

**ebm-papst Motor (Shanghai) Co., Ltd.**

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**Nominal Data**

Model	2478	
Motor	M3G150-NA	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	400-480
Frequency	Hz	50/60
Method of obtaining data		ml
Speed	rpm	2410
Power consumption	W	7424
Current draw	A	11.39
Min. ambient temp	°F (°C)	-40 (-40)
Max. ambient temp	°F (°C)	104 (40)

ml = Max. load (maximum fan input power over the range cataloged)

Subject to change

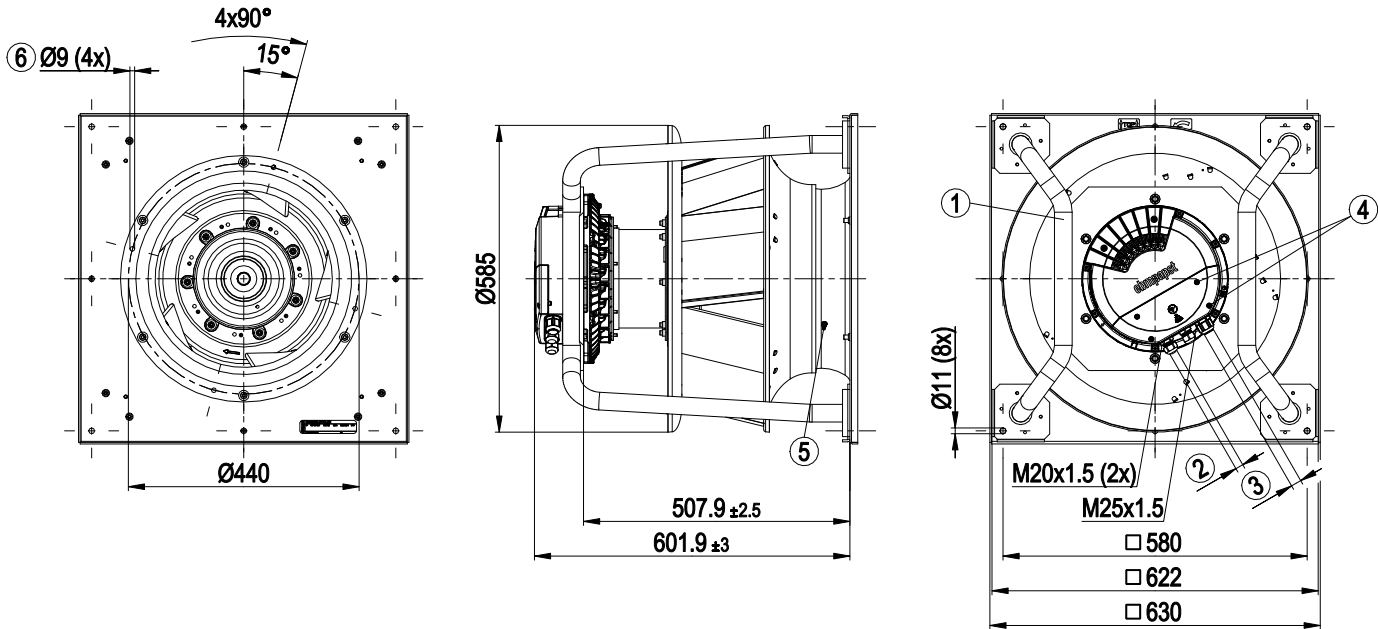
Speed (rpm) shown is nominal.

Performance is based on actual speed of test.

Technical Description	
Weight	119 lb (54 kg)
Nominal Impeller Size	19.7 in (500 mm)
Motor size	150
Rotor surface	Painted black
Impeller Material	Sheet aluminum
Support bracket material	Steel, painted black
Inlet plate material	Sheet steel, galvanized
Inlet nozzle material	Sheet steel, galvanized
Number of blades	5
Direction of rotation	Clockwise, viewed toward rotor
Degree of protection	IP55
Insulation class	F
Environmental class	H1
Ambient temp. note	Occasional startup between -40 °F & -13 °F (-40 °C & -25 °C) is permitted. For continuous operation below -13 °F (-25 °C), use a fan design with special low-temp bearings.
Max. ambient temp.	176 °F (+80 °C) (for motor transport/storage)
Min. ambient temp.	-40 °F (-40 °C) (for motor transport/storage)
Installation position	Shaft horizontal or rotor on bottom; rotor on top on request
Condensation drain holes	On rotor side
Mode	S1
Motor bearing	Ball bearings
Technical features	<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 V6.3/6.4</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 (option)</li> </ul>
EMC immunity to interference	According to EN 61000-6-2 (industrial environment)
EMC interference emission	According to EN 61000-6-4 (industrial environment)
Touch current	≤ 3.5 mA (according to IEC60990; measuring circuit Fig.4, TN system)
Electrical hookup	Terminal box
Motor protection	Electronic motor protection
Protection class	I (with customer connection of protective earth)
Conformity with standards	EN 61800-5-1; CE
Approvals	UL 1004-7 + 60730-1; EAC; CSA C22.2 No. 77 + CAN/CSA-E60730-1

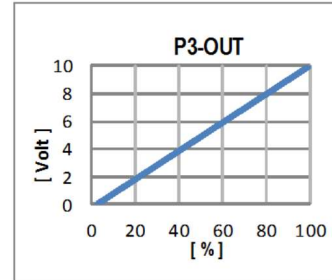
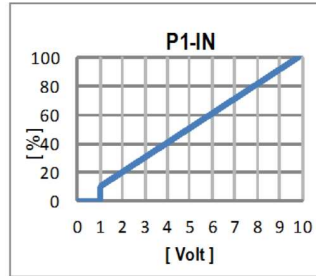
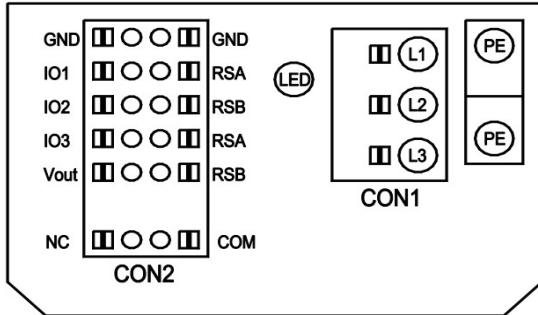
## Product drawing

Dimensions in millimeters



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: 281)
6	Attachment holes for FlowGrid 35505-2-2957 (not included in scope of delivery)
	Note: Please contact ebm-papst if conduit is required

## Electrical Interface



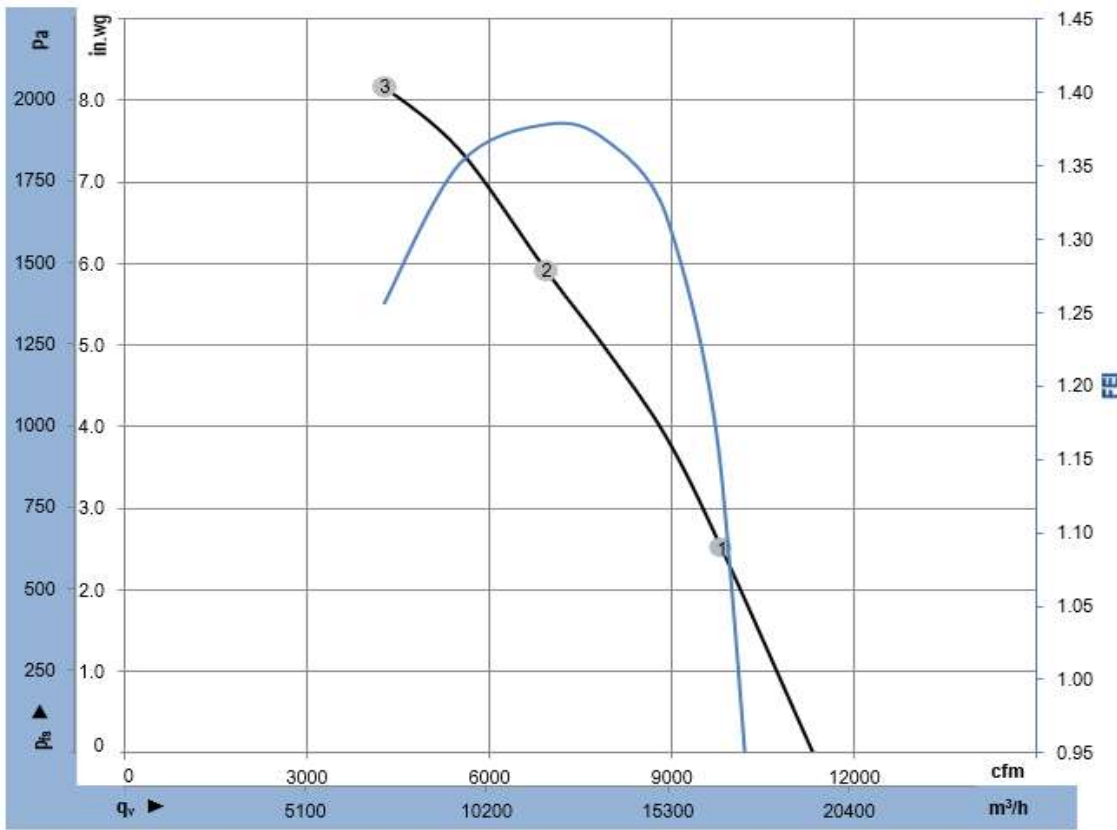
No.	Conn.	Desig.	Function/ Assignment
	CON1	L1,L2,L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function parameterizable (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 VDC / 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 VDC, max. 5 mA, function: Fan modulation level 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 assignment

Terminal	Function	IO Mode	Configurable IO
D101 [..]	source: set value		configurable IO functions: normal / inverse
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		

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

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



$\rho = 0.075 \text{ lbm/ft}^3$

Measurement: LU-2478

ebm-papst Motor (Shanghai) Co., Ltd. certifies that the RadiPac - Modular EC Plenum Fan 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 comply with the requirements of the AMCA Certified Ratings Program.



## Performance Ratings

		U	f	n	$P_{ed}$	I	$q_v$	$p_{is}$	FEI
		V	Hz	rpm	W	A	cfm	in. wg	
1	3~	400	50	2401	5823	9.0	9827	2.5	1.13
2	3~	400	50	2400	7351	11.3	6941	5.9	1.38
3	3~	400	50	2407	6928	10.6	4285	8.2	1.26

U = Supply voltage · f = Frequency · n = Speed ·  $P_{ed}$  = Electrical power · I = Current draw ·  $q_v$  = Air flow ·  $p_{is}$  = Pressure increase

Performance certified is for installation type A - Free inlet, Free outlet with partition.  
Rating Method "E" (Direct Drive, As Run Speed)  
Performance ratings include the effects of support brackets.