
D130	signal: output pulses autoaddressing	OUTPUT	
D61B	signal: DCI out	OUTPUT	
D130	signal: fan modulation level %	OUTPUT	
D130	signal: actual speed 1/min	OUTPUT	
D130	signal: system modulation level %	OUTPUT	
D130	signal: remote control output 0-10 V	OUTPUT	
D145	signal: run monitoring	OUTPUT	
D145	signal: status	OUTPUT	

configurable IO functions: normal / inverse

CON2	configurable IO mode	electrical specification	MODBUS Register for IO mode configuration
I01	Dim1 (active high): digital input	active: applied voltage 3,5-50 VDC, SELV not active: pin open or applied voltage < 1,5 VDC SELV	D158 [0]
	Dim1 (active low): digital input	active: applied voltage < 1,5 VDC, SELV not active: pin open or applied voltage 3,5-50 VDC SELV	D158 [1]
	Air1 0-10 V/PWM: analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D158 [2]
	Air1 0-10 V/PWM (with pull up): analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D158 [9]
I02	Dim1 (active high): digital input	active: applied voltage 3,5-50 VDC, SELV not active: pin open or applied voltage < 1,5 VDC SELV	D159 [0]
	Air1 0-10 V/PWM: analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D159 [2]
	Tach out (open collector)	U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, SELV	D159 [5]
	Diagnostics out (open collector)	U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, SELV	D159 [6]
	Alarm out (open collector)	U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, SELV	D159 [10]
	Test pulse output addressing (open collector)	U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, SELV	D159 [11]
RSA	RS485 bus connection	MODBUS RTU, parameter specification V7, SELV	D159 [12]
COM	Relay	250 VAC / 2 A (AC1)	
NC	Voltage output	Voltage 10 VDC, SELV	
Vout	Alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...30 VDC	

### Medium (M2)

Functions and parameter description  
 MODBUS V7.0

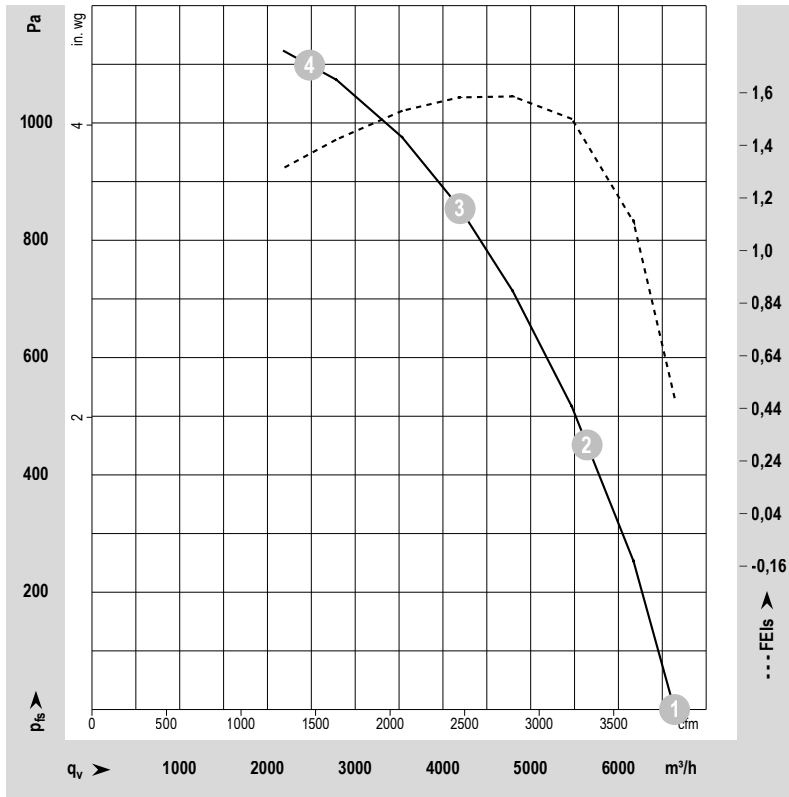
- configurable function
- (○) function to be activated via IO Mode

8300100881  
 VBH0355CTPHS  
 Model LU-226730-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Curves: Air performance 50 Hz



$$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$$

Measurement: LU-226730-1  
 Date: 2023-05-02  
 Nozzle: 8217101928

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	LwA	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	dB	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	3080	955	1.49	81	89	93	94	6640	0	3910	0.00
2	3~	400	50	3080	1294	1.99	75	82	87	88	5635	450	3315	1.81
3	3~	400	50	3080	1500	2.30	71	78	84	85	4185	850	2465	3.41
4	3~	400	50	3080	1399	2.15	75	82	88	89	2480	1100	1460	4.42



Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
 LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LWA, LwA<sub>in</sub> and LwA<sub>out</sub>)  
 The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
 Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.

8300100087  
VBH0355CTRLS  
Model LU-215843-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100087	
Motor	E11233-60	

Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60

Method of obtaining data		ml
Speed (rpm)	min <sup>-1</sup>	3800
Power consumption	W	2750
Current draw	A	4.3
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	72.8	56.1	09 Power consumption $P_{ed}$	kW	2.72
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	5340
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	1270
04 Efficiency grade N		78.7	62	10 Speed (rpm) $n$	min <sup>-1</sup>	3795
05 Variable speed drive		Yes		11 Specific ratio*		1.01

Data obtained at optimum efficiency level.

\* Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-215843

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings). The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again. The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100087

VBH0355CTRLS

Model LU-215843-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	24.3 kg
<b>Size</b>	355 mm
<b>Motor size</b>	112
<b>Rotor surface</b>	Painted black
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"> <li>- Operation and alarm display with LED</li> <li>- External 15-50 VDC input (parameterization)</li> <li>- Alarm relay</li> <li>- Integrated PI controller</li> <li>- Configurable inputs/outputs (I/O)</li> <li>- MODBUS V6.3</li> <li>- Motor current limitation</li> <li>- RS-485 MODBUS-RTU</li> <li>- Soft start</li> <li>- Voltage output 3.3-24 VDC, Pmax = 800 mW</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage / phase failure detection</li> <li>- Vibration sensor</li> </ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Electronic motor protection

8300100087

VBH0355CTRLS

Model LU-215843-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

8300100087

VBH0355CTRLS

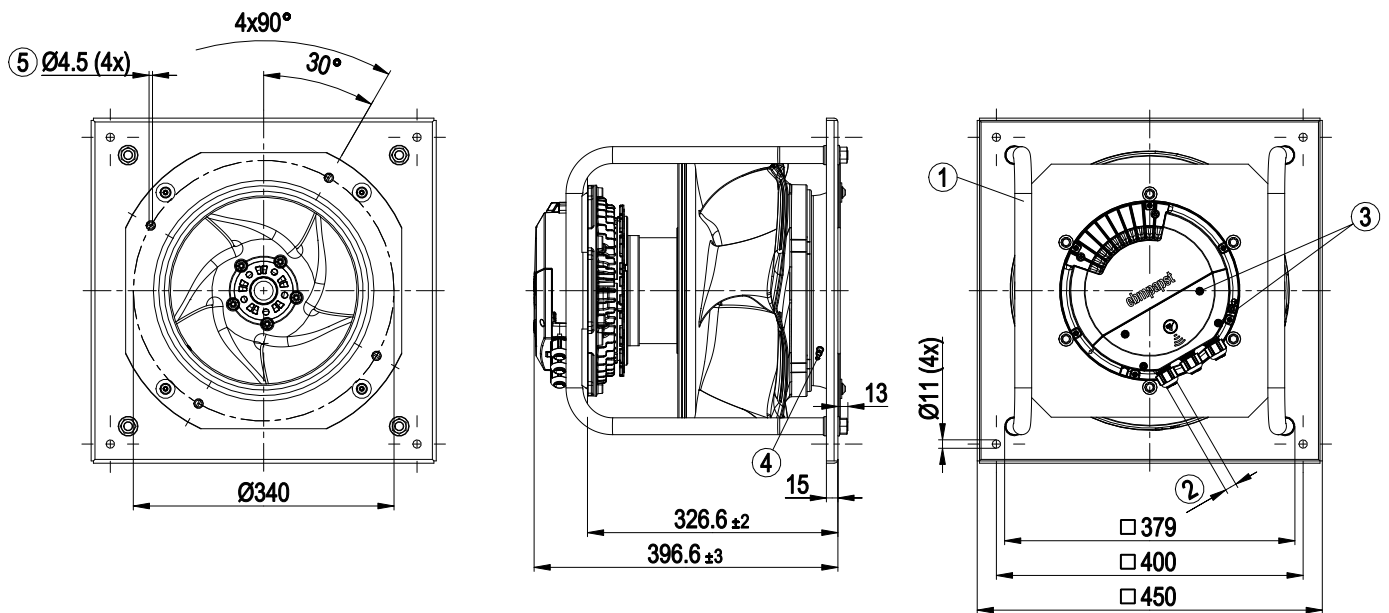
Model LU-215843-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing

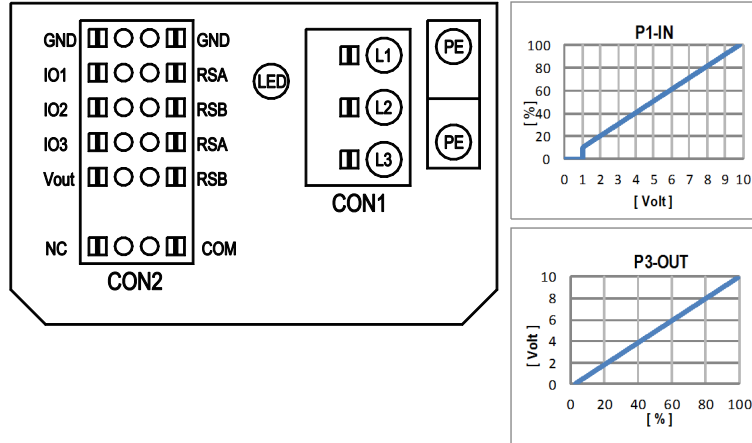


1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque $4 \pm 0.6$ Nm (The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
3	Tightening torque $1.5 \pm 0.2$ Nm
4	Inlet ring with pressure tap (k-factor: 145)
5	Fastening holes for FlowGrid 00400-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
	CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function parameterizable (see "Optional interface functions" table) Factory setting: Digital input - high active, function: Disable input, SELV - inactive: Pin open or applied voltage < 1.5 VDC - active: applied voltage 3.5-50 VDC Reset function: Triggering of error reset on change of state from "enabled" to "disabled"
	CON2	IO2	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog input 0-10 V/PWM, Ri=100 kΩ, function: Set value Characteristic curve parameterizable (see input characteristic curve P1-IN), SELV
	CON2	IO3	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog output 0-10 V, max. 5 mA, function: Actual speed Characteristic curve parametrizable (see output characteristic curve P3-OUT), SELV
	CON2	Vout	Voltage output 3.3-24 VDC ±5%, Pmax=800 mW, voltage parameterizable Factory setting: 10 VDC short-circuit-proof, supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage
	CON2	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	CON2	NC	Status relay, floating status contact, break for failure
		LED	green: status = good, ready for operation orange: status = warning red: status = failure
		P1-IN	Input characteristic curve
		P3-OUT	Output characteristic curve



8300100087

VBH0355CTRLS

Model LU-215843-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Terminal/plug assignment

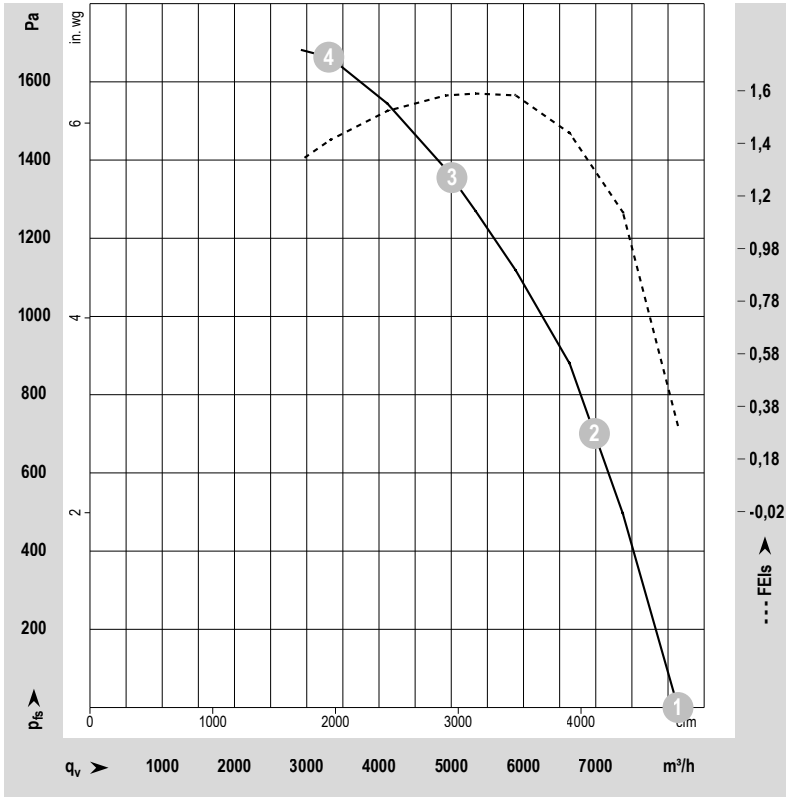
CON2	configurable IO mode	electrical specification	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	
				selected directly via IO mode)	selected directly via IO mode)
IO1	○ Din1 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	D158 [0]
	○ Ain1 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV			D158 [2]
	○ Tach out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV		○	D158 [5]
	○ Diagnostics out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV			D158 [6]
IO2	○ Din2 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	D159 [0]
	○ Ain2 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV			D159 [2]
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV		○	D159 [3]
	○ Din3 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC			D15A [0]
IO3	○ Din3 (active low), digital input	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage 3.5-50VDC		○	D15A [1]
	○ PWMIn3: digital input, idle level high	PWM = 40Hz - 10kHz, characteristics parameterizable			D15A [7]
	○ PWMIn3: digital input, idle level low	active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV		○	D15A [8]
	○ Aout3 0-10V: analog output	function parameterizable, max. 5mA, max output frequency 300Hz, SELV			D15A [4]
RSA	○ Tacho out (pulses), analog output	0-10V/max. 5mA, max output frequency 300Hz, SELV		○	D15A [5]
	○ Diagnostics out (pulses)	0-10V/max. 5mA, max output frequency 300Hz, SELV			D15A [6]
	○ Diagnostics out (pulses)	MODBUS RTU, specification V6.3, SELV			
RSB	RS485 bus connection,				
Vout	voltage output	voltage parameterizable 3.3...24VDC +/- 5%, Pmax=800mW, short-circuit-proof, supply for external devices, SELV			D16E [..]
	alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...50VDC			

8300100087  
 VBH0355CTRLS  
 Model LU-215843-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Curves: Air performance 50 Hz



$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$

Measurement: LU-215843-1  
 Date: 2021-09-01  
 Nozzle: 8217101928

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	3800	1772	2.81	89	96	99	8140	0	4790	0.00
2	3~	400	50	3800	2494	3.87	81	89	93	6980	700	4105	2.81
3	3~	400	50	3800	2750	4.30	75	83	89	5000	1350	2945	5.42
4	3~	400	50	3800	2582	4.00	79	87	92	3290	1650	1940	6.62

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
 LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LWA, LwA<sub>in</sub> and LwA<sub>out</sub>)  
 The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
 Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.



8300100883

VBH0400CSPHS

Model LU-224465-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100883	
Motor	E09002-40	
Phase		1~
Nominal voltage	VAC	230
Nominal voltage range	VAC	200 .. 277
Frequency	Hz	50/60
Method of obtaining data		ml
Status		prelim.
Speed (rpm)	min <sup>-1</sup>	1780
Power consumption	W	500
Current draw	A	2.2
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	60

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	70.9	48.3	09 Power consumption $P_{ed}$	kW	0.49
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	3595
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	319
04 Efficiency grade N		84.6	62	10 Speed (rpm) n	min <sup>-1</sup>	1780
05 Variable speed drive		Yes		11 Specific ratio <sup>*</sup>		1.00

Data obtained at optimum efficiency level.

<sup>\*</sup> Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-224465

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).

The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.

The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100883

VBH0400CSPHS

Model LU-224465-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

Size	400 mm
Motor size	90
Rotor surface	Painted black
Electronics housing material	Die-cast aluminum
Impeller material	PP plastic
Support plate material	Sheet steel, galvanized
Support bracket material	Steel, painted black
Inlet nozzle material	ABS plastic
Number of blades	5
Direction of rotation	Clockwise, viewed toward rotor
Degree of protection	IP55
Insulation class	"F"
Moisture (F) / Environmental (H) protection class	H1
Ambient temperature note	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
Max. permitted ambient temp. for motor (transport/storage)	+80 °C
Min. permitted ambient temp. for motor (transport/storage)	-40 °C
Installation position	See legend on product drawing
Condensation drainage holes	On rotor side
Mode	S1
Motor bearing	Ball bearing
Technical features	<ul style="list-style-type: none"><li>- Output 10 VDC, max. 10 mA</li><li>- Operation and alarm display with LED</li><li>- Locked-rotor detection</li><li>- Speed control</li><li>- External 15-30 VDC input (parameterization)</li><li>- Alarm relay</li><li>- Configurable inputs/outputs (I/O)</li><li>- Power limiter</li><li>- MODBUS V7.0</li><li>- Motor current limitation</li><li>- PFC, active</li><li>- RS-485 MODBUS-RTU</li><li>- Soft start</li><li>- Control interface with SELV potential safely disconnected from the mains</li><li>- Temperature derating</li><li>- Thermal overload protection for electronics/motor</li><li>- Line undervoltage / phase failure detection</li></ul>
Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)	<= 3.5 mA
Motor protection	Electronic motor protection
With cable	Lateral

8300100883

VBH0400CSPHS

Model LU-224465-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 60335-1; EN 61800-5-1; UKCA; CE
<b>Approval</b>	UL 1004-7 + 60730-1; CSA C22.2 No. 77 + CAN/CSA-E60730-1

8300100883

VBH0400CSPHS

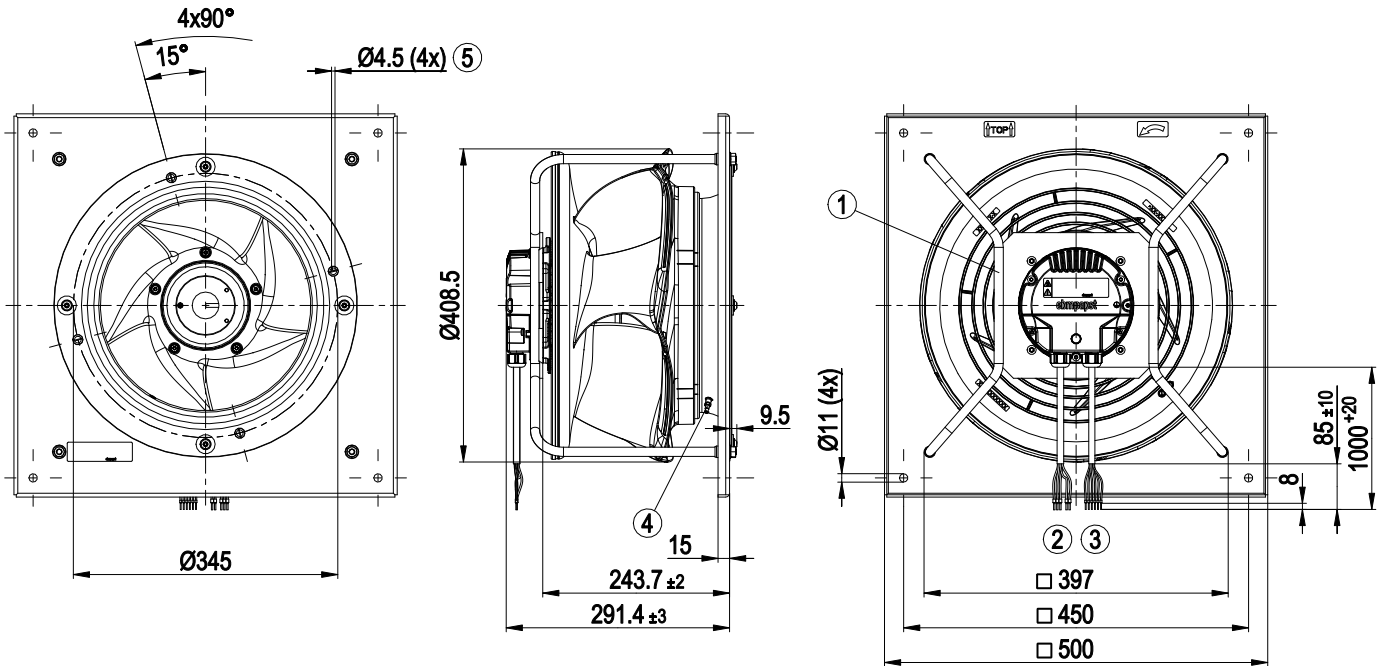
Model LU-224465-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Supply line (PWR) PVC AWG18 5x wire-end ferrule
3	Control wire (CTRL) PVC AWG22 6x wire-end ferrule
4	Inlet ring with pressure tap (k-factor: 190)
5	Fastening holes for FlowGrid 00400-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

8300100883

VBH0400CSPHS

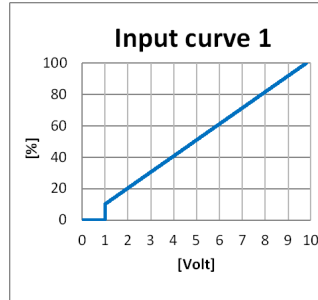
Model LU-224465-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Color	Function/assignment
	PWR	PE	green/yellow	Protective earth
	PWR	L	black	Power supply, phase, see nameplate for voltage range
	PWR	N	blue	Power supply, neutral conductor, see nameplate for voltage range
	PWR	COM	orange	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	PWR	NC	orange	Status relay, floating status contact, break for failure
	CTRL	GND	blue	Reference ground for control interface, SELV
	CTRL	Vout	red	Voltage output 10 VDC +/-3%, I <sub>max</sub> =10 mA Short-circuit-proof, power supply for external devices, SELV alternative: 15-30 VDC input for parameterization via MODBUS without line voltage
	CTRL	IO1	yellow	Factory setting: Analog input 0-10 V / PWM, R <sub>i</sub> =100 kΩ, function: set value Characteristic curve parameterizable (see input characteristic curve "Input curve 1"), SELV Function parameterizable (see table Optional interface functions)
	CTRL	IO2	white	Factory setting: Open collector output, U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, function:Tacho output 1 pulse/revolution, SELV Function parameterizable (see table Optional interface functions)
	CTRL	RSA	gray	RS-485 interface for MODBUS RSA, SELV dielectric strength to MODBUS RSB +/-14 V, dielectric strength to GND +/-7 V
	CTRL	RSB	brown	RS-485 interface for MODBUS RSB, SELV dielectric strength to MODBUS RSA +/-14 V, dielectric strength to GND +/-7 V
		LED		green: status = good, ready for operation orange: status = warning red: status = failure

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Terminal/plug assignment

Terminal	Function	IO Mode	Configurable
D101 [..]	source: set value		
D147 [..]	source: sensor value		
D104 [..]	switch: parameter set: #1 / #2		
D12E [..]	switch: control function: heating (pos.) / cooling (neg.)		
D148 [..]	switch: direction of rotation: cw / ccw		
D16C [..]	switch: set value source		
D16A [..]	switch: fan enable / disable		
D00C [1]	source: input pulses autoaddressing		
D638 [..]	source: DCI in		
D130 [4]	signal: output pulses autoaddressing		
D61B	signal: DCI out		
D130 [0]	signal: fan modulation level %		
D130 [1]	signal: actual speed 1/min		
D130 [2]	signal: system modulation level %		
D130 [5]	signal: remote control output 0-10 V		
D145	signal: run monitoring		
	signal: status		

configurable IO functions: normal / inverse

### MODBUS Register for IO mode configuration

CON2	configurable IO mode	electrical specification	MODBUS Register for IO mode configuration
101	Dim1 (active high): digital input	active: applied voltage 3,5-50 VDC, SELV not active: pin open or applied voltage < 1,5 VDC SELV	D158 [0]
	Dim1 (active low): digital input	active: applied voltage < 1,5 VDC, SELV not active: pin open or applied voltage 3,5-50 VDC SELV	D158 [1]
	Air1 0-10 V/PWM: analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D158 [2]
	Air1 0-10 V/PWM (with pull up): analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D158 [3]
102	Dim1 (active high): digital input	active: applied voltage 3,5-50 VDC, SELV not active: pin open or applied voltage < 1,5 VDC SELV	D159 [0]
	Air1 0-10 V/PWM: analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D159 [2]
	Tach out (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [5]
	Diagnostics out (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [6]
	Alarm out (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [10]
	Test pulse output addressing (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [11]
RSA RSB	DCI-output (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [12]
	RS485 bus connection	MODBUS RTU, parameter specification V7, SELV	
COM NC	Relay	250 VAC / 2 A (AC1)	
Vout	Voltage output	Voltage 10 VDC, SELV	
	Alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...30 VDC	

### Medium (M2)

Functions and parameter description  
 MODBUS V7.0

- configurable function
- (○) function to be activated via IO Mode

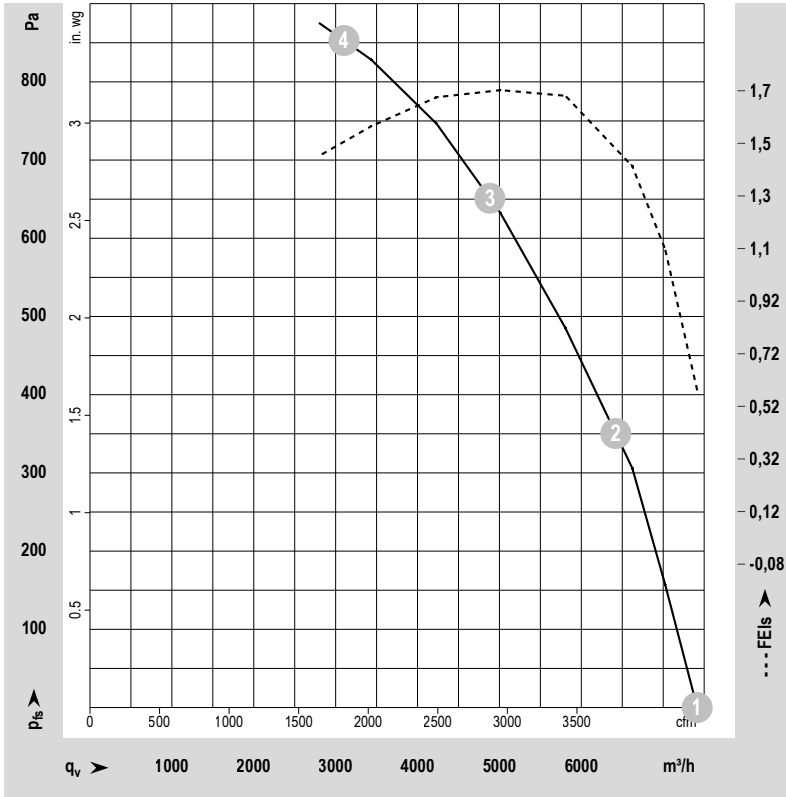


8300100883  
 VBH0400CSPHS  
 Model LU-224465-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Curves: Air performance 50 Hz



$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$

Measurement: LU-224465-1  
 Date: 2022-12-08  
 Nozzle: 8217101929

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	LwA	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	dB	m <sup>3</sup> /h	Pa	cfm	in. wg
1	1~	230	50	1780	346	1.54	70	78	82	84	5350	0	3150	0.00
2	1~	230	50	1780	449	1.98	63	71	76	77	4420	200	2600	0.80
3	1~	230	50	1780	500	2.20	60	67	73	74	3305	350	1945	1.41
4	1~	230	50	1780	474	2.09	63	70	75	76	2075	450	1220	1.81



Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
 LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LwA, LwA<sub>in</sub> and LwA<sub>out</sub>)  
 The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
 Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.

8300100056

VBH0400CTRHS

Model LU-213976-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100056	
Motor	E11229-40	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Speed (rpm)	min <sup>-1</sup>	2600
Power consumption	W	1500
Current draw	A	2.4
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	72.2	53.6	09 Power consumption $P_{ed}$	kW	1.57
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	5335
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	716
04 Efficiency grade N		80.6	62	10 Speed (rpm) $n$	min <sup>-1</sup>	2590
05 Variable speed drive		Yes		11 Specific ratio*		1.01

Data obtained at optimum efficiency level.

\* Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-213976

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings). The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again. The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100056

VBH0400CTRHS

Model LU-213976-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Technical description

Weight	16.56 kg
Size	400 mm
Motor size	112
Rotor surface	Painted black
Terminal box material	PP plastic
Electronics housing material	Die-cast aluminum
Impeller material	PP plastic
Support plate material	Sheet steel, galvanized
Support bracket material	Steel, painted black
Inlet nozzle material	ABS plastic
Number of blades	5
Direction of rotation	Clockwise, viewed toward rotor
Degree of protection	IP55
Insulation class	"F"
Moisture (F) / Environmental (H) protection class	H1
Ambient temperature note	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
Max. permitted ambient temp. for motor (transport/storage)	+80 °C
Min. permitted ambient temp. for motor (transport/storage)	-40 °C
Installation position	See legend on product drawing
Condensation drainage holes	On rotor side
Mode	S1
Motor bearing	Ball bearing
Technical features	<ul style="list-style-type: none"><li>- Output 10 VDC, max. 10 mA</li><li>- Operation and alarm display</li><li>- External 24 V input (parameter setting)</li><li>- Alarm relay</li><li>- Integrated PID controller</li><li>- MODBUS V5.1</li><li>- Motor current limitation</li><li>- PFC, passive</li><li>- RS-485 MODBUS-RTU</li><li>- Soft start</li><li>- EEPROM write cycles: 100,000 maximum</li><li>- Control input 0-10 VDC / PWM</li><li>- Control interface with SELV potential safely disconnected from the mains</li><li>- Thermal overload protection for electronics/motor</li><li>- Line undervoltage / phase failure detection</li></ul>
EMC immunity to interference	According to EN 61000-6-2 (industrial environment)
EMC interference emission	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)	<= 3.5 mA
Electrical hookup	Terminal box

8300100056

VBH0400CTRHS

Model LU-213976-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Motor protection</b>	Thermal switch auto reset, internally connected
<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

8300100056

VBH0400CTRHS

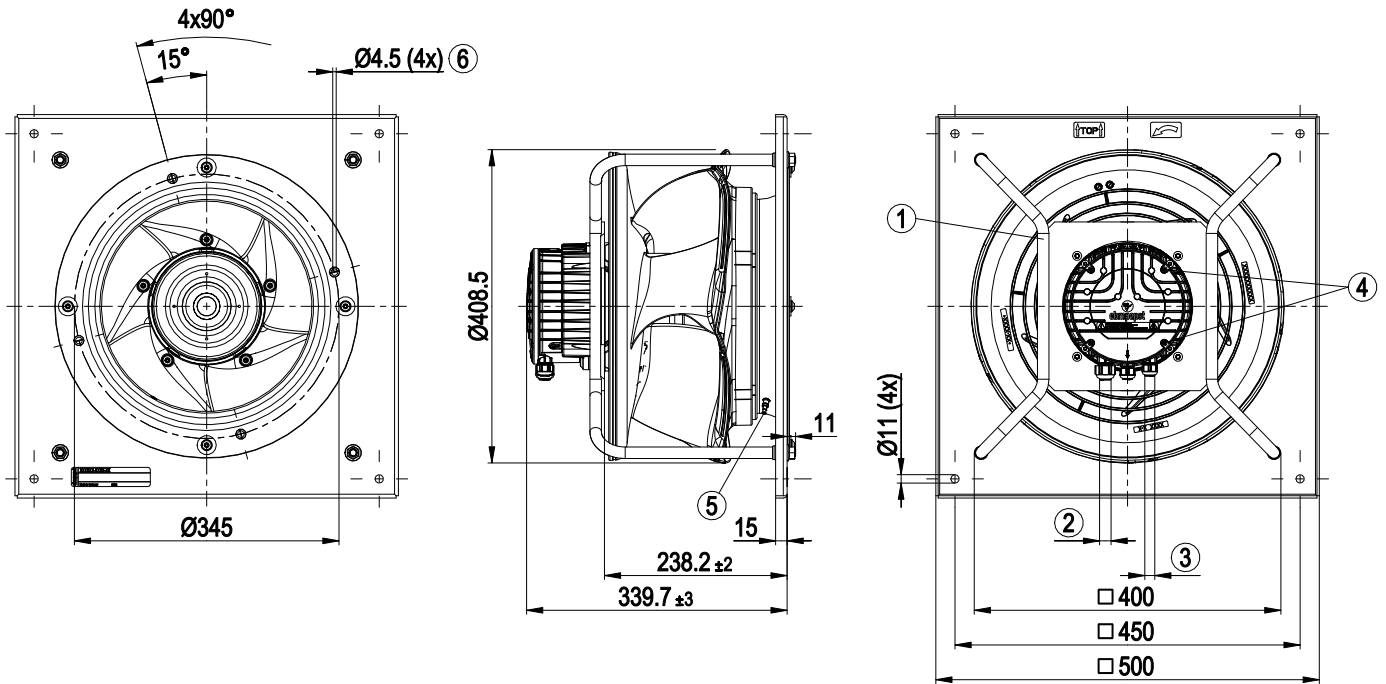
Model LU-213976-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 8 mm, max. 12 mm, tightening torque $1.8 \pm 0.3$ Nm (use must be made of seal provided) Cable diameter min. 4 mm, max. 10 mm, tightening torque $1.8 \pm 0.3$ Nm
3	Cable diameter min. 6 mm, max. 10 mm, tightening torque $1.8 \pm 0.3$ Nm (use must be made of seal provided) Cable diameter min. 4 mm, max. 7 mm, tightening torque $1.8 \pm 0.3$ Nm
4	Tightening torque $1.5 \pm 0.2$ Nm
5	Inlet ring with pressure tap (k-factor: 190)
6	Fastening holes for FlowGrid 00400-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

8300100056

VBH0400CTRHS

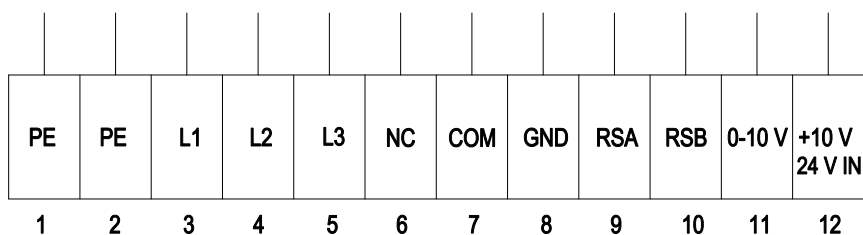
Model LU-213976-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



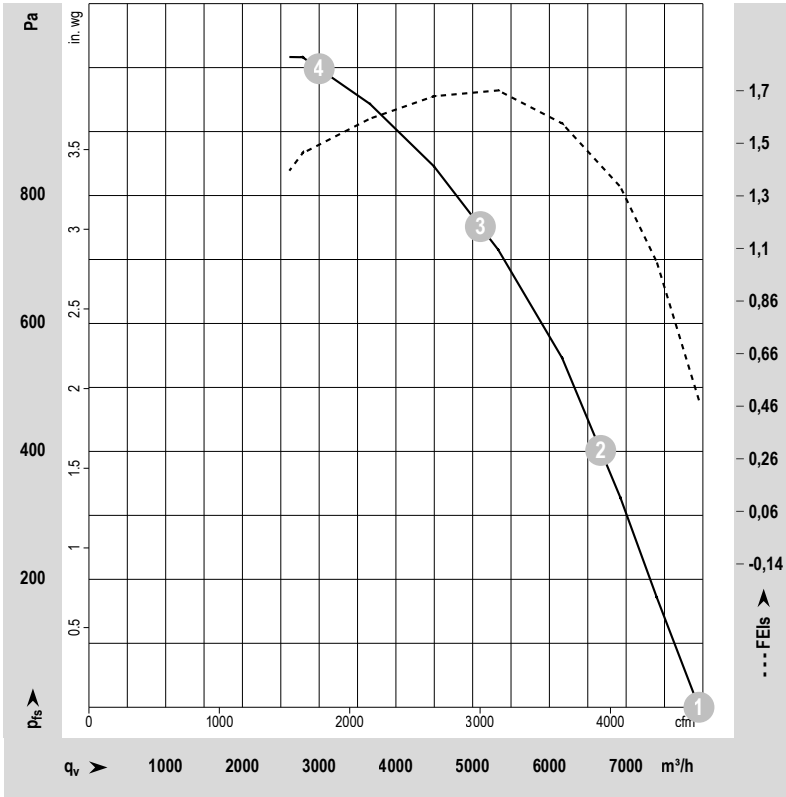
No.	Conn.	Designation	Function/assignment
1	PE	PE	Protective earth
2	PE	PE	Protective earth
3	L1	L1	Power supply
4	L2	L2	Power supply
5	L3	L3	Power supply
6	NC	NC	Status relay, floating status contact, break for failure, contact rating 250 VAC / 2 A (AC1) / min. 10 mA; reinforced insulation on supply side and basic insulation on control interface side
7	COM	COM	Status relay, floating status contact, break for failure, contact rating 250 VAC / 2 A (AC1) / min. 10 mA; reinforced insulation on supply side and basic insulation on control interface side
8	GND	GND	Reference ground for control interface, SELV
9	RSA	RSA	RS485 interface for MODBUS, RSA; SELV
10	RSB	RSB	RS485 interface for MODBUS, RSB; SELV
11	0-10 V	0-10 V	Analog input (set value) SELV, 0-10 V, Ri = 100 kΩ, adjustable curve
12	+10 V	+10 V	Fixed voltage output 10 VDC, SELV, +10 V ±3%, max. 10 mA, short-circuit-proof, power supply for external devices (e.g. pot); fixed voltage input 24 VDC for setting parameters via MODBUS without line voltage supply

8300100056  
 VBH0400CTRHS  
 Model LU-213976-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Curves: Air performance 50 Hz



$$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$$

Measurement: LU-213976-1  
 Date: 2021-05-28  
 Nozzle: 8217101929

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	Pe	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	qv	Pfs	qv	Pfs
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	2600	1105	1.70	82	90	93	7950	0	4680	0.00
2	3~	400	50	2600	1441	2.20	76	83	87	6655	400	3920	1.61
3	3~	400	50	2600	1500	2.40	73	79	84	5095	750	3000	3.01
4	3~	400	50	2600	1453	2.22	76	82	88	3005	1000	1765	4.01

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · Pe = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
 LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · qv = Air flow · Pfs = Pressure increase

Values for sound power levels (total LWA, LwA<sub>in</sub> and LwA<sub>out</sub>)  
 The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
 Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.



8300100479

VBH0400CTRHS

Model LU-220449-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100479	
Motor	E11229-40	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Speed (rpm)	min <sup>-1</sup>	2450
Power consumption	W	1300
Current draw	A	2.0
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	73	52.7	09 Power consumption $P_{ed}$	kW	1.29
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	5015
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	632
04 Efficiency grade N		82.3	62	10 Speed (rpm) $n$	min <sup>-1</sup>	2455
05 Variable speed drive		Yes		11 Specific ratio*		1.01

Data obtained at optimum efficiency level.

\* Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-220449

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings). The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again. The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).



8300100479

VBH0400CTRHS

Model LU-220449-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	16.9 kg
<b>Size</b>	400 mm
<b>Motor size</b>	112
<b>Rotor surface</b>	Painted black
<b>Terminal box material</b>	PP plastic
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"> <li>- Output 10 VDC, max. 10 mA</li> <li>- Operation and alarm display</li> <li>- External 24 V input (parameter setting)</li> <li>- Alarm relay</li> <li>- Integrated PID controller</li> <li>- MODBUS V5.1</li> <li>- Motor current limitation</li> <li>- PFC, passive</li> <li>- RS-485 MODBUS-RTU</li> <li>- Soft start</li> <li>- EEPROM write cycles: 100,000 maximum</li> <li>- Control input 0-10 VDC / PWM</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage / phase failure detection</li> </ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box

8300100479

VBH0400CTRHS

Model LU-220449-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Motor protection</b>	Thermal switch auto reset, internally connected
<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

8300100479

VBH0400CTRHS

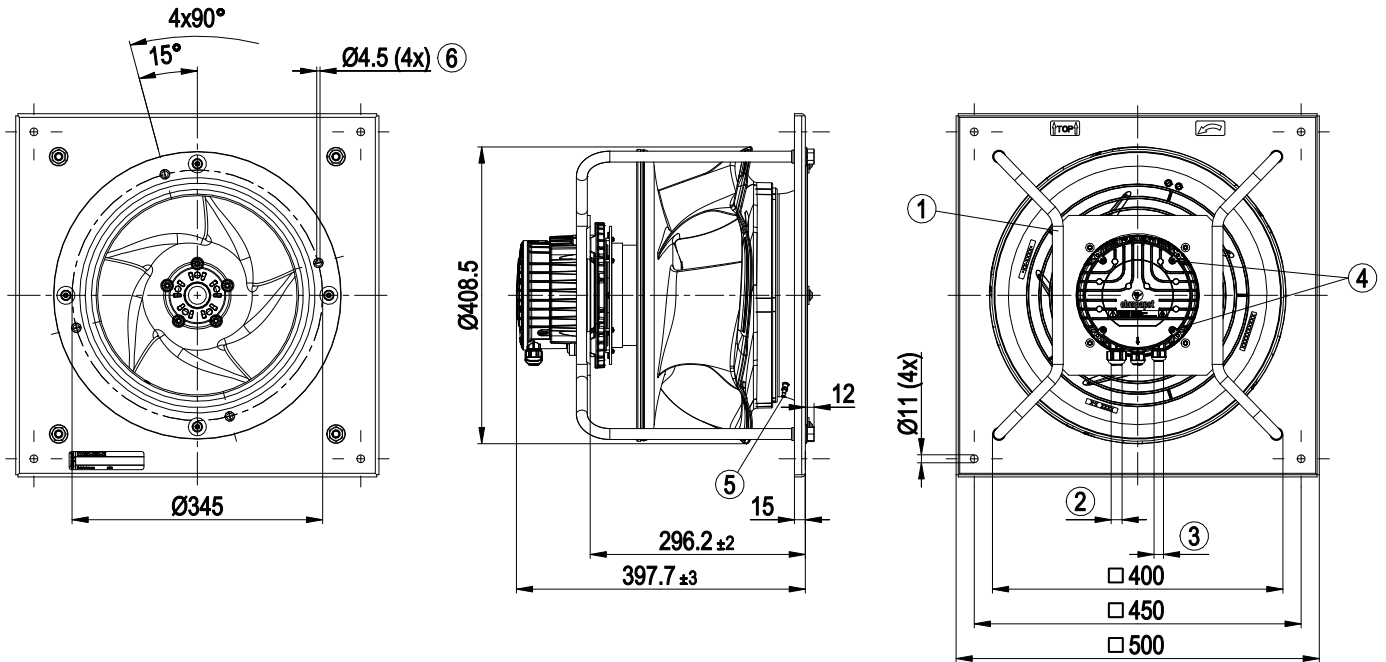
Model LU-220449-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 8 mm, max. 12 mm, tightening torque $1.8 \pm 0.3$ Nm (use must be made of seal provided) Cable diameter min. 4 mm, max. 10 mm, tightening torque $1.8 \pm 0.3$ Nm
3	Cable diameter min. 6 mm, max. 10 mm, tightening torque $1.8 \pm 0.3$ Nm (use must be made of seal provided) Cable diameter min. 4 mm, max. 7 mm, tightening torque $1.8 \pm 0.3$ Nm
4	Tightening torque $1.5 \pm 0.2$ Nm
5	Inlet ring with pressure tap (k-factor: 190)
6	Fastening holes for FlowGrid 00400-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

8300100479

VBH0400CTRHS

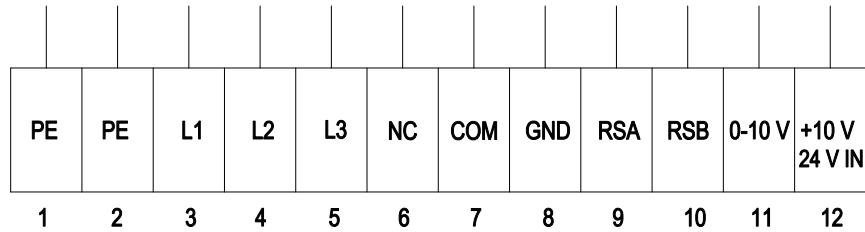
Model LU-220449-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
1	PE	PE	Protective earth
2	PE	PE	Protective earth
3	L1	L1	Power supply
4	L2	L2	Power supply
5	L3	L3	Power supply
6	NC	NC	Status relay, floating status contact, break for failure, contact rating 250 VAC / 2 A (AC1) / min. 10 mA; reinforced insulation on supply side and basic insulation on control interface side
7	COM	COM	Status relay, floating status contact, break for failure, contact rating 250 VAC / 2 A (AC1) / min. 10 mA; reinforced insulation on supply side and basic insulation on control interface side
8	GND	GND	Reference ground for control interface, SELV
9	RSA	RSA	RS485 interface for MODBUS, RSA; SELV
10	RSB	RSB	RS485 interface for MODBUS, RSB; SELV
11	0-10 V	0-10 V	Analog input (set value) SELV, 0-10 V, Ri = 100 kΩ, adjustable curve
12	+10 V	+10 V	Fixed voltage output 10 VDC, SELV, +10 V ±3%, max. 10 mA, short-circuit-proof, power supply for external devices (e.g. pot); fixed voltage input 24 VDC for setting parameters via MODBUS without line voltage supply

8300100479

VBH0400CTRHS

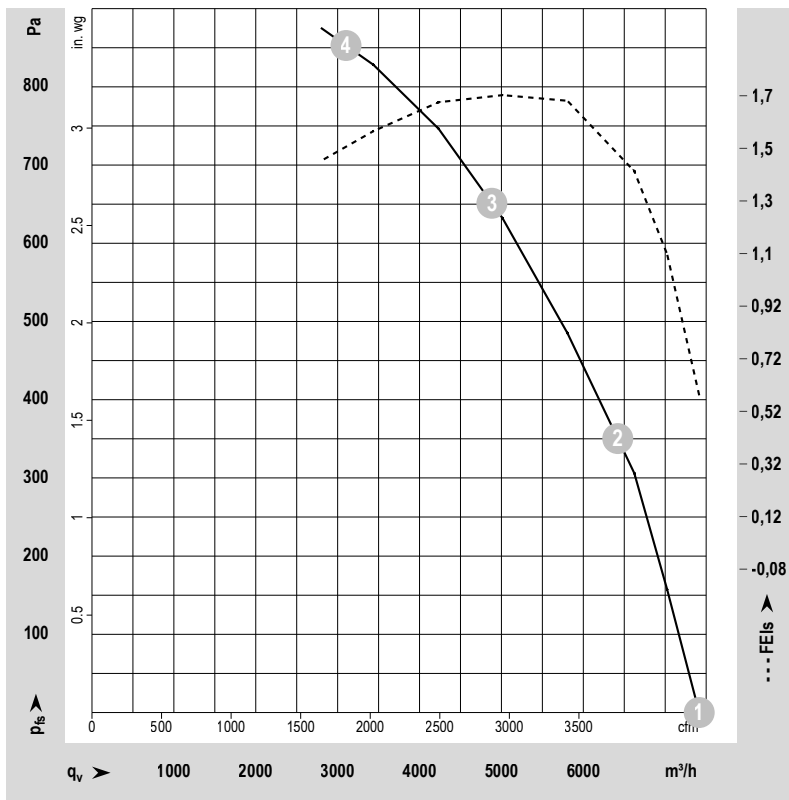
Model LU-220449-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Curves: Air performance 50 Hz



$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$

Measurement: LU-220449-1  
Date: 2022-04-26  
Nozzle: 8217101929

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	LwA	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	dB	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	2450	865	1.35	77	86	90	91	7415	0	4365	0.00
2	3~	400	50	2450	1159	1.78	71	79	83	85	6420	350	3775	1.41
3	3~	400	50	2450	1300	2.00	67	74	80	81	4880	650	2870	2.61
4	3~	400	50	2450	1245	1.91	72	78	85	86	3095	850	1825	3.41



Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LWA, LwA<sub>in</sub> and LwA<sub>out</sub>)  
The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.

8300100058

VBH0400CTRNS

Model LU-215166-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100058	
Motor	E11233-80	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Speed (rpm)	min <sup>-1</sup>	3430
Power consumption	W	3600
Current draw	A	5.5
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	74.4	57.3	09 Power consumption $P_{ed}$	kW	3.56
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	7155
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	1278
04 Efficiency grade N		79.1	62	10 Speed (rpm) n	min <sup>-1</sup>	3430
05 Variable speed drive		Yes		11 Specific ratio*		1.01

Data obtained at optimum efficiency level.

\* Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-215166

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings). The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again. The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100058

VBH0400CTRNS

Model LU-215166-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	27.92 kg
<b>Size</b>	400 mm
<b>Motor size</b>	112
<b>Rotor surface</b>	Painted black
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"><li>- Operation and alarm display with LED</li><li>- External 15-50 VDC input (parameterization)</li><li>- Alarm relay</li><li>- Integrated PI controller</li><li>- Configurable inputs/outputs (I/O)</li><li>- MODBUS V6.3</li><li>- Motor current limitation</li><li>- RS-485 MODBUS-RTU</li><li>- Soft start</li><li>- Voltage output 3.3-24 VDC, Pmax = 800 mW</li><li>- Control interface with SELV potential safely disconnected from the mains</li><li>- Thermal overload protection for electronics/motor</li><li>- Line undervoltage / phase failure detection</li><li>- Vibration sensor</li></ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Electronic motor protection

8300100058

VBH0400CTRNS

Model LU-215166-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1



8300100058

VBH0400CTRNS

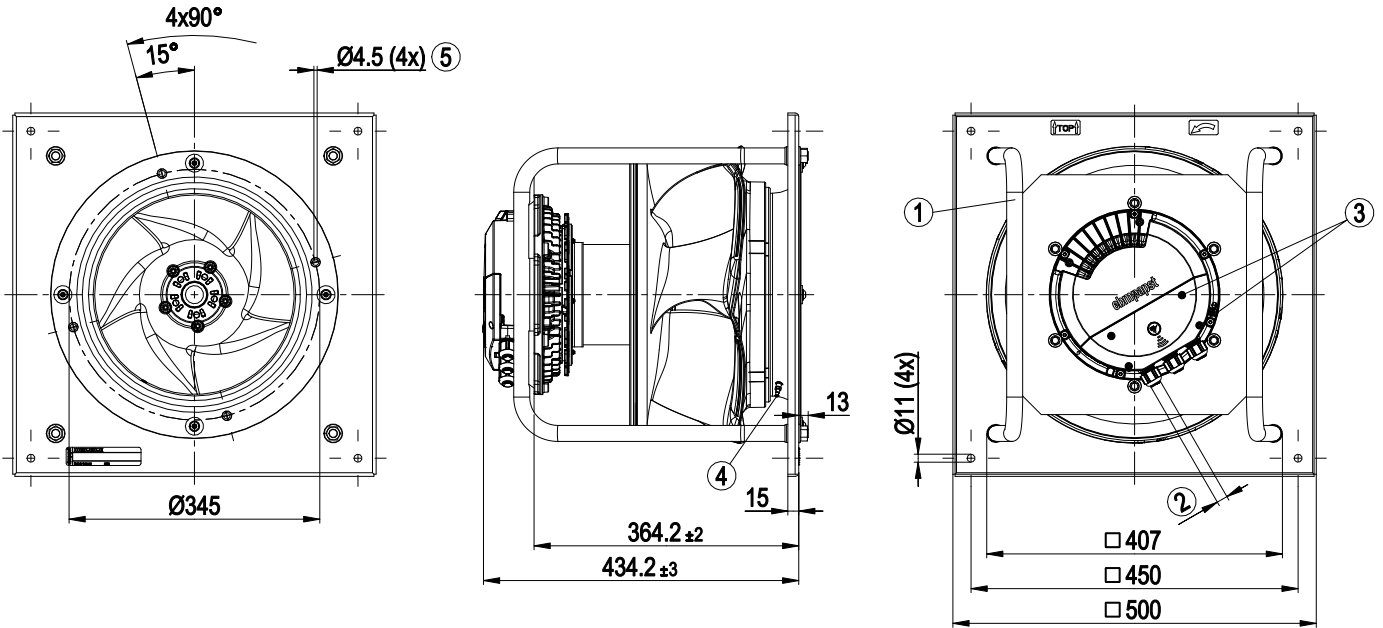
Model LU-215166-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Product drawing

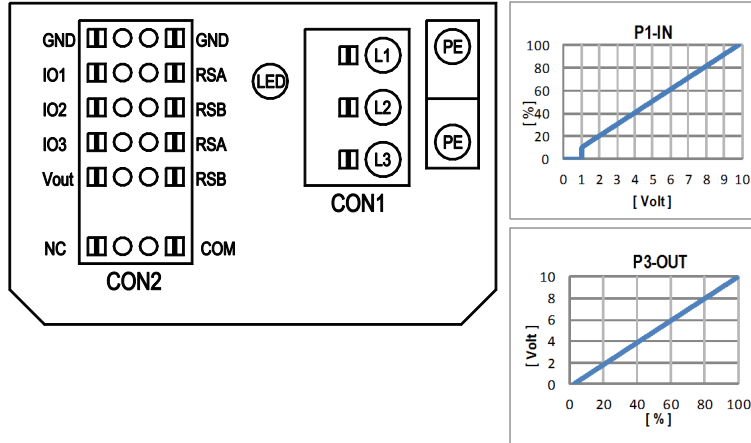


1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque $4 \pm 0.6$ Nm (The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
3	Tightening torque $1.5 \pm 0.2$ Nm
4	Inlet ring with pressure tap (k-factor: 190)
5	Fastening holes for FlowGrid 00400-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
	CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function parameterizable (see "Optional interface functions" table) Factory setting: Digital input - high active, function: Disable input, SELV - inactive: Pin open or applied voltage < 1.5 VDC - active: applied voltage 3.5-50 VDC Reset function: Triggering of error reset on change of state from "enabled" to "disabled"
	CON2	IO2	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog input 0-10 V/PWM, Ri=100 kΩ, function: Set value Characteristic curve parameterizable (see input characteristic curve P1-IN), SELV
	CON2	IO3	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog output 0-10 V, max. 5 mA, function: Actual speed Characteristic curve parametrizable (see output characteristic curve P3-OUT), SELV
	CON2	Vout	Voltage output 3.3-24 VDC ±5%, Pmax=800 mW, voltage parameterizable Factory setting: 10 VDC short-circuit-proof, supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage
	CON2	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	CON2	NC	Status relay, floating status contact, break for failure
		LED	green: status = good, ready for operation orange: status = warning red: status = failure
		P1-IN	Input characteristic curve
		P3-OUT	Output characteristic curve

8300100058

VBH0400CTRNS

Model LU-215166-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Terminal/plug assignment

CON2	configurable IO mode	electrical specification	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	
				selected directly via IO mode)	selected directly via IO mode)
IO1	○ Din1 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	D158 [0]
	○ Ain1 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV		○	D158 [2]
	○ Tach out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV		○	D158 [5]
	○ Diagnostics out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV		○	D158 [6]
IO2	○ Din2 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	D159 [0]
	○ Ain2 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV		○	D159 [2]
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV		○	D159 [3]
	○ Din3 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	D15A [0]
IO3	○ Din3 (active low), digital input	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage 3.5-50VDC		○	D15A [1]
	○ PWMIn3: digital input, idle level high	PWM = 40Hz - 10kHz, characteristics parameterizable		○	D15A [7]
	○ PWMIn3: digital input, idle level low	active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV		○	D15A [8]
	○ Aout3 0-10V: analog output	function parameterizable, max. 5mA max output frequency 300Hz, SELV		○	D15A [4]
RSA	○ Tacho out (pulses), analog output	0-10V/max. 5mA max output frequency 300Hz, SELV		○	D15A [5]
	○ Diagnostics out (pulses)	0-10V/max. 5mA max output frequency 300Hz, SELV		○	D15A [6]
	○ RSA/RSB bus connection,	MODBUS RTU, specification V6.3, SELV		○	
RSB					
Vout	voltage output	voltage parameterizable 3.3...24VDC +/- 5%, Pmax=800mW, short-circuit-proof, supply for external devices, SELV		○	D16E [..]
	alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...50VDC		○	

○ configurable option

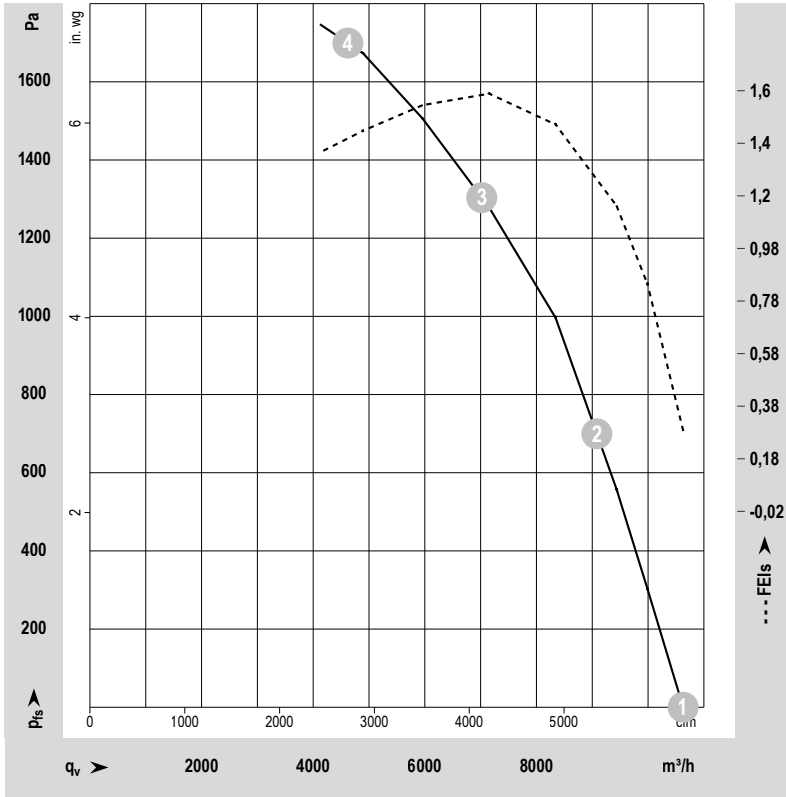
For further information and additional functions see EC Control Software, Fan-Set-App, or MODBUS Parameter Specification V6.3

8300100058  
 VBH0400CTRNS  
 Model LU-215166-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Curves: Air performance 50 Hz



$$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$$

Measurement: LU-215166-1  
 Date: 2021-06-14  
 Nozzle: 8217101929

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	3430	2350	3.65	90	97	99	10630	0	6255	0.00
2	3~	400	50	3430	3241	4.96	83	91	94	9085	700	5345	2.81
3	3~	400	50	3430	3600	5.50	78	85	89	7010	1300	4125	5.22
4	3~	400	50	3430	3481	5.30	78	85	91	4625	1700	2720	6.82

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
 LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LWA, LwA<sub>in</sub> and LwA<sub>out</sub>)  
 The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
 Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.



8300100078

VBH0400CTRNS

Model LU-215179-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100078	
Motor	E11233-80	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Speed (rpm)	min <sup>-1</sup>	3540
Power consumption	W	3740
Current draw	A	5.8
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	68.8	57.4	09 Power consumption $P_{ed}$	kW	3.65
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	7030
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	1232
04 Efficiency grade N		73.4	62	10 Speed (rpm) n	min <sup>-1</sup>	3540
05 Variable speed drive		Yes		11 Specific ratio*		1.01

Data obtained at optimum efficiency level.

\* Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-215179

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings). The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again. The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100078

VBH0400CTRNS

Model LU-215179-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Technical description

<b>Weight</b>	26.7 kg
<b>Size</b>	400 mm
<b>Motor size</b>	112
<b>Rotor surface</b>	Painted black
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"><li>- Operation and alarm display with LED</li><li>- External 15-50 VDC input (parameterization)</li><li>- Alarm relay</li><li>- Integrated PI controller</li><li>- Configurable inputs/outputs (I/O)</li><li>- MODBUS V6.3</li><li>- Motor current limitation</li><li>- RS-485 MODBUS-RTU</li><li>- Soft start</li><li>- Voltage output 3.3-24 VDC, Pmax = 800 mW</li><li>- Control interface with SELV potential safely disconnected from the mains</li><li>- Thermal overload protection for electronics/motor</li><li>- Line undervoltage / phase failure detection</li><li>- Vibration sensor</li></ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Electronic motor protection

8300100078

VBH0400CTRNS

Model LU-215179-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1





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VBH0400CTRNS

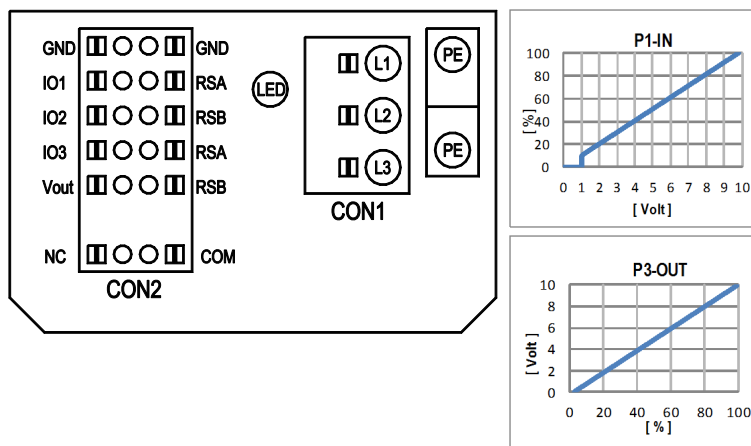
Model LU-215179-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
	CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function parameterizable (see "Optional interface functions" table) Factory setting: Digital input - high active, function: Disable input, SELV - inactive: Pin open or applied voltage < 1.5 VDC - active: applied voltage 3.5-50 VDC Reset function: Triggering of error reset on change of state from "enabled" to "disabled"
	CON2	IO2	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog input 0-10 V/PWM, Ri=100 kΩ, function: Set value Characteristic curve parameterizable (see input characteristic curve P1-IN), SELV
	CON2	IO3	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog output 0-10 V, max. 5 mA, function: Actual speed Characteristic curve parametrizable (see output characteristic curve P3-OUT), SELV
	CON2	Vout	Voltage output 3.3-24 VDC ±5%, Pmax=800 mW, voltage parameterizable Factory setting: 10 VDC short-circuit-proof, supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage
	CON2	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	CON2	NC	Status relay, floating status contact, break for failure
		LED	green: status = good, ready for operation orange: status = warning red: status = failure
		P1-IN	Input characteristic curve
		P3-OUT	Output characteristic curve

8300100078

VBH0400CTRNS

Model LU-215179-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Terminal/plug assignment

CON2	configurable IO mode	electrical specification	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	
				selected directly via IO mode)	selected directly via IO mode)
IO1	○ Din1 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	D158 [0]
	○ Ain1 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, f <sub>PWM</sub> = 1k...10kHz, SELV		○	D158 [2]
	○ Tach out (open collector output)	U <sub>max</sub> = 50VDC, I <sub>max</sub> = 20mA, SELV		○	D158 [5]
	○ Diagnostics out (open collector output)	U <sub>max</sub> = 50VDC, I <sub>max</sub> = 20mA, SELV		○	D158 [6]
IO2	○ Din2 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	D159 [0]
	○ Ain2 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, f <sub>PWM</sub> = 1k...10kHz, SELV		○	D159 [2]
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV		○	D159 [3]
	○ Din3 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	D15A [0]
IO3	○ Din3 (active low), digital input	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage 3.5-50VDC		○	D15A [1]
	○ PWMIn3: digital input, idle level high	PWM = 40Hz - 10kHz, characteristics parameterizable		○	D15A [7]
	○ PWMIn3: digital input, idle level low	active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV		○	D15A [8]
	○ Aout3 0-10V: analog output	function parameterizable, max. 5mA max output frequency 300Hz, SELV		○	D15A [4]
RSA	○ Tacho out (pulses), analog output	0-10V/max. 5mA max output frequency 300Hz, SELV		○	D15A [5]
	○ Diagnostics out (pulses)	0-10V/max. 5mA max output frequency 300Hz, SELV		○	D15A [6]
	○ RSA/RSB bus connection,	MODBUS RTU, specification V6.3, SELV		○	
RSB					
Vout	voltage output	voltage parameterizable 3.3...24VDC +/- 5%, P <sub>max</sub> =800mW, short-circuit-proof, supply for external devices, SELV			D16E [..]
	alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...50VDC			

8300100078

VBH0400CTRNS

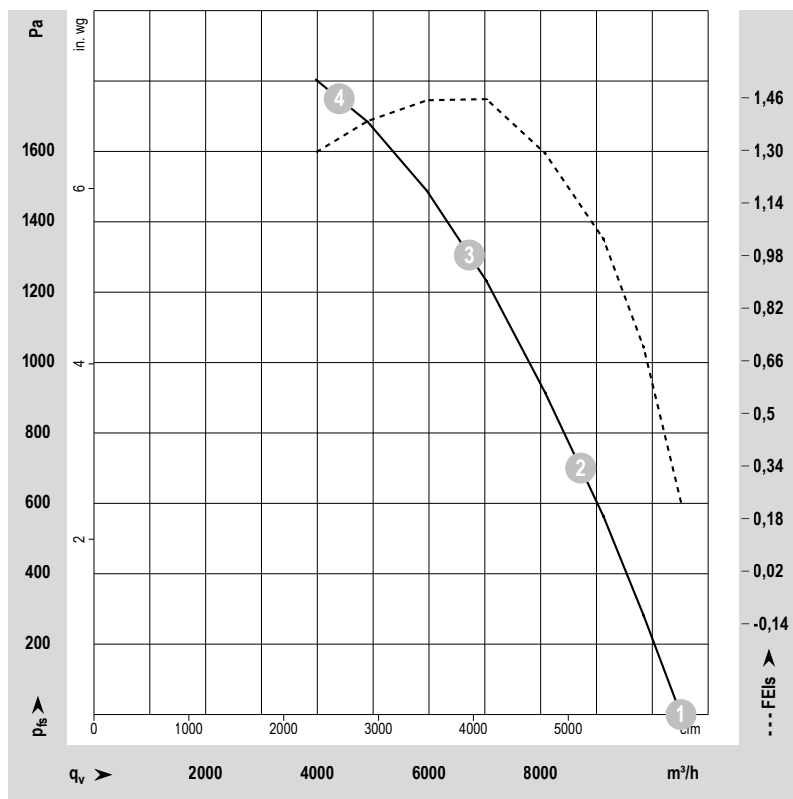
Model LU-215179-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Curves: Air performance 50 Hz



$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$

Measurement: LU-215179-1  
Date: 2021-06-29  
Nozzle: 8217101929

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	LwA	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	dB	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	3540	2882	4.42	93	101	103	105	10515	0	6190	0.00
2	3~	400	50	3540	3448	5.30	85	93	97	98	8715	700	5130	2.81
3	3~	400	50	3540	3740	5.80	81	89	93	94	6710	1300	3950	5.22
4	3~	400	50	3540	3570	5.48	82	89	94	96	4395	1750	2585	7.03



Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LWA, LwA<sub>in</sub> and LwA<sub>out</sub>)  
The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.

Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.

8300100128  
VBH0400CTTLS  
Model LU-216561-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100128	
Motor	E15031-55	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Speed (rpm)	min <sup>-1</sup>	3690
Power consumption	W	4500
Current draw	A	6.9
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	73	58.4	09 Power consumption $P_{ed}$	kW	4.51
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	6965
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	1642
04 Efficiency grade N		76.6	62	10 Speed (rpm) $n$	min <sup>-1</sup>	3690
05 Variable speed drive		Yes		11 Specific ratio*		1.02

Data obtained at optimum efficiency level.

\* Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-216561

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings). The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again. The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100128

VBH0400CTTLS

Model LU-216561-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	29.6 kg
<b>Size</b>	400 mm
<b>Motor size</b>	150
<b>Rotor surface</b>	Painted black
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"><li>- Operation and alarm display with LED</li><li>- External 15-50 VDC input (parameterization)</li><li>- Alarm relay</li><li>- Integrated PI controller</li><li>- Configurable inputs/outputs (I/O)</li><li>- MODBUS V6.3</li><li>- Motor current limitation</li><li>- RS-485 MODBUS-RTU</li><li>- Soft start</li><li>- Voltage output 3.3-24 VDC, Pmax = 800 mW</li><li>- Control interface with SELV potential safely disconnected from the mains</li><li>- Thermal overload protection for electronics/motor</li><li>- Line undervoltage / phase failure detection</li><li>- Vibration sensor</li></ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Electronic motor protection

8300100128

VBH0400CTTLS

Model LU-216561-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

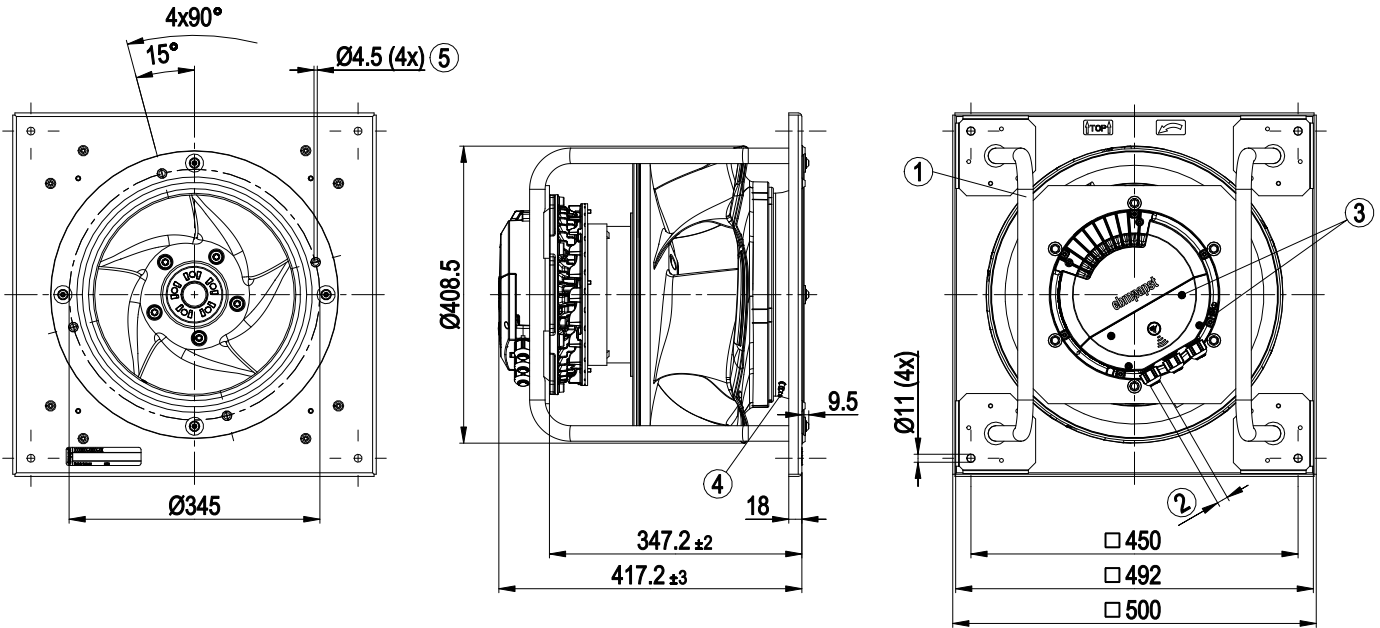
<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

8300100128  
 VBH0400CTTLS  
 Model LU-216561-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Product drawing

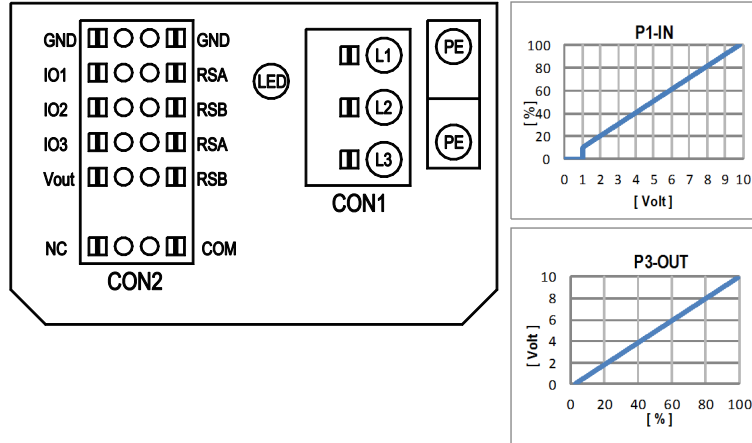


1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque $4 \pm 0.6$ Nm (The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
3	Tightening torque $1.5 \pm 0.2$ Nm
4	Inlet ring with pressure tap (k-factor: 190)
5	Fastening holes for FlowGrid 00400-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
	CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function parameterizable (see "Optional interface functions" table) Factory setting: Digital input - high active, function: Disable input, SELV - inactive: Pin open or applied voltage < 1.5 VDC - active: applied voltage 3.5-50 VDC Reset function: Triggering of error reset on change of state from "enabled" to "disabled"
	CON2	IO2	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog input 0-10 V/PWM, Ri=100 kΩ, function: Set value Characteristic curve parameterizable (see input characteristic curve P1-IN), SELV
	CON2	IO3	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog output 0-10 V, max. 5 mA, function: Actual speed Characteristic curve parametrizable (see output characteristic curve P3-OUT), SELV
	CON2	Vout	Voltage output 3.3-24 VDC ±5%, Pmax=800 mW, voltage parameterizable Factory setting: 10 VDC short-circuit-proof, supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage
	CON2	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	CON2	NC	Status relay, floating status contact, break for failure
		LED	green: status = good, ready for operation orange: status = warning red: status = failure
		P1-IN	Input characteristic curve
		P3-OUT	Output characteristic curve



8300100128

VBH0400CTTLS

Model LU-216561-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Terminal/plug assignment

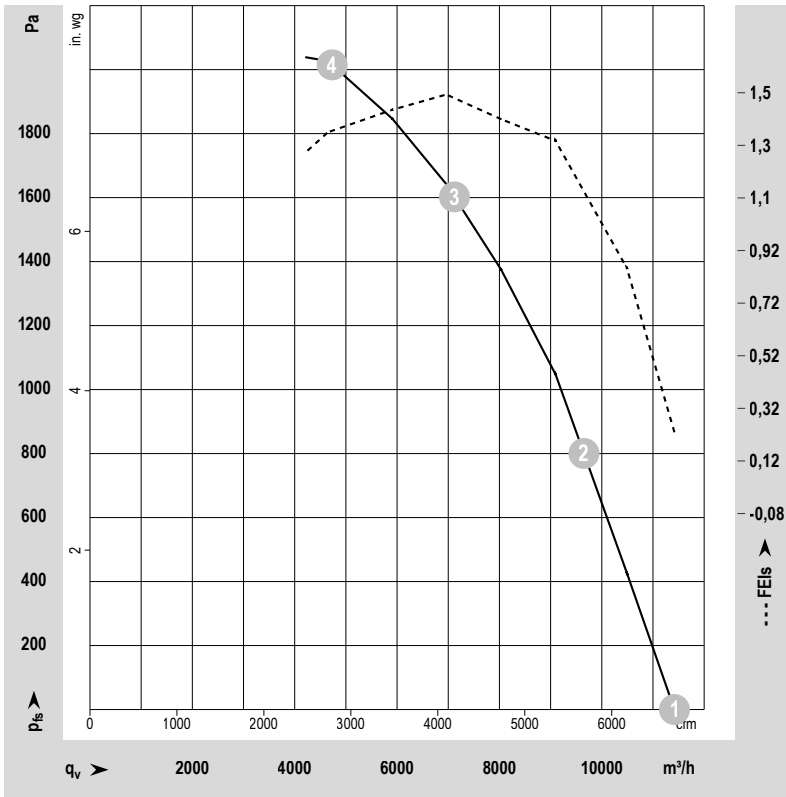
CON2	configurable IO mode	electrical specification	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	
				selected directly via IO mode)	selected directly via IO mode)
IO1	○ Din1 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	D158 [0]
	○ Ain1 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV		○	D158 [2]
	○ Tach out (open collector output)	Umax = 50VDC, I <sub>max</sub> = 20mA, SELV		○	D158 [5]
	○ Diagnostics out (open collector output)	Umax = 50VDC, I <sub>max</sub> = 20mA, SELV		○	D158 [6]
IO2	○ Din2 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	D159 [0]
	○ Ain2 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV		○	D159 [2]
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV		○	D159 [3]
	○ Din3 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	D15A [0]
IO3	○ Din3 (active low), digital input	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage 3.5-50VDC		○	D15A [1]
	○ PWMIn3: digital input, idle level high	PWM = 40Hz - 10kHz, characteristics parameterizable		○	D15A [7]
	○ PWMIn3: digital input, idle level low	active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV		○	D15A [8]
	○ Aout3 0-10V: analog output	function parameterizable, max. 5mA, max output frequency 300Hz, SELV		○	D15A [4]
RSA	○ Tacho out (pulses), analog output	0-10V/max. 5mA, max output frequency 300Hz, SELV		○	D15A [5]
	○ Diagnostics out (pulses)	0-10V/max. 5mA, max output frequency 300Hz, SELV		○	D15A [6]
	○ RSA	MODBUS RTU, specification V6.3, SELV		○	
RSB	○ RSB	MODBUS RTU, specification V6.3, SELV		○	
	○ Vout	voltage output alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	voltage parameterizable 3.3...24VDC +/- 5%, P <sub>max</sub> =800mW, short-circuit-proof, supply for external devices, SELV 15...50VDC		D16E [..]

8300100128  
 VBH0400CTTLS  
 Model LU-216561-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Curves: Air performance 50 Hz



$$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$$

Measurement: LU-216561-1  
 Date: 2021-10-04  
 Nozzle: 8217101929

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	3690	3128	4.80	90	99	102	11420	0	6720	0.00
2	3~	400	50	3690	4097	6.25	84	92	96	9650	800	5680	3.21
3	3~	400	50	3690	4500	6.90	76	84	92	7115	1600	4190	6.42
4	3~	400	50	3690	4231	6.43	79	86	93	4715	2000	2775	8.03

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
 LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LWA, LwA<sub>in</sub> and LwA<sub>out</sub>)  
 The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
 Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.



8300100761

VBH0450CSPFS

Model LU-224017-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100761	
Motor	E09002-28	
Phase		1~
Nominal voltage	VAC	230
Nominal voltage range	VAC	200 .. 277
Frequency	Hz	50/60
Method of obtaining data		ml
Status		prelim.
Speed (rpm)	min <sup>-1</sup>	1450
Power consumption	W	500
Current draw	A	2.2
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	60

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	67.9	48.3	09 Power consumption $P_{ed}$	kW	0.49
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	4245
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	261
04 Efficiency grade N		81.6	62	10 Speed (rpm) n	min <sup>-1</sup>	1450
05 Variable speed drive		Yes		11 Specific ratio <sup>*</sup>		1.00

Data obtained at optimum efficiency level.

<sup>\*</sup> Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-224017

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).  
The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.  
The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100761

VBH0450CSPFS

Model LU-224017-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

Size	450 mm
Motor size	90
Rotor surface	Painted black
Electronics housing material	Die-cast aluminum
Impeller material	PP plastic
Support plate material	Sheet steel, galvanized
Support bracket material	Steel, painted black
Inlet nozzle material	ABS plastic
Number of blades	5
Direction of rotation	Clockwise, viewed toward rotor
Degree of protection	IP55
Insulation class	"F"
Moisture (F) / Environmental (H) protection class	H1
Ambient temperature note	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
Max. permitted ambient temp. for motor (transport/storage)	+80 °C
Min. permitted ambient temp. for motor (transport/storage)	-40 °C
Installation position	See legend on product drawing
Condensation drainage holes	On rotor side
Mode	S1
Motor bearing	Ball bearing
Technical features	<ul style="list-style-type: none"><li>- Output 10 VDC, max. 10 mA</li><li>- Operation and alarm display with LED</li><li>- Locked-rotor detection</li><li>- Speed control</li><li>- External 15-30 VDC input (parameterization)</li><li>- Alarm relay</li><li>- Configurable inputs/outputs (I/O)</li><li>- Power limiter</li><li>- MODBUS V7.0</li><li>- Motor current limitation</li><li>- PFC, active</li><li>- RS-485 MODBUS-RTU</li><li>- Soft start</li><li>- Control interface with SELV potential safely disconnected from the mains</li><li>- Temperature derating</li><li>- Thermal overload protection for electronics/motor</li><li>- Line undervoltage / phase failure detection</li></ul>
Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)	<= 3.5 mA
Motor protection	Electronic motor protection
With cable	Lateral

8300100761

VBH0450CSPFS

Model LU-224017-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Maximum surface temperature</b>	240 °C
<b>Conformity with standards</b>	EN 60335-1; EN 61800-5-1; CE; UKCA
<b>Approval</b>	UL 1004-7 + 60730-1; CSA C22.2 No. 77 + CAN/CSA-E60730-1

8300100761

VBH0450CSPFS

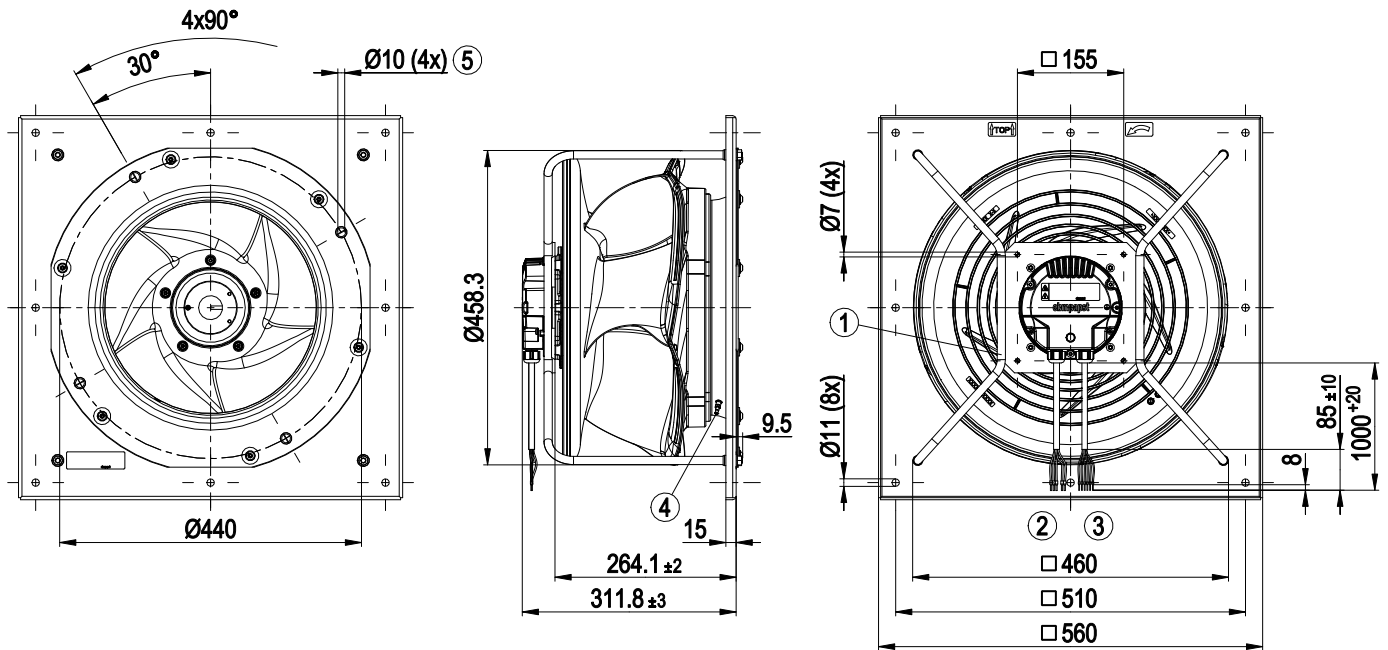
Model LU-224017-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Supply line (PWR) PVC AWG18 5x wire-end ferrule
3	Control wire (CTRL) PVC AWG22 6x wire-end ferrule
4	Inlet ring with pressure tap (k-factor: 232)
5	Fastening holes for FlowGrid 35505-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

8300100761

VBH0450CSPFS

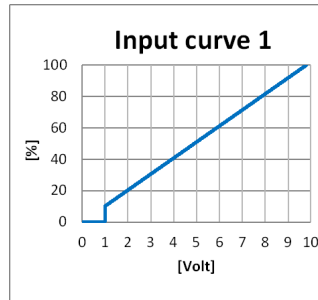
Model LU-224017-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Color	Function/assignment
	PWR	PE	green/yellow	Protective earth
	PWR	L	black	Power supply, phase, see nameplate for voltage range
	PWR	N	blue	Power supply, neutral conductor, see nameplate for voltage range
	PWR	COM	orange	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	PWR	NC	orange	Status relay, floating status contact, break for failure
	CTRL	GND	blue	Reference ground for control interface, SELV
	CTRL	Vout	red	Voltage output 10 VDC +/-3%, I <sub>max</sub> =10 mA Short-circuit-proof, power supply for external devices, SELV alternative: 15-30 VDC input for parameterization via MODBUS without line voltage
	CTRL	IO1	yellow	Factory setting: Analog input 0-10 V / PWM, R <sub>i</sub> =100 kΩ, function: set value Characteristic curve parameterizable (see input characteristic curve "Input curve 1"), SELV Function parameterizable (see table Optional interface functions)
	CTRL	IO2	white	Factory setting: Open collector output, U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, function:Tacho output 1 pulse/revolution, SELV Function parameterizable (see table Optional interface functions)
	CTRL	RSA	gray	RS-485 interface for MODBUS RSA, SELV dielectric strength to MODBUS RSB +/-14 V, dielectric strength to GND +/-7 V
	CTRL	RSB	brown	RS-485 interface for MODBUS RSB, SELV dielectric strength to MODBUS RSA +/-14 V, dielectric strength to GND +/-7 V
		LED		green: status = good, ready for operation orange: status = warning red: status = failure

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Terminal/plug assignment

Terminal / Plug	Function	Signal	Selection
D101 [..]	source: set value		
D147 [..]	source: sensor value		
D104 [..]	switch: parameter set: #1 / #2		
D12E [..]	switch: control function: heating (pos.) / cooling (neg.)		
D148 [..]	switch: direction of rotation: cw / ccw		
D16C [..]	switch: set value source		
D16A [..]	switch: fan enable / disable		
D00C [1]	source: input pulses autoaddressing		
D638 [..]	source: DCI in		
	signal: tach out		
	signal: diagnostics out		
	signal: alarm out		
D130 [4]	signal: output pulses autoaddressing		
D61B	signal: DCI out		
D130 [0]	signal: fan modulation level %		
D130 [1]	signal: actual speed 1/min		
D130 [2]	signal: system modulation level %		
D130 [5]	signal: remote control output 0-10 V		
D145	signal: run monitoring		
	signal: status		

configurable IO functions: normal / inverse

CON2	configurable IO mode	electrical specification	MODBUS Register for IO mode configuration
101	Dim1 (active high): digital input	active: applied voltage 3,5-50 VDC, SELV not active: pin open or applied voltage < 1,5 VDC SELV	D158 [0]
	Dim1 (active low): digital input	active: applied voltage < 1,5 VDC, SELV not active: pin open or applied voltage 3,5-50 VDC SELV	D158 [1]
	Air1 0-10 V/PWM: analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D158 [2]
	Air1 0-10 V/PWM (with pull up): analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D158 [3]
	Dim1 (active high): digital input	active: applied voltage 3,5-50 VDC, SELV not active: pin open or applied voltage < 1,5 VDC SELV	D159 [0]
102	Air1 0-10 V/PWM: analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D159 [2]
	Tach out (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [5]
	Diagnostics out (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [6]
	Alarm out (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [10]
	Test pulse output addressing (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [11]
	DCI-output (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [12]
RSA RSB	RS485 bus connection	MODBUS RTU, parameter specification V7, SELV	
COM NC	Relay	250 VAC / 2 A (AC1)	
Vout	Voltage output	Voltage 10 VDC, SELV	
	Alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...30 VDC	

### Medium (M2)

Functions and parameter description  
 MODBUS V7.0

- configurable function
- (○) function to be activated via IO Mode

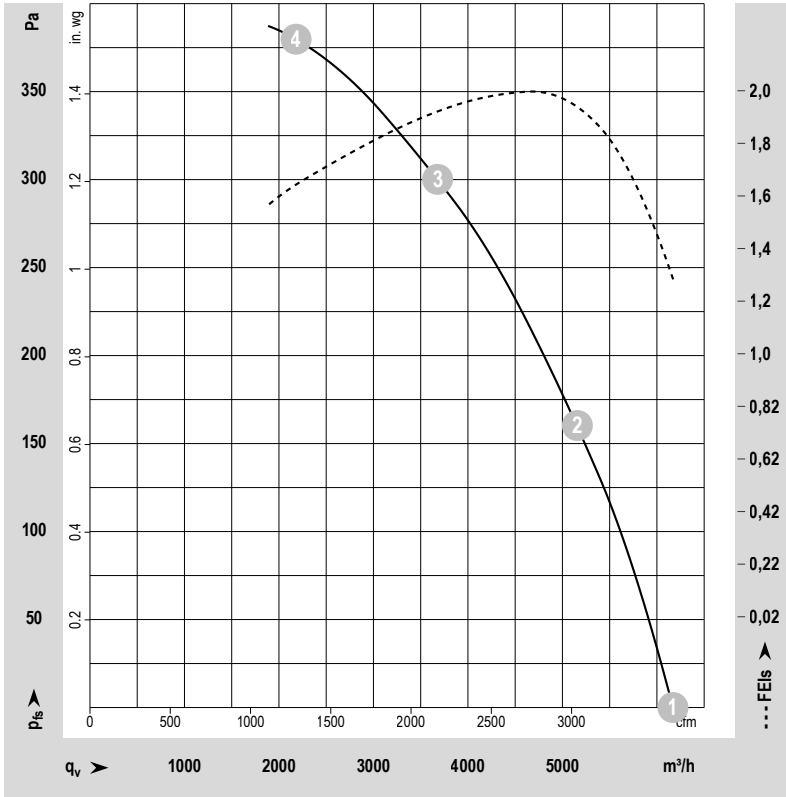


8300100761  
 VBH0450CSPFS  
 Model LU-224017-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Curves: Air performance 50 Hz



$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$

Measurement: LU-224017-1  
 Date: 2022-11-22  
 Nozzle: 8217101922

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	LwA	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	dB	m <sup>3</sup> /h	Pa	cfm	in. wg
1	1~	230	50	1450	328	1.46	69	78	81	83	6170	0	3630	0.00
2	1~	230	50	1450	440	1.94	64	72	76	78	5155	160	3035	0.64
3	1~	230	50	1450	500	2.20	59	66	71	72	3680	300	2165	1.20
4	1~	230	50	1450	462	2.03	60	67	72	73	2180	380	1285	1.53



Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
 LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LwA, LwA<sub>in</sub> and LwA<sub>out</sub>) is for installation type A - Free inlet, Free outlet.  
 The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
 Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.

8300100791

VBH0450CSPHS

Model LU-224053-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100791	
Motor	E09002-40	
Phase		1~
Nominal voltage	VAC	230
Nominal voltage range	VAC	200 .. 277
Frequency	Hz	50/60
Method of obtaining data		ml
Status		prelim.
Speed (rpm)	min <sup>-1</sup>	1470
Power consumption	W	500
Current draw	A	2.2
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	55

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	70.2	48.4	09 Power consumption $P_{ed}$	kW	0.5
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	4250
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	272
04 Efficiency grade N		83.8	62	10 Speed (rpm) n	min <sup>-1</sup>	1470
05 Variable speed drive		Yes		11 Specific ratio <sup>*</sup>		1.00

Data obtained at optimum efficiency level.

<sup>\*</sup> Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-224053

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).

The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.

The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100791

VBH0450CSPHS

Model LU-224053-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

Size	450 mm
Motor size	90
Rotor surface	Painted black
Electronics housing material	Die-cast aluminum
Impeller material	PP plastic
Support plate material	Sheet steel, galvanized
Support bracket material	Steel, painted black
Inlet nozzle material	ABS plastic
Number of blades	5
Direction of rotation	Clockwise, viewed toward rotor
Degree of protection	IP55
Insulation class	"F"
Moisture (F) / Environmental (H) protection class	H1
Ambient temperature note	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
Max. permitted ambient temp. for motor (transport/storage)	+80 °C
Min. permitted ambient temp. for motor (transport/storage)	-40 °C
Installation position	See legend on product drawing
Condensation drainage holes	On rotor side
Mode	S1
Motor bearing	Ball bearing
Technical features	<ul style="list-style-type: none"> <li>- Output 10 VDC, max. 10 mA</li> <li>- Operation and alarm display with LED</li> <li>- Locked-rotor detection</li> <li>- Speed control</li> <li>- External 15-30 VDC input (parameterization)</li> <li>- Alarm relay</li> <li>- Configurable inputs/outputs (I/O)</li> <li>- Power limiter</li> <li>- MODBUS V7.0</li> <li>- Motor current limitation</li> <li>- PFC, active</li> <li>- RS-485 MODBUS-RTU</li> <li>- Soft start</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Temperature derating</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage / phase failure detection</li> </ul>
Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)	<= 3.5 mA
Motor protection	Electronic motor protection
With cable	Lateral

8300100791

VBH0450CSPHS

Model LU-224053-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 60335-1; EN 61800-5-1; UKCA; CE
<b>Approval</b>	UL 1004-7 + 60730-1; CSA C22.2 No. 77 + CAN/CSA-E60730-1

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VBH0450CSPHS

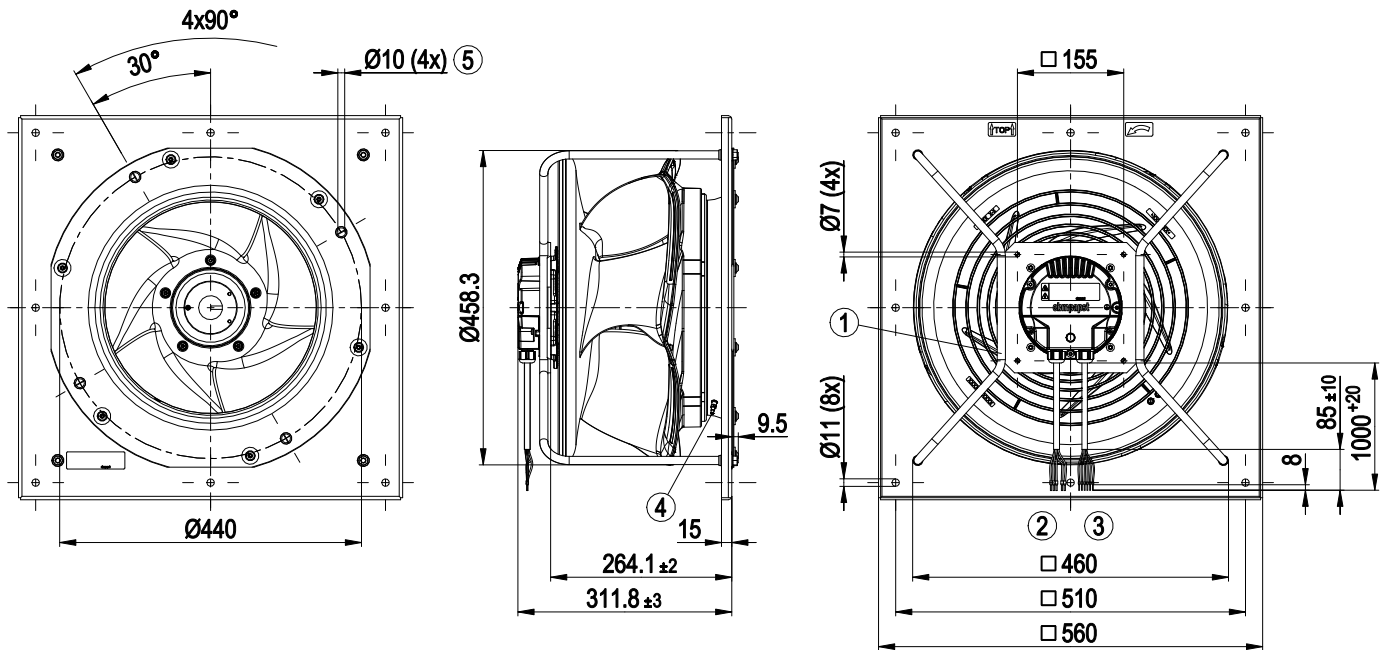
Model LU-224053-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Supply line (PWR) PVC AWG18 5x wire-end ferrule
3	Control wire (CTRL) PVC AWG22 6x wire-end ferrule
4	Inlet ring with pressure tap (k-factor: 232)
5	Fastening holes for FlowGrid 35505-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

8300100791

VBH0450CSPHS

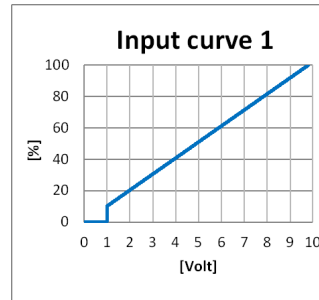
Model LU-224053-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Color	Function/assignment
	PWR	PE	green/yellow	Protective earth
	PWR	L	black	Power supply, phase, see nameplate for voltage range
	PWR	N	blue	Power supply, neutral conductor, see nameplate for voltage range
	PWR	COM	orange	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	PWR	NC	orange	Status relay, floating status contact, break for failure
	CTRL	GND	blue	Reference ground for control interface, SELV
	CTRL	Vout	red	Voltage output 10 VDC +/-3%, I <sub>max</sub> =10 mA Short-circuit-proof, power supply for external devices, SELV alternative: 15-30 VDC input for parameterization via MODBUS without line voltage
	CTRL	IO1	yellow	Factory setting: Analog input 0-10 V / PWM, R <sub>i</sub> =100 kΩ, function: set value Characteristic curve parameterizable (see input characteristic curve "Input curve 1"), SELV Function parameterizable (see table Optional interface functions)
	CTRL	IO2	white	Factory setting: Open collector output, U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, function:Tacho output 1 pulse/revolution, SELV Function parameterizable (see table Optional interface functions)
	CTRL	RSA	gray	RS-485 interface for MODBUS RSA, SELV dielectric strength to MODBUS RSB +/-14 V, dielectric strength to GND +/-7 V
	CTRL	RSB	brown	RS-485 interface for MODBUS RSB, SELV dielectric strength to MODBUS RSA +/-14 V, dielectric strength to GND +/-7 V
		LED		green: status = good, ready for operation orange: status = warning red: status = failure

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VBH0450CSPHS

Model LU-224053-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Terminal/plug assignment

selection direct via IO	signal	OUTPUT	INPUT
D145	signal: run monitoring		
D130 [5]	signal: remote control output 0-10 V		
D130 [2]	signal: system modulation level %		
D130 [1]	signal: actual speed 1/min		
D130 [0]	signal: fan modulation level %		
D61B	signal: DCI out		
D130 [4]	signal: output pulses autoaddressing		
	signal: alarm out		
	signal: diagnostics out		
	signal: tach out		
D638 [...]	source: DCI in		
D00C [1]	source: input pulses autoaddressing		
D16A [...]	switch: fan enable / disable		
D16C [...]	switch: set value source		
D148 [...]	switch: direction of rotation: cw / ccw		
D12E [...]	switch: control function: heating (pos.) / cooling (neg.)		
D104 [...]	switch: parameter set: #1 / #2		
D147 [...]	source: sensor value		
D101 [...]	source: set value		

configurable IO functions: normal / inverse

### MODBUS Register for IO mode configuration

CON2	configurable IO mode	electrical specification	MODBUS Register for IO mode configuration
101	Dim1 (active high): digital input	active: applied voltage 3,5-50 VDC, SELV not active: pin open or applied voltage < 1,5 VDC SELV	D158 [0]
	Dim1 (active low): digital input	active: applied voltage < 1,5 VDC, SELV not active: pin open or applied voltage 3,5-50 VDC SELV	D158 [1]
	Air1 0-10 V/PWM: analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D158 [2]
	Air1 0-10 V/PWM (with pull up): analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D158 [3]
102	Dim1 (active high): digital input	active: applied voltage 3,5-50 VDC, SELV not active: pin open or applied voltage < 1,5 VDC SELV	D159 [0]
	Air1 0-10 V/PWM: analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D159 [2]
	Tach out (open collector)	U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, SELV	D159 [5]
	Diagnostics out (open collector)	U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, SELV	D159 [6]
	Alarm out (open collector)	U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, SELV	D159 [10]
	Test pulse output addressing (open collector)	U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, SELV	D159 [11]
RSA RSB	DCI-output (open collector)	U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, SELV	D159 [12]
	RS485 bus connection	MODBUS RTU, parameter specification V7, SELV	
COM NC	Relay	250 VAC / 2 A (AC1)	
Vout	Voltage output	Voltage 10 VDC, SELV	
	Alternatively: input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...30 VDC	

## Medium (M2)

Functions and parameter description  
MODBUS V7.0

- configurable function
- (○) function to be activated via IO Mode

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VBH0450CSPHS

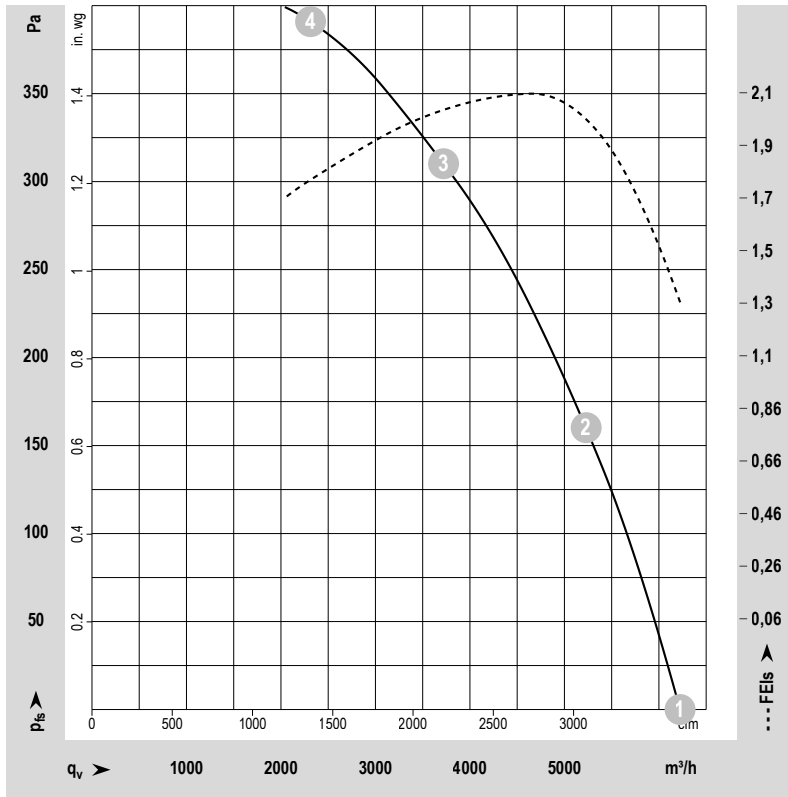
Model LU-224053-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Curves: Air performance 50 Hz



$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$

Measurement: LU-224053-1  
Date: 2022-11-23  
Nozzle: 8217101922

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	LwA	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	dB	m <sup>3</sup> /h	Pa	cfm	in. wg
1	1~	230	50	1470	345	1.54	70	78	81	83	6225	0	3665	0.00
2	1~	230	50	1470	447	1.97	64	72	76	78	5230	160	3075	0.64
3	1~	230	50	1470	500	2.20	59	67	72	73	3720	310	2190	1.24
4	1~	230	50	1470	475	2.09	61	68	73	74	2310	390	1360	1.57



Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side · LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LwA, LwA<sub>in</sub> and LwA<sub>out</sub>) is for installation type A - Free inlet, Free outlet. The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.



8300100502

VBH0450CTRLS

Model LU-220595-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100502	
Motor	E11229-60	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Speed (rpm)	min <sup>-1</sup>	2040
Power consumption	W	1300
Current draw	A	2.0
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	74.4	52.7	09 Power consumption $P_{ed}$	kW	1.29
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	5850
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	552
04 Efficiency grade N		83.7	62	10 Speed (rpm) n	min <sup>-1</sup>	2040
05 Variable speed drive		Yes		11 Specific ratio*		1.01

Data obtained at optimum efficiency level.

\* Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-220595

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings). The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again. The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100502

VBH0450CTRLS

Model LU-220595-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	22.38 kg
<b>Size</b>	450 mm
<b>Motor size</b>	112
<b>Rotor surface</b>	Painted black
<b>Terminal box material</b>	PP plastic
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"> <li>- Output 10 VDC, max. 10 mA</li> <li>- Operation and alarm display</li> <li>- External 24 V input (parameter setting)</li> <li>- Alarm relay</li> <li>- Integrated PID controller</li> <li>- MODBUS V5.1</li> <li>- Motor current limitation</li> <li>- PFC, passive</li> <li>- RS-485 MODBUS-RTU</li> <li>- Soft start</li> <li>- EEPROM write cycles: 100,000 maximum</li> <li>- Control input 0-10 VDC / PWM</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage / phase failure detection</li> </ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box

8300100502

VBH0450CTRLS

Model LU-220595-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Motor protection</b>	Thermal switch auto reset, internally connected
<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

8300100502

VBH0450CTRLS

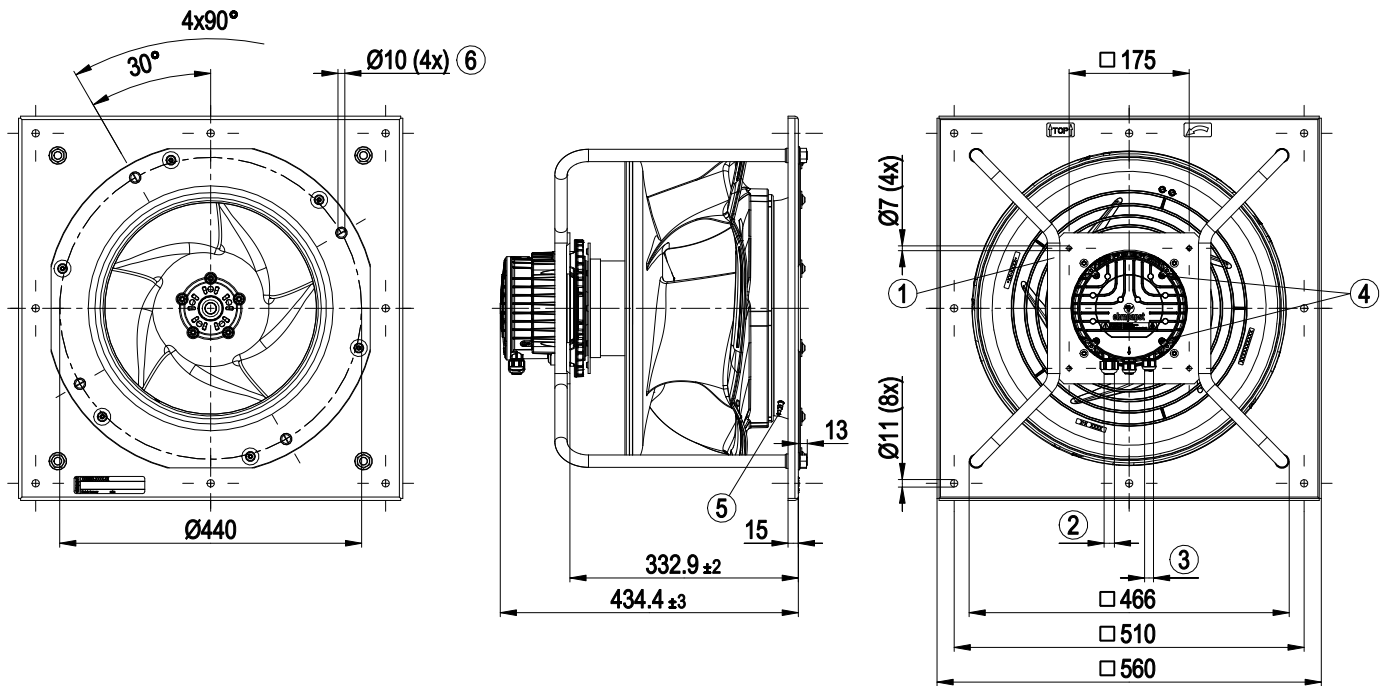
Model LU-220595-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



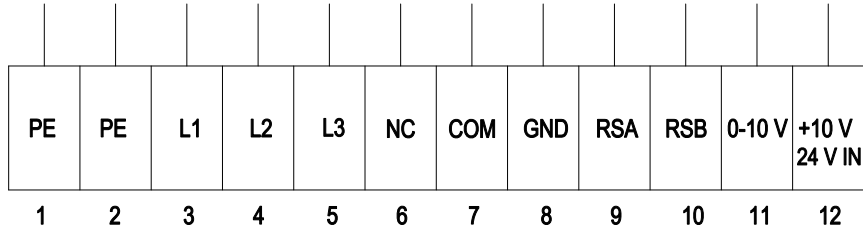
1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 8 mm, max. 12 mm, tightening torque $1.8 \pm 0.3$ Nm (use must be made of seal provided) Cable diameter min. 4 mm, max. 10 mm, tightening torque $1.8 \pm 0.3$ Nm
3	Cable diameter min. 6 mm, max. 10 mm, tightening torque $1.8 \pm 0.3$ Nm (use must be made of seal provided) Cable diameter min. 4 mm, max. 7 mm, tightening torque $1.8 \pm 0.3$ Nm
4	Tightening torque $1.5 \pm 0.2$ Nm
5	Inlet ring with pressure tap (k-factor: 232)
6	Fastening holes for FlowGrid 35505-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

8300100502  
 VBH0450CTRLS  
 Model LU-220595-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Connection diagram



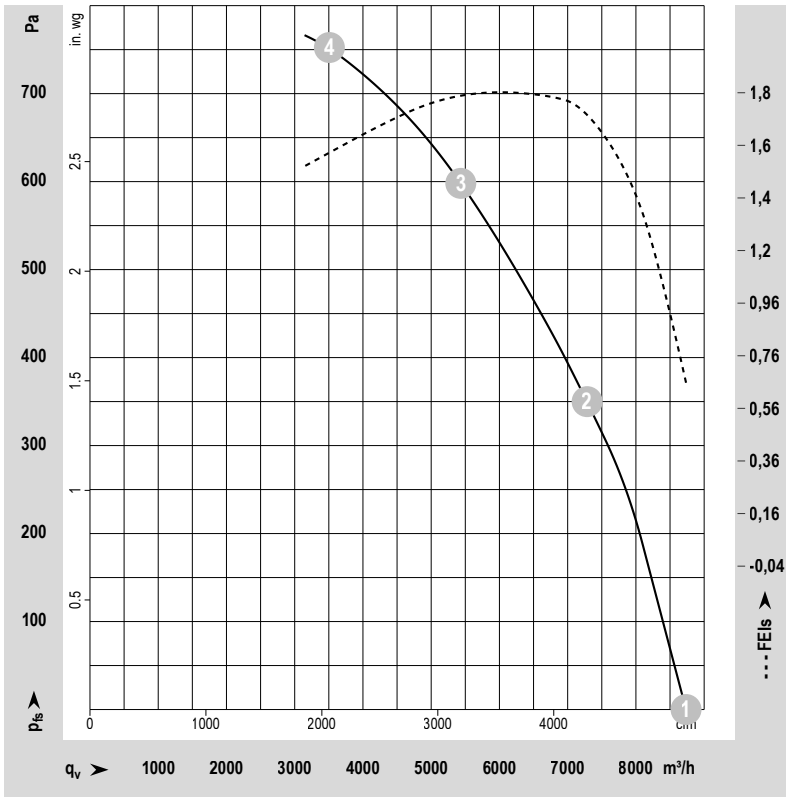
No.	Conn.	Designation	Function/assignment
1	PE	PE	Protective earth
2	PE	PE	Protective earth
3	L1	L1	Power supply
4	L2	L2	Power supply
5	L3	L3	Power supply
6	NC	NC	Status relay, floating status contact, break for failure, contact rating 250 VAC / 2 A (AC1) / min. 10 mA; reinforced insulation on supply side and basic insulation on control interface side
7	COM	COM	Status relay, floating status contact, break for failure, contact rating 250 VAC / 2 A (AC1) / min. 10 mA; reinforced insulation on supply side and basic insulation on control interface side
8	GND	GND	Reference ground for control interface, SELV
9	RSA	RSA	RS485 interface for MODBUS, RSA; SELV
10	RSB	RSB	RS485 interface for MODBUS, RSB; SELV
11	0-10 V	0-10 V	Analog input (set value) SELV, 0-10 V, Ri = 100 kΩ, adjustable curve
12	+10 V	+10 V	Fixed voltage output 10 VDC, SELV, +10 V ±3%, max. 10 mA, short-circuit-proof, power supply for external devices (e.g. pot); fixed voltage input 24 VDC for setting parameters via MODBUS without line voltage supply

8300100502  
 VBH0450CTRLS  
 Model LU-220595-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Curves: Air performance 50 Hz



$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$

Measurement: LU-220595-1  
 Date: 2022-04-27  
 Nozzle: 8217101922

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	LwA	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	dB	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	2040	878	1.36	78	86	90	91	8735	0	5140	0.00
2	3~	400	50	2040	1159	1.78	72	80	84	86	7285	350	4290	1.41
3	3~	400	50	2040	1300	2.00	67	74	79	81	5445	600	3205	2.41
4	3~	400	50	2040	1240	1.90	70	76	81	83	3505	750	2060	3.01



Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
 LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LwA, LwA<sub>in</sub> and LwA<sub>out</sub>) is for installation type A - Free inlet, Free outlet.  
 The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
 Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.

8300100550

VBH0450CTRLS

Model LU-221184-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100550	
Motor	E11229-60	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Status		prelim.
Speed (rpm)	min <sup>-1</sup>	2110
Power consumption	W	1430
Current draw	A	2.2
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	71.4	53	09 Power consumption $P_{ed}$	kW	1.4
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	5960
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	564
04 Efficiency grade N		80.4	62	10 Speed (rpm) n	min <sup>-1</sup>	2110
05 Variable speed drive		Yes		11 Specific ratio <sup>*</sup>		1.01

Data obtained at optimum efficiency level.

<sup>\*</sup> Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-221184

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).

The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.

The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100550

VBH0450CTRLS

Model LU-221184-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Size</b>	450 mm
<b>Motor size</b>	112
<b>Rotor surface</b>	Painted black
<b>Terminal box material</b>	PP plastic
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"> <li>- Output 10 VDC, max. 10 mA</li> <li>- Operation and alarm display</li> <li>- External 24 V input (parameter setting)</li> <li>- Alarm relay</li> <li>- Integrated PID controller</li> <li>- MODBUS V5.1</li> <li>- Motor current limitation</li> <li>- PFC, passive</li> <li>- RS-485 MODBUS-RTU</li> <li>- Soft start</li> <li>- EEPROM write cycles: 100,000 maximum</li> <li>- Control input 0-10 VDC / PWM</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage / phase failure detection</li> </ul>
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Thermal switch auto reset, internally connected
<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.



8300100550

VBH0450CTRLS

Model LU-221184-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

8300100550

VBH0450CTRLS

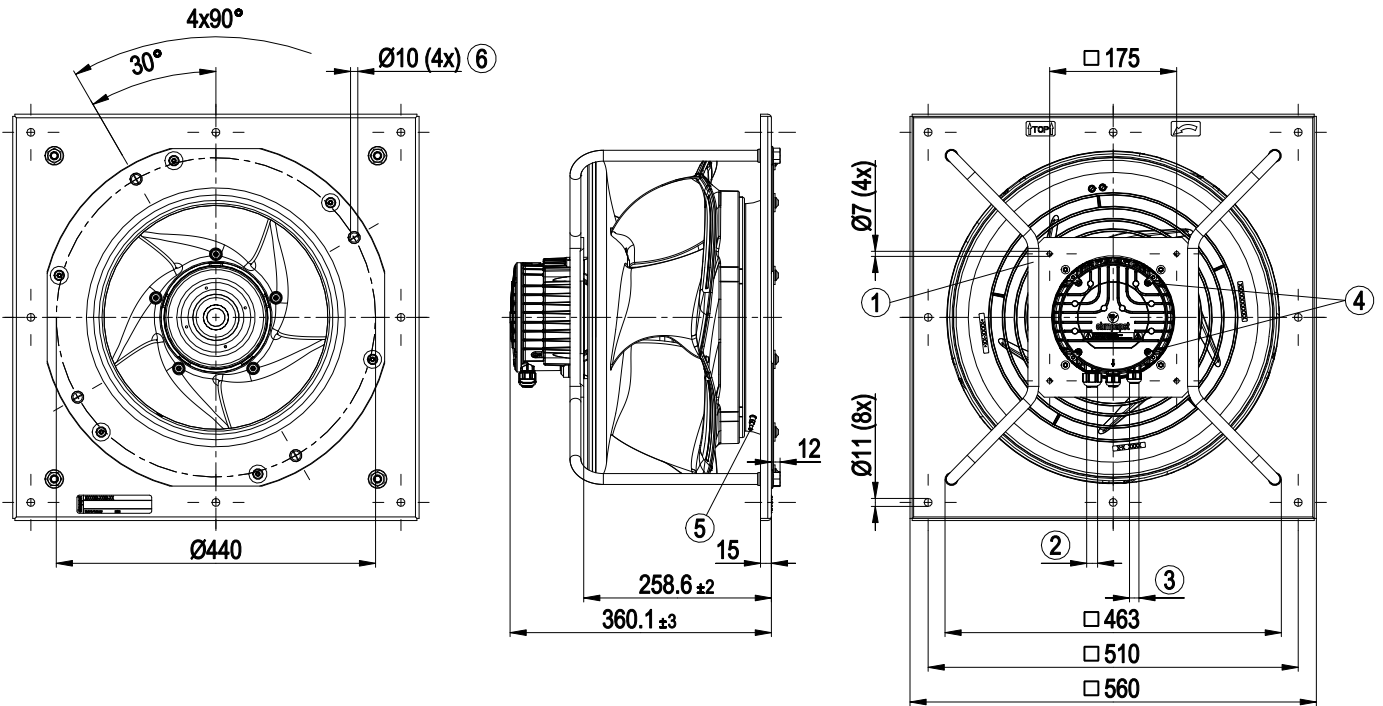
Model LU-221184-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 8 mm, max. 12 mm, tightening torque $1.8 \pm 0.3$ Nm (use must be made of seal provided) Cable diameter min. 4 mm, max. 10 mm, tightening torque $1.8 \pm 0.3$ Nm
3	Cable diameter min. 6 mm, max. 10 mm, tightening torque $1.8 \pm 0.3$ Nm (use must be made of seal provided) Cable diameter min. 4 mm, max. 7 mm, tightening torque $1.8 \pm 0.3$ Nm
4	Tightening torque $1.5 \pm 0.2$ Nm
5	Inlet ring with pressure tap (k-factor: 232)
6	Fastening holes for FlowGrid 35505-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

8300100550

VBH0450CTRLS

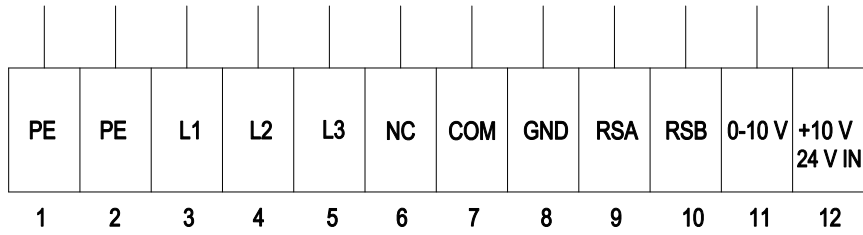
Model LU-221184-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



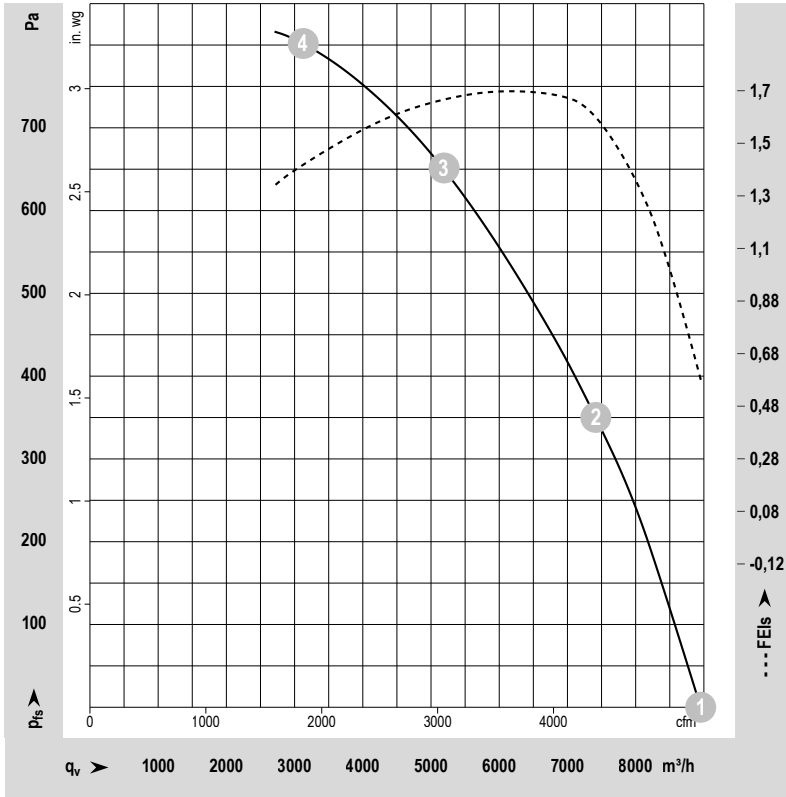
No.	Conn.	Designation	Function/assignment
1	PE	PE	Protective earth
2	PE	PE	Protective earth
3	L1	L1	Power supply
4	L2	L2	Power supply
5	L3	L3	Power supply
6	NC	NC	Status relay, floating status contact, break for failure, contact rating 250 VAC / 2 A (AC1) / min. 10 mA; reinforced insulation on supply side and basic insulation on control interface side
7	COM	COM	Status relay, floating status contact, break for failure, contact rating 250 VAC / 2 A (AC1) / min. 10 mA; reinforced insulation on supply side and basic insulation on control interface side
8	GND	GND	Reference ground for control interface, SELV
9	RSA	RSA	RS485 interface for MODBUS, RSA; SELV
10	RSB	RSB	RS485 interface for MODBUS, RSB; SELV
11	0-10 V	0-10 V	Analog input (set value) SELV, 0-10 V, Ri = 100 kΩ, adjustable curve
12	+10 V	+10 V	Fixed voltage output 10 VDC, SELV, +10 V ±3%, max. 10 mA, short-circuit-proof, power supply for external devices (e.g. pot); fixed voltage input 24 VDC for setting parameters via MODBUS without line voltage supply

8300100550  
 VBH0450CTRLS  
 Model LU-221184-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Curves: Air performance 50 Hz



$$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$$

Measurement: LU-221184-1  
 Date: 2022-06-08  
 Nozzle: 8217101922

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	LwA	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	dB	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	2110	1003	1.55	79	87	91	92	8955	0	5270	0.00
2	3~	400	50	2110	1246	1.91	73	81	85	86	7415	350	4365	1.41
3	3~	400	50	2110	1430	2.20	70	76	81	82	5185	650	3050	2.61
4	3~	400	50	2110	1297	1.99	73	80	84	85	3125	800	1840	3.21



Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
 LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · p<sub>fs</sub> = Pressure increase

Values for sound power levels (total LwA, LwA<sub>in</sub> and LwA<sub>out</sub>) is for installation type A - Free inlet, Free outlet. The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
 Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.

8300100311  
VBH0450CTRNS  
Model LU-217994-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100311	
Motor	E11233-80	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Speed (rpm)	min <sup>-1</sup>	2940
Power consumption	W	3850
Current draw	A	5.9
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	69.5	57.5	09 Power consumption $P_{ed}$	kW	3.76
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	8305
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	1091
04 Efficiency grade N		74	62	10 Speed (rpm) n	min <sup>-1</sup>	2935
05 Variable speed drive		Yes		11 Specific ratio <sup>*</sup>		1.01

Data obtained at optimum efficiency level.

<sup>\*</sup> Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-217994

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings). The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again. The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100311

VBH0450CTRNS

Model LU-217994-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	25.34 kg
<b>Size</b>	450 mm
<b>Motor size</b>	112
<b>Rotor surface</b>	Painted black
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"> <li>- Operation and alarm display with LED</li> <li>- External 15-50 VDC input (parameterization)</li> <li>- Alarm relay</li> <li>- Integrated PI controller</li> <li>- Configurable inputs/outputs (I/O)</li> <li>- MODBUS V6.3</li> <li>- Motor current limitation</li> <li>- RS-485 MODBUS-RTU</li> <li>- Soft start</li> <li>- Voltage output 3.3-24 VDC, Pmax = 800 mW</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage / phase failure detection</li> <li>- Vibration sensor</li> </ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Electronic motor protection

8300100311

VBH0450CTRNS

Model LU-217994-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; UKCA; CE
<b>Approval</b>	EAC; UL 1004-7 + 60730-1; CSA C22.2 No. 77 + CAN/CSA-E60730-1

8300100311

VBH0450CTRNS

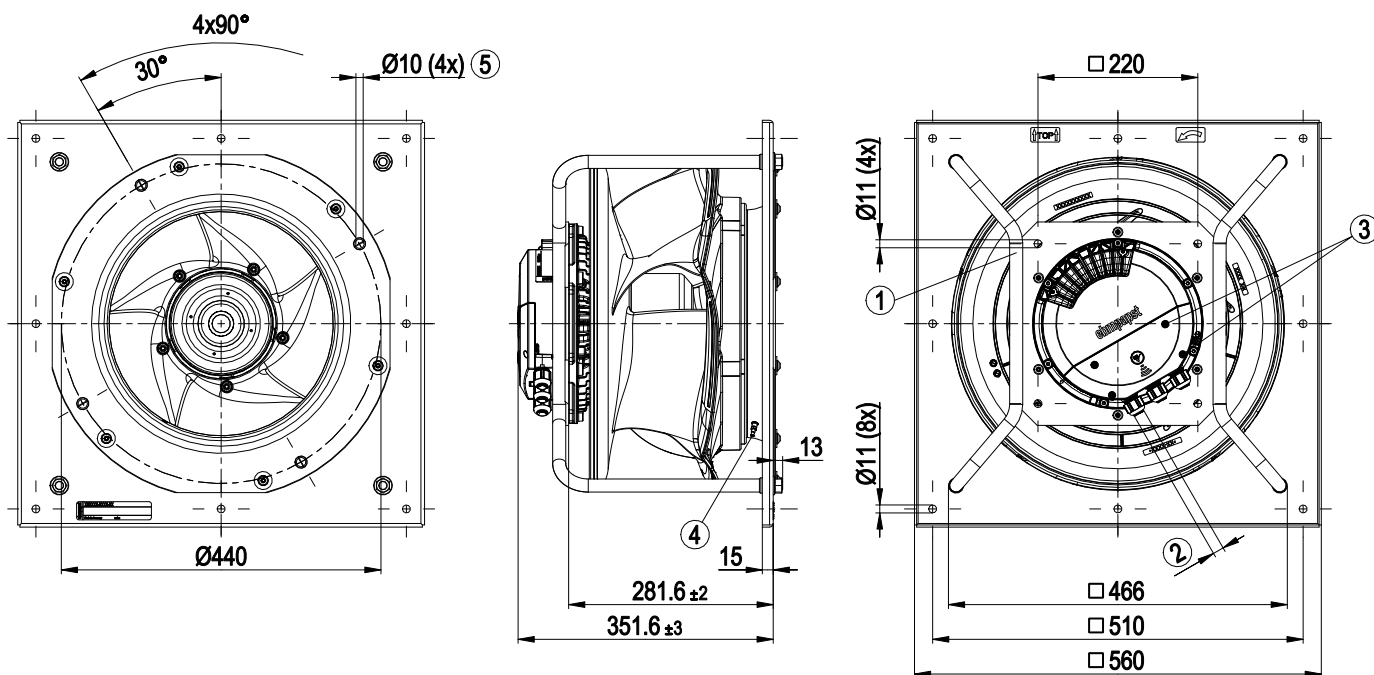
Model LU-217994-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque $4 \pm 0.6$ Nm (The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
3	Tightening torque $1.5 \pm 0.2$ Nm
4	Inlet ring with pressure tap (k-factor: 232)
5	Fastening holes for FlowGrid 35505-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required



8300100311

VBH0450CTRNS

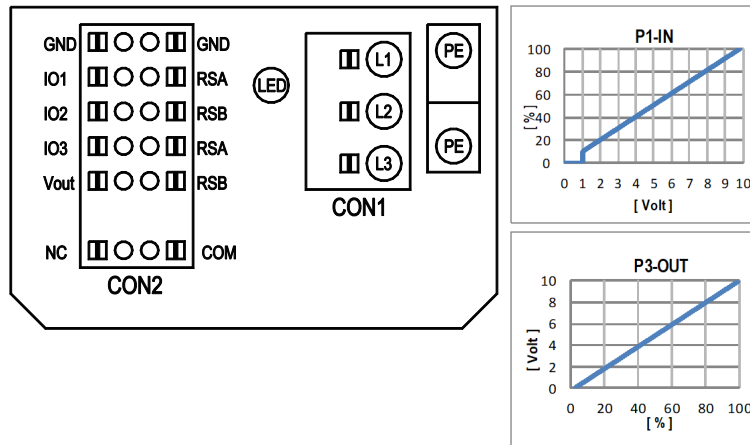
Model LU-217994-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
	CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function parameterizable (see "Optional interface functions" table) Factory setting: Digital input - high active, function: Disable input, SELV - inactive: Pin open or applied voltage < 1.5 VDC - active: applied voltage 3.5-50 VDC Reset function: Triggering of error reset on change of state from "enabled" to "disabled"
	CON2	IO2	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog input 0-10 V/PWM, Ri=100 kΩ, function: Set value Characteristic curve parameterizable (see input characteristic curve P1-IN), SELV
	CON2	IO3	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog output 0-10 V, max. 5 mA, function: Actual speed Characteristic curve parameterizable (see output characteristic curve P3-OUT), SELV
	CON2	Vout	Voltage output 3.3-24 VDC ±5%, Pmax=800 mW, voltage parameterizable Factory setting: 10 VDC short-circuit-proof, supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage
	CON2	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	CON2	NC	Status relay, floating status contact, break for failure
		LED	green: status = good, ready for operation orange: status = warning red: status = failure
		P1-IN	Input characteristic curve
		P3-OUT	Output characteristic curve

## Terminal/plug assignment

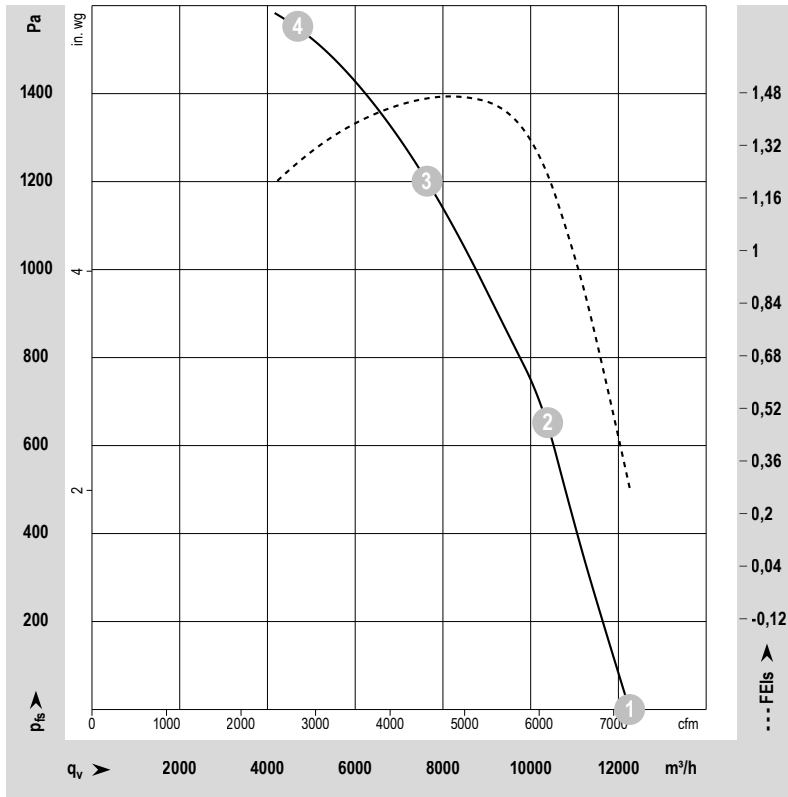
CON2	configurable IO mode	electrical specification	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	
				selected directly via IO mode)	selected directly via IO mode)
IO1	○ Din1 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D158 [0]	
	○ Ain1 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV		D158 [2]	
	○ Tach out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV		D158 [5]	
	○ Diagnostics out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV		D158 [6]	
IO2	○ Din2 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D159 [0]	
	○ Ain2 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV		D159 [2]	
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV		D159 [3]	
	○ Din3 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D15A [0]	
IO3	○ Din3 (active low), digital input	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage 3.5-50VDC		D15A [1]	
	○ PWMIn3: digital input, idle level high	PWM = 40Hz - 10kHz, characteristics parameterizable		D15A [7]	
	○ PWMIn3: digital input, idle level low	active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV		D15A [8]	
	○ Aout3 0-10V: analog output	function parameterizable, max. 5mA max output frequency 300Hz, SELV		D15A [4]	
RSA	○ Tacho out (pulses), analog output	0-10V/max. 5mA max output frequency 300Hz, SELV		D15A [5]	
	○ Diagnostics out (pulses)	0-10V/max. 5mA max output frequency 300Hz, SELV		D15A [6]	
	○ RSA/RSB bus connection,	MODBUS RTU, specification V6.3, SELV			
Yout	voltage output alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	voltage parameterizable 3.3...24VDC +/- 5%, Pmax=800mW, short-circuit-proof, supply for external devices, SELV 15...50VDC		D16E [..]	

8300100311  
 VBH0450CTRNS  
 Model LU-217994-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Curves: Air performance 50 Hz



$$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$$

Measurement: LU-217994-1  
 Date: 2022-01-10  
 Nozzle: 8217101922

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	2940	2783	4.28	88	96	100	12255	0	7215	0.00
2	3~	400	50	2940	3534	5.40	81	89	93	10370	650	6105	2.61
3	3~	400	50	2940	3850	5.90	78	85	90	7635	1200	4495	4.82
4	3~	400	50	2940	3586	5.48	81	89	96	4685	1550	2760	6.22

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
 LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LwA, LwA<sub>in</sub> and LwA<sub>out</sub>) is for installation type A - Free inlet, Free outlet.  
 The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
 Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.



8300100344

VBH0450CTRNS

Model LU-219151-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100344	
Motor	E11233-80	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Speed (rpm)	min <sup>-1</sup>	2690
Power consumption	W	3050
Current draw	A	4.7
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	72.1	56.5	09 Power consumption $P_{ed}$	kW	2.99
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	7755
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	956
04 Efficiency grade N		77.6	62	10 Speed (rpm) $n$	min <sup>-1</sup>	2685
05 Variable speed drive		Yes		11 Specific ratio <sup>*</sup>		1.01

Data obtained at optimum efficiency level.

<sup>\*</sup> Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-219151

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings). The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again. The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100344

VBH0450CTRNS

Model LU-219151-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	28.85 kg
<b>Size</b>	450 mm
<b>Motor size</b>	112
<b>Rotor surface</b>	Painted black
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"> <li>- Operation and alarm display with LED</li> <li>- External 15-50 VDC input (parameterization)</li> <li>- Alarm relay</li> <li>- Integrated PI controller</li> <li>- Configurable inputs/outputs (I/O)</li> <li>- MODBUS V6.3</li> <li>- Motor current limitation</li> <li>- RS-485 MODBUS-RTU</li> <li>- Soft start</li> <li>- Voltage output 3.3-24 VDC, Pmax = 800 mW</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage / phase failure detection</li> <li>- Vibration sensor</li> </ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Electronic motor protection

8300100344

VBH0450CTRNS

Model LU-219151-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

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VBH0450CTRNS

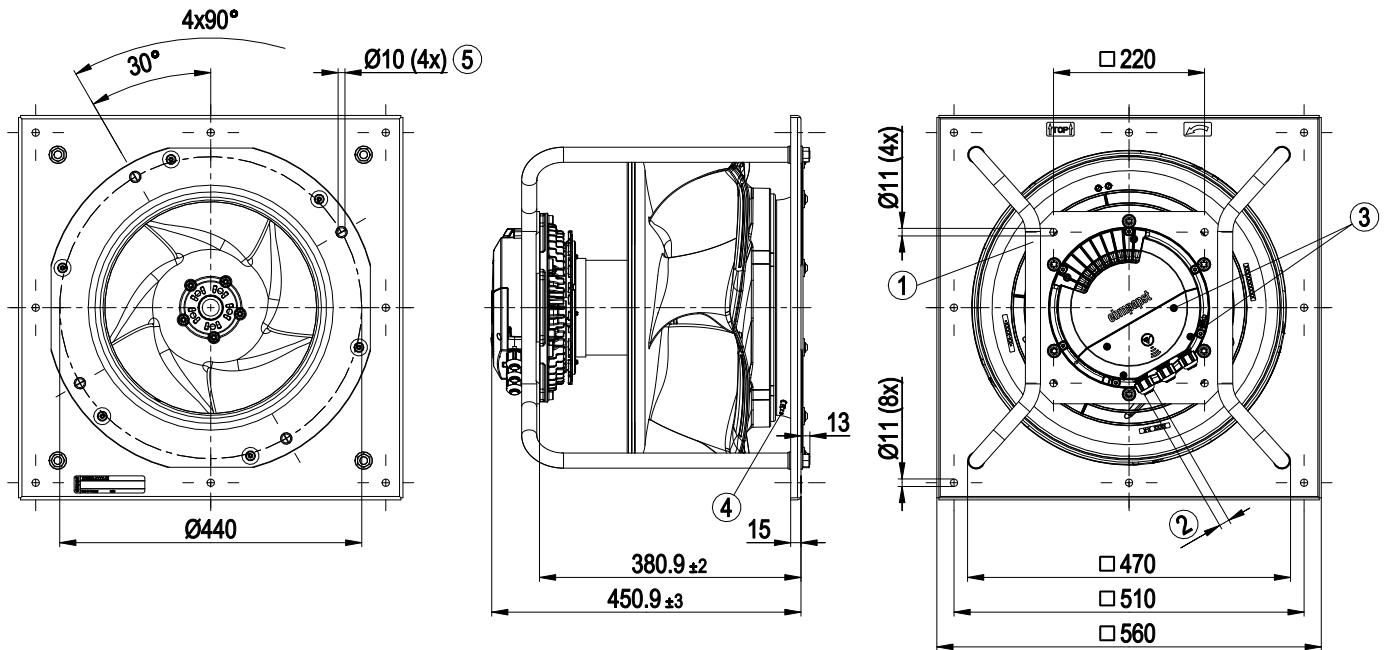
Model LU-219151-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque $4 \pm 0.6$ Nm (The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
3	Tightening torque $1.5 \pm 0.2$ Nm
4	Inlet ring with pressure tap (k-factor: 232)
5	Fastening holes for FlowGrid 35505-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

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VBH0450CTRNS

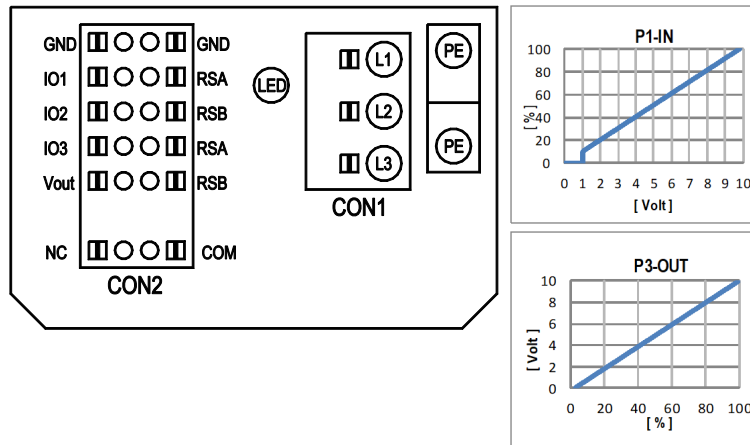
Model LU-219151-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
	CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function parameterizable (see "Optional interface functions" table) Factory setting: Digital input - high active, function: Disable input, SELV - inactive: Pin open or applied voltage < 1.5 VDC - active: applied voltage 3.5-50 VDC Reset function: Triggering of error reset on change of state from "enabled" to "disabled"
	CON2	IO2	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog input 0-10 V/PWM, Ri=100 kΩ, function: Set value Characteristic curve parameterizable (see input characteristic curve P1-IN), SELV
	CON2	IO3	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog output 0-10 V, max. 5 mA, function: Actual speed Characteristic curve parametrizable (see output characteristic curve P3-OUT), SELV
	CON2	Vout	Voltage output 3.3-24 VDC ±5%, Pmax=800 mW, voltage parameterizable Factory setting: 10 VDC short-circuit-proof, supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage
	CON2	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	CON2	NC	Status relay, floating status contact, break for failure
		LED	green: status = good, ready for operation orange: status = warning red: status = failure
		P1-IN	Input characteristic curve
		P3-OUT	Output characteristic curve



8300100344

VBH0450CTRNS

Model LU-219151-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Terminal/plug assignment

CON2	configurable IO mode	electrical specification	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	
				selected directly via IO mode)	selected directly via IO mode)
IO1	○ Din1 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D158 [0]	
	○ Ain1 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV		D158 [2]	
	○ Tach out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV		D158 [5]	
	○ Diagnostics out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV		D158 [6]	
IO2	○ Din2 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D159 [0]	
	○ Ain2 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV		D159 [2]	
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV		D159 [3]	
	○ Din3 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D15A [0]	
IO3	○ Din3 (active low), digital input	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage 3.5-50VDC		D15A [1]	
	○ PWMIn3: digital input, idle level high	PWM = 40Hz - 10kHz, characteristics parameterizable		D15A [7]	
	○ PWMIn3: digital input, idle level low	active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV		D15A [8]	
	○ Aout3 0-10V: analog output	function parameterizable, max. 5mA max output frequency 300Hz, SELV		D15A [4]	
RSA	○ Tacho out (pulses), analog output	0-10V/max. 5mA max output frequency 300Hz, SELV		D15A [5]	
	○ Diagnostics out (pulses)	0-10V/max. 5mA max output frequency 300Hz, SELV		D15A [6]	
	○ Diagnostics out (pulses)	MODBUS RTU, specification V6.3, SELV			
RSB	RS485 bus connection,				
Vout	voltage output	voltage parameterizable 3.3...24VDC +/- 5%, Pmax=800mW, short-circuit-proof, supply for external devices, SELV		D16E [..]	
	alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...50VDC			

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VBH0450CTRNS

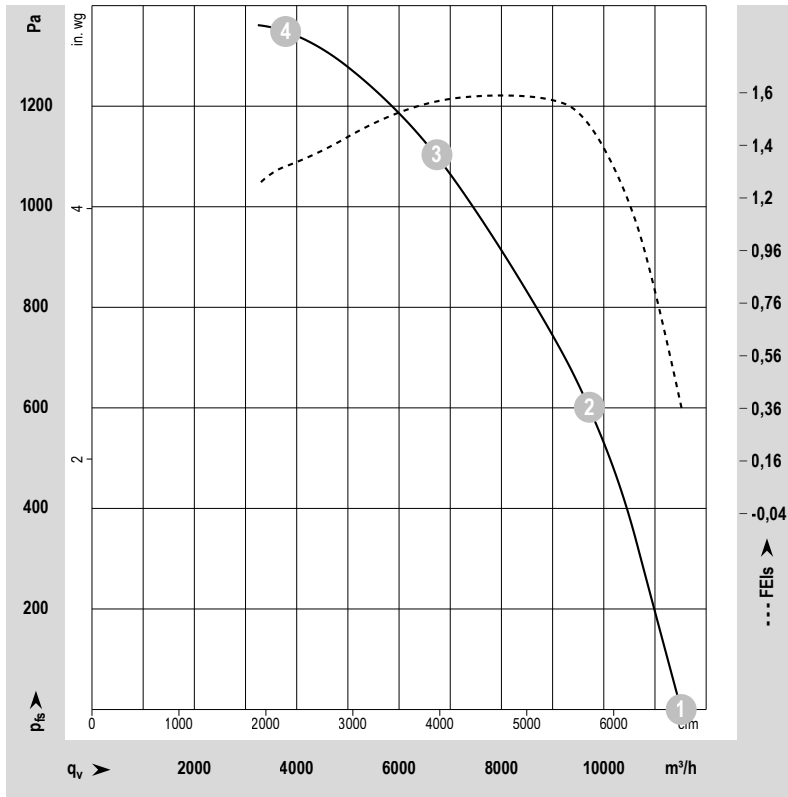
Model LU-219151-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Curves: Air performance 50 Hz



$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$

Measurement: LU-219151-1  
Date: 2022-01-27  
Nozzle: 8217101922

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	2690	1983	3.10	84	93	96	11510	0	6775	0.00
2	3~	400	50	2690	2663	4.11	80	87	90	9710	600	5715	2.41
3	3~	400	50	2690	3050	4.70	75	81	86	6730	1100	3960	4.42
4	3~	400	50	2690	2601	4.01	80	87	91	3785	1350	2230	5.42

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side · LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LWA, LwA<sub>in</sub> and LwA<sub>out</sub>) is for installation type A - Free inlet, Free outlet. The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.

Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.



8300100043  
VBH0450CTTLS  
Model LU-228317-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100043	
Motor	E15031-55	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Speed (rpm)	min <sup>-1</sup>	2960
Power consumption	W	4000
Current draw	A	6.0
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	71.6	57.8	09 Power consumption $P_{ed}$	kW	3.94
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	8540
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	1145
04 Efficiency grade N		75.8	62	10 Speed (rpm) n	min <sup>-1</sup>	2955
05 Variable speed drive		Yes		11 Specific ratio*		1.01

Data obtained at optimum efficiency level.

\* Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-228317

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).  
The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.  
The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100043

VBH0450CTTLS

Model LU-228317-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	31.54 kg
<b>Size</b>	450 mm
<b>Motor size</b>	150
<b>Rotor surface</b>	Painted black
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"><li>- Operation and alarm display with LED</li><li>- External 15-50 VDC input (parameterization)</li><li>- Alarm relay</li><li>- Integrated PI controller</li><li>- Configurable inputs/outputs (I/O)</li><li>- MODBUS V6.3</li><li>- Motor current limitation</li><li>- RS-485 MODBUS-RTU</li><li>- Soft start</li><li>- Voltage output 3.3-24 VDC, Pmax = 800 mW</li><li>- Control interface with SELV potential safely disconnected from the mains</li><li>- Thermal overload protection for electronics/motor</li><li>- Line undervoltage / phase failure detection</li><li>- Vibration sensor</li></ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Electronic motor protection

8300100043

VBH0450CTTLS

Model LU-228317-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected by the customer This component for installation may have several local protection classes. This information relates to this component's basic design. The final protection class is based on the component's intended installation and connection.
<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

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VBH0450CTTLS

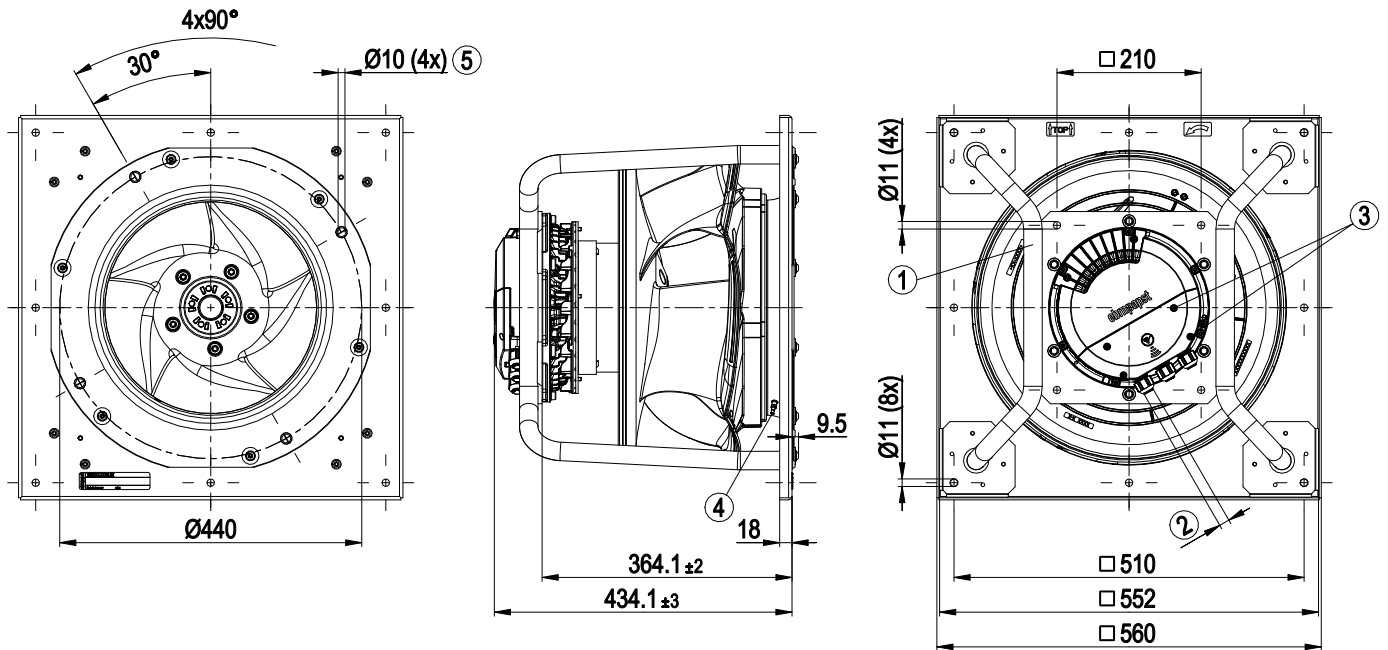
Model LU-228317-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque $4 \pm 0.6$ Nm (The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
3	Tightening torque $1.5 \pm 0.2$ Nm
4	Inlet ring with pressure tap (k-factor: 232)
5	Fastening holes for FlowGrid 35505-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

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VBH0450CTTLS

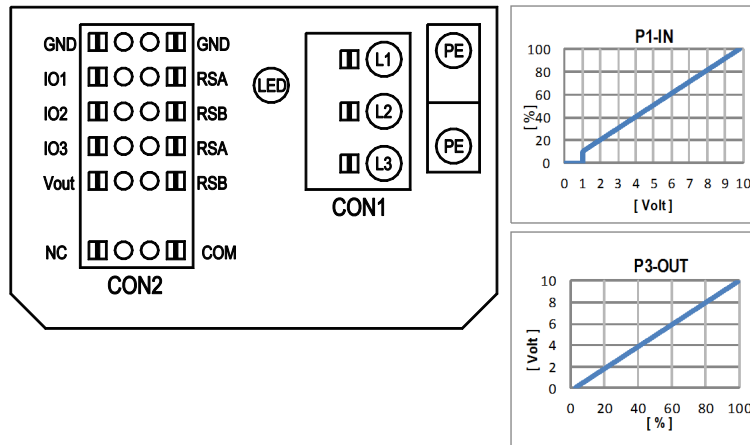
Model LU-228317-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
	CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function parameterizable (see "Optional interface functions" table) Factory setting: Digital input - high active, function: Disable input, SELV - inactive: Pin open or applied voltage < 1.5 VDC - active: applied voltage 3.5-50 VDC Reset function: Triggering of error reset on change of state from "enabled" to "disabled"
	CON2	IO2	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog input 0-10 V/PWM, Ri=100 kΩ, function: Set value Characteristic curve parameterizable (see input characteristic curve P1-IN), SELV
	CON2	IO3	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog output 0-10 V, max. 5 mA, function: Actual speed Characteristic curve parametrizable (see output characteristic curve P3-OUT), SELV
	CON2	Vout	Voltage output 3.3-24 VDC ±5%, Pmax=800 mW, voltage parameterizable Factory setting: 10 VDC short-circuit-proof, supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage
	CON2	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	CON2	NC	Status relay, floating status contact, break for failure
		LED	green: status = good, ready for operation orange: status = warning red: status = failure
		P1-IN	Input characteristic curve
		P3-OUT	Output characteristic curve

8300100043

VBH0450CTTLS

Model LU-228317-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Terminal/plug assignment

CON2	configurable IO mode	electrical specification	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	
				selected directly via IO mode)	selected directly via IO mode)
IO1	○ Din1 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D158 [0]	
	○ Ain1 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV		D158 [2]	
	○ Tach out (open collector output)	Umax = 50VDC, I <sub>max</sub> = 20mA, SELV		D158 [5]	
	○ Diagnostics out (open collector output)	Umax = 50VDC, I <sub>max</sub> = 20mA, SELV		D158 [6]	
IO2	○ Din2 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D159 [0]	
	○ Ain2 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV		D159 [2]	
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV		D159 [3]	
	○ Din3 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D15A [0]	
IO3	○ Din3 (active low), digital input	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage 3.5-50VDC		D15A [1]	
	○ PWMIn3: digital input, idle level high	PWM = 40Hz - 10kHz, characteristics parameterizable		D15A [7]	
	○ PWMIn3: digital input, idle level low	active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV		D15A [8]	
	○ Aout3 0-10V: analog output	function parameterizable, max. 5mA, max output frequency 300Hz, SELV		D15A [4]	
RSA	○ Tacho out (pulses), analog output	0-10V/max. 5mA, max output frequency 300Hz, SELV		D15A [5]	
	○ Diagnostics out (pulses)	0-10V/max. 5mA, max output frequency 300Hz, SELV		D15A [6]	
	○ RSA/RSB bus connection,	MODBUS RTU, specification V6.3, SELV			
Vout	voltage output	voltage parameterizable 3.3...24VDC +/- 5%, P <sub>max</sub> =800mW, short-circuit-proof, supply for external devices, SELV		D16E [..]	
	alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...50VDC			



8300100043

VBH0450CTTLS

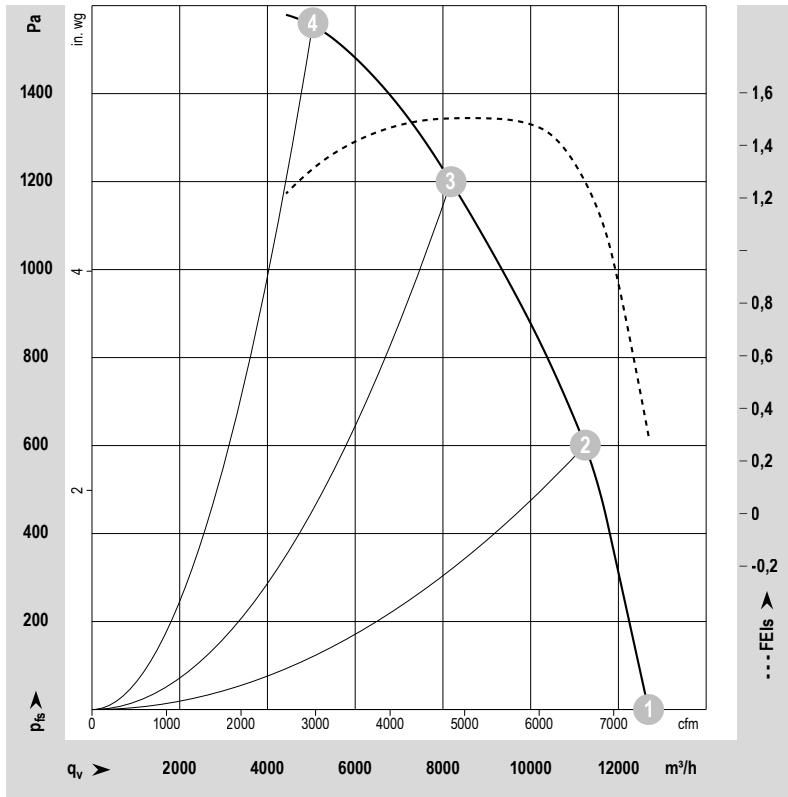
Model LU-228317-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Curves: Air performance 50 Hz



$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$

Measurement: LU-228317-1  
Date: 2023-08-04  
Nozzle: 8217101922

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	$P_e$	I	$LpA_{in}$	$LwA_{in}$	$LwA_{out}$	LwA	$q_v$	$P_{fs}$	$q_v$	$P_{fs}$
		V	Hz	$\text{min}^{-1}$	W	A	dB(A)	dB(A)	dB(A)	dB	$\text{m}^3/\text{h}$	Pa	cfm	in. wg
1	3~	400	50	2960	2637	4.08	86	94	98	100	12690	0	7470	0.00
2	3~	400	50	2960	3469	5.31	81	88	93	94	11235	600	6615	2.41
3	3~	400	50	2960	4000	6.00	74	83	90	91	8185	1200	4820	4.82
4	3~	400	50	2960	3693	5.65	79	87	93	94	5020	1550	2955	6.22

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) ·  $P_e$  = Power consumption · I = Current draw ·  $LpA_{in}$  = Sound pressure level intake side ·  $LwA_{in}$  = Sound power level intake side  
 $LwA_{out}$  = Sound power level outlet side · LwA = Sound power level total ·  $q_v$  = Air flow ·  $P_{fs}$  = Pressure increase

Values for sound power levels (total LwA,  $LwA_{in}$  and  $LwA_{out}$ ) is for installation type A - Free inlet, Free outlet.  
The  $LpA$  levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.



8300100075

VBH0450CTTPS

Model LU-215103-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100075	
Motor	E15034-85	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Speed (rpm)	min <sup>-1</sup>	3430
Power consumption	W	6300
Current draw	A	9.9
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	73.6	59.9	09 Power consumption $P_{ed}$	kW	6.25
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	9985
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	1604
04 Efficiency grade N		75.7	62	10 Speed (rpm) n	min <sup>-1</sup>	3430
05 Variable speed drive		Yes		11 Specific ratio*		1.02

Data obtained at optimum efficiency level.

\* Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-215103

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings). The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again. The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100075

VBH0450CTTPS

Model LU-215103-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	40.18 kg
<b>Size</b>	450 mm
<b>Motor size</b>	150
<b>Rotor surface</b>	Painted black
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"><li>- Operation and alarm display with LED</li><li>- External 15-50 VDC input (parameterization)</li><li>- Alarm relay</li><li>- Integrated PI controller</li><li>- Configurable inputs/outputs (I/O)</li><li>- MODBUS V6.4</li><li>- Motor current limitation</li><li>- RS-485 MODBUS-RTU</li><li>- Soft start</li><li>- Voltage output 3.3-24 VDC, Pmax = 800 mW</li><li>- Control interface with SELV potential safely disconnected from the mains</li><li>- Thermal overload protection for electronics/motor</li><li>- Line undervoltage / phase failure detection</li><li>- Vibration sensor</li></ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Electronic motor protection

8300100075

VBH0450CTTPS

Model LU-215103-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

8300100075

VBH0450CTTPS

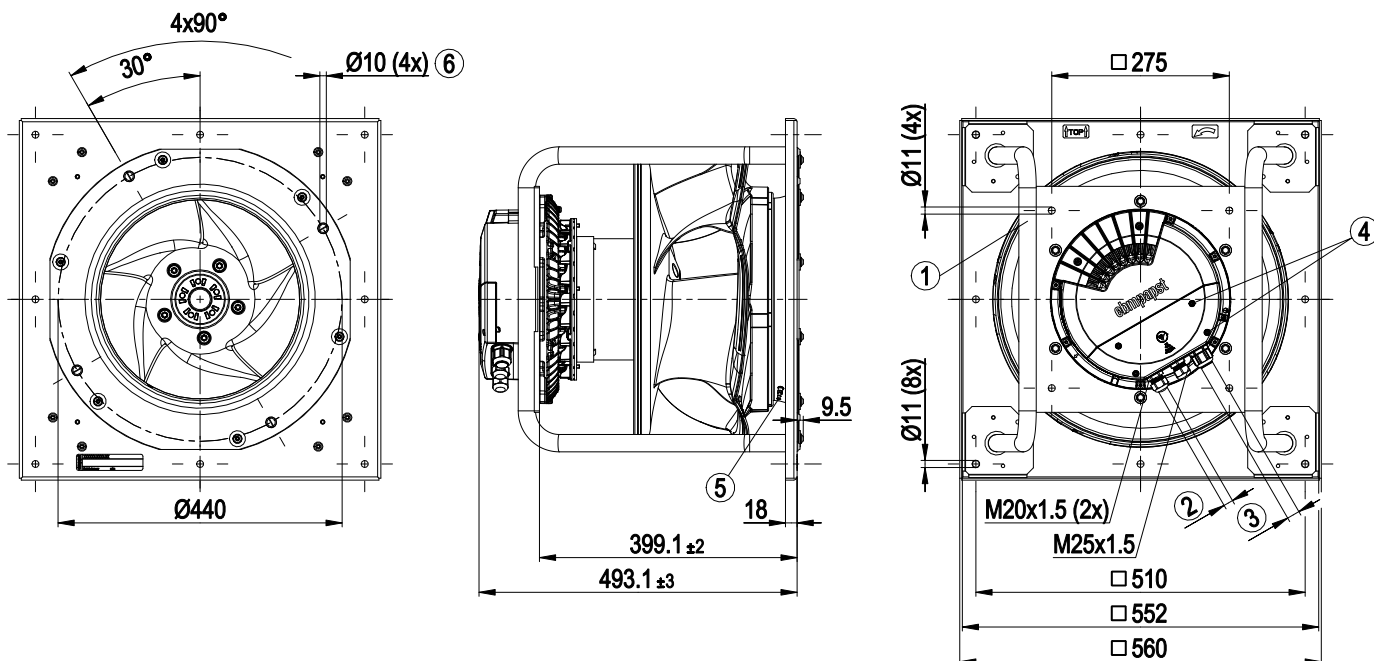
Model LU-215103-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque $4 \pm 0.6$ Nm
3	Cable diameter min. 5 mm, max. 14 mm, tightening torque $6 \pm 0.9$ Nm (The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
4	Tightening torque $3 \pm 0.3$ Nm
5	Inlet ring with pressure tap (k-factor: 232)
6	Fastening holes for FlowGrid 35505-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

8300100075

VBH0450CTTPS

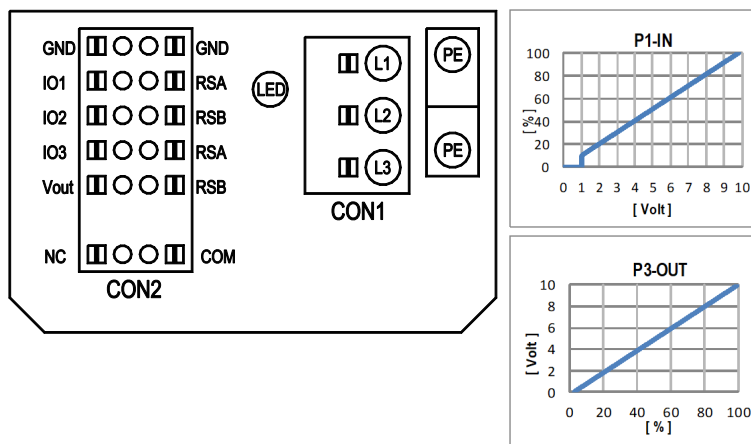
Model LU-215103-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
	CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function parameterizable (see "Optional interface functions" table) Factory setting: Digital input - high active, function: Disable input, SELV - inactive: Pin open or applied voltage < 1.5 VDC - active: applied voltage 3.5-50 VDC Reset function: Triggering of error reset on change of state from "enabled" to "disabled"
	CON2	IO2	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog input 0-10 V/PWM, Ri=100 kΩ, function: Set value Characteristic curve parameterizable (see input characteristic curve P1-IN), SELV
	CON2	IO3	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog output 0-10 V, max. 5 mA, function: Actual speed Characteristic curve parametrizable (see output characteristic curve P3-OUT), SELV
	CON2	Vout	Voltage output 3.3-24 VDC ±5%, Pmax=800 mW, voltage parameterizable Factory setting: 10 VDC short-circuit-proof, supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage
	CON2	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	CON2	NC	Status relay, floating status contact, break for failure
		LED	green: status = good, ready for operation orange: status = warning red: status = failure
		P1-IN	Input characteristic curve
		P3-OUT	Output characteristic curve

8300100075

VBH0450CTTPS

Model LU-215103-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Terminal/plug assignment

CON2	configurable IO mode	electrical specification	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	
				selected directly via IO mode)	selected directly via IO mode)
IO1	○ Din1 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D158 [0]	
	○ Ain1 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV		D158 [2]	
	○ Tach out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV		D158 [5]	
	○ Diagnostics out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV		D158 [6]	
IO2	○ Din2 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D159 [0]	
	○ Ain2 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV		D159 [2]	
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV		D159 [3]	
	○ Din3 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D15A [0]	
IO3	○ Din3 (active low), digital input	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage 3.5-50VDC		D15A [1]	
	○ PWMIn3: digital input idle level high	PWM = 40Hz - 10kHz, characteristics parameterizable		D15A [7]	
	○ PWMIn3: digital input idle level low	active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV		D15A [8]	
	○ Aout3 0-10V: analog output	function parameterizable, max. 5mA max output frequency 300Hz SELV		D15A [4]	
RSA	○ Tacho out (pulses), analog output	0-10V/max. 5mA max output frequency 300Hz SELV		D15A [5]	
	○ Diagnostics out (pulses)	0-10V/max. 5mA max output frequency 300Hz, SELV		D15A [6]	
	○ RSA485 bus connection,	MODBUS RTU, specification V6.4, SELV			
RSB	voltage output	voltage parameterizable 3.3...24VDC +/- 5%, Pmax=800mW, short-circuit-proof, supply for external devices, SELV		D16E [..]	
Vout	alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...50VDC			

8300100075

VBH0450CTTPS

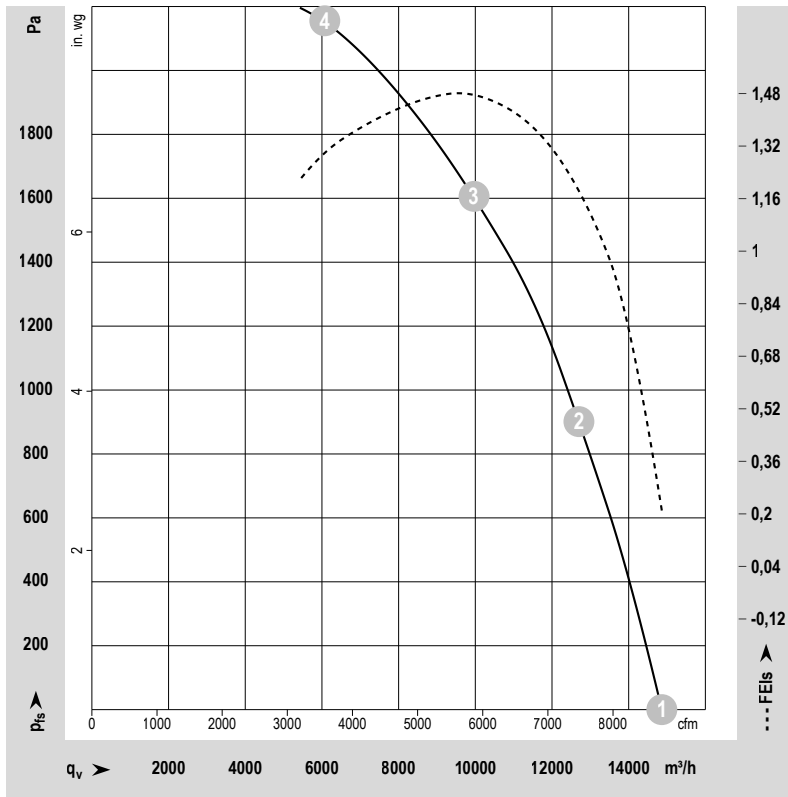
Model LU-215103-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Curves: Air performance 50 Hz



$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$

Measurement: LU-215103-1  
Date: 2021-06-30  
Nozzle: 8217101922

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	$P_e$	I	$LpA_{in}$	$LwA_{in}$	$LwA_{out}$	LwA	$q_v$	$P_{fs}$	$q_v$	$P_{fs}$
		V	Hz	$\text{min}^{-1}$	W	A	dB(A)	dB(A)	dB(A)	dB	$\text{m}^3/\text{h}$	Pa	cfm	in. wg
1	3~	400	50	3430	4232	6.94	95	103	105	107	14865	0	8750	0.00
2	3~	400	50	3430	5791	9.17	90	97	100	102	12695	900	7470	3.61
3	3~	400	50	3430	6300	9.90	85	92	96	97	9950	1600	5855	6.42
4	3~	400	50	3430	5926	9.38	82	89	95	96	6065	2150	3570	8.63

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) ·  $P_e$  = Power consumption · I = Current draw ·  $LpA_{in}$  = Sound pressure level intake side ·  $LwA_{in}$  = Sound power level intake side  
 $LwA_{out}$  = Sound power level outlet side · LwA = Sound power level total ·  $q_v$  = Air flow ·  $p_{fs}$  = Pressure increase

Values for sound power levels (total LwA,  $LwA_{in}$  and  $LwA_{out}$ ) is for installation type A - Free inlet, Free outlet. The  $LpA$  levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.

Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.





8300100889  
VBH0500CSPFS  
Model LU-224474-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
with support bracket

ebm-papst Mulfingen GmbH & Co. KG  
Bachmühle 2 · D-74673 Mulfingen  
Phone +49 7938 81-0  
Fax +49 7938 81-110  
info1@de.ebmpapst.com  
www.ebmpapst.com

Limited partnership · Headquarters Mulfingen  
Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen  
Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100889	
Motor	E09002-28	
Phase		1~
Nominal voltage	VAC	230
Nominal voltage range	VAC	200 .. 277
Frequency	Hz	50/60
Method of obtaining data		ml
Status		prelim.
Speed (rpm)	min <sup>-1</sup>	1050
Power consumption	W	370
Current draw	A	1.6
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	60

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	67.5	46.9	09 Power consumption $P_{ed}$	kW	0.36
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	4050
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	196
04 Efficiency grade N		82.6	62	10 Speed (rpm) n	min <sup>-1</sup>	1050
05 Variable speed drive		Yes		11 Specific ratio*		1.00

Data obtained at optimum efficiency level.

\* Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-224474

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).  
The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.  
The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100889

VBH0500CSPFS

Model LU-224474-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Technical description

Size	500 mm
Motor size	90
Rotor surface	Painted black
Electronics housing material	Die-cast aluminum
Impeller material	PP plastic
Support plate material	Sheet steel, galvanized
Support bracket material	Steel, painted black
Inlet nozzle material	ABS plastic
Number of blades	5
Direction of rotation	Clockwise, viewed toward rotor
Degree of protection	IP55
Insulation class	"F"
Moisture (F) / Environmental (H) protection class	H1
Ambient temperature note	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
Max. permitted ambient temp. for motor (transport/storage)	+80 °C
Min. permitted ambient temp. for motor (transport/storage)	-40 °C
Installation position	See legend on product drawing
Condensation drainage holes	On rotor side
Mode	S1
Motor bearing	Ball bearing
Technical features	<ul style="list-style-type: none"><li>- Output 10 VDC, max. 10 mA</li><li>- Operation and alarm display with LED</li><li>- Locked-rotor detection</li><li>- Speed control</li><li>- External 15-30 VDC input (parameterization)</li><li>- Alarm relay</li><li>- Configurable inputs/outputs (I/O)</li><li>- Power limiter</li><li>- MODBUS V7.0</li><li>- Motor current limitation</li><li>- PFC, active</li><li>- RS-485 MODBUS-RTU</li><li>- Soft start</li><li>- Control interface with SELV potential safely disconnected from the mains</li><li>- Temperature derating</li><li>- Thermal overload protection for electronics/motor</li><li>- Line undervoltage / phase failure detection</li></ul>
Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)	<= 3.5 mA
Motor protection	Electronic motor protection
With cable	Lateral

8300100889

VBH0500CSPFS

Model LU-224474-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

Protection class assignment	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
Maximum surface temperature	240 °C
Conformity with standards	EN 60335-1; EN 61800-5-1; CE; UKCA
Approval	CSA C22.2 No. 77 + CAN/CSA-E60730-1; UL 1004-7 + 60730-1

8300100889

VBH0500CSPFS

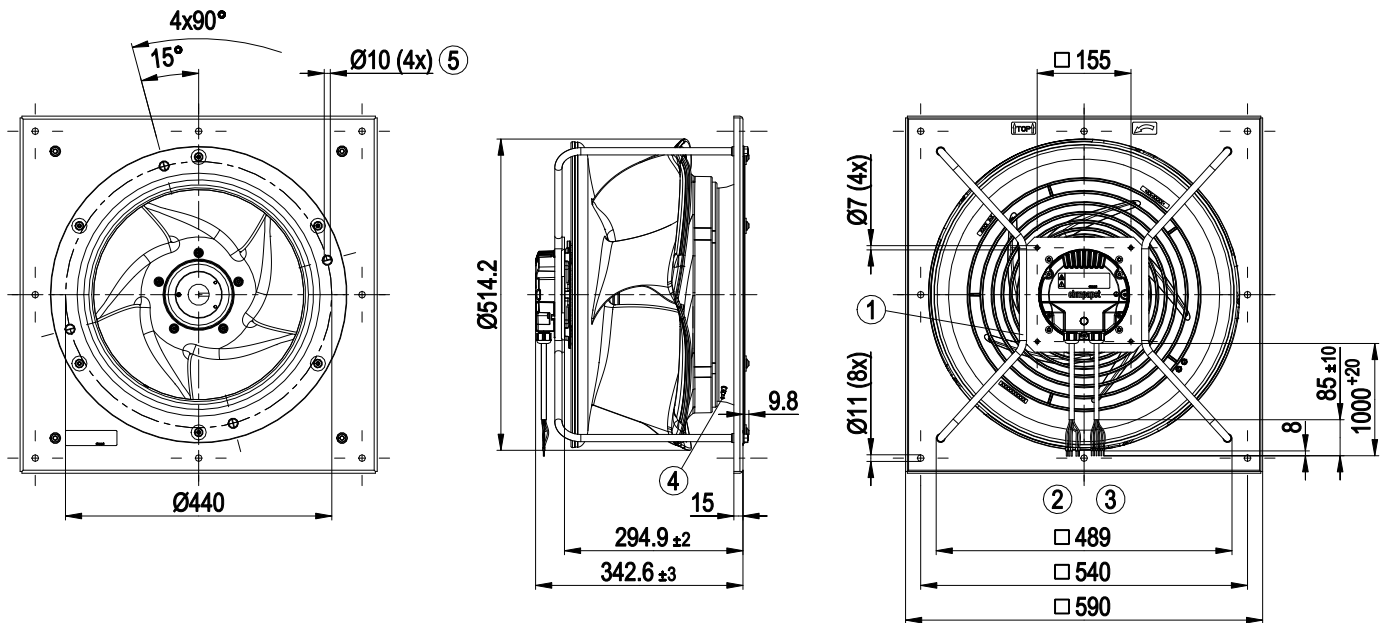
Model LU-224474-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Supply line (PWR) PVC AWG18 5x wire-end ferrule
3	Control wire (CTRL) PVC AWG22 6x wire-end ferrule
4	Inlet ring with pressure tap (k-factor: 290)
5	Fastening holes for FlowGrid 35505-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

8300100889

VBH0500CSPFS

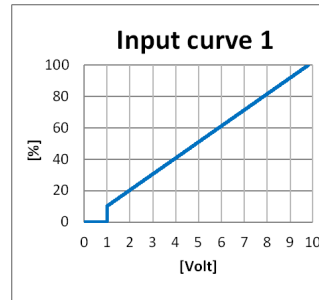
Model LU-224474-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Color	Function/assignment
	PWR	PE	green/yellow	Protective earth
	PWR	L	black	Power supply, phase, see nameplate for voltage range
	PWR	N	blue	Power supply, neutral conductor, see nameplate for voltage range
	PWR	COM	orange	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	PWR	NC	orange	Status relay, floating status contact, break for failure
	CTRL	GND	blue	Reference ground for control interface, SELV
	CTRL	Vout	red	Voltage output 10 VDC +/-3%, I <sub>max</sub> =10 mA Short-circuit-proof, power supply for external devices, SELV alternative: 15-30 VDC input for parameterization via MODBUS without line voltage
	CTRL	IO1	yellow	Factory setting: Analog input 0-10 V / PWM, R <sub>i</sub> =100 kΩ, function: set value Characteristic curve parameterizable (see input characteristic curve "Input curve 1"), SELV Function parameterizable (see table Optional interface functions)
	CTRL	IO2	white	Factory setting: Open collector output, U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, function:Tacho output 1 pulse/revolution, SELV Function parameterizable (see table Optional interface functions)
	CTRL	RSA	gray	RS-485 interface for MODBUS RSA, SELV dielectric strength to MODBUS RSB +/-14 V, dielectric strength to GND +/-7 V
	CTRL	RSB	brown	RS-485 interface for MODBUS RSB, SELV dielectric strength to MODBUS RSA +/-14 V, dielectric strength to GND +/-7 V
		LED		green: status = good, ready for operation orange: status = warning red: status = failure

8300100889

VBH0500CSPFS

Model LU-224474-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Terminal/plug assignment

Terminal/Plug	Function	Signal	Selection
D101 [..]	source: set value		
D147 [..]	source: sensor value		
D104 [..]	switch: parameter set: #1 / #2		
D12E [..]	switch: control function: heating (pos.) / cooling (neg.)		
D148 [..]	switch: direction of rotation: cw / ccw		
D16C [..]	switch: set value source		
D16A [..]	switch: fan enable / disable		
D00C [1]	source: input pulses autoaddressing		
D638 [..]	source: DCI in		
	signal: tach out		
	signal: diagnostics out		
	signal: alarm out		
D130 [4]	signal: output pulses autoaddressing		
D61B	signal: DCI out		
D130 [0]	signal: fan modulation level %		
D130 [1]	signal: actual speed 1/min		
D130 [2]	signal: system modulation level %		
D130 [5]	signal: remote control output 0-10 V		
D145	signal: run monitoring		
	signal: status		

configurable IO functions: normal / inverse

### MODBUS Register for IO mode configuration

CON2	configurable IO mode	electrical specification	MODBUS Register for IO mode configuration
101	Dim1 (active high): digital input	active: applied voltage 3,5-50 VDC, SELV not active: pin open or applied voltage < 1,5 VDC SELV	D158 [0]
	Dim1 (active low): digital input	active: applied voltage < 1,5 VDC, SELV not active: pin open or applied voltage 3,5-50 VDC SELV	D158 [1]
	Air1 0-10 V/PWM: analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D158 [2]
	Air1 0-10 V/PWM (with pull up): analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D158 [9]
102	Dim1 (active high): digital input	active: applied voltage 3,5-50 VDC, SELV not active: pin open or applied voltage < 1,5 VDC SELV	D159 [0]
	Air1 0-10 V/PWM: analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D159 [2]
	Tach out (open collector)	U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, SELV	D159 [5]
	Diagnostics out (open collector)	U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, SELV	D159 [6]
	Alarm out (open collector)	U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, SELV	D159 [10]
	Test pulse output addressing (open collector)	U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, SELV	D159 [11]
RSA RSB	DCI-output (open collector)	U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, SELV	D159 [12]
	RS485 bus connection	MODBUS RTU, parameter specification V7, SELV	
COM NC	Relay	250 VAC / 2 A (AC1)	
Vout	Voltage output	Voltage 10 VDC, SELV	
	Alternatively: input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...30 VDC	

- configurable function
- (○) function to be activated via IO Mode

### Medium (M2)

Functions and parameter description  
MODBUS V7.0

8300100889

VBH0500CSPFS

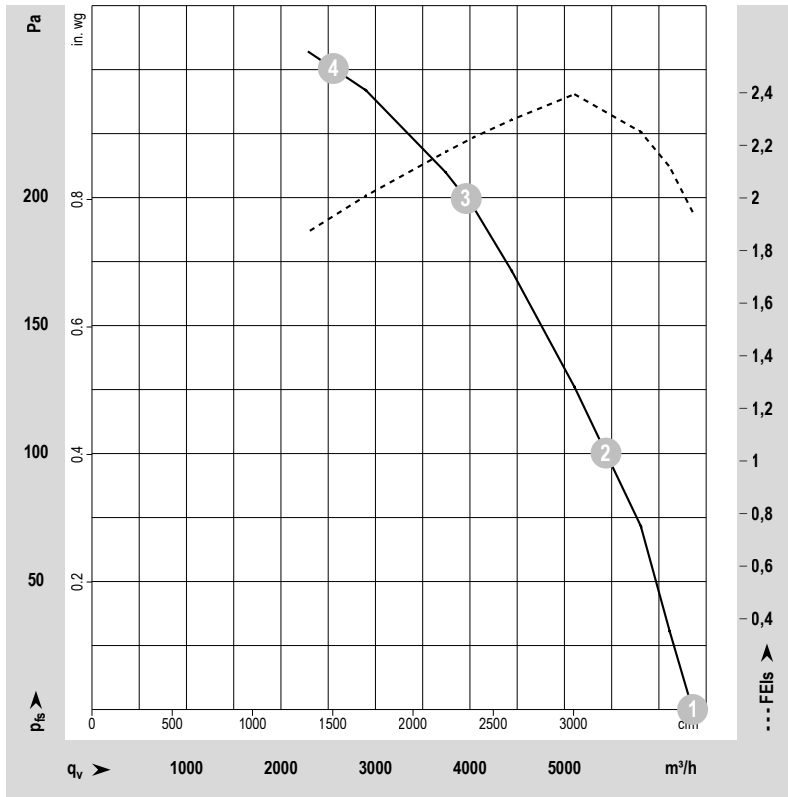
Model LU-224474-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Curves: Air performance 50 Hz



$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$

Measurement: LU-224474-1  
Date: 2022-12-12  
Nozzle: 8217101923

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	$P_e$	I	$LpA_{in}$	$LwA_{in}$	$LwA_{out}$	LWA	$q_V$	$p_{is}$	$q_V$	$p_{is}$
		V	Hz	$\text{min}^{-1}$	W	A	dB(A)	dB(A)	dB(A)	dB	$\text{m}^3/\text{h}$	Pa	cfm	in. wg
1	1~	230	50	1050	228	1.03	64	73	77	78	6355	0	3740	0.00
2	1~	230	50	1050	310	1.39	59	67	71	73	5435	100	3200	0.40
3	1~	230	50	1050	370	1.60	54	61	66	67	3965	200	2335	0.80
4	1~	230	50	1050	340	1.52	55	61	66	67	2550	250	1500	1.00



Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) ·  $P_e$  = Power consumption · I = Current draw ·  $LpA_{in}$  = Sound pressure level intake side ·  $LwA_{in}$  = Sound power level intake side  
 $LwA_{out}$  = Sound power level outlet side · LWA = Sound power level total ·  $q_V$  = Air flow ·  $p_{is}$  = Pressure increase

Values for sound power levels (total LWA,  $LwA_{in}$  and  $LwA_{out}$ ) is for installation type A - Free inlet, Free outlet. The  $LpA$  levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.

Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.

8300100924  
 VBH0500CSPFS  
 Model LU-224856-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen  
 Phone +49 7938 81-0  
 Fax +49 7938 81-110  
 info1@de.ebmpapst.com  
 www.ebmpapst.com

Limited partnership · Headquarters Mulfingen  
 Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen  
 Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100924	
Motor	E09001-28	
Phase		1~
Nominal voltage	VAC	230
Nominal voltage range	VAC	200 .. 240
Frequency	Hz	50/60
Method of obtaining data		ml
Status		prelim.
Speed (rpm)	min <sup>-1</sup>	1050
Power consumption	W	370
Current draw	A	2.3
Min. ambient temperature	°C	-25
Max. ambient temperature	°C	55

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
 Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	66.5	46.9	09 Power consumption $P_{ed}$	kW	0.36
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	4055
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	196
04 Efficiency grade N		81.6	62	10 Speed (rpm) n	min <sup>-1</sup>	1050
05 Variable speed drive		Yes		11 Specific ratio <sup>*</sup>		1.00

Data obtained at optimum efficiency level.

<sup>\*</sup> Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-224856

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).  
 The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.  
 The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).



8300100924

VBH0500CSPFS

Model LU-224856-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

Size	500 mm
Motor size	90
Rotor surface	Painted black
Electronics housing material	Die-cast aluminum
Impeller material	PP plastic
Support plate material	Sheet steel, galvanized
Support bracket material	Steel, painted black
Inlet nozzle material	ABS plastic
Number of blades	5
Direction of rotation	Clockwise, viewed toward rotor
Degree of protection	IP55
Insulation class	"F"
Moisture (F) / Environmental (H) protection class	H1
Max. permitted ambient temp. for motor (transport/storage)	+80 °C
Min. permitted ambient temp. for motor (transport/storage)	-40 °C
Installation position	See legend on product drawing
Condensation drainage holes	On rotor side
Mode	S1
Motor bearing	Ball bearing
Technical features	<ul style="list-style-type: none"> <li>- Output 10 VDC, max. 10 mA</li> <li>- Operation and alarm display with LED</li> <li>- Locked-rotor detection</li> <li>- Speed control</li> <li>- External 15-30 VDC input (parameterization)</li> <li>- Alarm relay</li> <li>- Configurable inputs/outputs (I/O)</li> <li>- Power limiter</li> <li>- MODBUS V7.0</li> <li>- Motor current limitation</li> <li>- PFC, passive</li> <li>- RS-485 MODBUS-RTU</li> <li>- Soft start</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Temperature derating</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage / phase failure detection</li> </ul>
Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)	<= 3.5 mA
Motor protection	Electronic motor protection
With cable	Lateral
Protection class assignment	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
Conformity with standards	EN 60335-1; EN 61800-5-1; UKCA; CE
Approval	UL 1004-7 + 60730-1; CSA C22.2 No. 77 + CAN/CSA-E60730-1

8300100924

VBH0500CSPFS

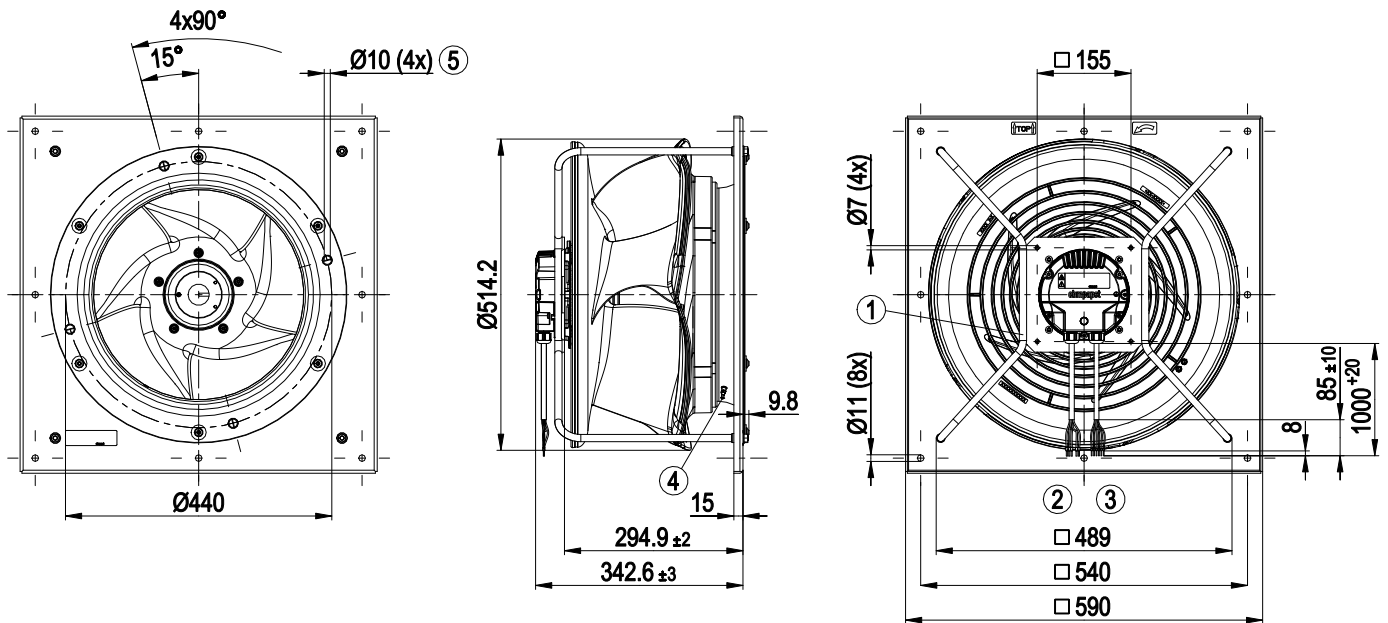
Model LU-224856-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Supply line (PWR) PVC AWG18 5x wire-end ferrule
3	Control wire (CTRL) PVC AWG22 6x wire-end ferrule
4	Inlet ring with pressure tap (k-factor: 290)
5	Fastening holes for FlowGrid 35505-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

8300100924

VBH0500CSPFS

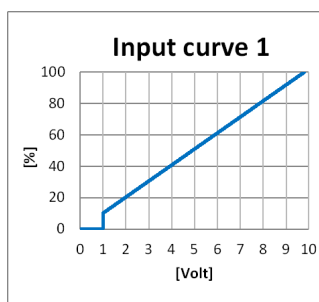
Model LU-224856-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Color	Function/assignment
	PWR	PE	green/yellow	Protective earth
	PWR	L	black	Power supply, phase, see nameplate for voltage range
	PWR	N	blue	Power supply, neutral conductor, see nameplate for voltage range
	PWR	COM	orange	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	PWR	NC	orange	Status relay, floating status contact, break for failure
	CTRL	GND	blue	Reference ground for control interface, SELV
	CTRL	Vout	red	Voltage output 10 VDC +/-3%, I <sub>max</sub> =10 mA Short-circuit-proof, power supply for external devices, SELV alternative: 15-30 VDC input for parameterization via MODBUS without line voltage
	CTRL	IO1	yellow	Factory setting: Analog input 0-10 V / PWM, R <sub>i</sub> =100 kΩ, function: set value Characteristic curve parameterizable (see input characteristic curve "Input curve 1"), SELV Function parameterizable (see table Optional interface functions)
	CTRL	IO2	white	Factory setting: Open collector output, U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, function:Tacho output 1 pulse/revolution, SELV Function parameterizable (see table Optional interface functions)
	CTRL	RSA	gray	RS-485 interface for MODBUS RSA, SELV dielectric strength to MODBUS RSB +/-14 V, dielectric strength to GND +/-7 V
	CTRL	RSB	brown	RS-485 interface for MODBUS RSB, SELV dielectric strength to MODBUS RSA +/-14 V, dielectric strength to GND +/-7 V
		LED		green: status = good, ready for operation orange: status = warning red: status = failure

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Terminal/plug assignment

Terminal/Plug	Function	Signal	Selection
D101 [..]	source: set value		
D147 [..]	source: sensor value		
D104 [..]	switch: parameter set: #1 / #2		
D12E [..]	switch: control function: heating (pos.) / cooling (neg.)		
D148 [..]	switch: direction of rotation: cw / ccw		
D16C [..]	switch: set value source		
D16A [..]	switch: fan enable / disable		
D00C [1]	source: input pulses autoaddressing		
D638 [..]	source: DCI in		
D130 [4]	signal: output pulses autoaddressing		
D61B	signal: DCI out		
D130 [0]	signal: fan modulation level %		
D130 [1]	signal: actual speed 1/min		
D130 [2]	signal: system modulation level %		
D130 [5]	signal: remote control output 0-10 V		
D145	signal: run monitoring		
	signal: status		

configurable IO functions: normal / inverse

### MODBUS Register for IO mode configuration

CON2	configurable IO mode	electrical specification	MODBUS Register for IO mode configuration
I01	Dim1 (active high): digital input	active: applied voltage 3,5-50 VDC, SELV not active: pin open or applied voltage < 1,5 VDC SELV	D158 [0]
	Dim1 (active low): digital input	active: applied voltage < 1,5 VDC, SELV not active: pin open or applied voltage 3,5-50 VDC SELV	D158 [1]
	Air1 0-10 V/PWM: analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D158 [2]
	Air1 0-10 V/PWM (with pull up): analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D158 [9]
I02	Dim1 (active high): digital input	active: applied voltage 3,5-50 VDC, SELV not active: pin open or applied voltage < 1,5 VDC SELV	D159 [0]
	Air1 0-10 V/PWM: analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D159 [2]
	Tach out (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [5]
	Diagnostics out (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [6]
	Alarm out (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [10]
	Test pulse output addressing (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [11]
RSA RSB	DCI-output (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [12]
	RS485 bus connection	MODBUS RTU, parameter specification V7, SELV	
COM NC	Relay	250 VAC / 2 A (AC1)	
Vout	Voltage output	Voltage 10 VDC, SELV	
	Alternatively: input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...30 VDC	

### Medium (M2)

Functions and parameter description  
 MODBUS V7.0

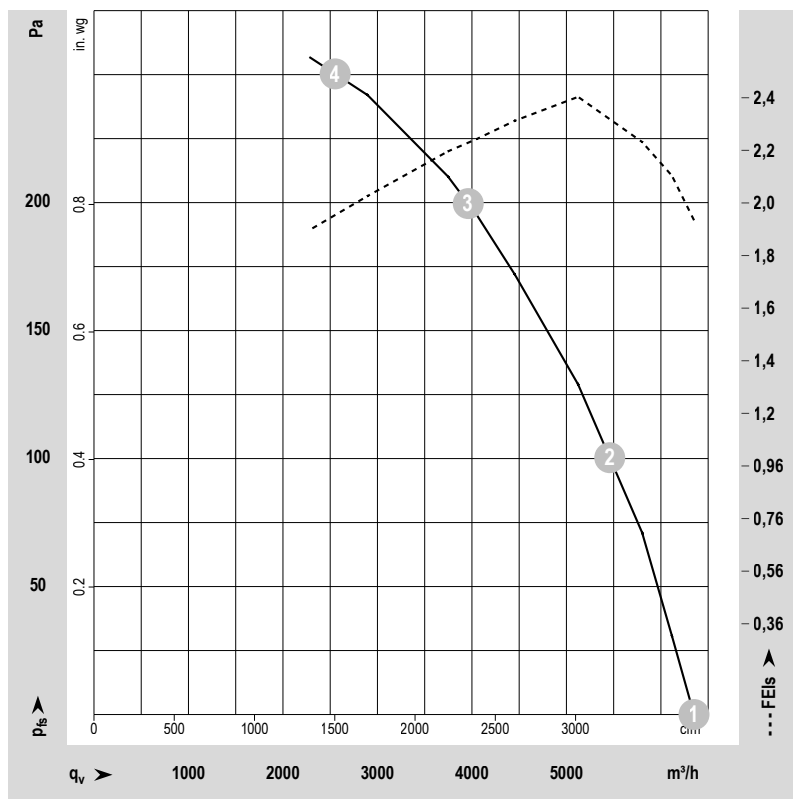
- configurable function
- (○) function to be activated via IO Mode

8300100924  
 VBH0500CSPFS  
 Model LU-224856-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Curves: Air performance 50 Hz



$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$

Measurement: LU-224856-1  
 Date: 2023-01-19  
 Nozzle: 8217101923

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LWA <sub>in</sub>	LWA <sub>out</sub>	LWA	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	dB	m <sup>3</sup> /h	Pa	cfm	in. wg
1	1~	230	50	1050	234	1.51	65	73	77	78	6350	0	3735	0.00
2	1~	230	50	1050	317	1.99	60	68	71	73	5450	100	3205	0.40
3	1~	230	50	1050	370	2.30	54	61	66	67	3965	200	2335	0.80
4	1~	230	50	1050	343	2.14	54	61	66	67	2550	250	1500	1.00



Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LWA<sub>in</sub> = Sound power level intake side  
 LWA<sub>out</sub> = Sound power level outlet side · LWA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LWA, LWA<sub>in</sub> and LWA<sub>out</sub>) is for installation type A - Free inlet, Free outlet. The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.

Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.

8300100891

VBH0500CSPLS

Model LU-223320-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100891	
Motor	E09002-55	
Phase		1~
Nominal voltage	VAC	230
Nominal voltage range	VAC	200 .. 277
Frequency	Hz	50/60
Method of obtaining data		ml
Status		prelim.
Speed (rpm)	min <sup>-1</sup>	1190
Power consumption	W	500
Current draw	A	2.2
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	55

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	71.8	48.3	09 Power consumption $P_{ed}$	kW	0.49
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	4600
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	250
04 Efficiency grade N		85.5	62	10 Speed (rpm) n	min <sup>-1</sup>	1190
05 Variable speed drive		Yes		11 Specific ratio <sup>*</sup>		1.00

Data obtained at optimum efficiency level.

<sup>\*</sup> Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-223320

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).

The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.

The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100891

VBH0500CSPLS

Model LU-223320-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Technical description

Size	500 mm
Motor size	90
Rotor surface	Painted black
Electronics housing material	Die-cast aluminum
Impeller material	PP plastic
Support plate material	Sheet steel, galvanized
Support bracket material	Steel, painted black
Inlet nozzle material	ABS plastic
Number of blades	5
Direction of rotation	Clockwise, viewed toward rotor
Degree of protection	IP55
Insulation class	"F"
Moisture (F) / Environmental (H) protection class	H1
Ambient temperature note	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
Max. permitted ambient temp. for motor (transport/storage)	+80 °C
Min. permitted ambient temp. for motor (transport/storage)	-40 °C
Installation position	See legend on product drawing
Condensation drainage holes	On rotor side
Mode	S1
Motor bearing	Ball bearing
Technical features	<ul style="list-style-type: none"><li>- Output 10 VDC, max. 10 mA</li><li>- Operation and alarm display with LED</li><li>- Locked-rotor detection</li><li>- Speed control</li><li>- External 15-30 VDC input (parameterization)</li><li>- Alarm relay</li><li>- Configurable inputs/outputs (I/O)</li><li>- Power limiter</li><li>- MODBUS V7.0</li><li>- Motor current limitation</li><li>- PFC, active</li><li>- RS-485 MODBUS-RTU</li><li>- Soft start</li><li>- Control interface with SELV potential safely disconnected from the mains</li><li>- Temperature derating</li><li>- Thermal overload protection for electronics/motor</li><li>- Line undervoltage / phase failure detection</li></ul>
Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)	<= 3.5 mA
Motor protection	Electronic motor protection
With cable	Lateral

8300100891

VBH0500CSPLS

Model LU-223320-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 60335-1; EN 61800-5-1; UKCA; CE
<b>Approval</b>	UL 1004-7 + 60730-1; CSA C22.2 No. 77 + CAN/CSA-E60730-1



8300100891

VBH0500CSPLS

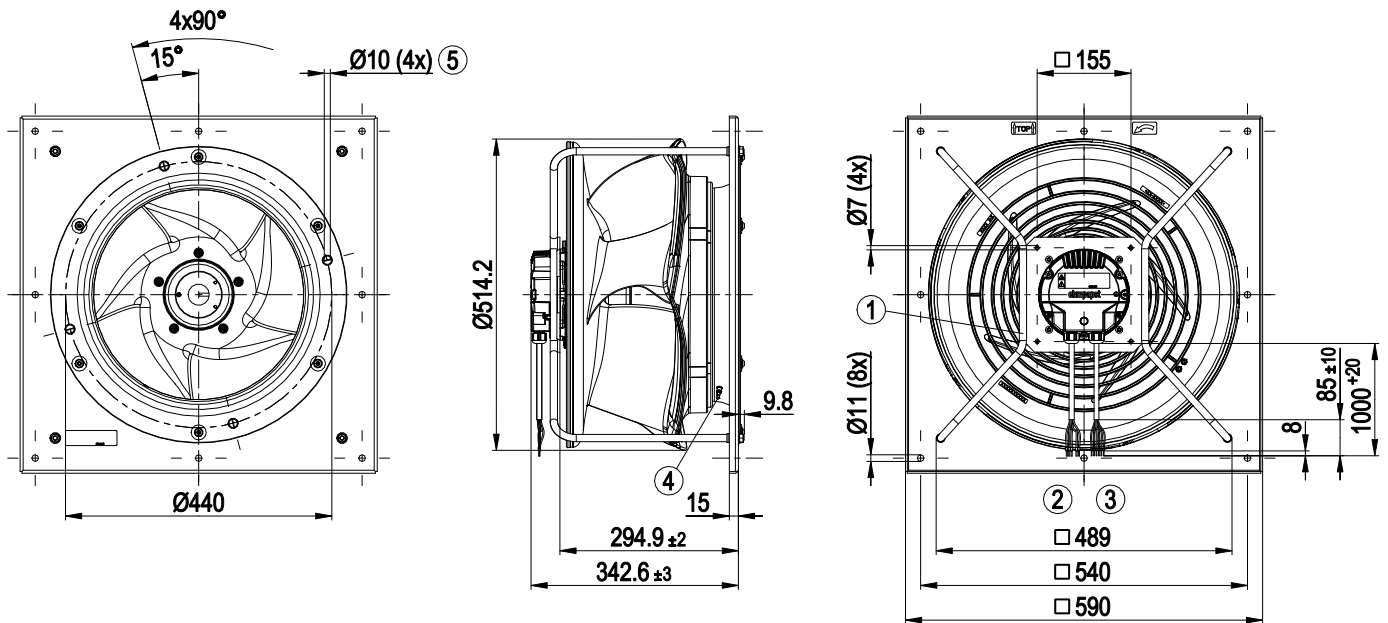
Model LU-223320-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Supply line (PWR) PVC AWG18 5x wire-end ferrule
3	Control wire (CTRL) PVC AWG22 6x wire-end ferrule
4	Inlet ring with pressure tap (k-factor: 290)
5	Fastening holes for FlowGrid 35505-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

8300100891

VBH0500CSPLS

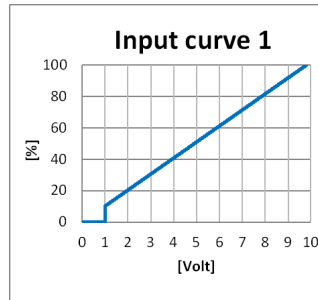
Model LU-223320-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Color	Function/assignment
	PWR	PE	green/yellow	Protective earth
	PWR	L	black	Power supply, phase, see nameplate for voltage range
	PWR	N	blue	Power supply, neutral conductor, see nameplate for voltage range
	PWR	COM	orange	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	PWR	NC	orange	Status relay, floating status contact, break for failure
	CTRL	GND	blue	Reference ground for control interface, SELV
	CTRL	Vout	red	Voltage output 10 VDC +/-3%, I <sub>max</sub> =10 mA Short-circuit-proof, power supply for external devices, SELV alternative: 15-30 VDC input for parameterization via MODBUS without line voltage
	CTRL	IO1	yellow	Factory setting: Analog input 0-10 V / PWM, R <sub>i</sub> =100 kΩ, function: set value Characteristic curve parameterizable (see input characteristic curve "Input curve 1"), SELV Function parameterizable (see table Optional interface functions)
	CTRL	IO2	white	Factory setting: Open collector output, U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, function:Tacho output 1 pulse/revolution, SELV Function parameterizable (see table Optional interface functions)
	CTRL	RSA	gray	RS-485 interface for MODBUS RSA, SELV dielectric strength to MODBUS RSB +/-14 V, dielectric strength to GND +/-7 V
	CTRL	RSB	brown	RS-485 interface for MODBUS RSB, SELV dielectric strength to MODBUS RSA +/-14 V, dielectric strength to GND +/-7 V
		LED		green: status = good, ready for operation orange: status = warning red: status = failure

8300100891

VBH0500CSPLS

Model LU-223320-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Terminal/plug assignment

Terminal / Plug	Function	Signal	Direction	Notes
D101 [..]	source: set value		INPUT	
D147 [..]	source: sensor value		INPUT	
D104 [..]	switch: parameter set: #1 / #2		INPUT	
D12E [..]	switch: control function: heating (pos.) / cooling (neg.)		INPUT	
D148 [..]	switch: direction of rotation: cw / ccw		INPUT	
D16C [..]	switch: set value source		INPUT	
D16A [..]	switch: fan enable / disable		INPUT	
D00C [1]	source: input pulses autoaddressing		INPUT	
D638 [..]	source: DCI in		INPUT	
D130 [4]	signal: output pulses autoaddressing		OUTPUT	
D61B	signal: DCI out		OUTPUT	
D130 [0]	signal: fan modulation level %		OUTPUT	
D130 [1]	signal: actual speed 1/min		OUTPUT	
D130 [2]	signal: system modulation level %		OUTPUT	
D130 [5]	signal: remote control output 0-10 V		OUTPUT	
D145	signal: run monitoring		OUTPUT	
	signal: status		OUTPUT	

configurable IO functions: normal / inverse

### MODBUS Register for IO mode configuration

CON2	configurable IO mode	electrical specification	MODBUS Register for IO mode configuration
101	Dim1 (active high): digital input	active: applied voltage 3,5-50 VDC, SELV not active: pin open or applied voltage < 1,5 VDC SELV	D158 [0]
	Dim1 (active low): digital input	active: applied voltage < 1,5 VDC, SELV not active: pin open or applied voltage 3,5-50 VDC SELV	D158 [1]
	Air1 0-10 V/PWM: analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D158 [2]
	Air1 0-10 V/PWM (with pull up): analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D158 [9]
	Dim1 (active high): digital input	active: applied voltage 3,5-50 VDC, SELV not active: pin open or applied voltage < 1,5 VDC SELV	D159 [0]
102	Air1 0-10 V/PWM: analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D159 [2]
	Tach out (open collector)	U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, SELV	D159 [5]
	Diagnostics out (open collector)	U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, SELV	D159 [6]
	Alarm out (open collector)	U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, SELV	D159 [10]
	Test pulse output addressing (open collector)	U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, SELV	D159 [11]
	DCI-output (open collector)	U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, SELV	D159 [12]
RSA	RS485 bus connection	MODBUS RTU, parameter specification V7, SELV	
R5B	Relay	250 VAC / 2 A (AC1)	
COM	Voltage output	Voltage 10 VDC, SELV	
NC	Vout	15...30 VDC	

Alternatively: input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage

### Medium (M2)

Functions and parameter description  
MODBUS V7.0

- configurable function
- (○) function to be activated via IO Mode

8300100891

VBH0500CSPLS

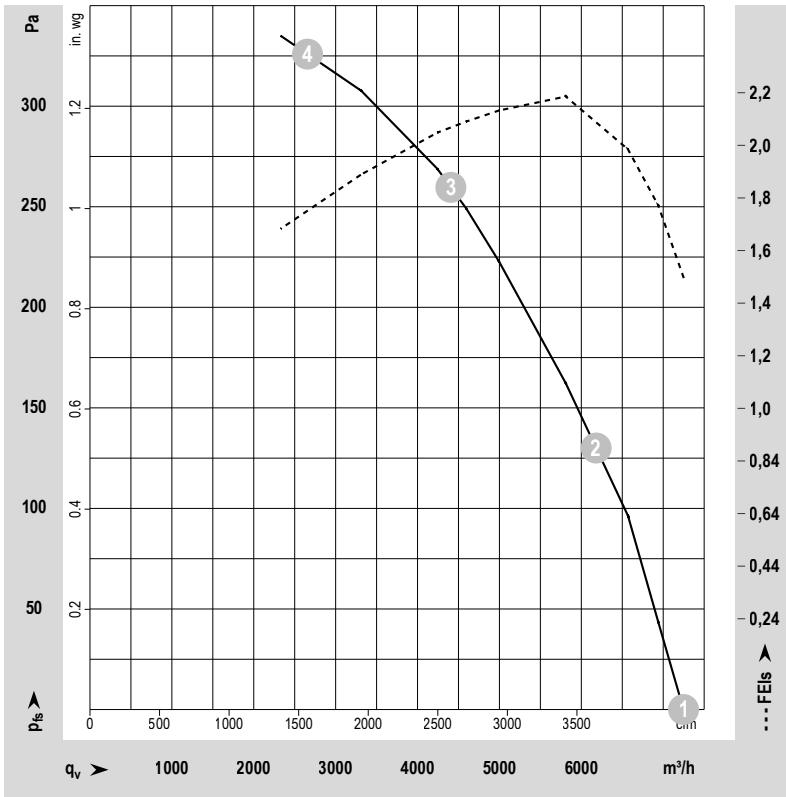
Model LU-223320-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Curves: Air performance 50 Hz



$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$

Measurement: LU-223320-1  
Date: 2022-10-13  
Nozzle: 8217101923

ebm-papst Muldingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	LwA	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	dB	m <sup>3</sup> /h	Pa	cfm	in. wg
1	1~	230	50	1190	320	1.43	68	76	80	81	7250	0	4265	0.00
2	1~	230	50	1190	426	1.88	63	71	75	76	6180	130	3640	0.52
3	1~	230	50	1190	500	2.20	57	64	69	70	4410	260	2595	1.04
4	1~	230	50	1190	449	1.98	58	65	70	71	2655	326	1565	1.31



Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LwA, LwA<sub>in</sub> and LwA<sub>out</sub>) is for installation type A - Free inlet, Free outlet. The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.

Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.

8300100911  
VBH0500CSPLS  
Model LU-224219-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100911	
Motor	E09001-55	
Phase		1~
Nominal voltage	VAC	230
Nominal voltage range	VAC	200 .. 240
Frequency	Hz	50/60
Method of obtaining data		ml
Status		prelim.
Speed (rpm)	min <sup>-1</sup>	1110
Power consumption	W	400
Current draw	A	2.5
Min. ambient temperature	°C	-25
Max. ambient temperature	°C	55

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	71.4	47.3	09 Power consumption $P_{ed}$	kW	0.4
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	4255
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	218
04 Efficiency grade N		86.1	62	10 Speed (rpm) n	min <sup>-1</sup>	1105
05 Variable speed drive		Yes		11 Specific ratio*		1.00

Data obtained at optimum efficiency level.

\* Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-224219

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).

The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.

The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100911

VBH0500CSPLS

Model LU-224219-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

Size	500 mm
Motor size	90
Rotor surface	Painted black
Electronics housing material	Die-cast aluminum
Impeller material	PP plastic
Support plate material	Sheet steel, galvanized
Support bracket material	Steel, painted black
Inlet nozzle material	ABS plastic
Number of blades	5
Direction of rotation	Clockwise, viewed toward rotor
Degree of protection	IP55
Insulation class	"F"
Moisture (F) / Environmental (H) protection class	H1
Max. permitted ambient temp. for motor (transport/storage)	+80 °C
Min. permitted ambient temp. for motor (transport/storage)	-40 °C
Installation position	See legend on product drawing
Condensation drainage holes	On rotor side
Mode	S1
Motor bearing	Ball bearing
Technical features	<ul style="list-style-type: none"><li>- Output 10 VDC, max. 10 mA</li><li>- Operation and alarm display with LED</li><li>- Locked-rotor detection</li><li>- Speed control</li><li>- External 15-30 VDC input (parameterization)</li><li>- Alarm relay</li><li>- Configurable inputs/outputs (I/O)</li><li>- Power limiter</li><li>- MODBUS V7.0</li><li>- Motor current limitation</li><li>- PFC, passive</li><li>- RS-485 MODBUS-RTU</li><li>- Soft start</li><li>- Control interface with SELV potential safely disconnected from the mains</li><li>- Temperature derating</li><li>- Thermal overload protection for electronics/motor</li><li>- Line undervoltage / phase failure detection</li></ul>
Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)	<= 3.5 mA
Motor protection	Electronic motor protection
With cable	Lateral
Protection class assignment	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
Conformity with standards	EN 60335-1; EN 61800-5-1; UKCA; CE
Approval	UL 1004-7 + 60730-1; CSA C22.2 No. 77 + CAN/CSA-E60730-1

8300100911

VBH0500CSPLS

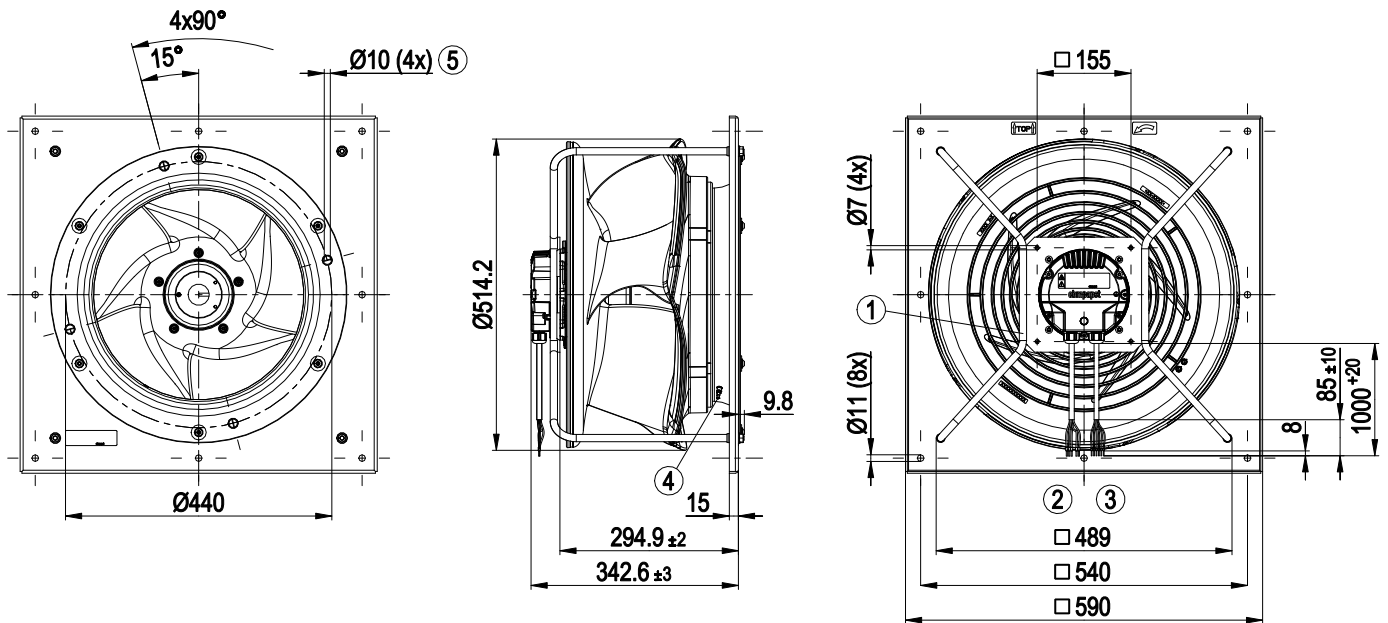
Model LU-224219-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Supply line (PWR) PVC AWG18 5x wire-end ferrule
3	Control wire (CTRL) PVC AWG22 6x wire-end ferrule
4	Inlet ring with pressure tap (k-factor: 290)
5	Fastening holes for FlowGrid 35505-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

8300100911

VBH0500CSPLS

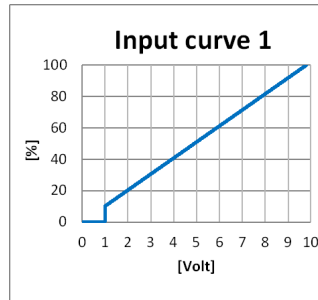
Model LU-224219-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Color	Function/assignment
	PWR	PE	green/yellow	Protective earth
	PWR	L	black	Power supply, phase, see nameplate for voltage range
	PWR	N	blue	Power supply, neutral conductor, see nameplate for voltage range
	PWR	COM	orange	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	PWR	NC	orange	Status relay, floating status contact, break for failure
	CTRL	GND	blue	Reference ground for control interface, SELV
	CTRL	Vout	red	Voltage output 10 VDC +/-3%, I <sub>max</sub> =10 mA Short-circuit-proof, power supply for external devices, SELV alternative: 15-30 VDC input for parameterization via MODBUS without line voltage
	CTRL	IO1	yellow	Factory setting: Analog input 0-10 V / PWM, R <sub>i</sub> =100 kΩ, function: set value Characteristic curve parameterizable (see input characteristic curve "Input curve 1"), SELV Function parameterizable (see table Optional interface functions)
	CTRL	IO2	white	Factory setting: Open collector output, U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, function:Tacho output 1 pulse/revolution, SELV Function parameterizable (see table Optional interface functions)
	CTRL	RSA	gray	RS-485 interface for MODBUS RSA, SELV dielectric strength to MODBUS RSB +/-14 V, dielectric strength to GND +/-7 V
	CTRL	RSB	brown	RS-485 interface for MODBUS RSB, SELV dielectric strength to MODBUS RSA +/-14 V, dielectric strength to GND +/-7 V
		LED		green: status = good, ready for operation orange: status = warning red: status = failure



# EC centrifugal module - RadiPac

backward-curved, single-intake  
with support bracket

## Terminal/plug assignment

selection direct via IO	signal	OUTPUT	INPUT
D145	signal: run monitoring		
D130 [5]	signal: remote control output 0-10 V		
D130 [2]	signal: system modulation level %		
D130 [1]	signal: actual speed 1/min		
D130 [0]	signal: fan modulation level %		
D61B	signal: DCI out		
D130 [4]	signal: output pulses autoaddressing		
	signal: alarm out		
	signal: diagnostics out		
	signal: tach out		
D638 [...]	source: DCI in		
D00C [1]	source: input pulses autoaddressing		
D16A [...]	switch: fan enable / disable		
D16C [...]	switch: set value source		
D148 [...]	switch: direction of rotation: cw / ccw		
D12E [...]	switch: control function: heating (pos.) / cooling (neg.)		
D104 [...]	switch: parameter set: #1 / #2		
D147 [...]	source: sensor value		
D101 [...]	source: set value		

configurable IO functions: normal / inverse

### MODBUS Register for IO mode configuration

CON2	configurable IO mode	electrical specification	MODBUS Register for IO mode configuration
I01	◦ Dim1 (active high): digital input	active: applied voltage 3,5-50 VDC, SELV not active: pin open or applied voltage < 1,5 VDC SELV	D158 [0]
	◦ Dim1 (active low): digital input	active: applied voltage < 1,5 VDC, SELV not active: pin open or applied voltage 3,5-50 VDC SELV	D158 [1]
	◦ Air1 0-10 V/PWM: analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D158 [2]
	◦ Air1 0-10 V/PWM (with pull up): analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D158 [9]
	◦ Dim1 (active high): digital input	active: applied voltage 3,5-50 VDC, SELV not active: pin open or applied voltage < 1,5 VDC SELV	D159 [0]
I02	◦ Air1 0-10 V/PWM: analog input	RI = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1k..10 kHz$ , SELV	D159 [2]
	◦ Tach out (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [5]
	◦ Diagnostics out (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [6]
	◦ Alarm out (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [10]
	◦ Test pulse output addressing (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [11]
	◦ DCI-output (open collector)	Umax=50 VDC, Imax=20 mA, SELV	D159 [12]
RSA RSB	RS485 bus connection	MODBUS RTU, parameter specification V7, SELV	
COM NC	Relay	250 VAC / 2 A (AC1)	
Vout	Voltage output	Voltage 10 VDC, SELV	
	Alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...30 VDC	

### Medium (M2)

Functions and parameter description  
MODBUS V7.0

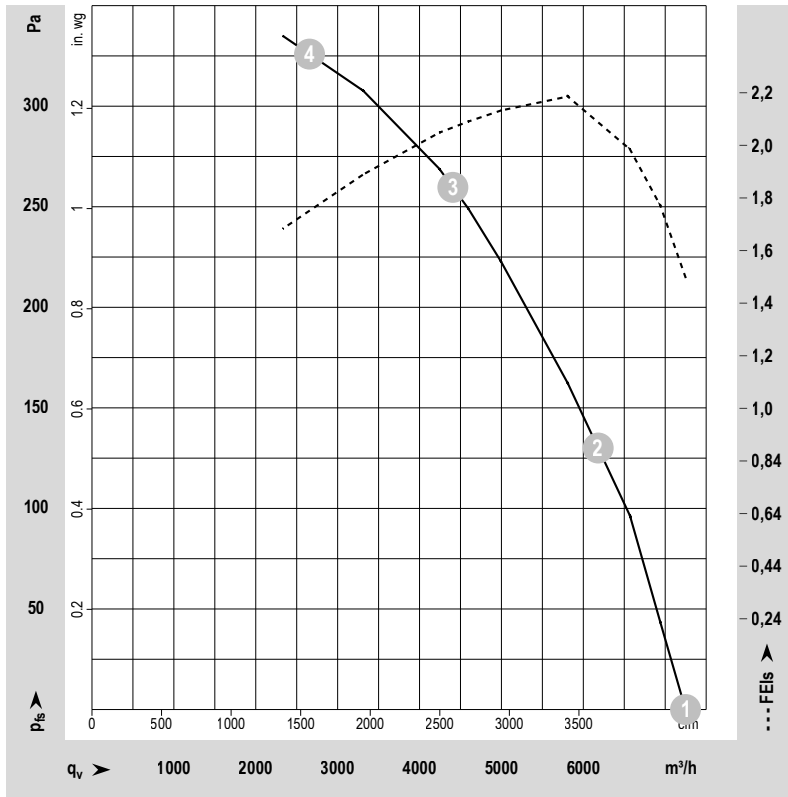
- configurable function
- (◦) function to be activated via IO Mode

8300100911  
 VBH0500CSPLS  
 Model LU-224219-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Curves: Air performance 50 Hz



$$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$$

Measurement: LU-224219-1  
 Date: 2022-11-30  
 Nozzle: 8217101923

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	Pe	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	LwA	qv	P <sub>fs</sub>	qv	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	dB	m <sup>3</sup> /h	Pa	cfm	in. wg
1	1~	230	50	1110	269	1.71	67	74	78	80	6725	0	3960	0.00
2	1~	230	50	1110	353	2.20	61	69	73	74	5655	120	3330	0.48
3	1~	230	50	1110	400	2.50	55	62	67	68	4005	230	2355	0.92
4	1~	230	50	1110	367	2.28	56	63	68	69	2400	290	1410	1.16



Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · Pe = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
 LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · qv = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LwA, LwA<sub>in</sub> and LwA<sub>out</sub>) is for installation type A - Free inlet, Free outlet.  
 The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
 Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.

8300100498

VBH0500CTRLS

Model LU-220554-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Muldingen GmbH & Co. KG

Bachmühle 2 · D-74673 Muldingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Muldingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Muldingen GmbH · Headquarters Muldingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

### Nominal data

Item	8300100498	
Motor	E11229-60	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Status		prelim.
Speed (rpm)	min <sup>-1</sup>	1740
Power consumption	W	1430
Current draw	A	2.2
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

### Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	73.8	53.1	09 Power consumption $P_{ed}$	kW	1.4
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	7345
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	474
04 Efficiency grade N		82.7	62	10 Speed (rpm) n	min <sup>-1</sup>	1740
05 Variable speed drive		Yes		11 Specific ratio <sup>*</sup>		1.01

Data obtained at optimum efficiency level.

<sup>\*</sup> Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-220554

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).

The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.

The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100498

VBH0500CTRLS

Model LU-220554-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	21,94
<b>Size</b>	500 mm
<b>Motor size</b>	112
<b>Rotor surface</b>	Painted black
<b>Terminal box material</b>	PP plastic
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"><li>- Output 10 VDC, max. 10 mA</li><li>- Operation and alarm display</li><li>- External 24 V input (parameter setting)</li><li>- Alarm relay</li><li>- Integrated PID controller</li><li>- MODBUS V5.1</li><li>- Motor current limitation</li><li>- PFC, passive</li><li>- RS-485 MODBUS-RTU</li><li>- Soft start</li><li>- EEPROM write cycles: 100,000 maximum</li><li>- Control input 0-10 VDC / PWM</li><li>- Control interface with SELV potential safely disconnected from the mains</li><li>- Thermal overload protection for electronics/motor</li><li>- Line undervoltage / phase failure detection</li></ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box

8300100498

VBH0500CTRLS

Model LU-220554-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Motor protection</b>	Thermal switch auto reset, internally connected
<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

8300100498

VBH0500CTRLS

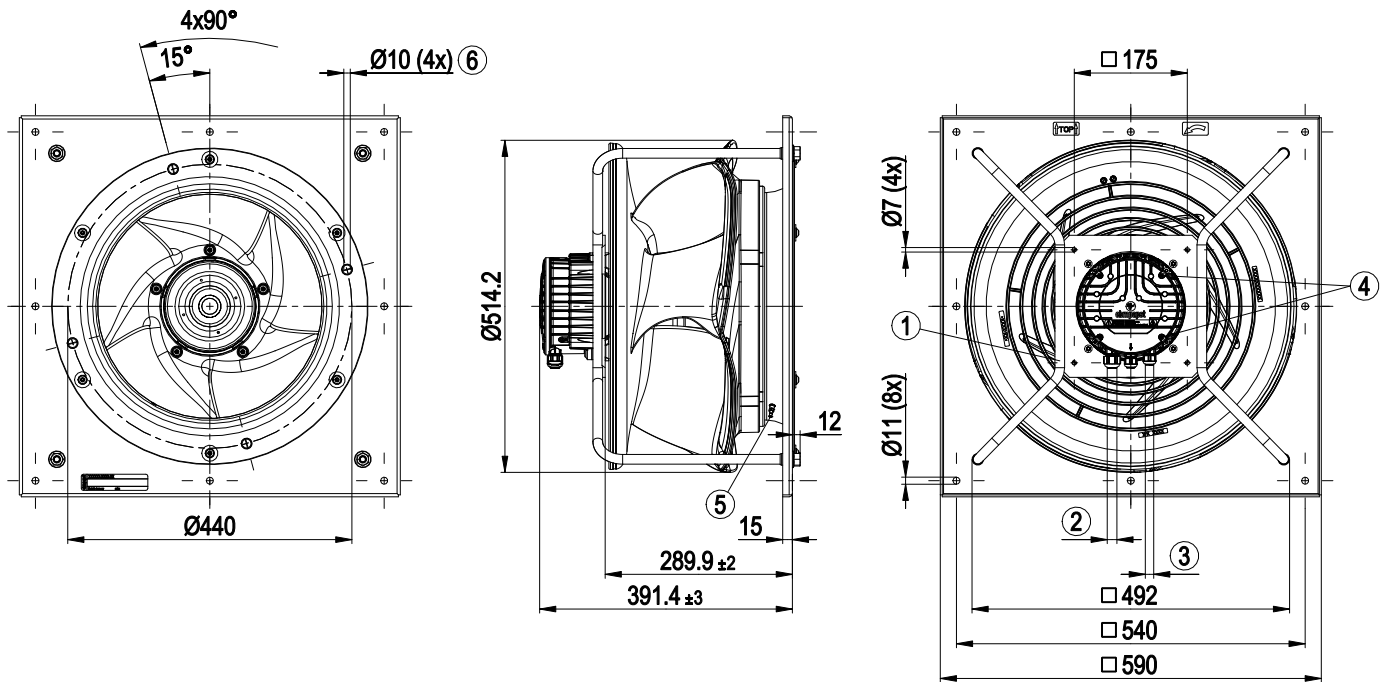
Model LU-220554-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 8 mm, max. 12 mm, tightening torque $1.8 \pm 0.3$ Nm (use must be made of seal provided) Cable diameter min. 4 mm, max. 10 mm, tightening torque $1.8 \pm 0.3$ Nm
3	Cable diameter min. 6 mm, max. 10 mm, tightening torque $1.8 \pm 0.3$ Nm (use must be made of seal provided) Cable diameter min. 4 mm, max. 7 mm, tightening torque $1.8 \pm 0.3$ Nm
4	Tightening torque $1.5 \pm 0.2$ Nm
5	Inlet ring with pressure tap (k-factor: 290)
6	Fastening holes for FlowGrid 35505-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

8300100498

VBH0500CTRLS

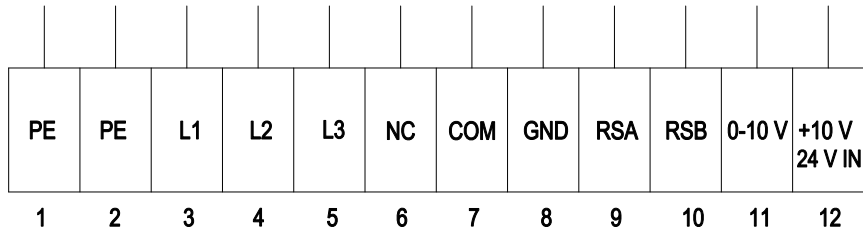
Model LU-220554-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
	1	PE	Protective earth
	2	PE	Protective earth
	3	L1	Power supply
	4	L2	Power supply
	5	L3	Power supply
	6	NC	Status relay, floating status contact, break for failure, contact rating 250 VAC / 2 A (AC1) / min. 10 mA; reinforced insulation on supply side and basic insulation on control interface side
	7	COM	Status relay, floating status contact, break for failure, contact rating 250 VAC / 2 A (AC1) / min. 10 mA; reinforced insulation on supply side and basic insulation on control interface side
	8	GND	Reference ground for control interface, SELV
	9	RSA	RS485 interface for MODBUS, RSA; SELV
	10	RSB	RS485 interface for MODBUS, RSB; SELV
	11	0-10 V	Analog input (set value) SELV, 0-10 V, Ri = 100 kΩ, adjustable curve
	12	+10 V	Fixed voltage output 10 VDC, SELV, +10 V ±3%, max. 10 mA, short-circuit-proof, power supply for external devices (e.g. pot); fixed voltage input 24 VDC for setting parameters via MODBUS without line voltage supply

8300100498

VBH0500CTRLS

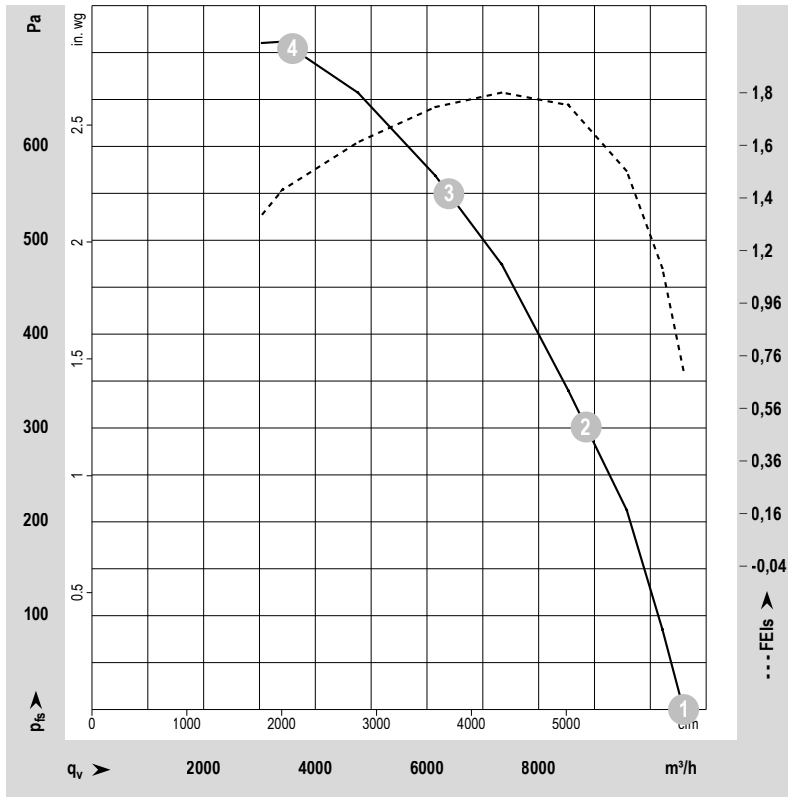
Model LU-220554-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Curves: Air performance 50 Hz



$$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$$

Measurement: LU-220554-1  
Date: 2022-04-25  
Nozzle: 8217101923

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal.

The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	LwA	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	dB	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	1740	955	1.48	76	84	88	89	10595	0	6235	0.00
2	3~	400	50	1740	1263	1.94	71	78	82	84	8835	300	5200	1.20
3	3~	400	50	1740	1430	2.20	69	74	79	80	6395	550	3765	2.21
4	3~	400	50	1740	1294	1.98	71	77	81	83	3580	700	2110	2.81



Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LWA, LwA<sub>in</sub> and LwA<sub>out</sub>) is for installation type A - Free inlet, Free outlet.  
The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.

Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.



8300100529

VBH0500CTRLS

Model LU-220883-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100529	
Motor	E11229-60	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Speed (rpm)	min <sup>-1</sup>	1710
Power consumption	W	1380
Current draw	A	2.1
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	75	52.9	09 Power consumption $P_{ed}$	kW	1.34
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	7265
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	466
04 Efficiency grade N		84.1	62	10 Speed (rpm) $n$	min <sup>-1</sup>	1710
05 Variable speed drive		Yes		11 Specific ratio*		1.01

Data obtained at optimum efficiency level.

\* Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-220883

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings). The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again. The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

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Model LU-220883-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	24
<b>Size</b>	500 mm
<b>Motor size</b>	112
<b>Rotor surface</b>	Painted black
<b>Terminal box material</b>	PP plastic
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"><li>- Output 10 VDC, max. 10 mA</li><li>- Operation and alarm display</li><li>- External 24 V input (parameter setting)</li><li>- Alarm relay</li><li>- Integrated PID controller</li><li>- MODBUS V5.1</li><li>- Motor current limitation</li><li>- PFC, passive</li><li>- RS-485 MODBUS-RTU</li><li>- Soft start</li><li>- EEPROM write cycles: 100,000 maximum</li><li>- Control input 0-10 VDC / PWM</li><li>- Control interface with SELV potential safely disconnected from the mains</li><li>- Thermal overload protection for electronics/motor</li><li>- Line undervoltage / phase failure detection</li></ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box

8300100529  
VBH0500CTRLS  
Model LU-220883-1

## EC centrifugal module - RadiPac

backward-curved, single-intake  
with support bracket

<b>Motor protection</b>	Thermal switch auto reset, internally connected
<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

8300100529

VBH0500CTRLS

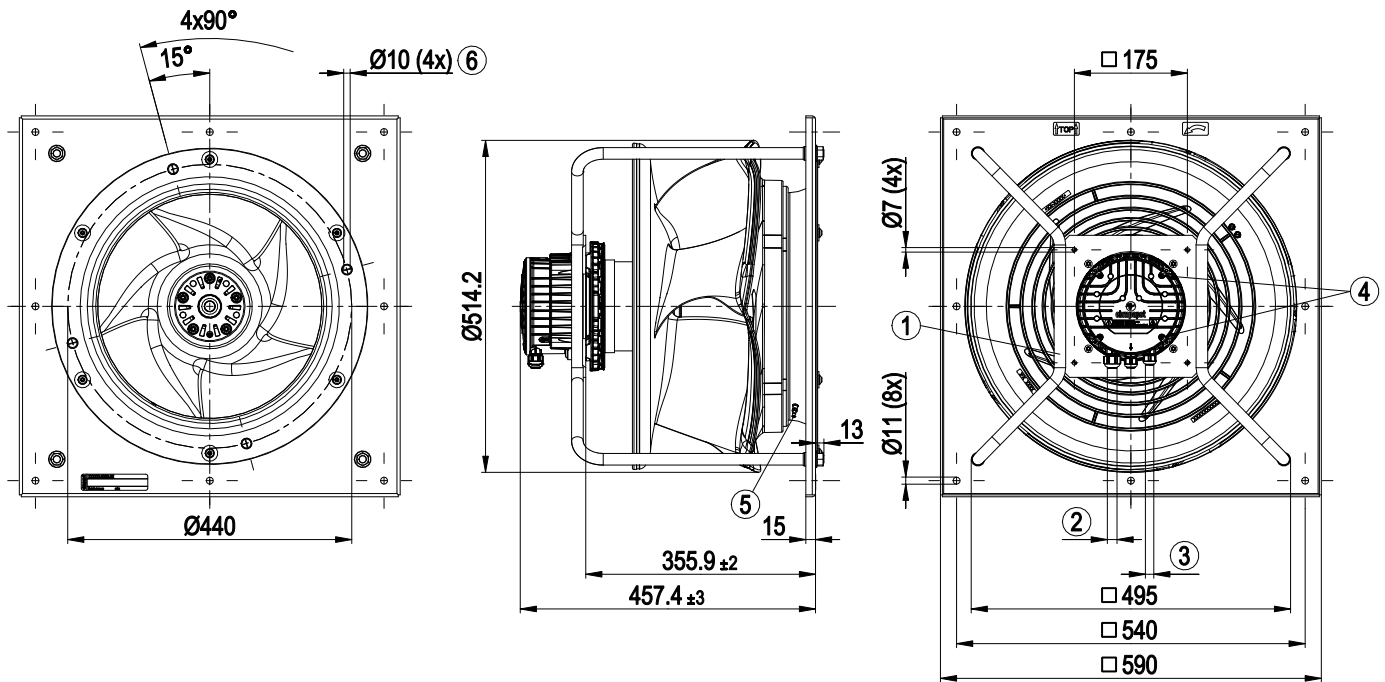
Model LU-220883-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 8 mm, max. 12 mm, tightening torque $1.8 \pm 0.3$ Nm (use must be made of seal provided) Cable diameter min. 4 mm, max. 10 mm, tightening torque $1.8 \pm 0.3$ Nm
3	Cable diameter min. 6 mm, max. 10 mm, tightening torque $1.8 \pm 0.3$ Nm (use must be made of seal provided) Cable diameter min. 4 mm, max. 7 mm, tightening torque $1.8 \pm 0.3$ Nm
4	Tightening torque $1.5 \pm 0.2$ Nm
5	Inlet ring with pressure tap (k-factor: 290)
6	Fastening holes for FlowGrid 35505-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

8300100529

VBH0500CTRLS

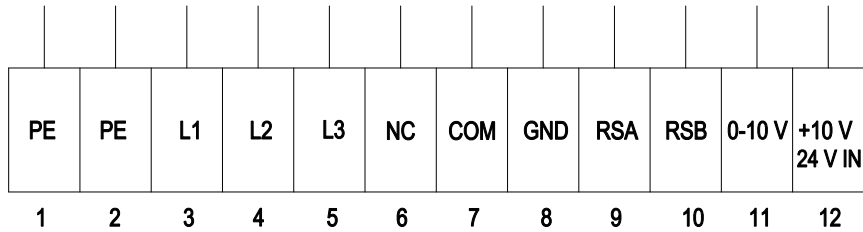
Model LU-220883-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



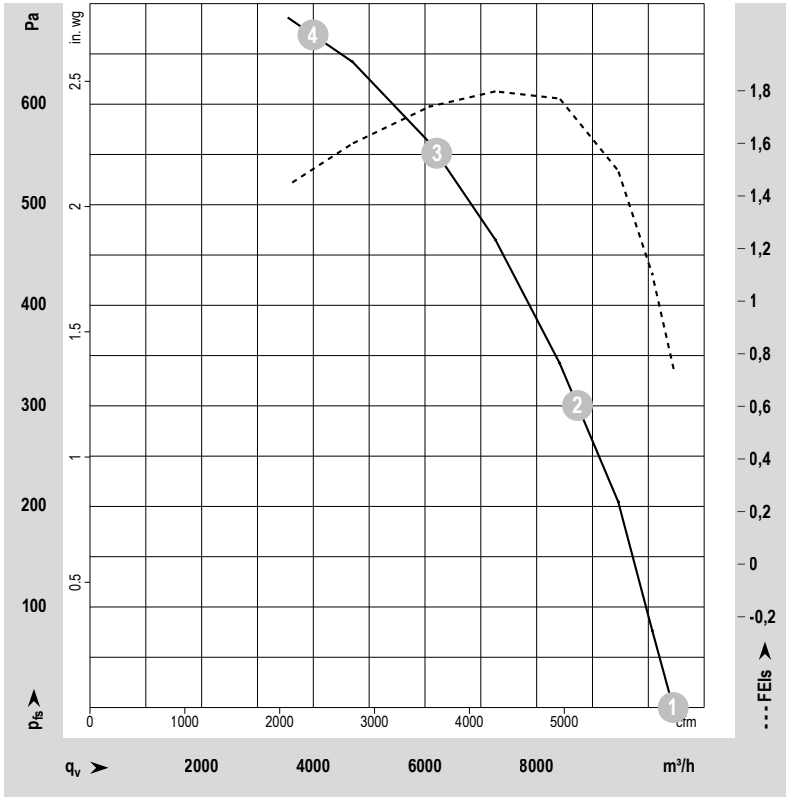
No.	Conn.	Designation	Function/assignment
1	PE	PE	Protective earth
2	PE	PE	Protective earth
3	L1	L1	Power supply
4	L2	L2	Power supply
5	L3	L3	Power supply
6	NC	NC	Status relay, floating status contact, break for failure, contact rating 250 VAC / 2 A (AC1) / min. 10 mA; reinforced insulation on supply side and basic insulation on control interface side
7	COM	COM	Status relay, floating status contact, break for failure, contact rating 250 VAC / 2 A (AC1) / min. 10 mA; reinforced insulation on supply side and basic insulation on control interface side
8	GND	GND	Reference ground for control interface, SELV
9	RSA	RSA	RS485 interface for MODBUS, RSA; SELV
10	RSB	RSB	RS485 interface for MODBUS, RSB; SELV
11	0-10 V	0-10 V	Analog input (set value) SELV, 0-10 V, Ri = 100 kΩ, adjustable curve
12	+10 V	+10 V	Fixed voltage output 10 VDC, SELV, +10 V ±3%, max. 10 mA, short-circuit-proof, power supply for external devices (e.g. pot); fixed voltage input 24 VDC for setting parameters via MODBUS without line voltage supply

8300100529  
 VBH0500CTRLS  
 Model LU-220883-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Curves: Air performance 50 Hz



$$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$$

Measurement: LU-220883-1  
 Date: 2022-05-10  
 Nozzle: 8217101923

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	LwA	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	dB	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	1710	888	1.38	75	84	87	89	10445	0	6150	0.00
2	3~	400	50	1710	1208	1.86	70	78	82	83	8725	300	5135	1.20
3	3~	400	50	1710	1380	2.10	64	72	77	78	6205	550	3650	2.21
4	3~	400	50	1710	1274	1.95	67	75	80	81	4000	670	2355	2.69



Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
 LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LWA, LWA<sub>in</sub> and LWA<sub>out</sub>) is for installation type A - Free inlet, Free outlet.  
 The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.

Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.

8300100265

VBH0500CTRNS

Model LU-217382-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100265	
Motor	E11233-80	

Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Speed (rpm)	min <sup>-1</sup>	2240
Power consumption	W	3000
Current draw	A	4.7
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	71.4	56.4	09 Power consumption $P_{ed}$	kW	2.94
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	9350
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	770
04 Efficiency grade N		77	62	10 Speed (rpm) n	min <sup>-1</sup>	2235
05 Variable speed drive		Yes		11 Specific ratio*		1.01

Data obtained at optimum efficiency level.

\* Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-217382

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings). The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again. The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100265

VBH0500CTRNS

Model LU-217382-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	26.2 kg
<b>Size</b>	500 mm
<b>Motor size</b>	112
<b>Rotor surface</b>	Painted black
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"><li>- Operation and alarm display with LED</li><li>- External 15-50 VDC input (parameterization)</li><li>- Alarm relay</li><li>- Integrated PI controller</li><li>- Configurable inputs/outputs (I/O)</li><li>- MODBUS V6.3</li><li>- Motor current limitation</li><li>- RS-485 MODBUS-RTU</li><li>- Soft start</li><li>- Voltage output 3.3-24 VDC, Pmax = 800 mW</li><li>- Control interface with SELV potential safely disconnected from the mains</li><li>- Thermal overload protection for electronics/motor</li><li>- Line undervoltage / phase failure detection</li><li>- Vibration sensor</li></ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Electronic motor protection



8300100265

VBH0500CTRNS

Model LU-217382-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

8300100265

VBH0500CTRNS

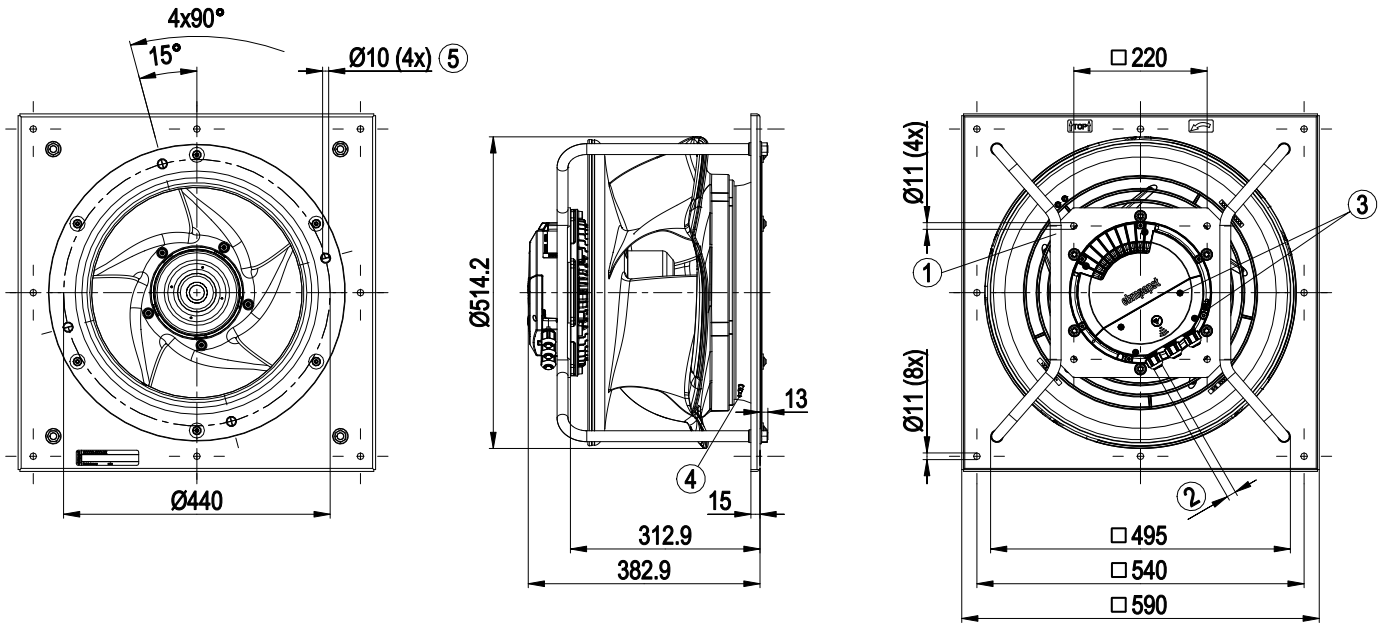
Model LU-217382-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Product drawing

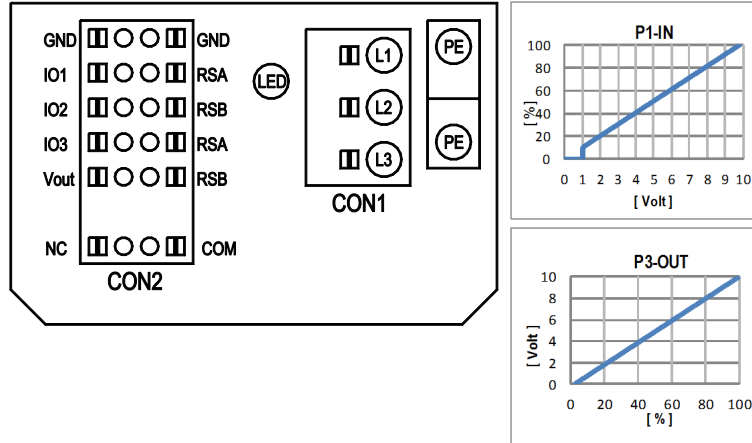


1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque $4 \pm 0.6$ Nm (The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
3	Tightening torque $1.5 \pm 0.2$ Nm
4	Inlet ring with pressure tap (k-factor: 290)
5	Fastening holes for FlowGrid 35505-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
	CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function parameterizable (see "Optional interface functions" table) Factory setting: Digital input - high active, function: Disable input, SELV - inactive: Pin open or applied voltage < 1.5 VDC - active: applied voltage 3.5-50 VDC Reset function: Triggering of error reset on change of state from "enabled" to "disabled"
	CON2	IO2	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog input 0-10 V/PWM, Ri=100 kΩ, function: Set value Characteristic curve parameterizable (see input characteristic curve P1-IN), SELV
	CON2	IO3	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog output 0-10 V, max. 5 mA, function: Actual speed Characteristic curve parametrizable (see output characteristic curve P3-OUT), SELV
	CON2	Vout	Voltage output 3.3-24 VDC ±5%, Pmax=800 mW, voltage parameterizable Factory setting: 10 VDC short-circuit-proof, supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage
	CON2	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	CON2	NC	Status relay, floating status contact, break for failure
		LED	green: status = good, ready for operation orange: status = warning red: status = failure
		P1-IN	Input characteristic curve
		P3-OUT	Output characteristic curve

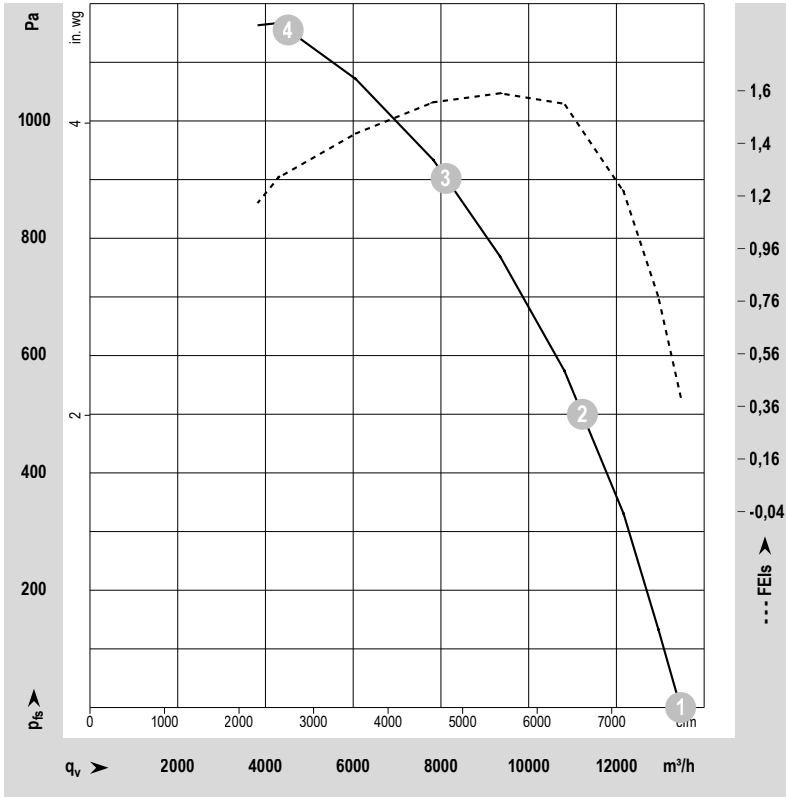


8300100265  
 VBH0500CTRNS  
 Model LU-217382-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Curves: Air performance 50 Hz



$$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$$

Measurement: LU-217382-1  
 Date: 2021-12-09  
 Nozzle: 8217101923

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	2240	2044	3.20	83	91	95	13465	0	7925	0.00
2	3~	400	50	2240	2650	4.09	77	84	88	11225	500	6605	2.01
3	3~	400	50	2240	3000	4.70	73	80	85	8110	900	4775	3.61
4	3~	400	50	2240	2700	4.16	77	84	88	4510	1150	2655	4.62

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
 LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LWA, LWA<sub>in</sub> and LWA<sub>out</sub>) is for installation type A - Free inlet, Free outlet.  
 The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.

Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.



8300100319

VBH0500CTRNS

Model LU-218041-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100319	
Motor	E11233-80	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Speed (rpm)	min <sup>-1</sup>	2070
Power consumption	W	2500
Current draw	A	3.9
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	73.3	55.6	09 Power consumption $P_{ed}$	kW	2.43
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	8870
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	688
04 Efficiency grade N		79.7	62	10 Speed (rpm) n	min <sup>-1</sup>	2065
05 Variable speed drive		Yes		11 Specific ratio*		1.01

Data obtained at optimum efficiency level.

\* Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-218041

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings). The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again. The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100319

VBH0500CTRNS

Model LU-218041-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	30.52 kg
<b>Size</b>	500 mm
<b>Motor size</b>	112
<b>Rotor surface</b>	Painted black
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"> <li>- Operation and alarm display with LED</li> <li>- External 15-50 VDC input (parameterization)</li> <li>- Alarm relay</li> <li>- Integrated PI controller</li> <li>- Configurable inputs/outputs (I/O)</li> <li>- MODBUS V6.3</li> <li>- Motor current limitation</li> <li>- RS-485 MODBUS-RTU</li> <li>- Soft start</li> <li>- Voltage output 3.3-24 VDC, Pmax = 800 mW</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage / phase failure detection</li> <li>- Vibration sensor</li> </ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Electronic motor protection

8300100319  
VBH0500CTRNS  
Model LU-218041-1

## EC centrifugal module - RadiPac

backward-curved, single-intake  
with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1



8300100319

VBH0500CTRNS

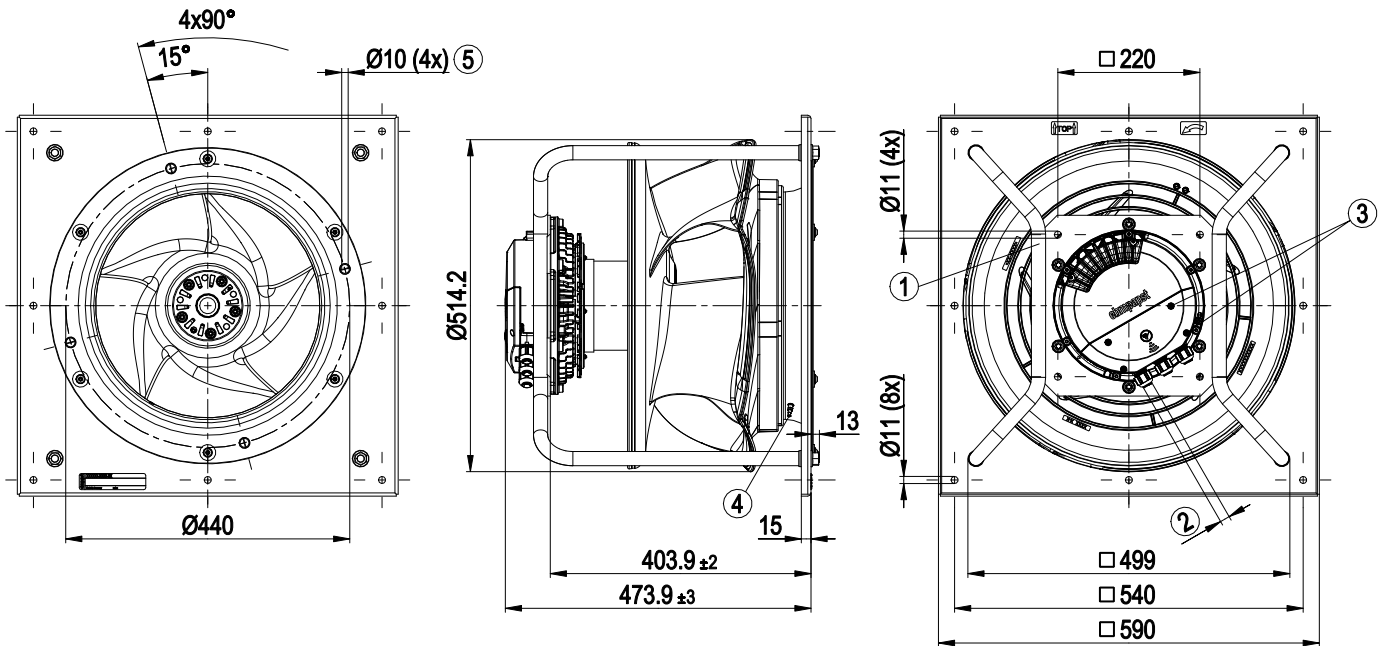
Model LU-218041-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing

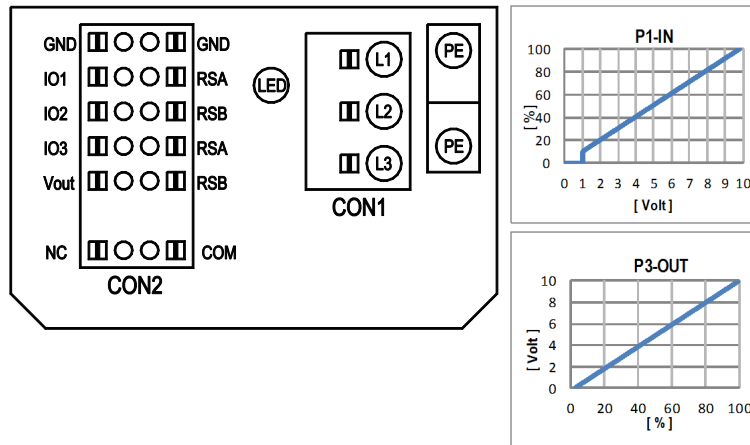


1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque $4 \pm 0.6$ Nm (The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
3	Tightening torque $1.5 \pm 0.2$ Nm
4	Inlet ring with pressure tap (k-factor: 290)
5	Fastening holes for FlowGrid 35505-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
	CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function parameterizable (see "Optional interface functions" table) Factory setting: Digital input - high active, function: Disable input, SELV - inactive: Pin open or applied voltage < 1.5 VDC - active: applied voltage 3.5-50 VDC Reset function: Triggering of error reset on change of state from "enabled" to "disabled"
	CON2	IO2	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog input 0-10 V/PWM, Ri=100 kΩ, function: Set value Characteristic curve parameterizable (see input characteristic curve P1-IN), SELV
	CON2	IO3	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog output 0-10 V, max. 5 mA, function: Actual speed Characteristic curve parametrizable (see output characteristic curve P3-OUT), SELV
	CON2	Vout	Voltage output 3.3-24 VDC ±5%, Pmax=800 mW, voltage parameterizable Factory setting: 10 VDC short-circuit-proof, supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage
	CON2	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	CON2	NC	Status relay, floating status contact, break for failure
		LED	green: status = good, ready for operation orange: status = warning red: status = failure
		P1-IN	Input characteristic curve
		P3-OUT	Output characteristic curve

## Terminal/plug assignment

CON2	configurable IO mode	electrical specification	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	
				selected directly via IO mode)	selected directly via IO mode)
IO1	○ Din1 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D158 [0]	
	○ Ain1 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, f <sub>PWM</sub> = 1k...10kHz, SELV		D158 [2]	
	○ Tach out (open collector output)	U <sub>max</sub> = 50VDC, I <sub>max</sub> = 20mA, SELV		D158 [5]	
	○ Diagnostics out (open collector output)	U <sub>max</sub> = 50VDC, I <sub>max</sub> = 20mA, SELV		D158 [6]	
IO2	○ Din2 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D159 [0]	
	○ Ain2 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, f <sub>PWM</sub> = 1k...10kHz, SELV		D159 [2]	
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV		D159 [3]	
	○ Din3 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D15A [0]	
IO3	○ Din3 (active low), digital input	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage 3.5-50VDC		D15A [1]	
	○ PWMIn3: digital input, idle level high	PWM = 40Hz - 10kHz, characteristics parameterizable		D15A [7]	
	○ PWMIn3: digital input, idle level low	active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV			
	○ Aout3 0-10V: analog output	active: applied voltage 3.5-50VDC not active: pin open or applied voltage < 1.5VDC, SELV		D15A [8]	
Yout	○ Tacho out (pulses), analog output	function parameterizable, max. 5mA max output frequency 300Hz, SELV		D15A [4]	
	○ Diagnostics out (pulses)	0-10V/max. 5mA max output frequency 300Hz, SELV		D15A [5]	
	○ Diagnostics out (pulses)	0-10V/max. 5mA max output frequency 300Hz, SELV		D15A [6]	
○ RSA	RS485 bus connection,	MODBUS RTU, specification V6.3, SELV			
○ RSB	voltage output	voltage parameterizable 3.3...24VDC +/- 5%, P <sub>max</sub> =800mW, short-circuit-proof, supply for external devices, SELV		D16E [..]	
○ Yout	alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...50VDC			

○ configurable option

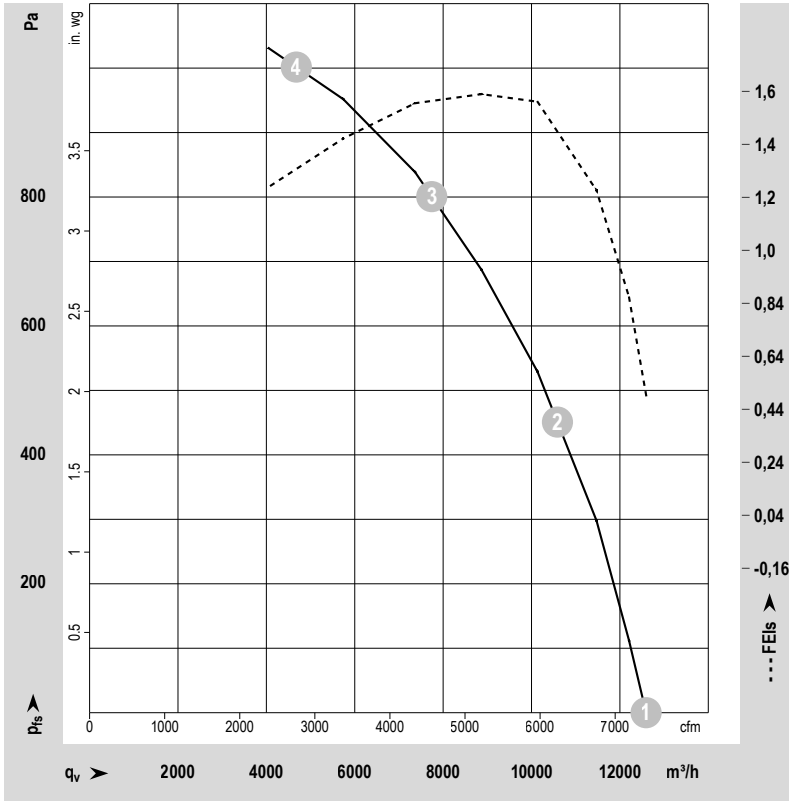
For further information and additional functions see EC Control Software, Fan-Set-App, or MODBUS Parameter Specification V6.3

8300100319  
 VBH0500CTRNS  
 Model LU-218041-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Curves: Air performance 50 Hz



$$\rho = 1.173 \text{ kg/m}^3 \pm 2 \%$$

Measurement: LU-218041-1  
 Date: 2022-01-14  
 Nozzle: 8217101923

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	2070	1604	2.56	80	88	92	12595	0	7410	0.00
2	3~	400	50	2070	2201	3.43	75	83	86	10575	450	6225	1.81
3	3~	400	50	2070	2500	3.90	70	78	82	7740	800	4555	3.21
4	3~	400	50	2070	2280	3.55	74	81	86	4675	1000	2750	4.01

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
 LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LWA, LWA<sub>in</sub> and LWA<sub>out</sub>) is for installation type A - Free inlet, Free outlet.  
 The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
 Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.



8300100082  
VBH0500CTTLS  
Model LU-214635-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100082	
Motor	E15031-55	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Speed (rpm)	min <sup>-1</sup>	2480
Power consumption	W	4150
Current draw	A	6.3
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	74.8	57.9	09 Power consumption $P_{ed}$	kW	4.07
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	10615
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	994
04 Efficiency grade N		78.9	62	10 Speed (rpm) n	min <sup>-1</sup>	2480
05 Variable speed drive		Yes		11 Specific ratio*		1.01

Data obtained at optimum efficiency level.

\* Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-214635

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).  
The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.  
The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100082

VBH0500CTTLS

Model LU-214635-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	33.3 kg
<b>Size</b>	500 mm
<b>Motor size</b>	150
<b>Rotor surface</b>	Painted black
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"><li>- Operation and alarm display with LED</li><li>- External 15-50 VDC input (parameterization)</li><li>- Alarm relay</li><li>- Integrated PI controller</li><li>- Configurable inputs/outputs (I/O)</li><li>- MODBUS V6.3</li><li>- Motor current limitation</li><li>- RS-485 MODBUS-RTU</li><li>- Soft start</li><li>- Voltage output 3.3-24 VDC, Pmax = 800 mW</li><li>- Control interface with SELV potential safely disconnected from the mains</li><li>- Thermal overload protection for electronics/motor</li><li>- Line undervoltage / phase failure detection</li><li>- Vibration sensor</li></ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Electronic motor protection

8300100082  
VBH0500CTTLS  
Model LU-214635-1

## EC centrifugal module - RadiPac

backward-curved, single-intake  
with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

8300100082

VBH0500CTTLS

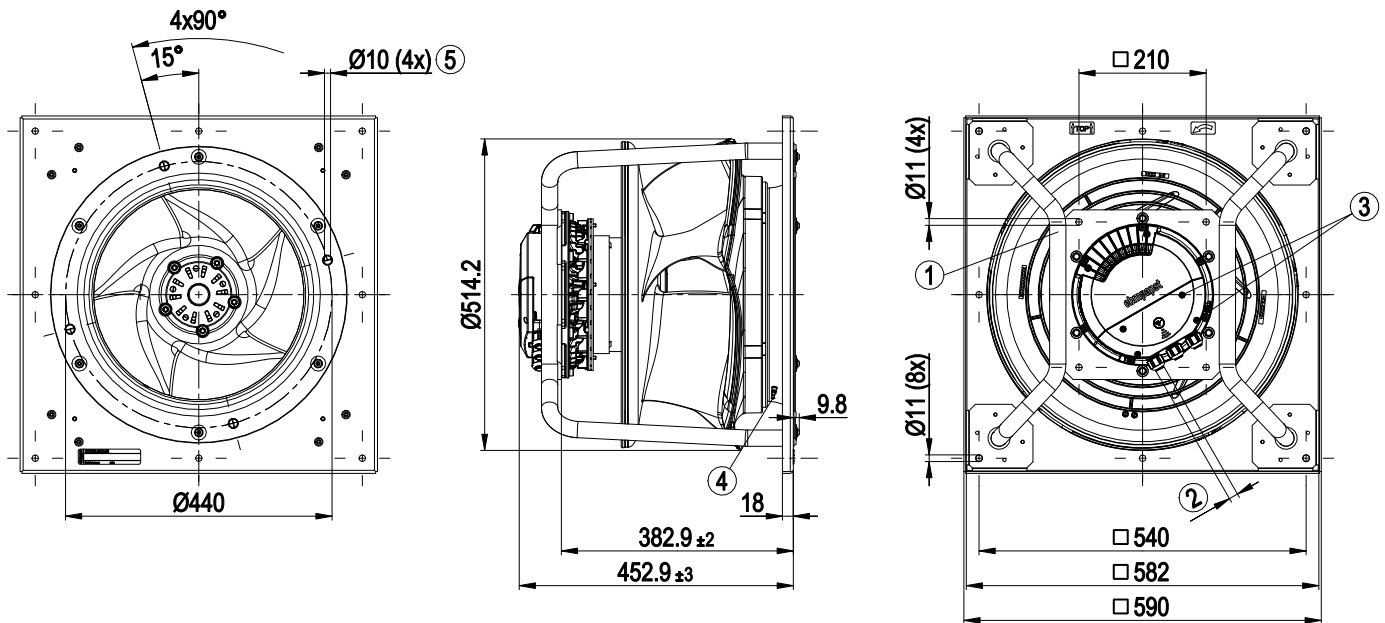
Model LU-214635-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



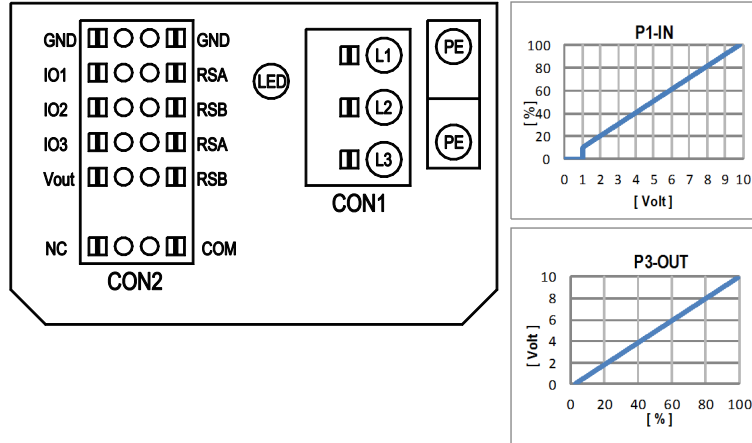
1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque $4 \pm 0.6$ Nm (The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
3	Tightening torque $1.5 \pm 0.2$ Nm
4	Inlet ring with pressure tap (k-factor: 290)
5	Fastening holes for FlowGrid 35505-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required



# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
	CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function parameterizable (see "Optional interface functions" table) Factory setting: Digital input - high active, function: Disable input, SELV - inactive: Pin open or applied voltage < 1.5 VDC - active: applied voltage 3.5-50 VDC Reset function: Triggering of error reset on change of state from "enabled" to "disabled"
	CON2	IO2	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog input 0-10 V/PWM, Ri=100 kΩ, function: Set value Characteristic curve parameterizable (see input characteristic curve P1-IN), SELV
	CON2	IO3	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog output 0-10 V, max. 5 mA, function: Actual speed Characteristic curve parametrizable (see output characteristic curve P3-OUT), SELV
	CON2	Vout	Voltage output 3.3-24 VDC ±5%, Pmax=800 mW, voltage parameterizable Factory setting: 10 VDC short-circuit-proof, supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage
	CON2	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	CON2	NC	Status relay, floating status contact, break for failure
		LED	green: status = good, ready for operation orange: status = warning red: status = failure
		P1-IN	Input characteristic curve
		P3-OUT	Output characteristic curve

8300100082

VBH0500CTTLS

Model LU-214635-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Terminal/plug assignment

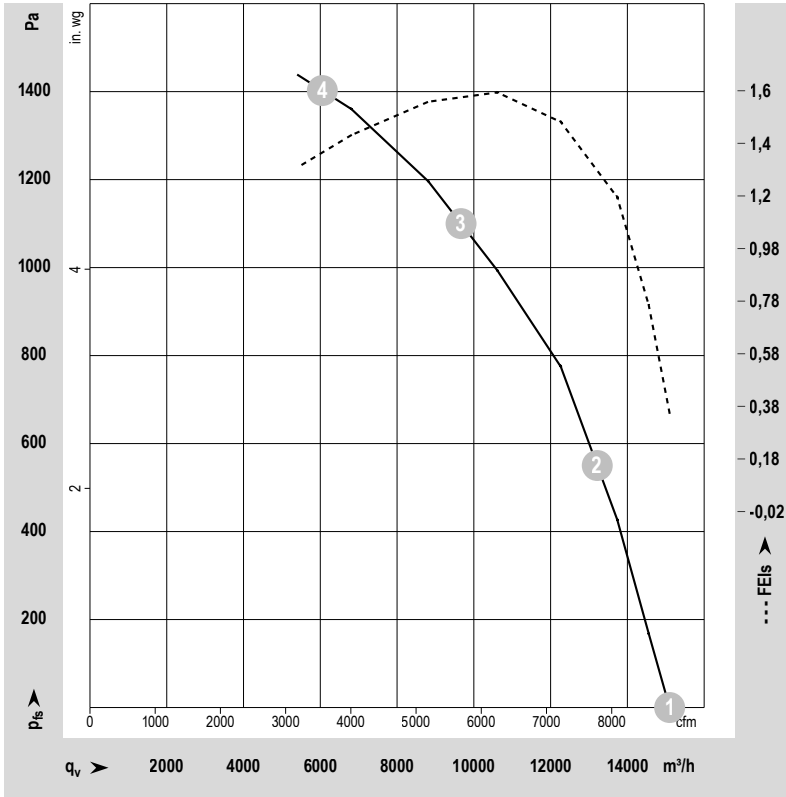
CON2	configurable IO mode	electrical specification	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	
				selected directly via IO mode)	selected directly via IO mode)
IO1	○ Din1 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D158 [0]	
	○ Ain1 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, f <sub>PWM</sub> = 1k...10kHz, SELV		D158 [2]	
	○ Tach out (open collector output)	U <sub>max</sub> = 50VDC, I <sub>max</sub> = 20mA, SELV		D158 [5]	
	○ Diagnostics out (open collector output)	U <sub>max</sub> = 50VDC, I <sub>max</sub> = 20mA, SELV		D158 [6]	
IO2	○ Din2 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D159 [0]	
	○ Ain2 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, f <sub>PWM</sub> = 1k...10kHz, SELV		D159 [2]	
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV		D159 [3]	
	○ Din3 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D15A [0]	
IO3	○ Din3 (active low), digital input	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage 3.5-50VDC		D15A [1]	
	○ PWMIn3: digital input, idle level high	PWM = 40Hz - 10kHz, characteristics parameterizable		D15A [7]	
	○ PWMIn3: digital input, idle level low	active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV		D15A [8]	
	○ Aout3 0-10V: analog output	function parameterizable, max. 5mA, max output frequency 300Hz, SELV		D15A [4]	
Vout	○ Tacho out (pulses), analog output	0-10V/max. 5mA, max output frequency 300Hz, SELV		D15A [5]	
	○ Diagnostics out (pulses)	0-10V/max. 5mA, max output frequency 300Hz, SELV		D15A [6]	
	○ Voltage output	alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage			
RSA	RS485 bus connection,	MODBUS RTU, specification V6.3, SELV			
RSB	voltage output	voltage parameterizable 3.3...24VDC +/- 5%, P <sub>max</sub> =800mW, short-circuit-proof, supply for external devices, SELV			D16E [..]

8300100082  
 VBH0500CTTLS  
 Model LU-214635-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Curves: Air performance 50 Hz



$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$

Measurement: LU-214635-1  
 Date: 2021-07-06  
 Nozzle: 8217101923

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	2480	2549	3.94	86	94	97	15100	0	8890	0.00
2	3~	400	50	2480	3644	5.57	80	88	92	13215	550	7775	2.21
3	3~	400	50	2480	4150	6.30	75	82	87	9665	1100	5690	4.42
4	3~	400	50	2480	3847	5.87	79	86	91	6050	1400	3560	5.62

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
 LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LWA, LWA<sub>in</sub> and LWA<sub>out</sub>) is for installation type A - Free inlet, Free outlet. The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
 Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.



8300100547

VBH0500CTTLS

Model LU-220201-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100547	
Motor	E15037-55	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Status		prelim.
Speed (rpm)	min <sup>-1</sup>	2450
Power consumption	W	4000
Current draw	A	5.8
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	71.9	57.8	09 Power consumption $P_{ed}$	kW	4
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	10385
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	959
04 Efficiency grade N		76.1	62	10 Speed (rpm) n	min <sup>-1</sup>	2435
05 Variable speed drive		Yes		11 Specific ratio <sup>*</sup>		1.01

Data obtained at optimum efficiency level.

<sup>\*</sup> Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-220201

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).  
The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.  
The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100547

VBH0500CTTLS

Model LU-220201-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	38,3
<b>Size</b>	500 mm
<b>Motor size</b>	150
<b>Rotor surface</b>	Painted black
<b>Terminal box material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	Shaft horizontal or rotor on bottom; rotor on top on request
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing; (sealed)
<b>Technical features</b>	<ul style="list-style-type: none"> <li>- Operation and alarm display with LED</li> <li>- External 15-50 VDC input (parameterization)</li> <li>- Alarm relay</li> <li>- Integrated PI controller</li> <li>- Configurable inputs/outputs (I/O)</li> <li>- MODBUS V6.4</li> <li>- Motor current limitation</li> <li>- PFC, active</li> <li>- RS-485 MODBUS-RTU</li> <li>- Soft start</li> <li>- Voltage output 3.3-24 VDC, Pmax = 800 mW</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage / phase failure detection</li> <li>- Vibration sensor</li> </ul>
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Electronic motor protection
<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.

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Model LU-220201-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1
<b>Comment</b>	Maximum permissible operating altitude 4000 m above sea level according to DIN 61800-5-1_2008_Sec. 4.3.6.4.1 overvoltage category II. Up to 2000 m above sea level, overvoltage category III applies.

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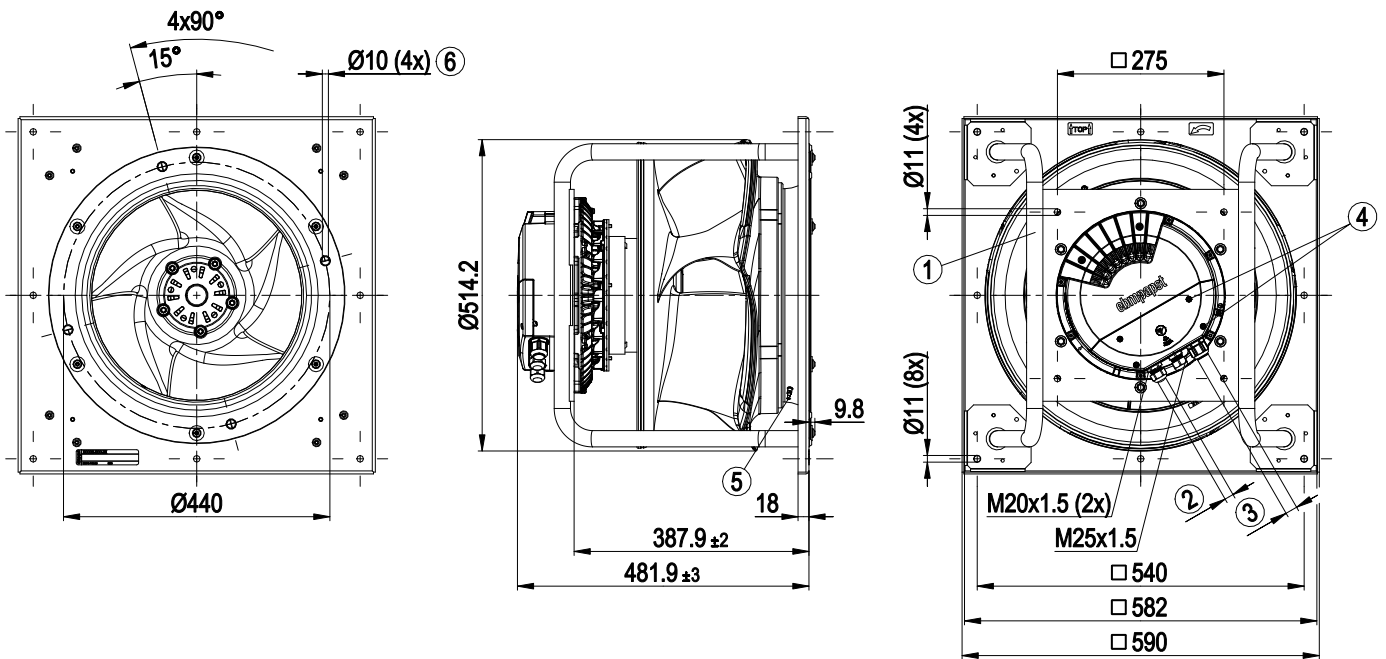
Model LU-220201-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque $4 \pm 0.6$ Nm
3	Cable diameter min. 5 mm, max. 14 mm, tightening torque $6 \pm 0.9$ Nm (The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
4	Tightening torque $3 \pm 0.3$ Nm
5	Inlet ring with pressure tap (k-factor: 290)
6	Fastening holes for FlowGrid 35505-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

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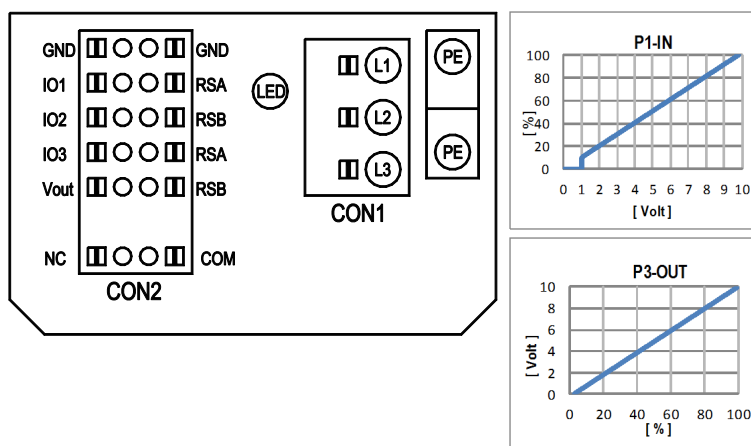
Model LU-220201-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
	CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function parameterizable (see "Optional interface functions" table) Factory setting: Digital input - high active, function: Disable input, SELV - inactive: Pin open or applied voltage < 1.5 VDC - active: applied voltage 3.5-50 VDC Reset function: Triggering of error reset on change of state from "enabled" to "disabled"
	CON2	IO2	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog input 0-10 V/PWM, Ri=100 kΩ, function: set value Characteristic curve parameterizable (see input characteristic curve P1-IN), SELV
	CON2	IO3	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog output 0-10 V, max. 5 mA, function: Actual speed Characteristic curve parametrizable (see output characteristic curve P3-OUT), SELV
	CON2	Vout	Voltage output 3.3-24 VDC +/-5%, Pmax=800 mW, voltage parameterizable Factory setting: 10 VDC short-circuit-proof, supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage
	CON2	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	CON2	NC	Status relay, floating status contact, break for failure
		LED	green: status = good, ready for operation orange: status = warning red: status = failure
		P1-IN	Input characteristic curve
		P3-OUT	Output characteristic curve



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Model LU-220201-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Terminal/plug assignment

CON2	configurable IO mode	electrical specification	configurable IO functions: normal / inverse	
			MODBUS Register for IO mode configuration	source: set value
IO1	○ Din1 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		source: set value
	○ Ain1 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, f <sub>PWM</sub> = 1k..10kHz, SELV		source: sensor value
	○ Tach out (open collector output)	U <sub>max</sub> = 50VDC, I <sub>max</sub> = 20mA, SELV		switch: parameter set: #1 / #2
	○ Diagnostics out (open collector output)	U <sub>max</sub> = 50VDC, I <sub>max</sub> = 20mA, SELV		switch: control function: heating (pos.) cooling (neg.)
IO2	○ Din2 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		switch: set value source
	○ Ain2 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, f <sub>PWM</sub> = 1k..10kHz, SELV		switch: direction of rotation: cw / ccw
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV		switch: fan enable / disable
	○ Din3 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		switch: tach out
IO3	○ Din3 (active low), digital input	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage < 1.5VDC		switch: fan enable / disable
	○ PWMIn3: digital input idle level high	PWM = 40Hz - 10kHz, characteristics parameterizable		switch: set value source
	○ PWMIn3: digital input idle level low	active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV		switch: direction of rotation: cw / ccw
	○ Aout3 0-10V: analog output	function parameterizable, max. 5mA max output frequency 300Hz, SELV		switch: tach out
RSA	○ Tacho out (pulses), analog output	0-10V/max. 5mA max output frequency 300Hz, SELV		switch: fan enable / disable
	○ Diagnostics out (pulses)	0-10V/max. 5mA max output frequency 300Hz, SELV		switch: set value source
RSB	RS485 bus connection,	active: applied voltage 3.5-50VDC not active: pin open or applied voltage < 1.5VDC, SELV		switch: tach out
Vout	voltage output	voltage parameterizable 3.3...24VDC +/- 5%, P <sub>max</sub> =800mW, short-circuit-proof, supply for external devices, SELV		switch: tach out
	alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...50VDC		switch: tach out

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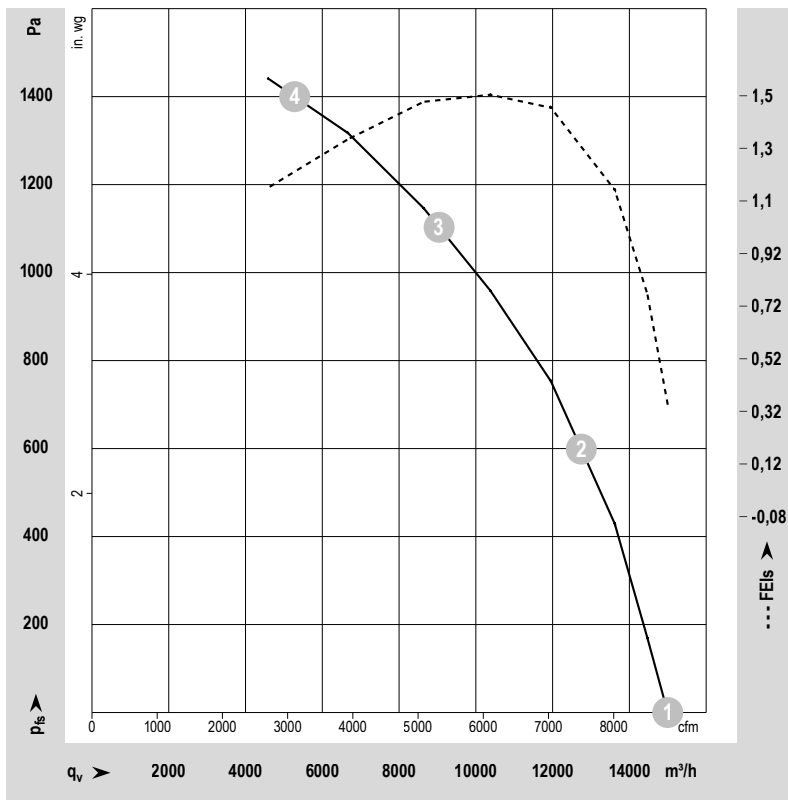
Model LU-220201-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Curves: Air performance 50 Hz



$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$

Measurement: LU-220201-1  
Date: 2022-04-28  
Nozzle: 8217101923

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	LwA	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	dB	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	2450	2647	3.82	85	93	97	98	15000	0	8830	0.00
2	3~	400	50	2450	3651	5.27	79	87	92	93	12760	600	7510	2.41
3	3~	400	50	2450	4000	5.80	73	81	87	88	9030	1100	5315	4.42
4	3~	400	50	2450	3715	5.36	79	86	92	93	5280	1400	3110	5.62

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LWA, LWA<sub>in</sub> and LWA<sub>out</sub>) is for installation type A - Free inlet, Free outlet.  
The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.

Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.



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VBH0500CTTRS

Model LU-215273-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100068	
Motor	E15034-120	

Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60

Method of obtaining data		ml
Speed (rpm)	min <sup>-1</sup>	2840
Power consumption	W	6210
Current draw	A	9.6
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	74.3	59.7	09 Power consumption $P_{ed}$	kW	6.07
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	12305
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	1274
04 Efficiency grade N		76.6	62	10 Speed (rpm) $n$	min <sup>-1</sup>	2840
05 Variable speed drive		Yes		11 Specific ratio*		1.01

Data obtained at optimum efficiency level.

\* Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-215273

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings). The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again. The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

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Model LU-215273-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	49 kg
<b>Size</b>	500 mm
<b>Motor size</b>	150
<b>Rotor surface</b>	Painted black
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"> <li>- Operation and alarm display with LED</li> <li>- External 15-50 VDC input (parameterization)</li> <li>- Alarm relay</li> <li>- Integrated PI controller</li> <li>- Configurable inputs/outputs (I/O)</li> <li>- MODBUS V6.4</li> <li>- Motor current limitation</li> <li>- RS-485 MODBUS-RTU</li> <li>- Soft start</li> <li>- Voltage output 3.3-24 VDC, Pmax = 800 mW</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage / phase failure detection</li> <li>- Vibration sensor</li> </ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Electronic motor protection

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VBH0500CTTRS

Model LU-215273-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

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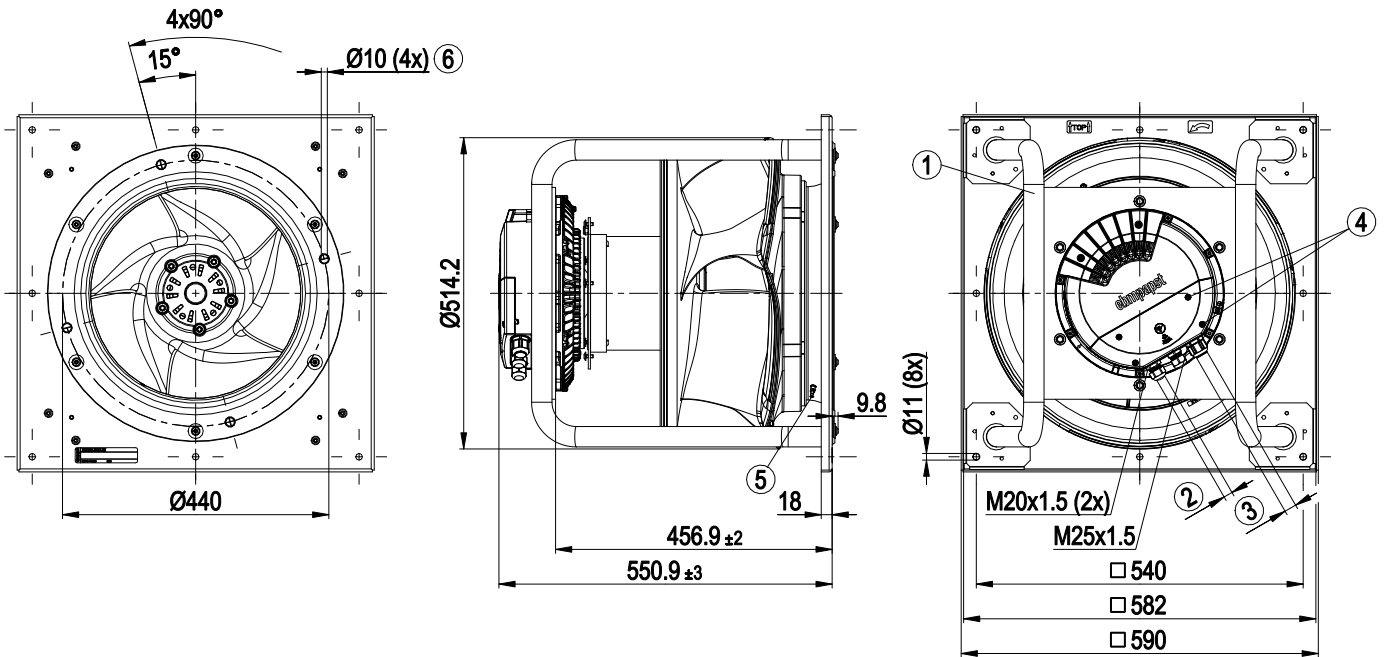
Model LU-215273-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque $4 \pm 0.6$ Nm
3	Cable diameter min. 5 mm, max. 14 mm, tightening torque $6 \pm 0.9$ Nm (The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
4	Tightening torque $3 \pm 0.3$ Nm
5	Inlet ring with pressure tap (k-factor: 290)
6	Fastening holes for FlowGrid 35505-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

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VBH0500CTTRS

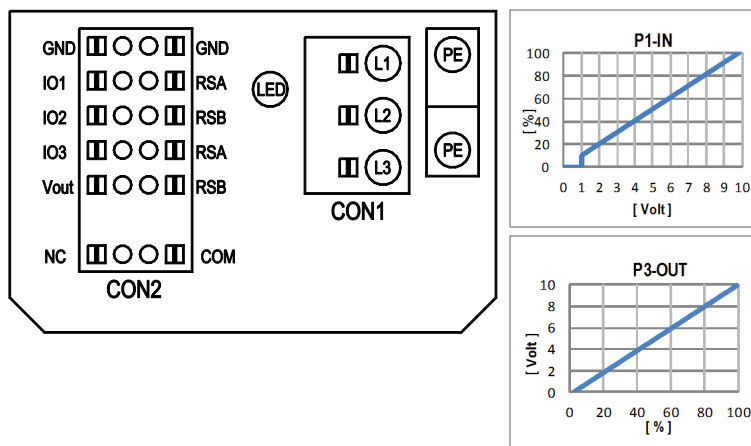
Model LU-215273-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
	CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function parameterizable (see "Optional interface functions" table) Factory setting: Digital input - high active, function: Disable input, SELV - inactive: Pin open or applied voltage < 1.5 VDC - active: applied voltage 3.5-50 VDC Reset function: Triggering of error reset on change of state from "enabled" to "disabled"
	CON2	IO2	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog input 0-10 V/PWM, Ri=100 kΩ, function: Set value Characteristic curve parameterizable (see input characteristic curve P1-IN), SELV
	CON2	IO3	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog output 0-10 V, max. 5 mA, function: Actual speed Characteristic curve parameterizable (see output characteristic curve P3-OUT), SELV
	CON2	Vout	Voltage output 3.3-24 VDC ±5%, Pmax=800 mW, voltage parameterizable Factory setting: 10 VDC short-circuit-proof, supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage
	CON2	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	CON2	NC	Status relay, floating status contact, break for failure
		LED	green: status = good, ready for operation orange: status = warning red: status = failure
		P1-IN	Input characteristic curve
		P3-OUT	Output characteristic curve

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VBH0500CTTRS

Model LU-215273-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Terminal/plug assignment

CON2	configurable IO mode	electrical specification	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	
				selected directly via IO mode)	selected directly via IO mode)
IO1	○ Din1 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	D158 [0]
	○ Ain1 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV			D158 [2]
	○ Tach out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV		○	D158 [5]
	○ Diagnostics out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV			D158 [6]
IO2	○ Din2 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	D159 [0]
	○ Ain2 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV			D159 [2]
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV		○	D159 [3]
	○ Din3 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC			D15A [0]
IO3	○ Din3 (active low), digital input	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage 3.5-50VDC		○	D15A [1]
	○ PWMIn3: digital input idle level high	PWM = 40Hz - 10kHz, characteristics parameterizable			D15A [7]
	○ PWMIn3: digital input idle level low	active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV		○	D15A [8]
	○ Aout3 0-10V: analog output	function parameterizable, max. 5mA max output frequency 300Hz SELV			D15A [4]
	○ Tacho out (pulses), analog output	0-10V/max. 5mA max output frequency 300Hz SELV		○	D15A [5]
	○ Diagnostics out (pulses)	0-10V/max. 5mA max output frequency 300Hz, SELV			D15A [6]
RSA	RS485 bus connection,	MODBUS RTU, specification V6.4, SELV			
RSB	voltage output	voltage parameterizable 3.3...24VDC +/- 5%, Pmax=800mW, short-circuit-proof, supply for external devices, SELV			D16E [..]
Vout	alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...50VDC			

○ configurable option

For further information and additional functions see EC Control Software, Fan-Set-App, or MODBUS Parameter Specification V6.4



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VBH0500CTTRS

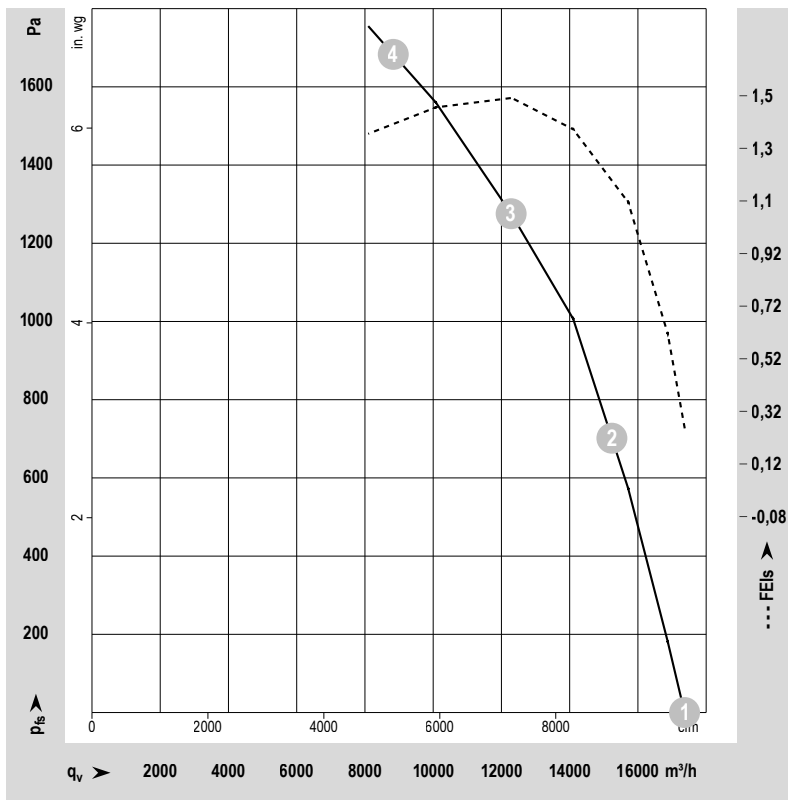
Model LU-215273-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Curves: Air performance 50 Hz



$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$

Measurement: LU-215273-1  
Date: 2021-06-21  
Nozzle: 8217101923

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	Pe	I	LpA <sub>in</sub>	LWA <sub>in</sub>	LWA <sub>out</sub>	LWA	qv	Pfs	qv	Pfs
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	dB	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	2840	3944	6.19	89	97	100	102	17365	0	10220	0.00
2	3~	400	50	2840	5454	8.43	84	92	95	97	15220	700	8960	2.81
3	3~	400	50	2840	6210	9.60	80	88	92	93	12280	1275	7230	5.12
4	3~	400	50	2840	6108	9.38	79	86	92	93	8820	1680	5190	6.74

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · Pe = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LWA<sub>in</sub> = Sound power level intake side  
LWA<sub>out</sub> = Sound power level outlet side · LWA = Sound power level total · qv = Air flow · Pfs = Pressure increase

Values for sound power levels (total LWA, LWA<sub>in</sub> and LWA<sub>out</sub>) is for installation type A - Free inlet, Free outlet.  
The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.



8300100521  
 VBH0560CTRNS  
 Model LU-221018-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen  
 Phone +49 7938 81-0  
 Fax +49 7938 81-110  
 info1@de.ebmpapst.com  
 www.ebmpapst.com

Limited partnership · Headquarters Mulfingen  
 Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen  
 Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100521	
Motor	E11229-80	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Status		prelim.
Speed (rpm)	min <sup>-1</sup>	1370
Power consumption	W	1270
Current draw	A	2.0
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
 Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	74.3	52.6	09 Power consumption $P_{ed}$	kW	1.26
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	7890
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	397
04 Efficiency grade N		83.7	62	10 Speed (rpm) n	min <sup>-1</sup>	1365
05 Variable speed drive		Yes		11 Specific ratio <sup>*</sup>		1.00

Data obtained at optimum efficiency level.

<sup>\*</sup> Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-221018

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).  
 The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.  
 The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100521

VBH0560CTRNS

Model LU-221018-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Technical description

<b>Size</b>	560 mm
<b>Motor size</b>	112
<b>Rotor surface</b>	Painted black
<b>Terminal box material</b>	PP plastic
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"><li>- Output 10 VDC, max. 10 mA</li><li>- Operation and alarm display</li><li>- External 24 V input (parameter setting)</li><li>- Alarm relay</li><li>- Integrated PID controller</li><li>- MODBUS V5.1</li><li>- Motor current limitation</li><li>- PFC, passive</li><li>- RS-485 MODBUS-RTU</li><li>- Soft start</li><li>- EEPROM write cycles: 100,000 maximum</li><li>- Control input 0-10 VDC / PWM</li><li>- Control interface with SELV potential safely disconnected from the mains</li><li>- Thermal overload protection for electronics/motor</li><li>- Line undervoltage / phase failure detection</li></ul>
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Thermal switch auto reset, internally connected
<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.

8300100521

VBH0560CTRNS

Model LU-221018-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

8300100521

VBH0560CTRNS

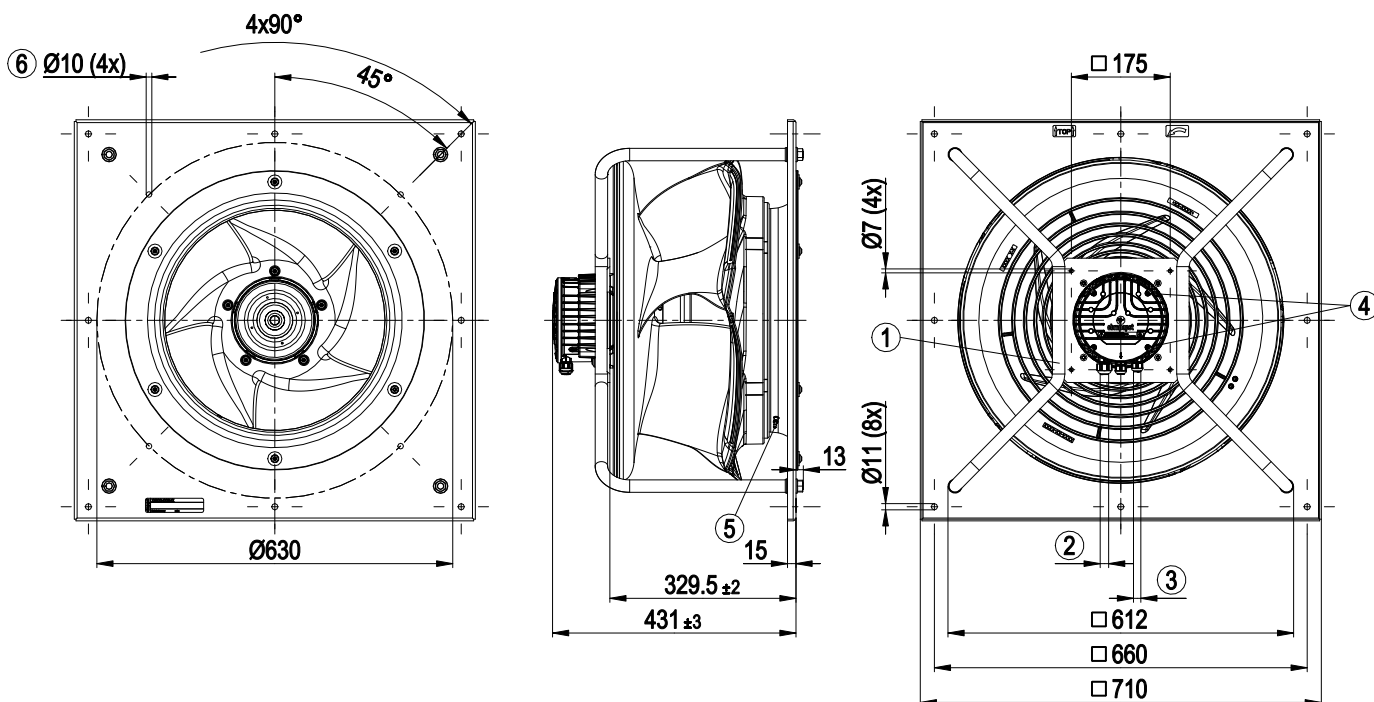
Model LU-221018-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



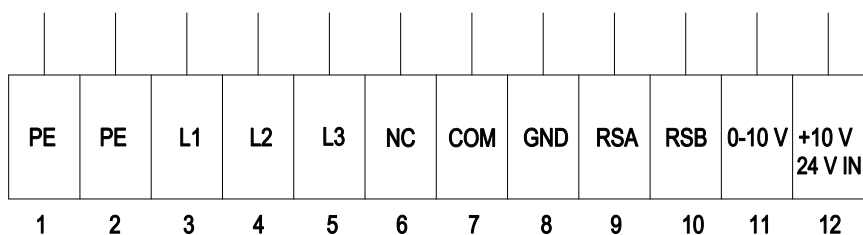
1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 8 mm, max. 12 mm, tightening torque $1.8 \pm 0.3$ Nm (use must be made of seal provided) Cable diameter min. 4 mm, max. 10 mm, tightening torque $1.8 \pm 0.3$ Nm
3	Cable diameter min. 6 mm, max. 10 mm, tightening torque $1.8 \pm 0.3$ Nm (use must be made of seal provided) Cable diameter min. 4 mm, max. 7 mm, tightening torque $1.8 \pm 0.3$ Nm
4	Tightening torque $1.5 \pm 0.2$ Nm
5	Inlet ring with pressure tap (k-factor: 381)
6	Attachment holes for FlowGrid 50710-2-2957 (not included in scope of delivery)

8300100521  
 VBH0560CTRNS  
 Model LU-221018-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
1	PE	PE	Protective earth
2	PE	PE	Protective earth
3	L1	L1	Power supply
4	L2	L2	Power supply
5	L3	L3	Power supply
6	NC	NC	Status relay, floating status contact, break for failure, contact rating 250 VAC / 2 A (AC1) / min. 10 mA; reinforced insulation on supply side and basic insulation on control interface side
7	COM	COM	Status relay, floating status contact, break for failure, contact rating 250 VAC / 2 A (AC1) / min. 10 mA; reinforced insulation on supply side and basic insulation on control interface side
8	GND	GND	Reference ground for control interface, SELV
9	RSA	RSA	RS485 interface for MODBUS, RSA; SELV
10	RSB	RSB	RS485 interface for MODBUS, RSB; SELV
11	0-10 V	0-10 V	Analog input (set value) SELV, 0-10 V, Ri = 100 kΩ, adjustable curve
12	+10 V	+10 V	Fixed voltage output 10 VDC, SELV, +10 V ±3%, max. 10 mA, short-circuit-proof, power supply for external devices (e.g. pot); fixed voltage input 24 VDC for setting parameters via MODBUS without line voltage supply

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VBH0560CTRNS

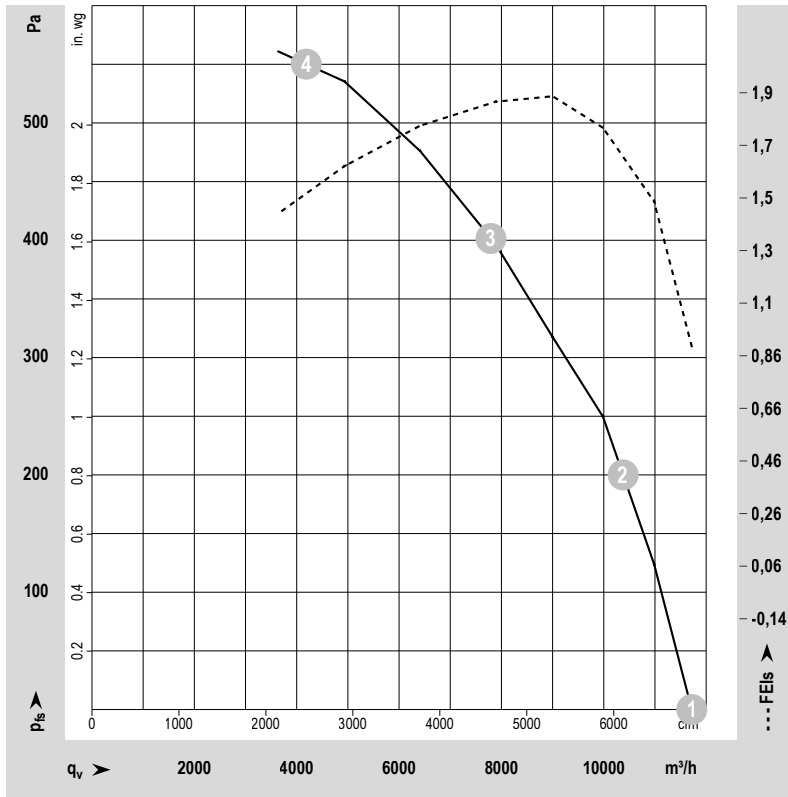
Model LU-221018-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Curves: Air performance 50 Hz



$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$

Measurement: LU-221018-1  
Date: 2022-05-17  
Nozzle: 8217101924

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal.

The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	$P_e$	I	$LpA_{in}$	$LwA_{in}$	$LwA_{out}$	LwA	$q_v$	$P_{fs}$	$q_v$	$P_{fs}$
		V	Hz	$\text{min}^{-1}$	W	A	dB(A)	dB(A)	dB(A)	dB	$\text{m}^3/\text{h}$	Pa	cfm	in. wg
1	3~	400	50	1370	825	1.29	74	82	86	87	11720	0	6900	0.00
2	3~	400	50	1370	1115	1.72	69	77	81	82	10380	200	6110	0.80
3	3~	400	50	1370	1270	2.00	67	72	76	78	7780	400	4580	1.61
4	3~	400	50	1370	1149	1.77	69	74	78	80	4185	550	2465	2.21

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) ·  $P_e$  = Power consumption · I = Current draw ·  $LpA_{in}$  = Sound pressure level intake side ·  $LwA_{in}$  = Sound power level intake side  
 $LwA_{out}$  = Sound power level outlet side · LwA = Sound power level total ·  $q_v$  = Air flow ·  $P_{fs}$  = Pressure increase

Values for sound power levels (total LwA,  $LwA_{in}$  and  $LwA_{out}$ ) is for installation type A - Free inlet, Free outlet.  
The  $LpA$  levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.

Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.



8300100047

VBH0560CTTPS

Model: LU-213515-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100047	
Motor	E15031-85	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Status		prelim.
Speed (rpm)	min <sup>-1</sup>	2080
Power consumption	W	4250
Current draw	A	6.4
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	71.9	58	09 Power consumption $P_{ed}$	kW	4.16
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	11910
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	871
04 Efficiency grade N		75.9	62	10 Speed (rpm) n	min <sup>-1</sup>	2080
05 Variable speed drive		Yes		11 Specific ratio*		1.01

Data obtained at optimum efficiency level.

\* Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-213515

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).

The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.

The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).





8300100047

VBH0560CTTPS

Model: LU-213515-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	42 kg
<b>Size</b>	560 mm
<b>Motor size</b>	150
<b>Rotor surface</b>	Painted black
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"><li>- Operation and alarm display with LED</li><li>- External 15-50 VDC input (parameterization)</li><li>- Alarm relay</li><li>- Integrated PI controller</li><li>- Configurable inputs/outputs (I/O)</li><li>- MODBUS V6.3</li><li>- Motor current limitation</li><li>- RS-485 MODBUS-RTU</li><li>- Soft start</li><li>- Voltage output 3.3-24 VDC, Pmax = 800 mW</li><li>- Control interface with SELV potential safely disconnected from the mains</li><li>- Thermal overload protection for electronics/motor</li><li>- Line undervoltage / phase failure detection</li><li>- Vibration sensor</li></ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Electronic motor protection



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VBH0560CTTPS

Model: LU-213515-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected by the customer This component for installation may have several local protection classes. This information relates to this component's basic design. The final protection class is based on the component's intended installation and connection.
<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1



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VBH0560CTTPS

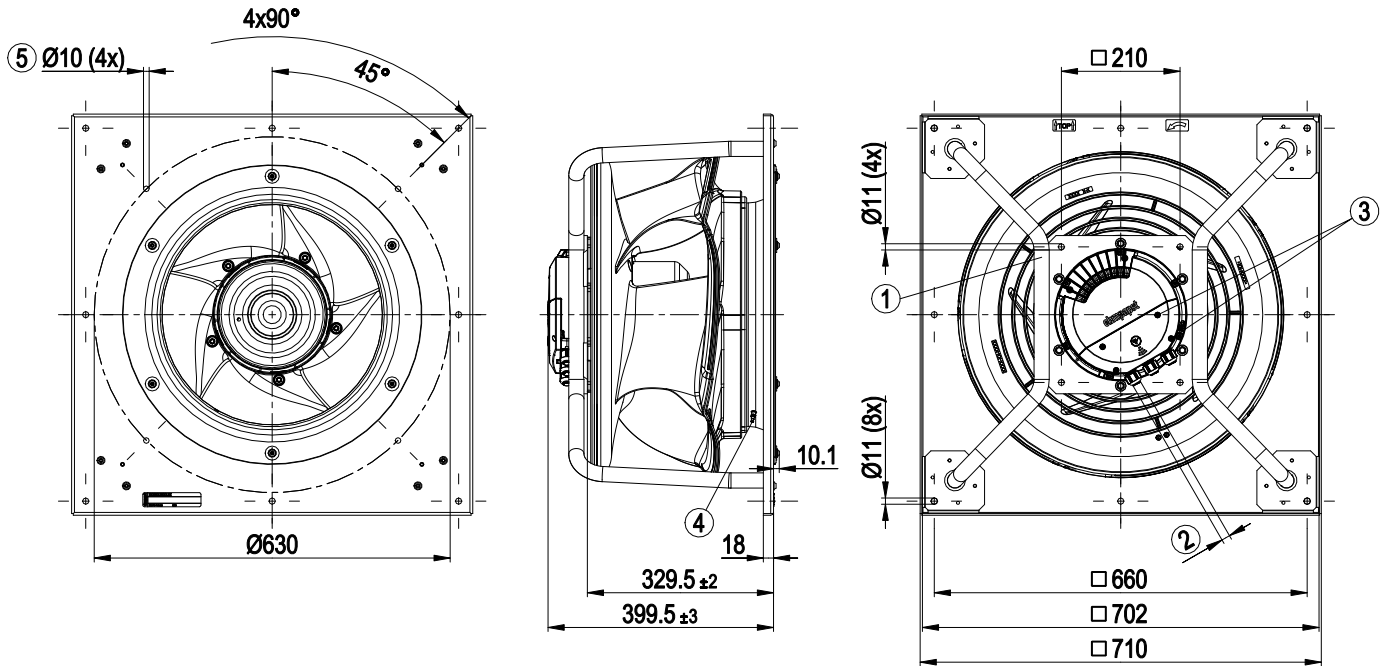
Model: LU-213515-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque $4 \pm 0.6$ Nm (The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
3	Tightening torque $1.5 \pm 0.2$ Nm
4	Inlet ring with pressure tap (k-factor: 381)
5	Attachment holes for FlowGrid 50710-2-2957 (not included in scope of delivery)

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VBH0560CTTPS

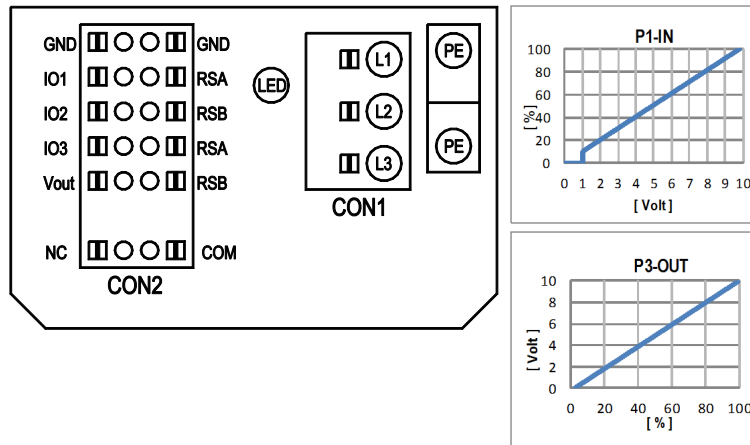
Model: LU-213515-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
	CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function parameterizable (see "Optional interface functions" table) Factory setting: Digital input - high active, function: Disable input, SELV - inactive: Pin open or applied voltage < 1.5 VDC - active: applied voltage 3.5-50 VDC Reset function: Triggering of error reset on change of state from "enabled" to "disabled"
	CON2	IO2	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog input 0-10 V/PWM, Ri=100 kΩ, function: Set value Characteristic curve parameterizable (see input characteristic curve P1-IN), SELV
	CON2	IO3	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog output 0-10 V, max. 5 mA, function: Actual speed Characteristic curve parametrizable (see output characteristic curve P3-OUT), SELV
	CON2	Vout	Voltage output 3.3-24 VDC ±5%, Pmax=800 mW, voltage parameterizable Factory setting: 10 VDC short-circuit-proof, supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage
	CON2	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	CON2	NC	Status relay, floating status contact, break for failure
		LED	green: status = good, ready for operation orange: status = warning red: status = failure
		P1-IN	Input characteristic curve
		P3-OUT	Output characteristic curve

8300100047

VBH0560CTTPS

Model: LU-213515-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Terminal/plug assignment

CON2	configurable IO mode	electrical specification	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	
				selected directly via IO mode)	selected directly via IO mode)
IO1	○ Din1 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D158 [0]	
	○ Ain1 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, f <sub>PWM</sub> = 1k..10kHz, SELV		D158 [2]	
	○ Tach out (open collector output)	U <sub>max</sub> = 50VDC, I <sub>max</sub> = 20mA, SELV		D158 [5]	
	○ Diagnostics out (open collector output)	U <sub>max</sub> = 50VDC, I <sub>max</sub> = 20mA, SELV		D158 [6]	
IO2	○ Din2 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D159 [0]	
	○ Ain2 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, f <sub>PWM</sub> = 1k..10kHz, SELV		D159 [2]	
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV		D159 [3]	
	○ Din3 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D15A [0]	
IO3	○ Din3 (active low), digital input	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage 3.5-50VDC		D15A [1]	
	○ PWMIn3: digital input, idle level high	PWM = 40Hz - 10kHz, characteristics parameterizable		D15A [7]	
	○ PWMIn3: digital input, idle level low	active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV		D15A [8]	
	○ Aout3 0-10V: analog output	function parameterizable, max. 5mA, max output frequency 300Hz, SELV		D15A [4]	
RSA	○ Tacho out (pulses), analog output	0-10V/max. 5mA, max output frequency 300Hz, SELV		D15A [5]	
	○ Diagnostics out (pulses)	0-10V/max. 5mA, max output frequency 300Hz, SELV		D15A [6]	
	○ RSA485 bus connection,	MODBUS RTU, specification V6.3, SELV			
RSB	voltage output	voltage parameterizable 3.3...24VDC +/- 5%, P <sub>max</sub> =800mW, short-circuit-proof, supply for external devices, SELV		D16E [..]	
Vout	alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...50VDC			

terminal	description	selected directly via IO mode)	selected directly via IO mode)
D101 [..]	source: set value		○
D147 [..]	source: sensor value		○
D104 [..]	switch: parameter set: #1 / #2	○	○
D12E [..]	switch: control function: heating (pos.) cooling (neg.)	○	○
D148 [..]	switch: direction of rotation: cw / ccw	○	○
D16C [..]	switch: set value source	○	○
D16A [..]	switch: fan enable / disable	○	○
(selected directly via IO mode)	signal: tach out	○	
(selected directly via IO mode)	signal: diagnostics out		○
D130 [0]	signal: fan modulation level %		○
D130 [1]	signal: actual speed		○
D130 [2]	signal: system modulation level %		○
D130 [5]	signal: remote control output 0-10V		○
D00C [1]	pulse input for auto-addressing	○	
D130 [4]	pulse output for auto-addressing		○

○ configurable option

For further information and additional functions see EC Control Software, Fan-Set-App, or MODBUS Parameter Specification V6.3



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VBH0560CTTPS

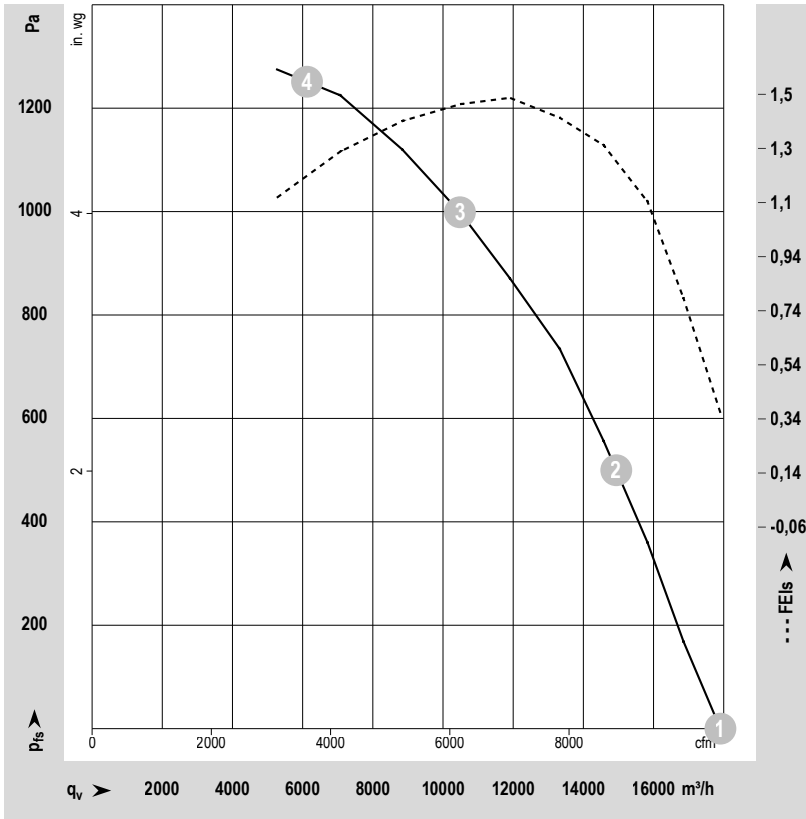
Model: LU-213515-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Curves: Air performance 50 Hz



$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$

Measurement: LU-213515-1  
Date: 2021-04-29  
Nozzle: 8217101924

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	Pe	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	q <sub>V</sub>	P <sub>fs</sub>	q <sub>V</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	2080	2900	4.46	86	94	98	17905	0	10540	0.00
2	3~	400	50	2080	3783	5.77	79	87	91	14940	500	8795	2.01
3	3~	400	50	2080	4250	6.40	77	83	88	10490	1000	6175	4.01
4	3~	400	50	2080	3815	5.82	80	87	92	6120	1250	3605	5.02



Wire = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · Pe = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side · LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>V</sub> = Air flow · p<sub>fs</sub> = Pressure increase

Values for sound power levels (total LWA, LwA<sub>in</sub> and LwA<sub>out</sub>) is for installation type A - Free inlet, Free outlet. The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet. Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.



8300100095

VBH0560CTTPS

Model LU-215087-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100095	
Motor	E15031-85	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Speed (rpm)	min <sup>-1</sup>	2080
Power consumption	W	4400
Current draw	A	6.7
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	74.6	58.2	09 Power consumption $P_{ed}$	kW	4.36
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	12210
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	926
04 Efficiency grade N		78.4	62	10 Speed (rpm) n	min <sup>-1</sup>	2080
05 Variable speed drive		Yes		11 Specific ratio*		1.01

Data obtained at optimum efficiency level.

\* Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-215087

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings). The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again. The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

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Model LU-215087-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	44.9 kg
<b>Size</b>	560 mm
<b>Motor size</b>	150
<b>Rotor surface</b>	Painted black
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"> <li>- Operation and alarm display with LED</li> <li>- External 15-50 VDC input (parameterization)</li> <li>- Alarm relay</li> <li>- Integrated PI controller</li> <li>- Configurable inputs/outputs (I/O)</li> <li>- MODBUS V6.3</li> <li>- Motor current limitation</li> <li>- RS-485 MODBUS-RTU</li> <li>- Soft start</li> <li>- Voltage output 3.3-24 VDC, Pmax = 800 mW</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage / phase failure detection</li> <li>- Vibration sensor</li> </ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Electronic motor protection



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VBH0560CTTPS

Model LU-215087-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	UL 1004-7 + 60730-1; EAC; CSA C22.2 No. 77 + CAN/CSA-E60730-1

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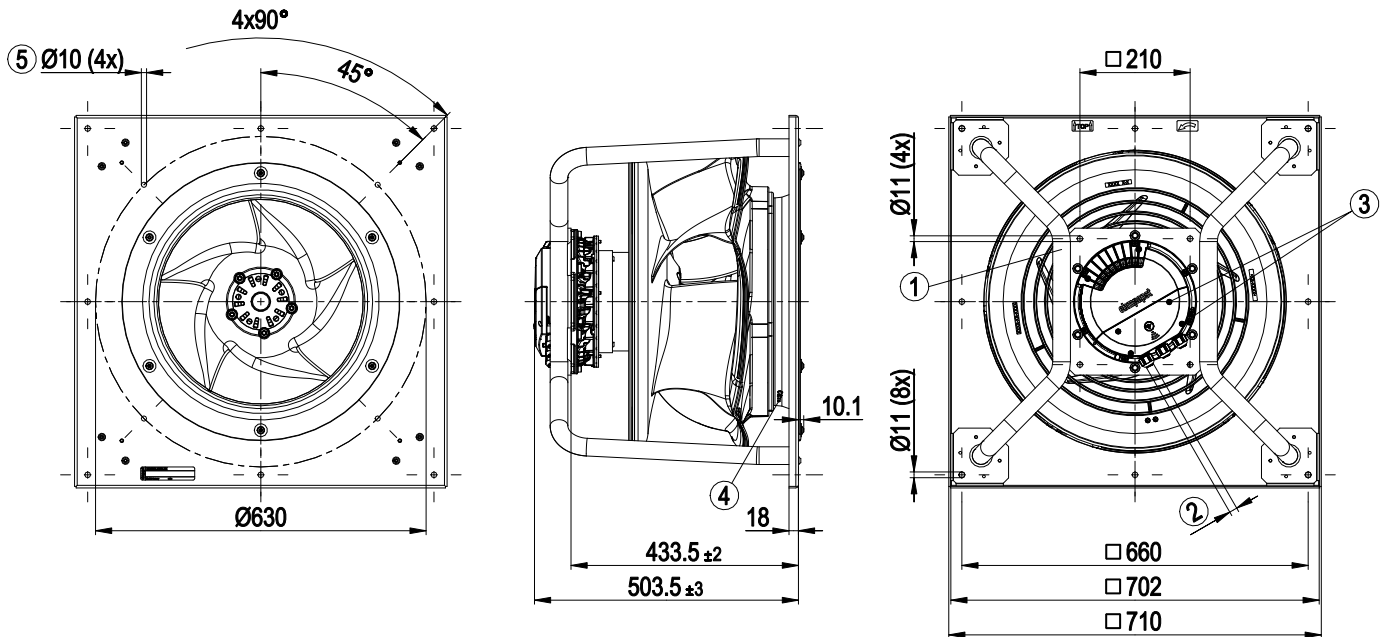
Model LU-215087-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing

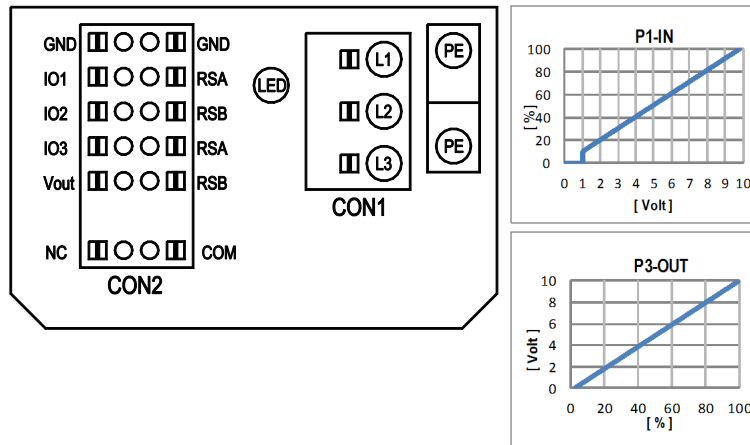


1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque $4 \pm 0.6$ Nm (The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
3	Tightening torque $1.5 \pm 0.2$ Nm
4	Inlet ring with pressure tap (k-factor: 381)
5	Attachment holes for FlowGrid 50710-2-2957 (not included in scope of delivery)

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
	CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function parameterizable (see "Optional interface functions" table) Factory setting: Digital input - high active, function: Disable input, SELV - inactive: Pin open or applied voltage < 1.5 VDC - active: applied voltage 3.5-50 VDC Reset function: Triggering of error reset on change of state from "enabled" to "disabled"
	CON2	IO2	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog input 0-10 V/PWM, Ri=100 kΩ, function: Set value Characteristic curve parameterizable (see input characteristic curve P1-IN), SELV
	CON2	IO3	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog output 0-10 V, max. 5 mA, function: Actual speed Characteristic curve parametrizable (see output characteristic curve P3-OUT), SELV
	CON2	Vout	Voltage output 3.3-24 VDC ±5%, Pmax=800 mW, voltage parameterizable Factory setting: 10 VDC short-circuit-proof, supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage
	CON2	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	CON2	NC	Status relay, floating status contact, break for failure
		LED	green: status = good, ready for operation orange: status = warning red: status = failure
		P1-IN	Input characteristic curve
		P3-OUT	Output characteristic curve

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VBH0560CTTPS

Model LU-215087-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Terminal/plug assignment

CON2	configurable IO mode	electrical specification	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	
				selected directly via IO mode)	selected directly via IO mode)
IO1	○ Din1 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D158 [0]	
	○ Ain1 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV		D158 [2]	
	○ Tach out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV		D158 [5]	
	○ Diagnostics out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV		D158 [6]	
IO2	○ Din2 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D159 [0]	
	○ Ain2 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV		D159 [2]	
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV		D159 [3]	
	○ Din3 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D15A [0]	
IO3	○ Din3 (active low), digital input	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage 3.5-50VDC		D15A [1]	
	○ PWMIn3: digital input, idle level high	PWM = 40Hz - 10kHz, characteristics parameterizable		D15A [7]	
	○ PWMIn3: digital input, idle level low	active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV		D15A [8]	
	○ Aout3 0-10V: analog output	function parameterizable, max. 5mA, max output frequency 300Hz, SELV		D15A [4]	
RSA	○ Tacho out (pulses), analog output	0-10V/max. 5mA, max output frequency 300Hz, SELV		D15A [5]	
	○ Diagnostics out (pulses)	0-10V/max. 5mA, max output frequency 300Hz, SELV		D15A [6]	
	○ RSA/RSB bus connection,	MODBUS RTU, specification V6.3, SELV			
Yout	voltage output alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	voltage parameterizable 3.3...24VDC +/- 5%, Pmax=800mW, short-circuit-proof, supply for external devices, SELV 15...50VDC		D16E [..]	

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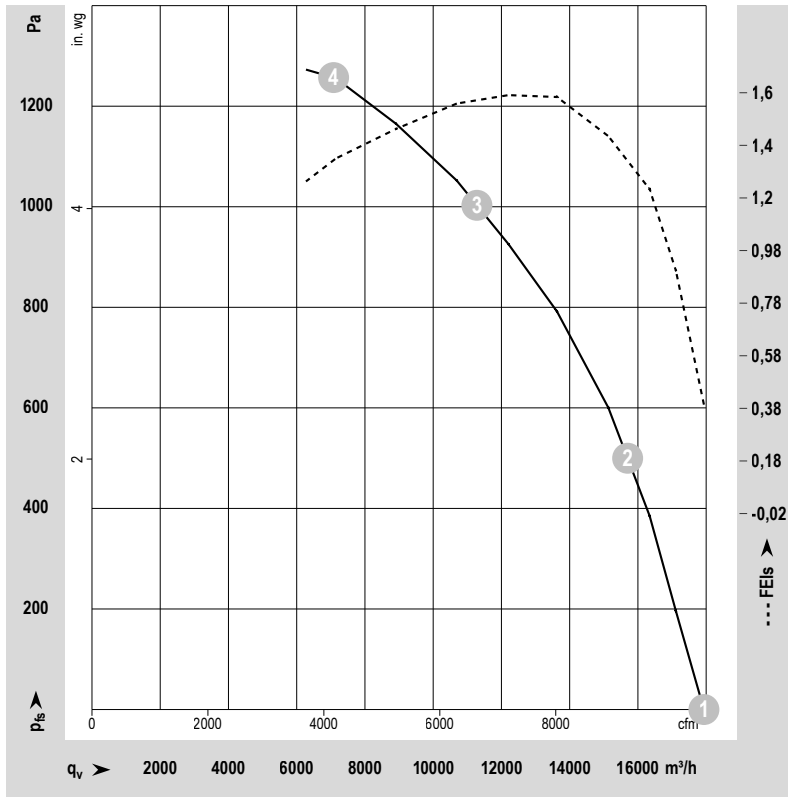
Model LU-215087-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Curves: Air performance 50 Hz



$$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$$

Measurement: LU-215087-1  
Date: 2021-07-26  
Nozzle: 8217101924

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	LwA	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	dB	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	2080	2670	4.12	84	92	96	98	17935	0	10555	0.00
2	3~	400	50	2080	3864	5.89	78	86	90	92	15700	500	9240	2.01
3	3~	400	50	2080	4400	6.70	72	80	85	87	11265	1000	6630	4.01
4	3~	400	50	2080	4112	6.27	77	84	89	90	7060	1250	4155	5.02



Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LwA, LwA<sub>in</sub> and LwA<sub>out</sub>) is for installation type A - Free inlet, Free outlet.  
The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.

Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.

8300100546

VBH0560CTTPS

Model LU-220438-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100546	
Motor	E15037-85	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Status		prelim.
Speed (rpm)	min <sup>-1</sup>	1990
Power consumption	W	4000
Current draw	A	5.8
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	72.5	57.8	09 Power consumption $P_{ed}$	kW	3.94
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	11555
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	856
04 Efficiency grade N		76.7	62	10 Speed (rpm) n	min <sup>-1</sup>	1995
05 Variable speed drive		Yes		11 Specific ratio <sup>*</sup>		1.01

Data obtained at optimum efficiency level.

<sup>\*</sup> Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-220438

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).

The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.

The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100546

VBH0560CTTPS

Model LU-220438-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	49.2 kg
<b>Size</b>	560 mm
<b>Motor size</b>	150
<b>Rotor surface</b>	Painted black
<b>Terminal box material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	Shaft horizontal or rotor on bottom; rotor on top on request
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing; (sealed)
<b>Technical features</b>	<ul style="list-style-type: none"> <li>- Operation and alarm display with LED</li> <li>- External 15-50 VDC input (parameterization)</li> <li>- Alarm relay</li> <li>- Integrated PI controller</li> <li>- Configurable inputs/outputs (I/O)</li> <li>- MODBUS V6.4</li> <li>- Motor current limitation</li> <li>- PFC, active</li> <li>- RS-485 MODBUS-RTU</li> <li>- Soft start</li> <li>- Voltage output 3.3-24 VDC, Pmax = 800 mW</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage / phase failure detection</li> <li>- Vibration sensor</li> </ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC circuit feedback</b>	According to EN 61000-3-2/3
<b>EMC interference emission</b>	According to EN 61000-6-4 (industrial environment)
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Electronic motor protection

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VBH0560CTTPS

Model LU-220438-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	UL 1004-7 + 60730-1; EAC; CSA C22.2 No. 77 + CAN/CSA-E60730-1



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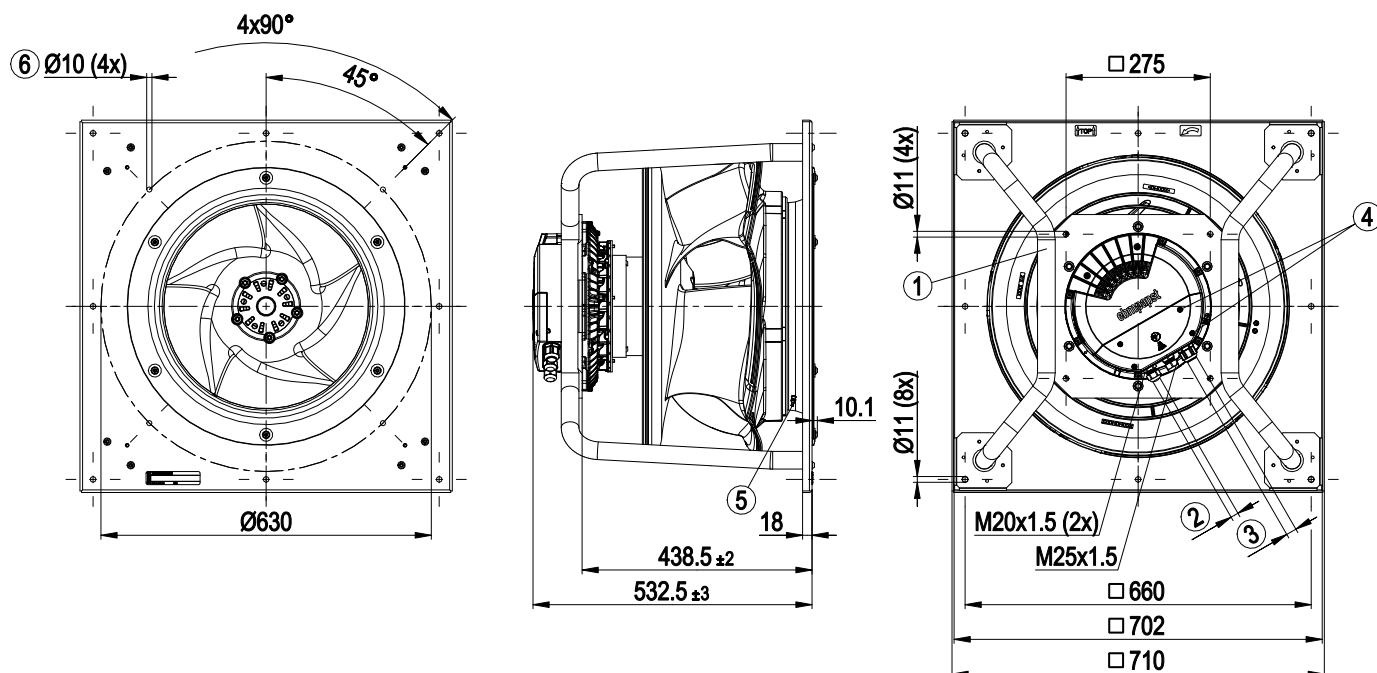
Model LU-220438-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque $4 \pm 0.6$ Nm
3	Cable diameter min. 5 mm, max. 14 mm, tightening torque $6 \pm 0.9$ Nm
	(The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
4	Tightening torque $3 \pm 0.3$ Nm
5	Inlet ring with pressure tap (k-factor: 381)
6	Attachment holes for FlowGrid 50710-2-2957 (not included in scope of delivery)

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VBH0560CTTPS

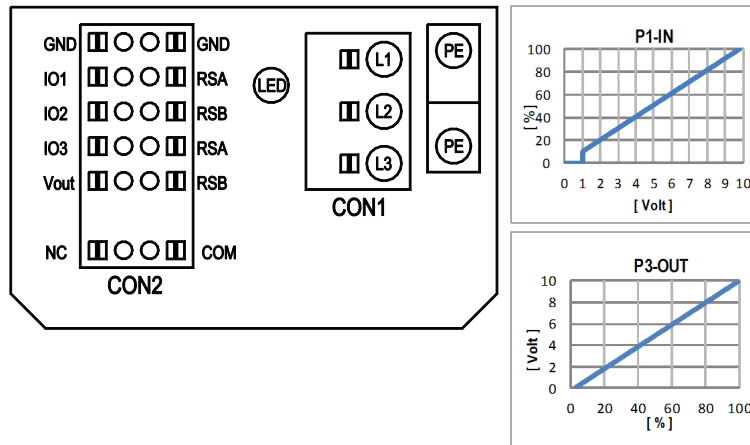
Model LU-220438-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
	CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function parameterizable (see "Optional interface functions" table) Factory setting: Digital input - high active, function: Disable input, SELV - inactive: Pin open or applied voltage < 1.5 VDC - active: applied voltage 3.5-50 VDC Reset function: Triggering of error reset on change of state from "enabled" to "disabled"
	CON2	IO2	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog input 0-10 V/PWM, Ri=100 kΩ, function: set value Characteristic curve parameterizable (see input characteristic curve P1-IN), SELV
	CON2	IO3	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog output 0-10 V, max. 5 mA, function: Actual speed Characteristic curve parametrizable (see output characteristic curve P3-OUT), SELV
	CON2	Vout	Voltage output 3.3-24 VDC +/-5%, Pmax=800 mW, voltage parameterizable Factory setting: 10 VDC short-circuit-proof, supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage
	CON2	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	CON2	NC	Status relay, floating status contact, break for failure
		LED	green: status = good, ready for operation orange: status = warning red: status = failure
		P1-IN	Input characteristic curve
		P3-OUT	Output characteristic curve

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VBH0560CTTPS

Model LU-220438-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Terminal/plug assignment

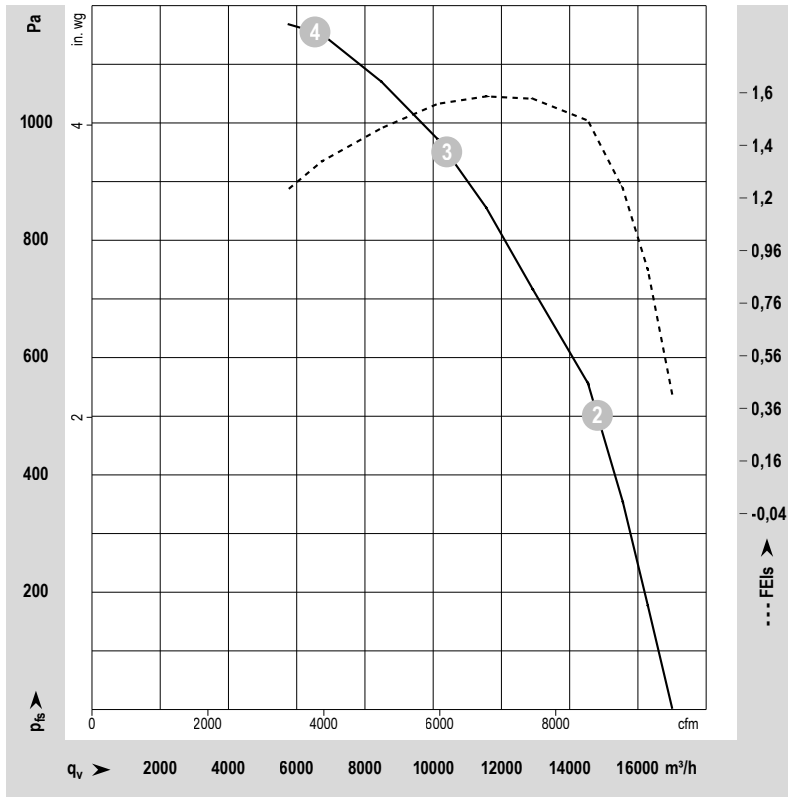
CON2	configurable IO mode	electrical specification	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	
				selected directly via IO mode)	selected directly via IO mode)
IO1	○ Din1 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	D158 [0]
	○ Ain1 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV		○	D158 [2]
	○ Tach out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV		○	D158 [5]
	○ Diagnostics out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV		○	D158 [6]
IO2	○ Din2 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	D159 [0]
	○ Ain2 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV		○	D159 [2]
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV		○	D159 [3]
	○ Din3 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	D15A [0]
IO3	○ Din3 (active low), digital input	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage 3.5-50VDC		○	D15A [1]
	○ PWMIn3: digital input idle level high	PWM = 40Hz - 10kHz, characteristics parameterizable		○	D15A [7]
	○ PWMIn3: digital input idle level low	active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV		○	D15A [8]
	○ Aout3 0-10V: analog output	function parameterizable, max. 5mA max output frequency 300Hz SELV		○	D15A [4]
RSA	○ Tacho out (pulses), analog output	0-10V/max. 5mA max output frequency 300Hz SELV		○	D15A [5]
	○ Diagnostics out (pulses)	0-10V/max. 5mA max output frequency 300Hz, SELV		○	D15A [6]
	○ RSA485 bus connection,	MODBUS RTU, specification V6.4, SELV		○	
RSB					
Vout	voltage output	voltage parameterizable 3.3...24VDC +/- 5%, Pmax=800mW, short-circuit-proof, supply for external devices, SELV			D16E [..]
	alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...50VDC			

8300100546  
VBH0560CTTPS

# EC centrifugal module - RadiPac

backward-curved, single-intake  
with support bracket

## Curves: Air performance 50 Hz



$$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$$

Measurement: LU-220438-1  
Date: 2022-05-06  
Nozzle: 8217101924

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	LwA	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	dB	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	1990	2497	3.61	84	92	95	97	17025	0	10020	0.00
2	3~	400	50	1990	3530	5.11	77	85	90	91	14790	500	8705	2.01
3	3~	400	50	1990	4000	5.80	71	79	84	86	10395	950	6115	3.81
4	3~	400	50	1995	3676	5.32	76	83	88	89	6520	1150	3840	4.62



Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LwA, LwA<sub>in</sub> and LwA<sub>out</sub>) is for installation type A - Free inlet, Free outlet.  
The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.

8300100101

VBH0560CTTRS

Model LU-215301-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100101	
Motor	E15034-120	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Speed (rpm)	min <sup>-1</sup>	2370
Power consumption	W	6500
Current draw	A	10
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment

Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	75.5	59.9	09 Power consumption $P_{ed}$	kW	6.32
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	14165
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	1172
04 Efficiency grade N		77.6	62	10 Speed (rpm) n	min <sup>-1</sup>	2370
05 Variable speed drive		Yes		11 Specific ratio*		1.01

Data obtained at optimum efficiency level.

\* Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-215301

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings). The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.

The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100101

VBH0560CTTRS

Model LU-215301-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	54.2 kg
<b>Size</b>	560 mm
<b>Motor size</b>	150
<b>Rotor surface</b>	Painted black
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"> <li>- Operation and alarm display with LED</li> <li>- External 15-50 VDC input (parameterization)</li> <li>- Alarm relay</li> <li>- Integrated PI controller</li> <li>- Configurable inputs/outputs (I/O)</li> <li>- MODBUS V6.4</li> <li>- Motor current limitation</li> <li>- RS-485 MODBUS-RTU</li> <li>- Soft start</li> <li>- Voltage output 3.3-24 VDC, Pmax = 800 mW</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage / phase failure detection</li> <li>- Vibration sensor</li> </ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Electronic motor protection

8300100101

VBH0560CTTRS

Model LU-215301-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; UKCA; CE
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

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VBH0560CTTRS

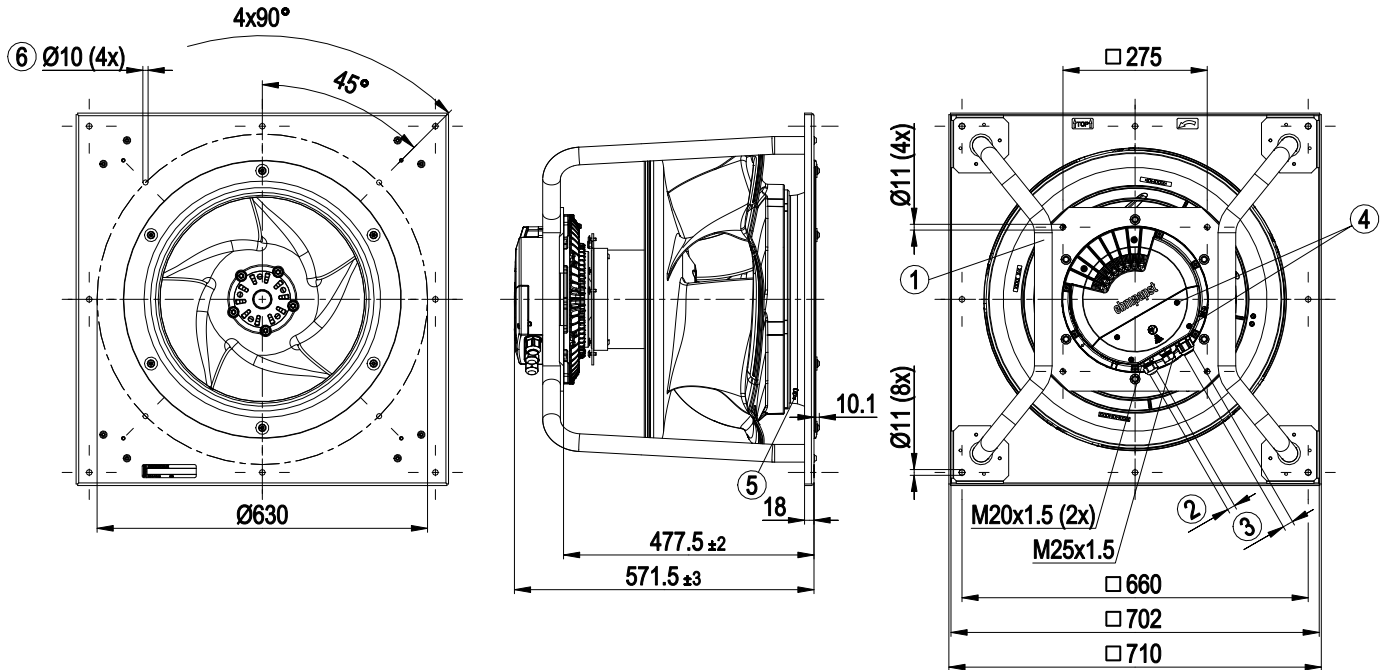
Model LU-215301-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque $4 \pm 0.6$ Nm
3	Cable diameter min. 5 mm, max. 14 mm, tightening torque $6 \pm 0.9$ Nm
	(The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
4	Tightening torque $3 \pm 0.3$ Nm
5	Inlet ring with pressure tap (k-factor: 381)
6	Attachment holes for FlowGrid 50710-2-2957 (not included in scope of delivery)



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VBH0560CTTRS

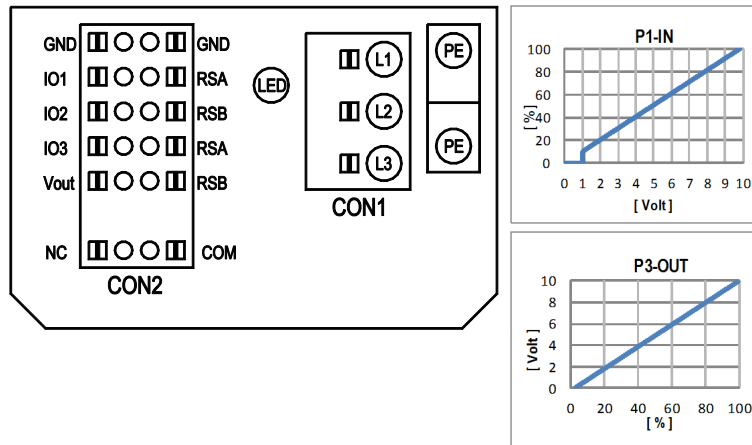
Model LU-215301-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
	CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function parameterizable (see "Optional interface functions" table) Factory setting: Digital input - high active, function: Disable input, SELV - inactive: Pin open or applied voltage < 1.5 VDC - active: applied voltage 3.5-50 VDC Reset function: Triggering of error reset on change of state from "enabled" to "disabled"
	CON2	IO2	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog input 0-10 V/PWM, Ri=100 kΩ, function: Set value Characteristic curve parameterizable (see input characteristic curve P1-IN), SELV
	CON2	IO3	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog output 0-10 V, max. 5 mA, function: Actual speed Characteristic curve parametrizable (see output characteristic curve P3-OUT), SELV
	CON2	Vout	Voltage output 3.3-24 VDC ±5%, Pmax=800 mW, voltage parameterizable Factory setting: 10 VDC short-circuit-proof, supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage
	CON2	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	CON2	NC	Status relay, floating status contact, break for failure
		LED	green: status = good, ready for operation orange: status = warning red: status = failure
		P1-IN	Input characteristic curve
		P3-OUT	Output characteristic curve

8300100101

VBH0560CTTRS

Model LU-215301-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Terminal/plug assignment

CON2	configurable IO mode	electrical specification	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	
				MODBUS Register for IO mode configuration	MODBUS Register for IO mode configuration
IO1	○ Din1 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D158 [0]	
	○ Ain1 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV		D158 [2]	
	○ Tach out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV		D158 [5]	
	○ Diagnostics out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV		D158 [6]	
IO2	○ Din2 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D159 [0]	
	○ Ain2 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV		D159 [2]	
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV		D159 [3]	
	○ Din3 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D15A [0]	
IO3	○ Din3 (active low), digital input	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage 3.5-50VDC		D15A [1]	
	○ PWMIn3: digital input idle level high	PWM = 40Hz - 10kHz, characteristics parameterizable		D15A [7]	
	○ PWMIn3: digital input idle level low	active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV		D15A [8]	
	○ Aout3 0-10V: analog output	function parameterizable, max. 5mA max output frequency 300Hz SELV		D15A [4]	
RSA	○ Tacho out (pulses), analog output	0-10V/max. 5mA max output frequency 300Hz SELV		D15A [5]	
	○ Diagnostics out (pulses)	0-10V/max. 5mA max output frequency 300Hz, SELV		D15A [6]	
	○ RSA485 bus connection,	MODBUS RTU, specification V6.4, SELV			
RSB	voltage output	voltage parameterizable 3.3...24VDC +/- 5%, Pmax=800mW, short-circuit-proof, supply for external devices, SELV		D16E [..]	
Vout	alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...50VDC			

8300100101

VBH0560CTTRS

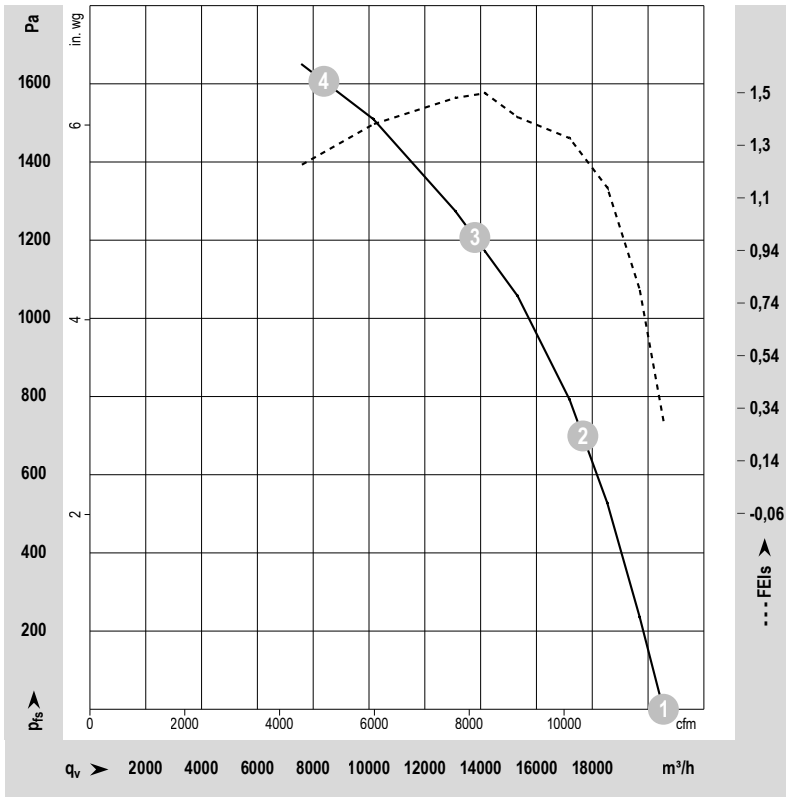
Model LU-215301-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Curves: Air performance 50 Hz



$$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$$

Measurement: LU-215301-1  
Date: 2021-07-27  
Nozzle: 8217101924

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	Pe	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	LwA	qv	Pfs	qv	Pfs
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	dB	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	2370	4002	6.28	87	95	98	100	20550	0	12095	0.00
2	3~	400	50	2370	5793	8.93	81	89	92	94	17675	700	10405	2.81
3	3~	400	50	2370	6500	10.00	76	84	89	90	13755	1200	8095	4.82
4	3~	400	50	2370	5991	9.26	80	86	91	92	8365	1600	4925	6.42

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · Pe = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · qv = Air flow · pfs = Pressure increase

Values for sound power levels (total LwA, LwA<sub>in</sub> and LwA<sub>out</sub>) is for installation type A - Free inlet, Free outlet.  
The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.

Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.



8300100221  
VBH0560CTTRS  
Model LU-217104-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100221	
Motor	E15034-120	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Status		prelim.
Speed (rpm)	min <sup>-1</sup>	2400
Power consumption	W	6500
Current draw	A	10.0
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	68.3	60	09 Power consumption $P_{ed}$	kW	6.44
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	12685
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	1210
04 Efficiency grade N		70.3	62	10 Speed (rpm) n	min <sup>-1</sup>	2400
05 Variable speed drive		Yes		11 Specific ratio <sup>*</sup>		1.01

Data obtained at optimum efficiency level.

<sup>\*</sup> Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-217104

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).

The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.

The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100221

VBH0560CTTRS

Model LU-217104-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	52.5 kg
<b>Size</b>	560 mm
<b>Motor size</b>	150
<b>Rotor surface</b>	Painted black
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"><li>- Operation and alarm display with LED</li><li>- External 15-50 VDC input (parameterization)</li><li>- Alarm relay</li><li>- Integrated PI controller</li><li>- Configurable inputs/outputs (I/O)</li><li>- MODBUS V6.4</li><li>- Motor current limitation</li><li>- RS-485 MODBUS-RTU</li><li>- Soft start</li><li>- Voltage output 3.3-24 VDC, Pmax = 800 mW</li><li>- Control interface with SELV potential safely disconnected from the mains</li><li>- Thermal overload protection for electronics/motor</li><li>- Line undervoltage / phase failure detection</li><li>- Vibration sensor</li></ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Electronic motor protection

8300100221  
VBH0560CTTRS  
Model LU-217104-1

## EC centrifugal module - RadiPac

backward-curved, single-intake  
with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

8300100221

VBH0560CTTRS

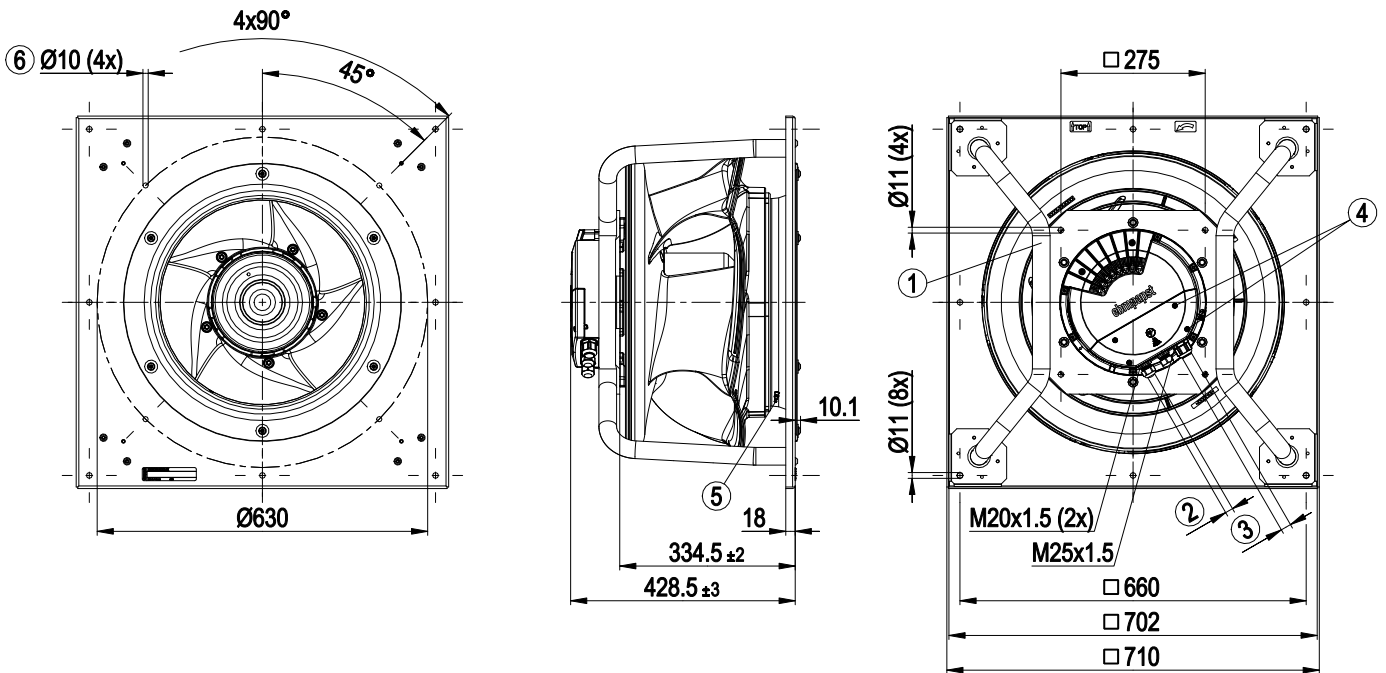
Model LU-217104-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque $4 \pm 0.6$ Nm
3	Cable diameter min. 5 mm, max. 14 mm, tightening torque $6 \pm 0.9$ Nm
	(The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
4	Tightening torque $3 \pm 0.3$ Nm
5	Inlet ring with pressure tap (k-factor: 381)
6	Attachment holes for FlowGrid 50710-2-2957 (not included in scope of delivery)

8300100221

VBH0560CTTRS

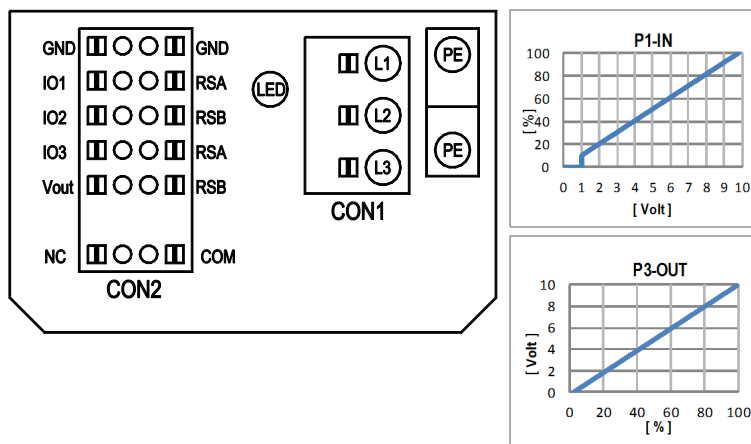
Model LU-217104-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
	CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function parameterizable (see "Optional interface functions" table) Factory setting: Digital input - high active, function: Disable input, SELV - inactive: Pin open or applied voltage < 1.5 VDC - active: applied voltage 3.5-50 VDC Reset function: Triggering of error reset on change of state from "enabled" to "disabled"
	CON2	IO2	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog input 0-10 V/PWM, Ri=100 kΩ, function: Set value Characteristic curve parameterizable (see input characteristic curve P1-IN), SELV
	CON2	IO3	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog output 0-10 V, max. 5 mA, function: Actual speed Characteristic curve parameterizable (see output characteristic curve P3-OUT), SELV
	CON2	Vout	Voltage output 3.3-24 VDC ±5%, Pmax=800 mW, voltage parameterizable Factory setting: 10 VDC short-circuit-proof, supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage
	CON2	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	CON2	NC	Status relay, floating status contact, break for failure
		LED	green: status = good, ready for operation orange: status = warning red: status = failure
		P1-IN	Input characteristic curve
		P3-OUT	Output characteristic curve



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VBH0560CTTRS

Model LU-217104-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Terminal/plug assignment

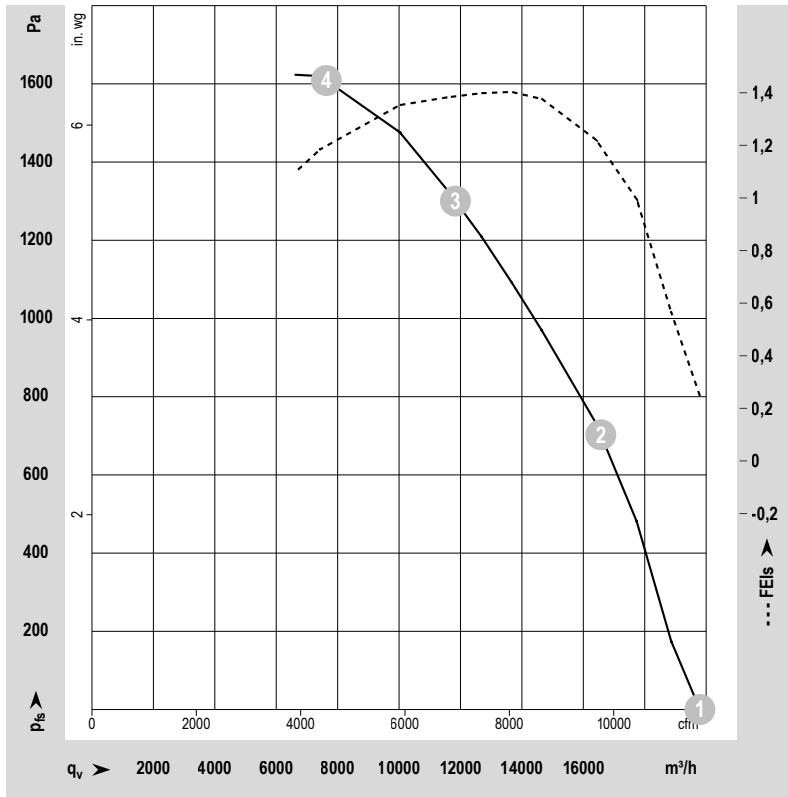
CON2	configurable IO mode	electrical specification	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	
				MODBUS Register for IO mode	configuration
IO1	○ Din1 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D158 [0]	
	○ Ain1 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, f <sub>PWM</sub> = 1k..10kHz, SELV		D158 [2]	
	○ Tach out (open collector output)	U <sub>max</sub> = 50VDC, I <sub>max</sub> = 20mA, SELV		D158 [5]	
	○ Diagnostics out (open collector output)	U <sub>max</sub> = 50VDC, I <sub>max</sub> = 20mA, SELV		D158 [6]	
IO2	○ Din2 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D159 [0]	
	○ Ain2 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, f <sub>PWM</sub> = 1k..10kHz, SELV		D159 [2]	
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV		D159 [3]	
	○ Din3 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D15A [0]	
IO3	○ Din3 (active low), digital input	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage 3.5-50VDC		D15A [1]	
	○ PWMIn3: digital input idle level high	PWM = 40Hz - 10kHz, characteristics parameterizable		D15A [7]	
	○ PWMIn3: digital input idle level low	active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV		D15A [8]	
	○ Aout3 0-10V: analog output	function parameterizable, max. 5mA, max output frequency 300Hz, SELV		D15A [4]	
RSA	○ Tacho out (pulses), analog output	0-10V/max. 5mA, max output frequency 300Hz, SELV		D15A [5]	
	○ Diagnostics out (pulses)	0-10V/max. 5mA, max output frequency 300Hz, SELV		D15A [6]	
	○ RSA485 bus connection,	MODBUS RTU, specification V6.4, SELV			
RSB	voltage output	voltage parameterizable 3.3...24VDC +/- 5%, P <sub>max</sub> =800mW, short-circuit-proof, supply for external devices, SELV		D16E [..]	
Vout	alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...50VDC			

8300100221  
 VBH0560CTTRS  
 Model LU-217104-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Curves: Air performance 50 Hz



$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$

Measurement: LU-217104-1  
 Date: 2021-12-01  
 Nozzle: 8217101924

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	$P_e$	I	$LpA_{in}$	$LwA_{in}$	$LwA_{out}$	$q_v$	$P_{fs}$	$q_v$	$P_{fs}$
		V	Hz	$\text{min}^{-1}$	W	A	dB(A)	dB(A)	dB(A)	$\text{m}^3/\text{h}$	Pa	cfm	in. wg
1	3~	400	50	2400	4611	7.14	90	98	103	19795	0	11650	0.00
2	3~	400	50	2400	6012	9.16	85	93	98	16540	700	9735	2.81
3	3~	400	50	2400	6500	10.00	81	88	93	11835	1300	6965	5.22
4	3~	400	50	2400	6068	9.24	84	91	97	7615	1600	4480	6.42

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) ·  $P_e$  = Power consumption · I = Current draw ·  $LpA_{in}$  = Sound pressure level intake side ·  $LwA_{in}$  = Sound power level intake side  
 $LwA_{out}$  = Sound power level outlet side · LWA = Sound power level total ·  $q_v$  = Air flow ·  $P_{fs}$  = Pressure increase

Values for sound power levels (total LWA,  $LwA_{in}$  and  $LwA_{out}$ ) is for installation type A - Free inlet, Free outlet.  
 The  $LpA$  levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
 Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.



8300100447

VBH0630CTRNS

Model LU-228937-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100447	
Motor	E11229-80	

Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Speed (rpm)	min <sup>-1</sup>	1060
Power consumption	W	1070
Current draw	A	1.7
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment

Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	75.1	51.7	09 Power consumption $P_{ed}$	kW	1.03
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	8660
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	299
04 Efficiency grade N		85.4	62	10 Speed (rpm) $n$	min <sup>-1</sup>	1060
05 Variable speed drive		Yes		11 Specific ratio <sup>*</sup>		1.00

Data obtained at optimum efficiency level.

<sup>\*</sup> Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-228937

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings). The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.

The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100447

VBH0630CTRNS

Model LU-228937-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	39.2 kg
<b>Size</b>	630 mm
<b>Motor size</b>	112
<b>Rotor surface</b>	Painted black
<b>Terminal box material</b>	PP plastic
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"> <li>- Output 10 VDC, max. 10 mA</li> <li>- Operation and alarm display</li> <li>- External 24 V input (parameter setting)</li> <li>- Alarm relay</li> <li>- Integrated PID controller</li> <li>- MODBUS V5.1</li> <li>- Motor current limitation</li> <li>- PFC, passive</li> <li>- RS-485 MODBUS-RTU</li> <li>- Soft start</li> <li>- EEPROM write cycles: 100,000 maximum</li> <li>- Control input 0-10 VDC / PWM</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage / phase failure detection</li> </ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box

8300100447

VBH0630CTRNS

Model LU-228937-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Motor protection</b>	Thermal switch auto reset, internally connected
<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

8300100447

VBH0630CTRNS

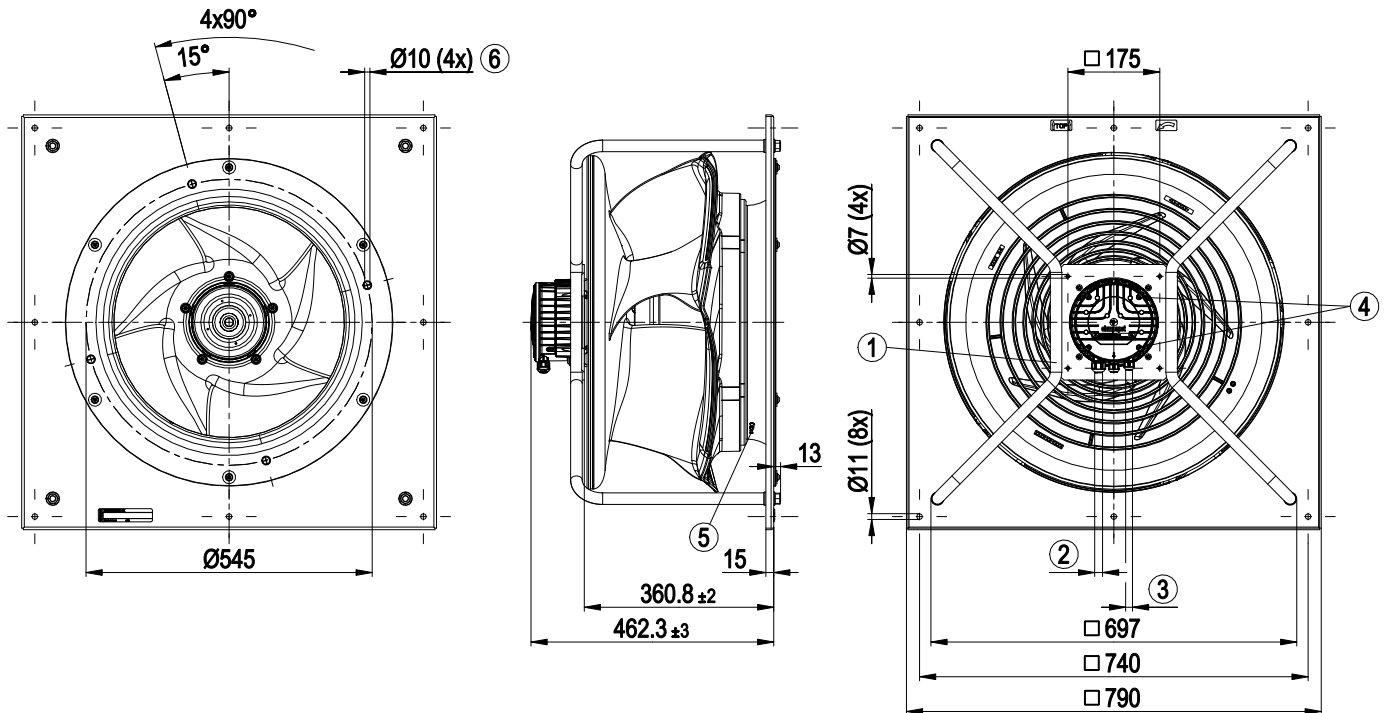
Model LU-228937-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 8 mm, max. 12 mm, tightening torque $1.8 \pm 0.3$ Nm (use must be made of seal provided) Cable diameter min. 4 mm, max. 10 mm, tightening torque $1.8 \pm 0.3$ Nm
3	Cable diameter min. 6 mm, max. 10 mm, tightening torque $1.8 \pm 0.3$ Nm (use must be made of seal provided) Cable diameter min. 4 mm, max. 7 mm, tightening torque $1.8 \pm 0.3$ Nm
4	Tightening torque $1.5 \pm 0.2$ Nm
5	Inlet ring with pressure tap (k-factor: 463)
6	Fastening holes for FlowGrid 00630-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

8300100447

VBH0630CTRNS

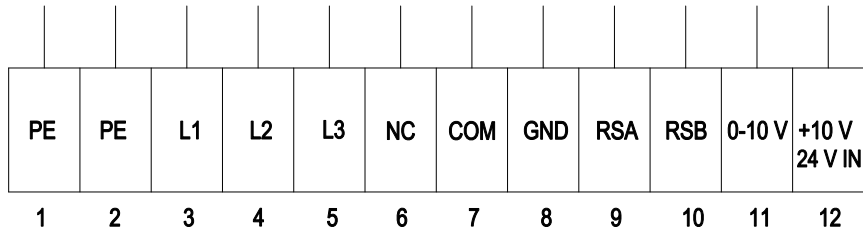
Model LU-228937-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
	1	PE	Protective earth
	2	PE	Protective earth
	3	L1	Power supply
	4	L2	Power supply
	5	L3	Power supply
	6	NC	Status relay, floating status contact, break for failure, contact rating 250 VAC / 2 A (AC1) / min. 10 mA; reinforced insulation on supply side and basic insulation on control interface side
	7	COM	Status relay, floating status contact, break for failure, contact rating 250 VAC / 2 A (AC1) / min. 10 mA; reinforced insulation on supply side and basic insulation on control interface side
	8	GND	Reference ground for control interface, SELV
	9	RSA	RS485 interface for MODBUS, RSA; SELV
	10	RSB	RS485 interface for MODBUS, RSB; SELV
	11	0-10 V	Analog input (set value) SELV, 0-10 V, Ri = 100 kΩ, adjustable curve
	12	+10 V	Fixed voltage output 10 VDC, SELV, +10 V ±3%, max. 10 mA, short-circuit-proof, power supply for external devices (e.g. pot); fixed voltage input 24 VDC for setting parameters via MODBUS without line voltage supply

8300100447

VBH0630CTRNS

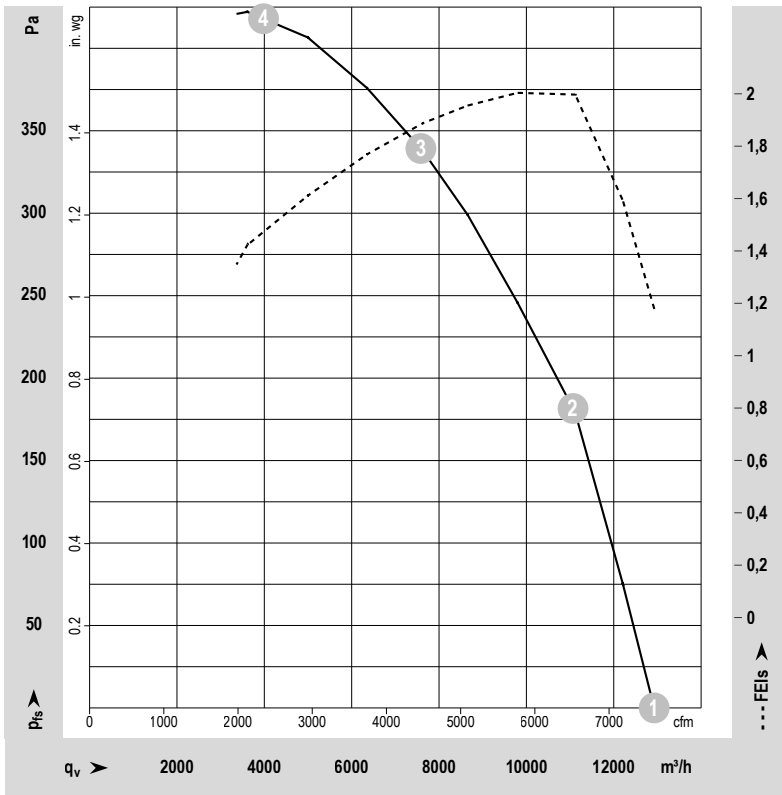
Model LU-228937-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Curves: Air performance 50 Hz



$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$

Measurement: LU-228937-1  
Date: 2023-09-20  
Nozzle: 8217101925

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	$P_e$	I	$LpA_{in}$	$LwA_{in}$	$LwA_{out}$	LwA	$q_v$	$P_{fs}$	$q_v$	$P_{fs}$
		V	Hz	$\text{min}^{-1}$	W	A	dB(A)	dB(A)	dB(A)	dB	$\text{m}^3/\text{h}$	Pa	cfm	in. wg
1	3~	400	50	1060	669	1.06	71	79	83	84	12925	0	7610	0.00
2	3~	400	50	1060	913	1.42	65	73	77	79	11020	180	6485	0.72
3	3~	400	50	1060	1070	1.70	59	66	71	72	7595	340	4470	1.36
4	3~	400	50	1060	900	1.40	61	69	73	74	3990	420	2350	1.69



Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) ·  $P_e$  = Power consumption · I = Current draw ·  $LpA_{in}$  = Sound pressure level intake side ·  $LwA_{in}$  = Sound power level intake side  
 $LwA_{out}$  = Sound power level outlet side · LwA = Sound power level total ·  $q_v$  = Air flow ·  $P_{fs}$  = Pressure increase

Values for sound power levels (total LwA,  $LwA_{in}$  and  $LwA_{out}$ ) is for installation type A - Free inlet, Free outlet.  
The  $LpA$  levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.

Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.



8300100091  
VBH0630CTTLS  
Model LU-214717-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100091	
Motor	E15031-55	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Status		prelim.
Speed (rpm)	min <sup>-1</sup>	1540
Power consumption	W	3150
Current draw	A	4.8
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	73	56.7	09 Power consumption $P_{ed}$	kW	3.14
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	12525
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	629
04 Efficiency grade N		78.3	62	10 Speed (rpm) n	min <sup>-1</sup>	1540
05 Variable speed drive		Yes		11 Specific ratio <sup>*</sup>		1.01

Data obtained at optimum efficiency level.

<sup>\*</sup> Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-214717

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).  
The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.  
The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100091

VBH0630CTTLS

Model LU-214717-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	42,4
<b>Size</b>	630 mm
<b>Motor size</b>	150
<b>Rotor surface</b>	Painted black
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"> <li>- Operation and alarm display with LED</li> <li>- External 15-50 VDC input (parameterization)</li> <li>- Alarm relay</li> <li>- Integrated PI controller</li> <li>- Configurable inputs/outputs (I/O)</li> <li>- MODBUS V6.3</li> <li>- Motor current limitation</li> <li>- RS-485 MODBUS-RTU</li> <li>- Soft start</li> <li>- Voltage output 3.3-24 VDC, Pmax = 800 mW</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage / phase failure detection</li> <li>- Vibration sensor</li> </ul>
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Electronic motor protection
<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA

8300100091

VBH0630CTTLS

Model LU-214717-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

Approval

CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

8300100091

VBH0630CTTLS

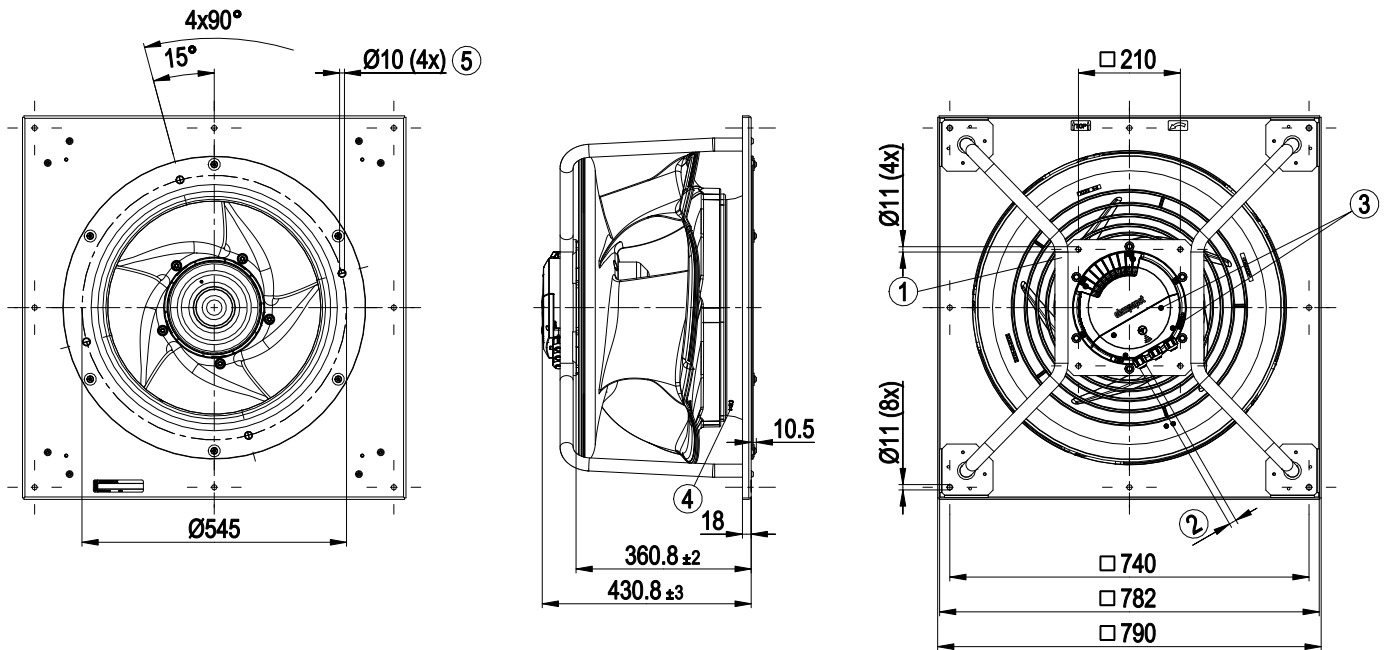
Model LU-214717-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque $4 \pm 0.6$ Nm (The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
3	Tightening torque $1.5 \pm 0.2$ Nm
4	Inlet ring with pressure tap (k-factor: 463)
5	Fastening holes for FlowGrid 00630-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

8300100091

VBH0630CTTLS

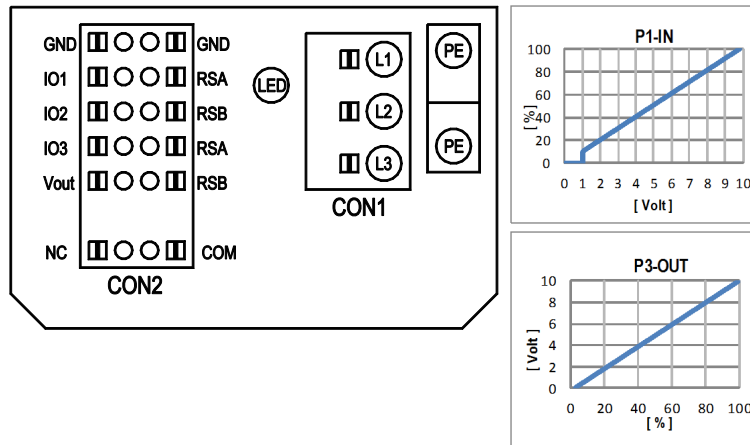
Model LU-214717-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
	CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function parameterizable (see "Optional interface functions" table) Factory setting: Digital input - high active, function: Disable input, SELV - inactive: Pin open or applied voltage < 1.5 VDC - active: applied voltage 3.5-50 VDC Reset function: Triggering of error reset on change of state from "enabled" to "disabled"
	CON2	IO2	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog input 0-10 V/PWM, Ri=100 kΩ, function: Set value Characteristic curve parameterizable (see input characteristic curve P1-IN), SELV
	CON2	IO3	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog output 0-10 V, max. 5 mA, function: Actual speed Characteristic curve parametrizable (see output characteristic curve P3-OUT), SELV
	CON2	Vout	Voltage output 3.3-24 VDC ±5%, Pmax=800 mW, voltage parameterizable Factory setting: 10 VDC short-circuit-proof, supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage
	CON2	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	CON2	NC	Status relay, floating status contact, break for failure
		LED	green: status = good, ready for operation orange: status = warning red: status = failure
		P1-IN	Input characteristic curve
		P3-OUT	Output characteristic curve

8300100091

VBH0630CTTLS

Model LU-214717-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Terminal/plug assignment

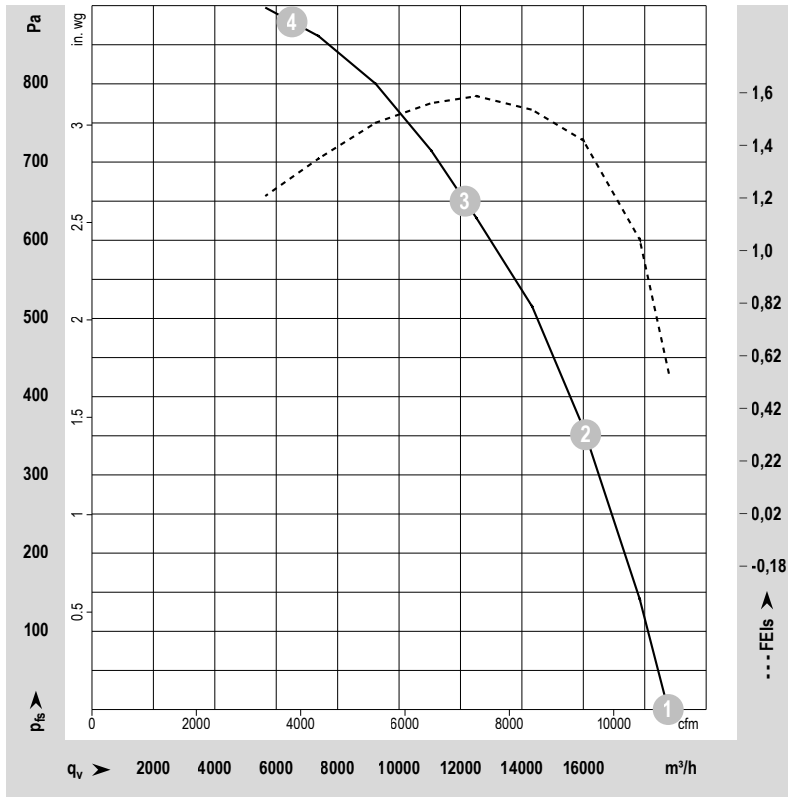
CON2	configurable IO mode	electrical specification	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	
				selected directly via IO mode)	selected directly via IO mode)
IO1	○ Din1 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	D158 [0]
	○ Ain1 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV			D158 [2]
	○ Tach out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV		○	D158 [5]
	○ Diagnostics out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV			D158 [6]
IO2	○ Din2 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	D159 [0]
	○ Ain2 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV			D159 [2]
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV		○	D159 [3]
	○ Din3 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC			D15A [0]
IO3	○ Din3 (active low), digital input	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage 3.5-50VDC		○	D15A [1]
	○ PWMIn3: digital input, idle level high	PWM = 40Hz - 10kHz, characteristics parameterizable			D15A [7]
	○ PWMIn3: digital input, idle level low	active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV		○	D15A [8]
	○ Aout3 0-10V: analog output	function parameterizable, max. 5mA max output frequency 300Hz, SELV			D15A [4]
RSA	○ Tacho out (pulses), analog output	0-10V/max. 5mA max output frequency 300Hz, SELV		○	D15A [5]
	○ Diagnostics out (pulses)	0-10V/max. 5mA max output frequency 300Hz, SELV			D15A [6]
	○ RSA/RSB bus connection,	MODBUS RTU, specification V6.3, SELV		○	
Yout	voltage output alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	voltage parameterizable 3.3...24VDC +/- 5%, Pmax=800mW, short-circuit-proof, supply for external devices, SELV 15...50VDC			D16E [..]

8300100091  
 VBH0630CTTLS  
 Model LU-214717-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Curves: Air performance 50 Hz



$$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$$

Measurement: LU-214717-1  
 Date: 2021-07-09  
 Nozzle: 8217101925

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	1540	1934	3.04	81	89	92	18765	0	11045	0.00
2	3~	400	50	1540	2818	4.34	74	82	86	16045	350	9445	1.41
3	3~	400	50	1540	3150	4.80	72	79	83	12150	650	7150	2.61
4	3~	400	50	1540	2829	4.36	74	81	85	6515	880	3835	3.53

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
 LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LWA, LWA<sub>in</sub> and LWA<sub>out</sub>) is for installation type A - Free inlet, Free outlet.  
 The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
 Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.



8300100094  
VBH0630CTTPS  
Model LU-228938-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen  
Phone +49 7938 81-0  
Fax +49 7938 81-110  
info1@de.ebmpapst.com  
www.ebmpapst.com

Limited partnership · Headquarters Mulfingen  
Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen  
Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100094	
Motor	E15031-85	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Speed (rpm)	min <sup>-1</sup>	1630
Power consumption	W	3720
Current draw	A	5.7
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	75	57.4	09 Power consumption $P_{ed}$	kW	3.63
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	13670
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	687
04 Efficiency grade N		79.6	62	10 Speed (rpm) n	min <sup>-1</sup>	1630
05 Variable speed drive		Yes		11 Specific ratio*		1.01

Data obtained at optimum efficiency level.

\* Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-228938

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).  
The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.  
The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).



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VBH0630CTTPS

Model LU-228938-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	49.8 kg
<b>Size</b>	630 mm
<b>Motor size</b>	150
<b>Rotor surface</b>	Painted black
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"> <li>- Operation and alarm display with LED</li> <li>- External 15-50 VDC input (parameterization)</li> <li>- Alarm relay</li> <li>- Integrated PI controller</li> <li>- Configurable inputs/outputs (I/O)</li> <li>- MODBUS V6.3</li> <li>- Motor current limitation</li> <li>- RS-485 MODBUS-RTU</li> <li>- Soft start</li> <li>- Voltage output 3.3-24 VDC, Pmax = 800 mW</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage / phase failure detection</li> <li>- Vibration sensor</li> </ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Electronic motor protection

8300100094

VBH0630CTTPS

Model LU-228938-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; UL 1004-7 + 60730-1; EAC

8300100094

VBH0630CTTPS

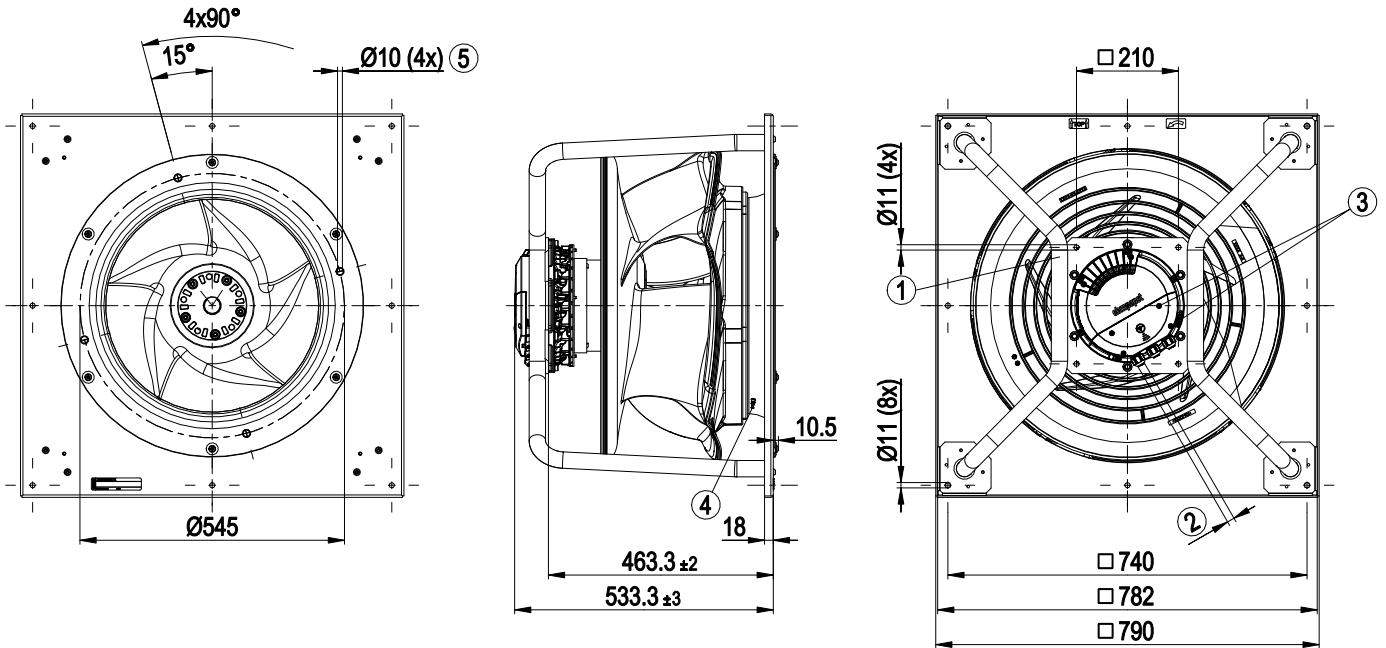
Model LU-228938-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Product drawing

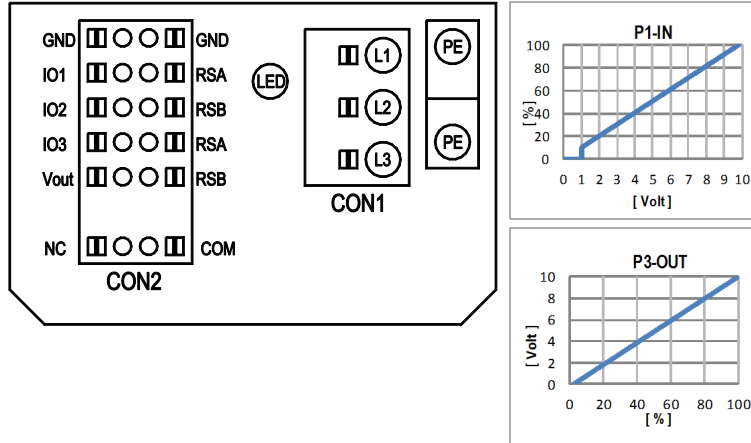


1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque $4 \pm 0.6$ Nm (The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
3	Tightening torque $1.5 \pm 0.2$ Nm
4	Inlet ring with pressure tap (k-factor: 463)
5	Fastening holes for FlowGrid 00630-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
	CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function parameterizable (see "Optional interface functions" table) Factory setting: Digital input - high active, function: Disable input, SELV - inactive: Pin open or applied voltage < 1.5 VDC - active: applied voltage 3.5-50 VDC Reset function: Triggering of error reset on change of state from "enabled" to "disabled"
	CON2	IO2	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog input 0-10 V/PWM, Ri=100 kΩ, function: Set value Characteristic curve parameterizable (see input characteristic curve P1-IN), SELV
	CON2	IO3	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog output 0-10 V, max. 5 mA, function: Actual speed Characteristic curve parametrizable (see output characteristic curve P3-OUT), SELV
	CON2	Vout	Voltage output 3.3-24 VDC ±5%, Pmax=800 mW, voltage parameterizable Factory setting: 10 VDC short-circuit-proof, supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage
	CON2	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	CON2	NC	Status relay, floating status contact, break for failure
		LED	green: status = good, ready for operation orange: status = warning red: status = failure
		P1-IN	Input characteristic curve
		P3-OUT	Output characteristic curve

8300100094

VBH0630CTTPS

Model LU-228938-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Terminal/plug assignment

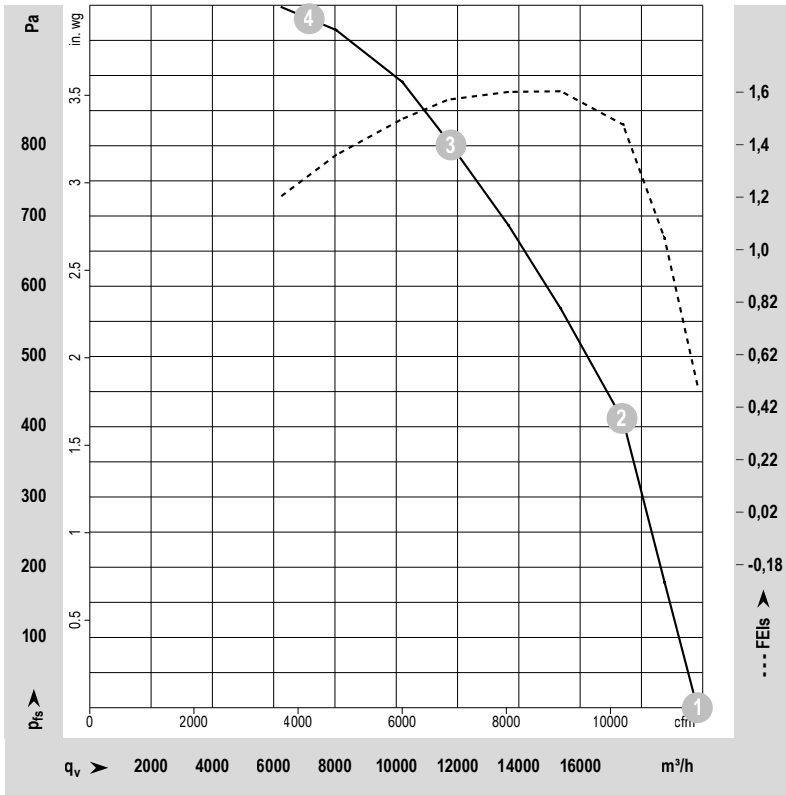
CON2	configurable IO mode	electrical specification	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	
				selected directly via IO mode)	selected directly via IO mode)
IO1	○ Din1 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	D158 [0]
	○ Ain1 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV			D158 [2]
	○ Tach out (open collector output)	Umax = 50VDC, I <sub>max</sub> = 20mA, SELV		○	D158 [5]
	○ Diagnostics out (open collector output)	Umax = 50VDC, I <sub>max</sub> = 20mA, SELV			D158 [6]
IO2	○ Din2 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	D159 [0]
	○ Ain2 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV			D159 [2]
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV		○	D159 [3]
	○ Din3 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC			D15A [0]
IO3	○ Din3 (active low), digital input	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage 3.5-50VDC		○	D15A [1]
	○ PWMIn3: digital input, idle level high	PWM = 40Hz - 10kHz, characteristics parameterizable			D15A [7]
	○ PWMIn3: digital input, idle level low	active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV		○	
	○ Aout3 0-10V: analog output	active: applied voltage 3.5-50VDC not active: pin open or applied voltage < 1.5VDC, SELV		○	D15A [8]
	○ Tacho out (pulses), analog output	function parameterizable, max. 5mA max output frequency 300Hz, SELV			D15A [4]
	○ Diagnostics out (pulses)	0-10V/max. 5mA max output frequency 300Hz, SELV 0-10V/max. 5mA max output frequency 300Hz, SELV		○	D15A [5] D15A [6]
RSA	RS485 bus connection,	MODBUS RTU, specification V6.3, SELV			
RSB	voltage output	voltage parameterizable 3.3...24VDC +/- 5%, P <sub>max</sub> =800mW, short-circuit-proof, supply for external devices, SELV			D16E [..]
Vout	alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...50VDC			

8300100094  
 VBH0630CTTPS  
 Model LU-228938-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Curves: Air performance 50 Hz



$$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$$

Measurement: LU-228938-1  
 Date: 2023-09-22  
 Nozzle: 8217101925

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	LwA	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	dB	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	1630	2249	3.50	85	92	95	96	19825	0	11670	0.00
2	3~	400	50	1630	3245	4.98	78	86	89	91	17330	410	10200	1.65
3	3~	400	50	1630	3720	5.70	70	78	83	84	11780	800	6930	3.21
4	3~	400	50	1630	3374	5.17	74	81	86	87	7160	980	4215	3.93

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
 LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LwA, LwA<sub>in</sub> and LwA<sub>out</sub>) is for installation type A - Free inlet, Free outlet.  
 The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
 Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.



8300100057  
VBH0630CTTPS  
Model LU-214123-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100057	
Motor	E15031-85	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Status		prelim.
Speed (rpm)	min <sup>-1</sup>	1670
Power consumption	W	3900
Current draw	A	6.0
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	74.2	57.6	09 Power consumption $P_{ed}$	kW	3.84
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	13585
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	725
04 Efficiency grade N		78.6	62	10 Speed (rpm) n	min <sup>-1</sup>	1665
05 Variable speed drive		Yes		11 Specific ratio <sup>*</sup>		1.01

Data obtained at optimum efficiency level.

<sup>\*</sup> Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-214123

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).  
The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.  
The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100057

VBH0630CTTPS

Model LU-214123-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Technical description

<b>Weight</b>	46.7 kg
<b>Size</b>	630 mm
<b>Motor size</b>	150
<b>Rotor surface</b>	Painted black
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"><li>- Operation and alarm display with LED</li><li>- External 15-50 VDC input (parameterization)</li><li>- Alarm relay</li><li>- Integrated PI controller</li><li>- Configurable inputs/outputs (I/O)</li><li>- MODBUS V6.3</li><li>- Motor current limitation</li><li>- RS-485 MODBUS-RTU</li><li>- Soft start</li><li>- Voltage output 3.3-24 VDC, Pmax = 800 mW</li><li>- Control interface with SELV potential safely disconnected from the mains</li><li>- Thermal overload protection for electronics/motor</li><li>- Line undervoltage / phase failure detection</li><li>- Vibration sensor</li></ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Electronic motor protection



8300100057  
VBH0630CTTPS  
Model LU-214123-1

## EC centrifugal module - RadiPac

backward-curved, single-intake  
with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

8300100057

VBH0630CTTPS

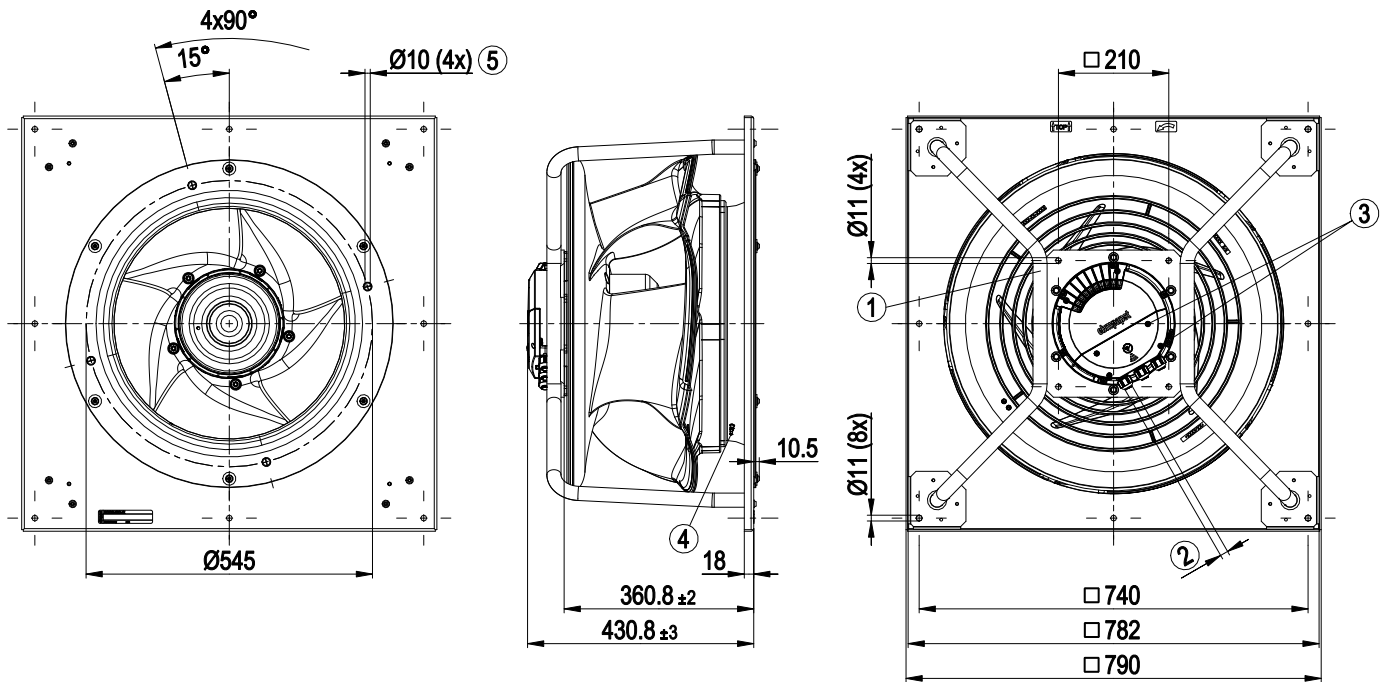
Model LU-214123-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing

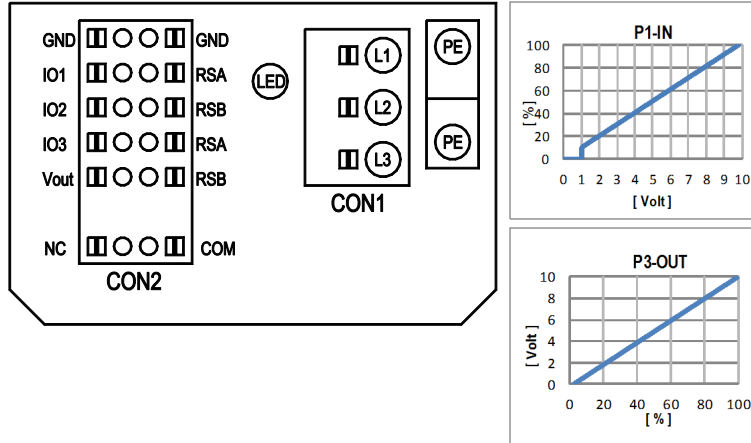


1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque $4 \pm 0.6$ Nm (The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
3	Tightening torque $1.5 \pm 0.2$ Nm
4	Inlet ring with pressure tap (k-factor: 463)
5	Fastening holes for FlowGrid 00630-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
	CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function parameterizable (see "Optional interface functions" table) Factory setting: Digital input - high active, function: Disable input, SELV - inactive: Pin open or applied voltage < 1.5 VDC - active: applied voltage 3.5-50 VDC Reset function: Triggering of error reset on change of state from "enabled" to "disabled"
	CON2	IO2	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog input 0-10 V/PWM, Ri=100 kΩ, function: Set value Characteristic curve parameterizable (see input characteristic curve P1-IN), SELV
	CON2	IO3	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog output 0-10 V, max. 5 mA, function: Actual speed Characteristic curve parametrizable (see output characteristic curve P3-OUT), SELV
	CON2	Vout	Voltage output 3.3-24 VDC ±5%, Pmax=800 mW, voltage parameterizable Factory setting: 10 VDC short-circuit-proof, supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage
	CON2	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	CON2	NC	Status relay, floating status contact, break for failure
		LED	green: status = good, ready for operation orange: status = warning red: status = failure
		P1-IN	Input characteristic curve
		P3-OUT	Output characteristic curve

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VBH0630CTTPS

Model LU-214123-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Terminal/plug assignment

CON2	configurable IO mode	electrical specification	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	
				selected directly via IO mode)	selected directly via IO mode)
IO1	○ Din1 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	D158 [0]
	○ Ain1 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV			D158 [2]
	○ Tach out (open collector output)	Umax = 50VDC, I <sub>max</sub> = 20mA, SELV		○	D158 [5]
	○ Diagnostics out (open collector output)	Umax = 50VDC, I <sub>max</sub> = 20mA, SELV			D158 [6]
IO2	○ Din2 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	D159 [0]
	○ Ain2 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV			D159 [2]
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV		○	D159 [3]
	○ Din3 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC			D15A [0]
IO3	○ Din3 (active low), digital input	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage 3.5-50VDC		○	D15A [1]
	○ PWMIn3: digital input, idle level high	PWM = 40Hz - 10kHz, characteristics parameterizable			D15A [7]
	○ PWMIn3: digital input, idle level low	active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV		○	D15A [8]
	○ Aout3 0-10V: analog output	function parameterizable, max. 5mA max output frequency 300Hz SELV			D15A [4]
RSA	○ Tacho out (pulses), analog output	0-10V/max. 5mA max output frequency 300Hz SELV		○	D15A [5]
	○ Diagnostics out (pulses)	0-10V/max. 5mA max output frequency 300Hz, SELV			D15A [6]
	○ RSA/RSB bus connection,	MODBUS RTU, specification V6.3, SELV		○	
RSB	voltage output	voltage parameterizable 3.3...24VDC +/- 5%, P <sub>max</sub> =800mW, short-circuit-proof, supply for external devices, SELV			D16E [..]
Vout	alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...50VDC			

○ configurable option

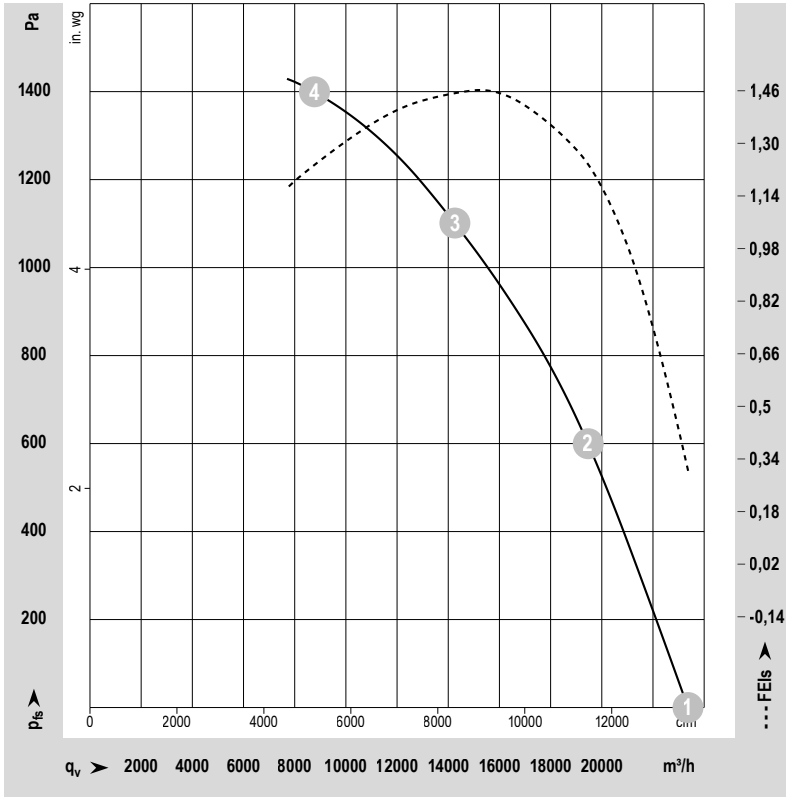
For further information and additional functions see EC Control Software, Fan-Set-App, or MODBUS Parameter Specification V6.3

8300100057  
 VBH0630CTTPS  
 Model LU-214123-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Curves: Air performance 50 Hz



$$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$$

Measurement: LU-214123-1  
 Date: 2021-06-10  
 Nozzle: 8217101925

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	1670	2495	3.87	83	91	95	20185	0	11880	0.00
2	3~	400	50	1670	3461	5.30	76	84	88	17130	400	10085	1.61
3	3~	400	50	1670	3900	6.00	73	80	85	12380	800	7285	3.21
4	3~	400	50	1670	3646	5.58	75	82	86	8000	1000	4710	4.01

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
 LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LwA, LwA<sub>in</sub> and LwA<sub>out</sub>) is for installation type A - Free inlet, Free outlet.  
 The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.

Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.



8300100048

VBH0630CTTRS

Model LU-213975-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100048	
Motor	E15034-120	

Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Speed (rpm)	min <sup>-1</sup>	1910
Power consumption	W	5850
Current draw	A	9.0
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment

Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	75.7	59.5	09 Power consumption $P_{ed}$	kW	5.75
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	15840
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	956
04 Efficiency grade N		78.2	62	10 Speed (rpm) n	min <sup>-1</sup>	1910
05 Variable speed drive		Yes		11 Specific ratio*		1.01

Data obtained at optimum efficiency level.

\* Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-213975

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings). The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.

The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100048

VBH0630CTTRS

Model LU-213975-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	59 kg
<b>Size</b>	630 mm
<b>Motor size</b>	150
<b>Rotor surface</b>	Painted black
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"><li>- Operation and alarm display with LED</li><li>- External 15-50 VDC input (parameterization)</li><li>- Alarm relay</li><li>- Integrated PI controller</li><li>- Configurable inputs/outputs (I/O)</li><li>- MODBUS V6.4</li><li>- Motor current limitation</li><li>- RS-485 MODBUS-RTU</li><li>- Soft start</li><li>- Voltage output 3.3-24 VDC, Pmax = 800 mW</li><li>- Control interface with SELV potential safely disconnected from the mains</li><li>- Thermal overload protection for electronics/motor</li><li>- Line undervoltage / phase failure detection</li><li>- Vibration sensor</li></ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Electronic motor protection

8300100048

VBH0630CTTRS

Model LU-213975-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1



8300100048

VBH0630CTTRS

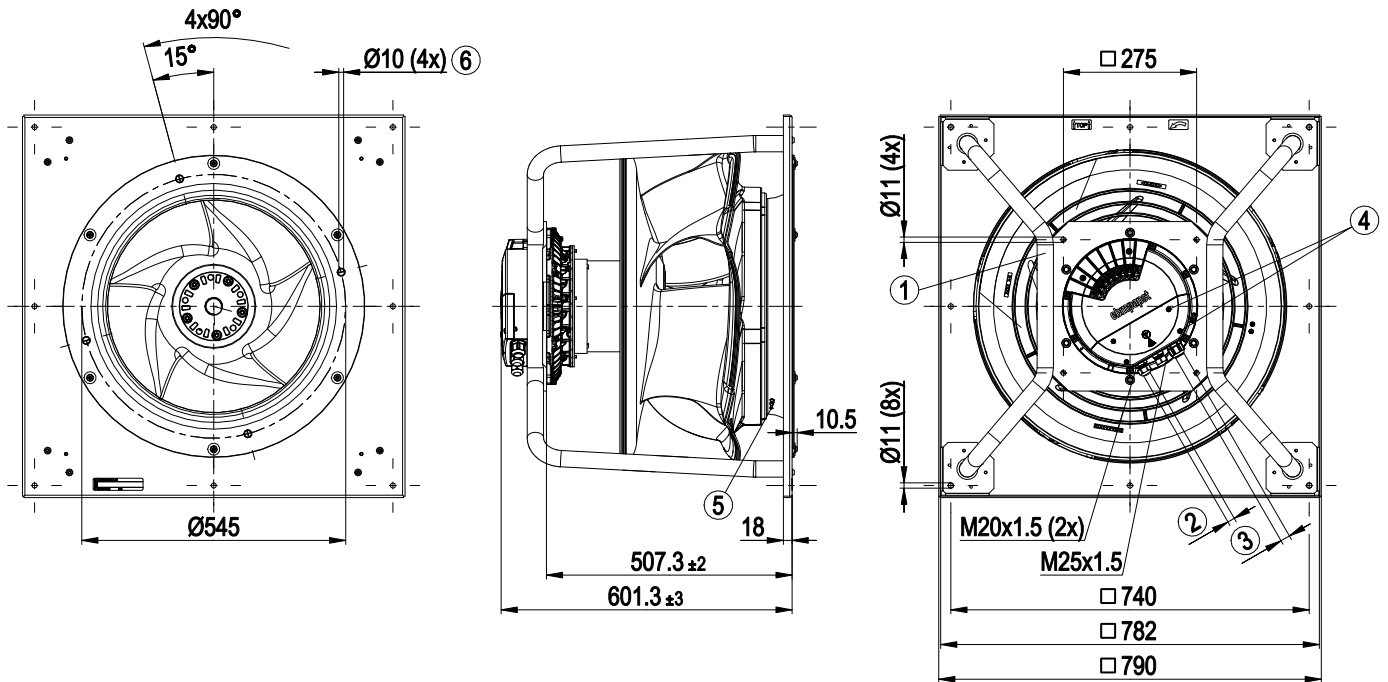
Model LU-213975-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

### Product drawing

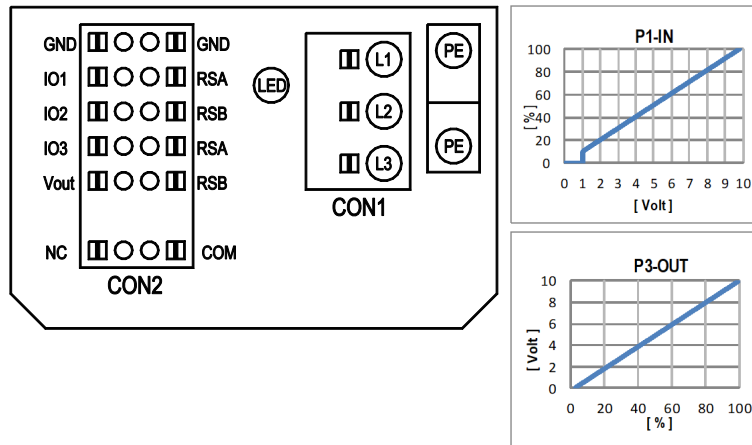


1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque $4 \pm 0.6$ Nm
3	Cable diameter min. 5 mm, max. 14 mm, tightening torque $6 \pm 0.9$ Nm (The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
4	Tightening torque $3 \pm 0.3$ Nm
5	Inlet ring with pressure tap (k-factor: 463)
6	Fastening holes for FlowGrid 00630-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
	CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function parameterizable (see "Optional interface functions" table) Factory setting: Digital input - high active, function: Disable input, SELV - inactive: Pin open or applied voltage < 1.5 VDC - active: applied voltage 3.5-50 VDC Reset function: Triggering of error reset on change of state from "enabled" to "disabled"
	CON2	IO2	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog input 0-10 V/PWM, Ri=100 kΩ, function: Set value Characteristic curve parameterizable (see input characteristic curve P1-IN), SELV
	CON2	IO3	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog output 0-10 V, max. 5 mA, function: Actual speed Characteristic curve parametrizable (see output characteristic curve P3-OUT), SELV
	CON2	Vout	Voltage output 3.3-24 VDC ±5%, Pmax=800 mW, voltage parameterizable Factory setting: 10 VDC short-circuit-proof, supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage
	CON2	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	CON2	NC	Status relay, floating status contact, break for failure
		LED	green: status = good, ready for operation orange: status = warning red: status = failure
		P1-IN	Input characteristic curve
		P3-OUT	Output characteristic curve

8300100048

VBH0630CTTRS

Model LU-213975-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Terminal/plug assignment

CON2	configurable IO mode	electrical specification	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	
				MODBUS Register for IO mode	configuration
IO1	○ Din1 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D158 [0]	
	○ Ain1 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV		D158 [2]	
	○ Tach out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV		D158 [5]	
	○ Diagnostics out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV		D158 [6]	
IO2	○ Din2 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D159 [0]	
	○ Ain2 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV		D159 [2]	
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV		D159 [3]	
	○ Din3 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		D15A [0]	
IO3	○ Din3 (active low), digital input	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage 3.5-50VDC		D15A [1]	
	○ PWMIn3: digital input idle level high	PWM = 40Hz - 10kHz, characteristics parameterizable		D15A [7]	
	○ PWMIn3: digital input idle level low	active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV		D15A [8]	
	○ Aout3 0-10V: analog output	function parameterizable, max. 5mA max output frequency 300Hz, SELV		D15A [4]	
	○ Tacho out (pulses), analog output	0-10V/max. 5mA max output frequency 300Hz, SELV		D15A [5]	
	○ Diagnostics out (pulses)	0-10V/max. 5mA max output frequency 300Hz, SELV		D15A [6]	
RSA	RS485 bus connection,	MODBUS RTU, specification V6.4, SELV			
RSB	voltage output	voltage parameterizable 3.3...24VDC +/- 5%, Pmax=800mW, short-circuit-proof, supply for external devices, SELV		D16E [..]	
Vout	alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...50VDC			

○ configurable option

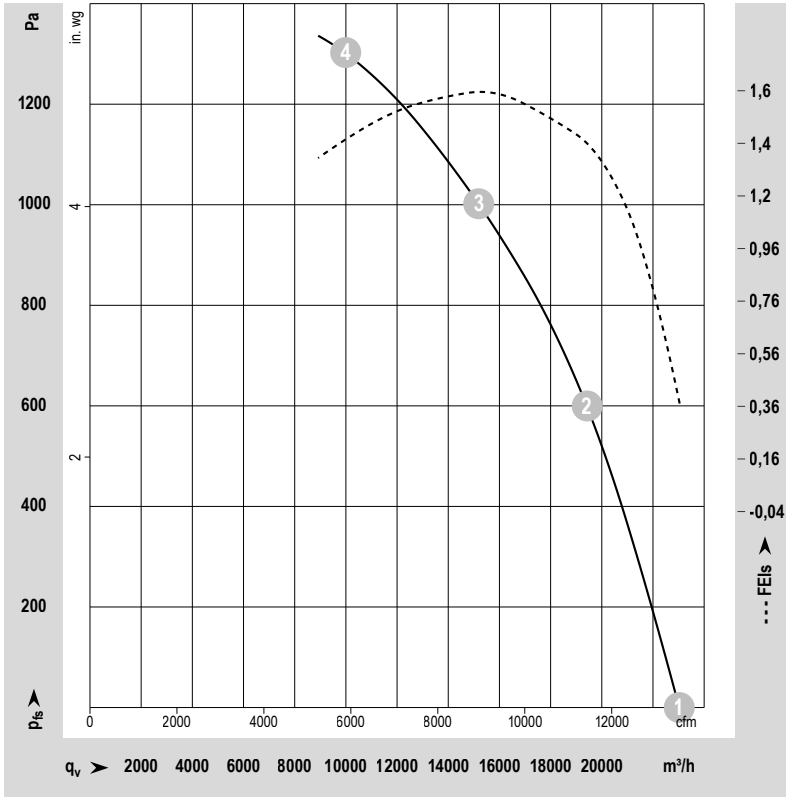
For further information and additional functions see EC Control Software, Fan-Set-App, or MODBUS Parameter Specification V6.4

8300100048  
 VBH0630CTTRS  
 Model LU-213975-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Curves: Air performance 50 Hz



$$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$$

Measurement: LU-213975-1  
 Date: 2021-06-01  
 Nozzle: 8217101925

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	LwA	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	dB	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	1910	3472	5.56	86	94	97	99	23030	0	13555	0.00
2	3~	400	50	1910	5318	8.22	79	87	91	93	19435	600	11440	2.41
3	3~	400	50	1910	5850	9.00	74	82	87	88	15175	1000	8930	4.01
4	3~	400	50	1910	5592	8.65	76	84	89	90	9985	1300	5875	5.22



Wire = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side · LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LwA, LwA<sub>in</sub> and LwA<sub>out</sub>) is for installation type A - Free inlet, Free outlet. The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet. Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.

8300100217

VBH0630CTTRS

Model LU-216705-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

## Nominal data

Item	8300100217	
Motor	E15034-120	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Speed (rpm)	min <sup>-1</sup>	1950
Power consumption	W	6400
Current draw	A	9.8
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change

## Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency $\eta_{es}$	%	71	59.9	09 Power consumption $P_{ed}$	kW	6.26
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	15945
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	971
04 Efficiency grade N		73.1	62	10 Speed (rpm) n	min <sup>-1</sup>	1945
05 Variable speed drive		Yes		11 Specific ratio*		1.01

Data obtained at optimum efficiency level.

\* Specific ratio =  $1 + p_{fs} / 100\,000\text{ Pa}$

LU-216705

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings). The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again. The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

8300100217

VBH0630CTTRS

Model LU-216705-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Technical description

<b>Weight</b>	57.2 kg
<b>Size</b>	630 mm
<b>Motor size</b>	150
<b>Rotor surface</b>	Painted black
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Support plate material</b>	Sheet steel, galvanized
<b>Support bracket material</b>	Steel, painted black
<b>Inlet nozzle material</b>	ABS plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	See legend on product drawing
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"> <li>- Operation and alarm display with LED</li> <li>- External 15-50 VDC input (parameterization)</li> <li>- Alarm relay</li> <li>- Integrated PI controller</li> <li>- Configurable inputs/outputs (I/O)</li> <li>- MODBUS V6.4</li> <li>- Motor current limitation</li> <li>- RS-485 MODBUS-RTU</li> <li>- Soft start</li> <li>- Voltage output 3.3-24 VDC, Pmax = 800 mW</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage / phase failure detection</li> <li>- Vibration sensor</li> </ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Electronic motor protection

8300100217

VBH0630CTTRS

Model LU-216705-1

## EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

<b>Protection class assignment</b>	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

8300100217

VBH0630CTTRS

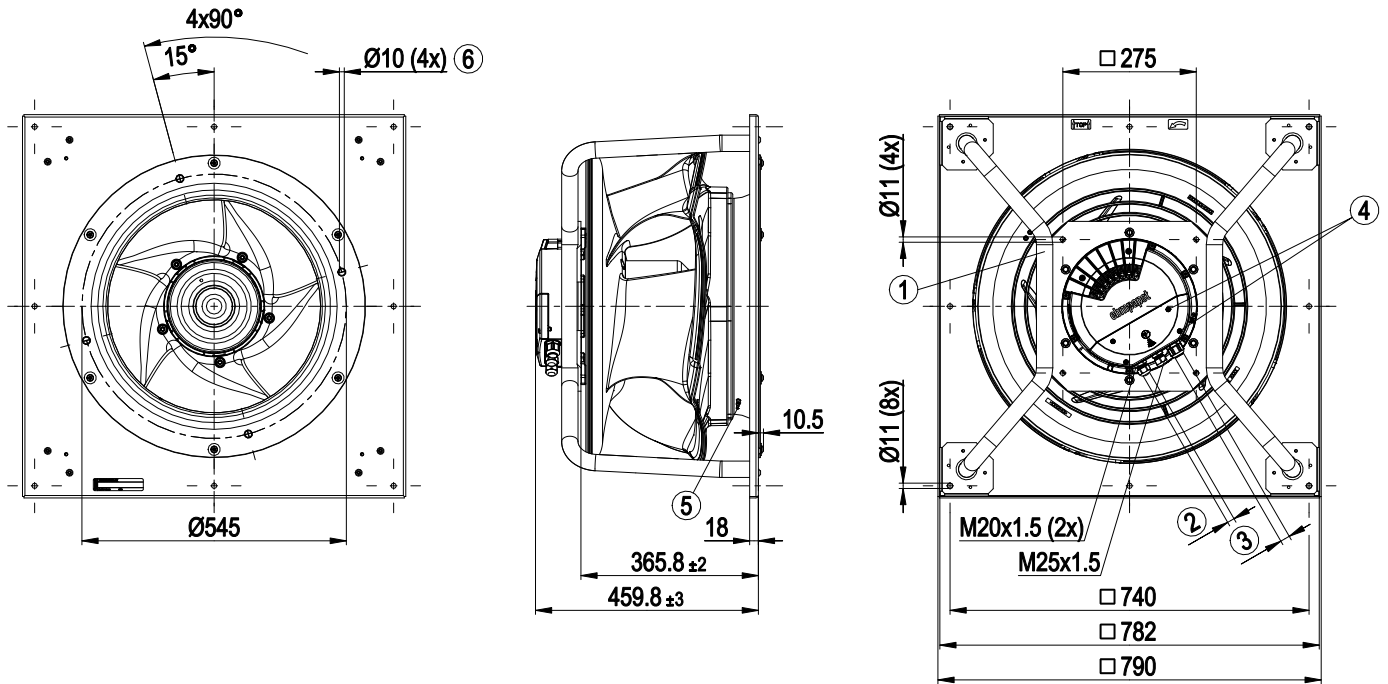
Model LU-216705-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque $4 \pm 0.6$ Nm
3	Cable diameter min. 5 mm, max. 14 mm, tightening torque $6 \pm 0.9$ Nm
	(The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
4	Tightening torque $3 \pm 0.3$ Nm
5	Inlet ring with pressure tap (k-factor: 463)
6	Fastening holes for FlowGrid 00630-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required



8300100217

VBH0630CTTRS

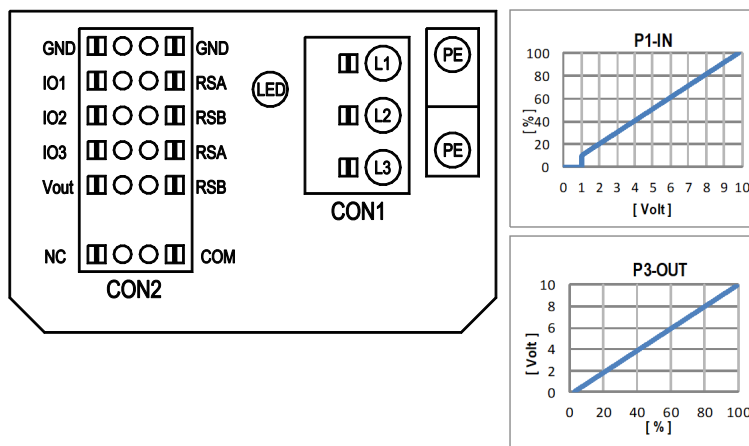
Model LU-216705-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Connection diagram



No.	Conn.	Designation	Function/assignment
	CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function parameterizable (see "Optional interface functions" table) Factory setting: Digital input - high active, function: Disable input, SELV - inactive: Pin open or applied voltage < 1.5 VDC - active: applied voltage 3.5-50 VDC Reset function: Triggering of error reset on change of state from "enabled" to "disabled"
	CON2	IO2	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog input 0-10 V/PWM, Ri=100 kΩ, function: Set value Characteristic curve parameterizable (see input characteristic curve P1-IN), SELV
	CON2	IO3	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog output 0-10 V, max. 5 mA, function: Actual speed Characteristic curve parameterizable (see output characteristic curve P3-OUT), SELV
	CON2	Vout	Voltage output 3.3-24 VDC ±5%, Pmax=800 mW, voltage parameterizable Factory setting: 10 VDC short-circuit-proof, supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage
	CON2	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	CON2	NC	Status relay, floating status contact, break for failure
		LED	green: status = good, ready for operation orange: status = warning red: status = failure
		P1-IN	Input characteristic curve
		P3-OUT	Output characteristic curve

8300100217

VBH0630CTTRS

Model LU-216705-1

# EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

## Terminal/plug assignment

CON2	configurable IO mode	electrical specification	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	
				selected directly via IO mode)	selected directly via IO mode)
IO1	○ Din1 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	D158 [0]
	○ Ain1 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, f <sub>PWM</sub> = 1k...10kHz, SELV		○	D158 [2]
	○ Tach out (open collector output)	U <sub>max</sub> = 50VDC, I <sub>max</sub> = 20mA, SELV		○	D158 [5]
	○ Diagnostics out (open collector output)	U <sub>max</sub> = 50VDC, I <sub>max</sub> = 20mA, SELV		○	D158 [6]
IO2	○ Din2 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	D159 [0]
	○ Ain2 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, f <sub>PWM</sub> = 1k...10kHz, SELV		○	D159 [2]
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV		○	D159 [3]
	○ Din3 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	D15A [0]
IO3	○ Din3 (active low), digital input	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage 3.5-50VDC		○	D15A [1]
	○ PWMIn3: digital input idle level high	PWM = 40Hz - 10kHz, characteristics parameterizable		○	D15A [7]
	○ PWMIn3: digital input idle level low	active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV		○	D15A [8]
	○ Aout3 0-10V: analog output	function parameterizable, max. 5mA, max output frequency 300Hz, SELV		○	D15A [4]
RSA	○ Tacho out (pulses), analog output	0-10V/max. 5mA, max output frequency 300Hz, SELV		○	D15A [5]
	○ Diagnostics out (pulses)	0-10V/max. 5mA, max output frequency 300Hz, SELV		○	D15A [6]
	○ RSA485 bus connection,	MODBUS RTU, specification V6.4, SELV		○	
RSB	voltage output	voltage parameterizable 3.3...24VDC +/- 5%, P <sub>max</sub> =800mW, short-circuit-proof, supply for external devices, SELV		○	D16E [..]
Vout	alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...50VDC		○	

○ configurable option

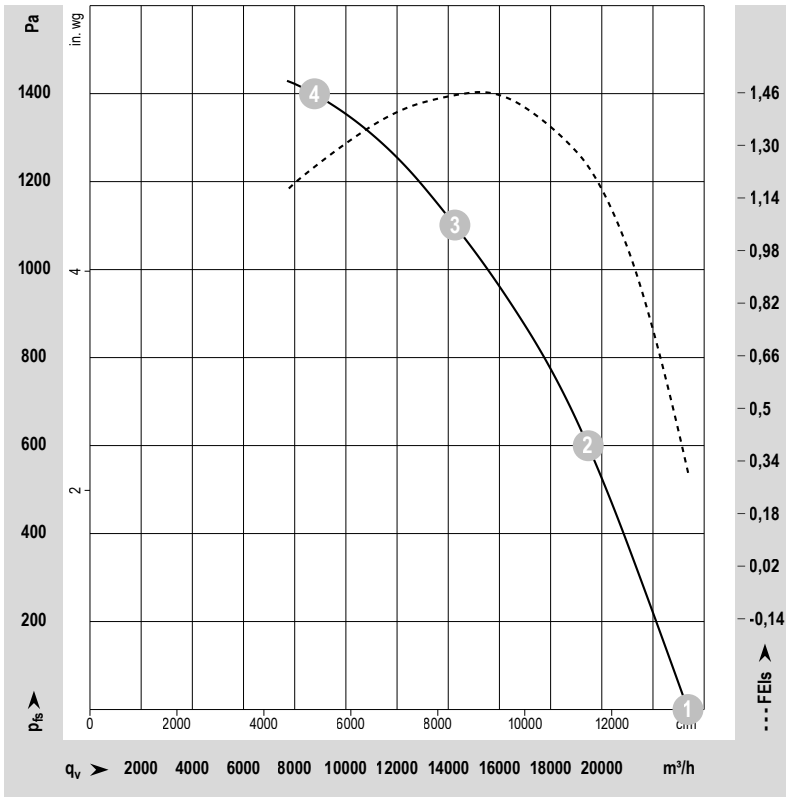
For further information and additional functions see EC Control Software, Fan-Set-App, or MODBUS Parameter Specification V6.4

8300100217  
 VBH0630CTTRS  
 Model LU-216705-1

# EC centrifugal module - RadiPac

backward-curved, single-intake  
 with support bracket

## Curves: Air performance 50 Hz



$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$

Measurement: LU-216705-1  
 Date: 2021-11-18  
 Nozzle: 8217101925

ebm-papst Mulfingen GmbH & Co. KG certifies that the EC centrifugal module - RadiPac shown herein is licensed to bear the AMCA Seal.

The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA 311 and comply with the requirements of the AMCA Certified Ratings Program.



## Measured values

	Wired	U	f	n	P <sub>e</sub>	I	LpA <sub>in</sub>	LwA <sub>in</sub>	LwA <sub>out</sub>	q <sub>v</sub>	P <sub>fs</sub>	q <sub>v</sub>	P <sub>fs</sub>
		V	Hz	min <sup>-1</sup>	W	A	dB(A)	dB(A)	dB(A)	m <sup>3</sup> /h	Pa	cfm	in. wg
1	3~	400	50	1950	4449	6.96	95	102	103	23370	0	13755	0.00
2	3~	400	50	1950	5883	9.07	86	93	96	19475	600	11465	2.41
3	3~	400	50	1950	6400	9.80	78	86	90	14250	1100	8390	4.42
4	3~	400	50	1950	5884	9.07	81	89	94	8775	1400	5165	5.62

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
 LwA<sub>out</sub> = Sound power level outlet side · LwA = Sound power level total · q<sub>v</sub> = Air flow · P<sub>fs</sub> = Pressure increase

Values for sound power levels (total LWA, LWA<sub>in</sub> and LWA<sub>out</sub>) is for installation type A - Free inlet, Free outlet.  
 The LpA levels are not licensed by AMCA International.

Performance certified is for installation type A - Free inlet, Free outlet.  
 Rating Method "E" (Direct Drive, As Run Speed)

FEI calculation is based on wire-to-air tests.

