

8300100075
VBH0450CTTPS

EC centrifugal module - RadiPac

backward-curved, single-intake
with support bracket

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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 ⁻¹	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 η_{es}	%	73.6	59.9	09 Power consumption P_{ed}	kW	6.25
02 Measurement category		A		09 Air flow q_v	m ³ /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 ⁻¹	3430
05 Variable speed drive		Yes		11 Specific ratio*		1.02

Data obtained at optimum efficiency level.

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

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).

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Technical description

Weight	40.18 kg
Size	450 mm
Motor size	150
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	- Operation and alarm display with LED - External 15-50 VDC input (parameterization) - Alarm relay - Integrated PI controller - Configurable inputs/outputs (I/O) - MODBUS V6.4 - Motor current limitation - RS-485 MODBUS-RTU - Soft start - Voltage output 3.3-24 VDC, Pmax = 800 mW - Control interface with SELV potential safely disconnected from the mains - Thermal overload protection for electronics/motor - Line undervoltage / phase failure detection - Vibration sensor
Power Factor Correction (PFC)	Passive (through low-capacitance DC link)
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
Motor protection	Electronic motor protection

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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 61800-5-1; CE; UKCA
Approval	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

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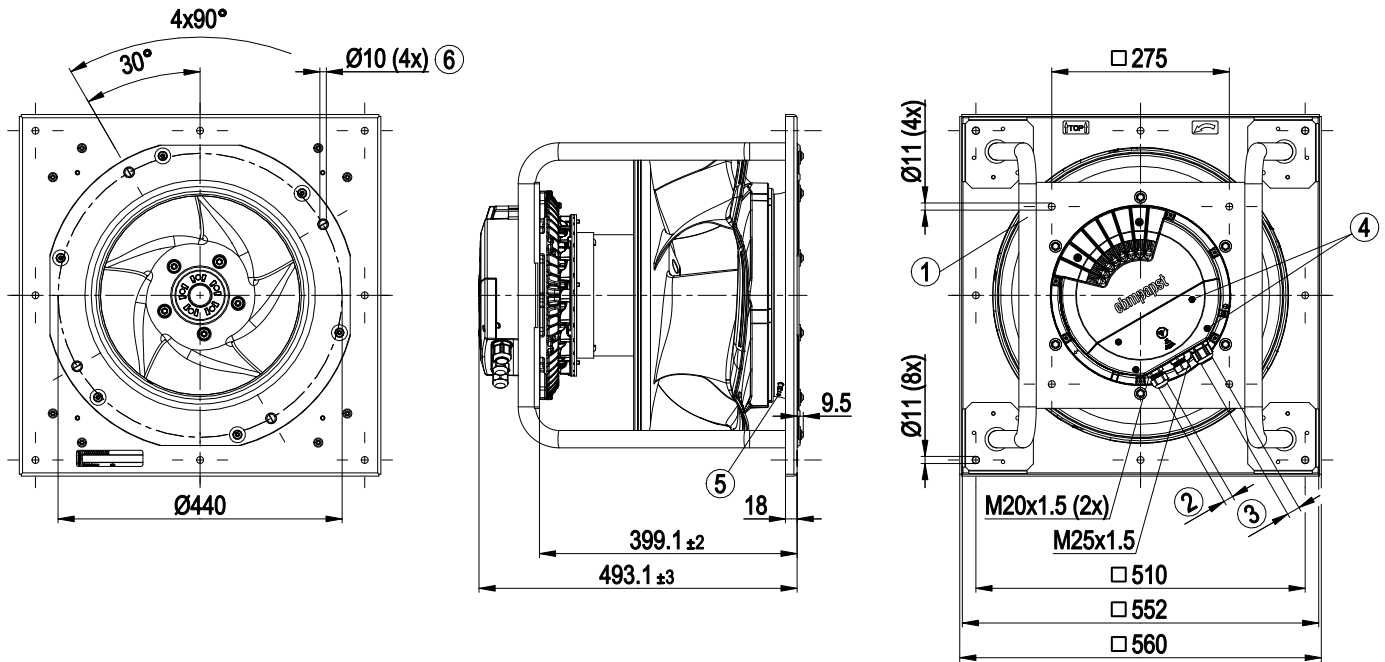
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Product drawing

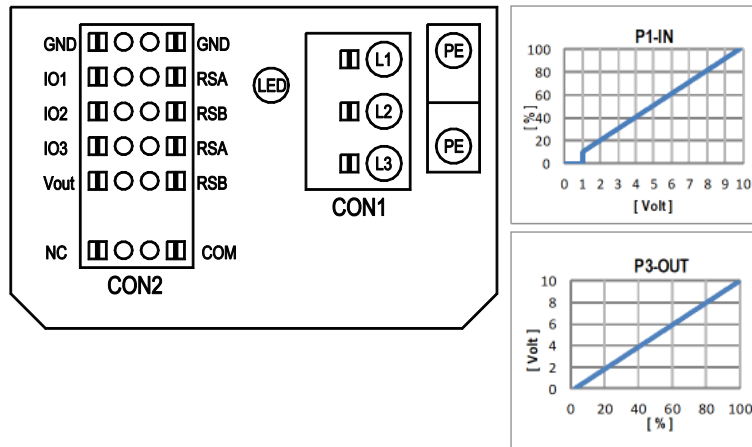


1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque 4 ± 0.6 Nm
3	Cable diameter min. 5 mm, max. 14 mm, tightening torque 6 ± 0.9 Nm
	(The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
4	Tightening torque 3 ± 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

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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

configurable option		For further information and additional functions see EC Control Software, Fan-Set-App, or MODBUS Parameter Specification V6.4		configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	electrical specification	configurable IO mode	CON2	OUTPUT																									
									INPUT																									
IO1	○ Din1 (active high): digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC	D158 [0]	○	switch: fan enable / disable	D16A [...]	(selected directly via IO mode)	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 output for auto-addressing	D130 [4]	○	pulse input for auto-addressing	D130 [1]													
	○ Ain1 0-10V/PWM: analog input	RI = 100K, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$, SELV	D158 [2]	○	switch: set value source	D16C [...]	(selected directly via IO mode)	D130 [10]	signal: diagnostics out	D130 [11]	signal: tach out	D16A [...]	(selected directly via IO mode)	D130 [10]	signal: fan modulation level %	D130 [11]	signal: tach out	D16A [...]																
	○ Tach out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV	D158 [5]	○	switch: direction of rotation: cw / ccw	D148 [...]	(selected directly via IO mode)	D130 [10]	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D147 [...]	source: set value	D101 [...]	source: set value	D101 [...]																
	○ Diagnostics out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV	D158 [6]	○	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D147 [...]	source: set value	D101 [...]	source: set value	D101 [...]	source: set value	D101 [...]	source: set value	D101 [...]	source: set value	D101 [...]																
IO2	○ Din2 (active high): digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC	D159 [0]	○	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]	(selected directly via IO mode)	D130 [10]	signal: fan modulation level %	D130 [11]	signal: tach out	D16A [...]	(selected directly via IO mode)	D130 [10]	signal: fan modulation level %	D130 [11]	signal: tach out	D16A [...]	○	pulse input for auto-addressing	D130 [1]													
	○ Ain2 0-10V/PWM: analog input	RI = 100K, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$, SELV	D159 [2]	○	switch: set value source	D16C [...]	(selected directly via IO mode)	D130 [10]	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D147 [...]	source: set value	D101 [...]	source: set value	D101 [...]																
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV	D159 [3]	○	switch: direction of rotation: cw / ccw	D148 [...]	(selected directly via IO mode)	D130 [10]	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D147 [...]	source: set value	D101 [...]	source: set value	D101 [...]																
	○ Din3 (active high): digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC	D15A [0]	○	switch: fan enable / disable	D16A [...]	(selected directly via IO mode)	D130 [10]	signal: fan modulation level %	D130 [11]	signal: tach out	D16A [...]	(selected directly via IO mode)	D130 [10]	signal: fan modulation level %	D130 [11]	signal: tach out	D16A [...]																
IO3	○ Din3 (active low): digital input	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage 3.5-50VDC	D15A [1]	○	switch: set value source	D16C [...]	(selected directly via IO mode)	D130 [10]	signal: diagnostics out	D130 [11]	signal: tach out	D16A [...]	(selected directly via IO mode)	D130 [10]	signal: fan modulation level %	D130 [11]	signal: tach out	D16A [...]	○	pulse input for auto-addressing	D130 [1]													
	○ PWMIn3: digital input idle level high	PWM = 40Hz - 10kHz, characteristics parameterizable	D15A [7]	○	switch: set value source	D16C [...]	(selected directly via IO mode)	D130 [10]	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D147 [...]	source: set value	D101 [...]	source: set value	D101 [...]																
	○ PWMIn3: digital input idle level low	active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV	D15A [8]	○	switch: direction of rotation: cw / ccw	D148 [...]	(selected directly via IO mode)	D130 [10]	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D147 [...]	source: set value	D101 [...]	source: set value	D101 [...]																
	○ Aout3 0-10V: analog output	active: applied voltage 3.5-50VDC not active: pin open or applied voltage < 1.5VDC, SELV	D15A [4]	○	switch: fan enable / disable	D16A [...]	(selected directly via IO mode)	D130 [10]	signal: fan modulation level %	D130 [11]	signal: tach out	D16A [...]	(selected directly via IO mode)	D130 [10]	signal: fan modulation level %	D130 [11]	signal: tach out	D16A [...]																
RSA RSB	○ Tacho out (pulses), analog output	function parameterizable, max. 5mA max output frequency 300Hz SELV	D15A [5]	○	switch: set value source	D16C [...]	(selected directly via IO mode)	D130 [10]	signal: diagnostics out	D130 [11]	signal: tach out	D16A [...]	(selected directly via IO mode)	D130 [10]	signal: fan modulation level %	D130 [11]	signal: tach out	D16A [...]	○	pulse input for auto-addressing	D130 [1]													
	○ Diagnostics out (pulses)	0-10V max. 5mA max output frequency 300Hz SELV	D15A [6]	○	switch: set value source	D16C [...]	(selected directly via IO mode)	D130 [10]	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D147 [...]	source: set value	D101 [...]	source: set value	D101 [...]																
	○ Diagnostics out (pulses)	0-10V max. 5mA max output frequency 300Hz SELV	D15A [6]	○	switch: direction of rotation: cw / ccw	D148 [...]	(selected directly via IO mode)	D130 [10]	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D147 [...]	source: set value	D101 [...]	source: set value	D101 [...]																
	○ Diagnostics out (pulses)	MODBUS RTU, specification V6.4, SELV		○	switch: fan enable / disable	D16A [...]	(selected directly via IO mode)	D130 [10]	signal: fan modulation level %	D130 [11]	signal: tach out	D16A [...]	(selected directly via IO mode)	D130 [10]	signal: fan modulation level %	D130 [11]	signal: tach out	D16A [...]																
Vout	voltage output	voltage parameterizable 3.3...24VDC +/- 5%, Pmax=800mW, short-circuit-proof, supply for external devices, SELV	D16E [...]	○	switch: set value source	D16C [...]	(selected directly via IO mode)	D130 [10]	signal: diagnostics out	D130 [11]	signal: tach out	D16A [...]	(selected directly via IO mode)	D130 [10]	signal: fan modulation level %	D130 [11]	signal: tach out	D16A [...]	○	pulse input for auto-addressing	D130 [1]													
	alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...50VDC		○	switch: set value source	D16C [...]	(selected directly via IO mode)	D130 [10]	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D147 [...]	source: set value	D101 [...]	source: set value	D101 [...]																

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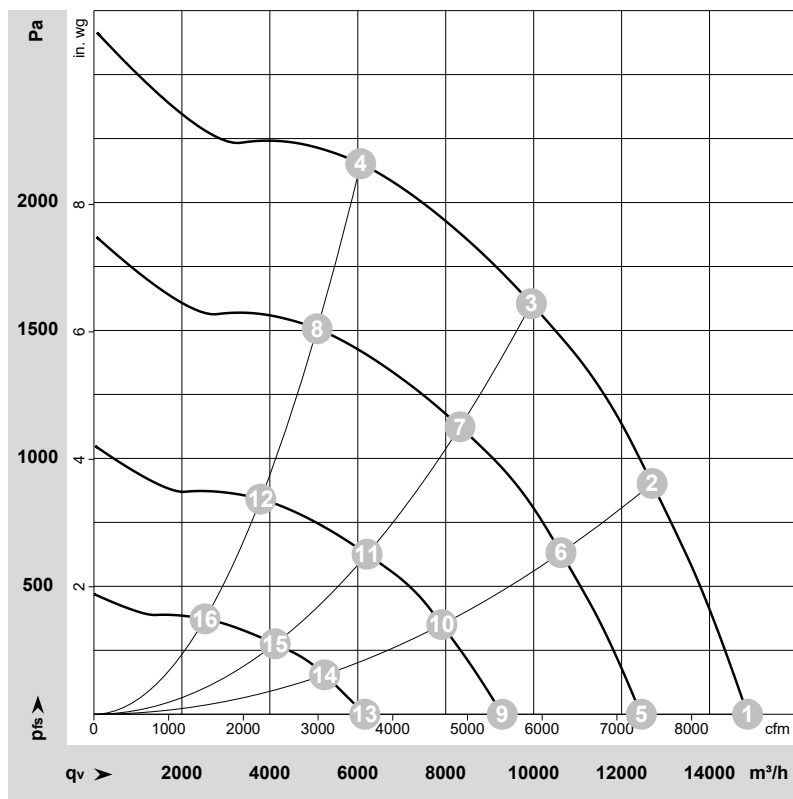
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Curves: Air performance 50 Hz



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

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

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 _e	I	LpA _{in}	LwA _{in}	LwA _{out}	LwA	q _V	P _{fs}	q _V	P _{fs}
		V	Hz	min ⁻¹	W	A	dB(A)	dB(A)	dB(A)	dB	m ³ /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
5	3~	400	50	2870	2548	4.23	90	98	100	102	12450	0	7325	0.00
6	3~	400	50	2870	3442	5.51	84	92	95	97	10620	633	6250	2.54
7	3~	400	50	2870	3716	5.89	80	87	91	92	8325	1127	4900	4.52
8	3~	400	50	2870	3523	5.58	78	85	91	92	5075	1510	2990	6.06
9	3~	400	50	2145	1155	2.30	82	90	93	95	9285	0	5465	0.00
10	3~	400	50	2145	1534	2.80	76	84	87	89	7910	351	4655	1.41
11	3~	400	50	2145	1648	2.96	72	80	84	85	6210	627	3655	2.52
12	3~	400	50	2145	1568	2.85	71	77	83	84	3795	843	2230	3.38
13	3~	400	50	1430	428	1.17	70	79	83	84	6160	0	3625	0.00
14	3~	400	50	1430	530	1.35	65	73	77	79	5245	155	3085	0.62
15	3~	400	50	1430	561	1.40	61	69	74	75	4120	276	2425	1.11
16	3~	400	50	1430	543	1.37	58	66	72	73	2525	373	1485	1.50

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 · q_V = Air flow · P_{fs} = Pressure increase