

8300100422
VBH0450PTTLS

EC centrifugal module - RadiPac

backward-curved, single-intake
with support bracket

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Nominal data

Item	8300100422	
Motor	E15037-55	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Speed (rpm)	min ⁻¹	2320
Power consumption	W	3700
Current draw	A	5.3
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 η_{es}	%	67.9	57.3	09 Power consumption P_{ed}	kW	3.55
02 Measurement category		A		09 Air flow q_v	m³/h	6940
03 Efficiency category		Static		09 Pressure increase p_{fs}	Pa	1201
04 Efficiency grade N		72.6	62	10 Speed (rpm) n	min ⁻¹	2315
05 Variable speed drive		Yes		11 Specific ratio*		1.01

Data obtained at optimum efficiency level.
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).

* Specific ratio = $1 + p_b / 100\,000\text{ Pa}$ LU-223231

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Technical description

Weight	40 kg
Size	450 mm
Motor size	150
Rotor surface	Painted black
Electronics housing material	Die-cast aluminum
Impeller material	Sheet aluminum
Support plate material	Sheet steel, galvanized
Support bracket material	Steel, painted black
Inlet nozzle material	Sheet steel, galvanized
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; (sealed)
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 - PFC, active - 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)	Active
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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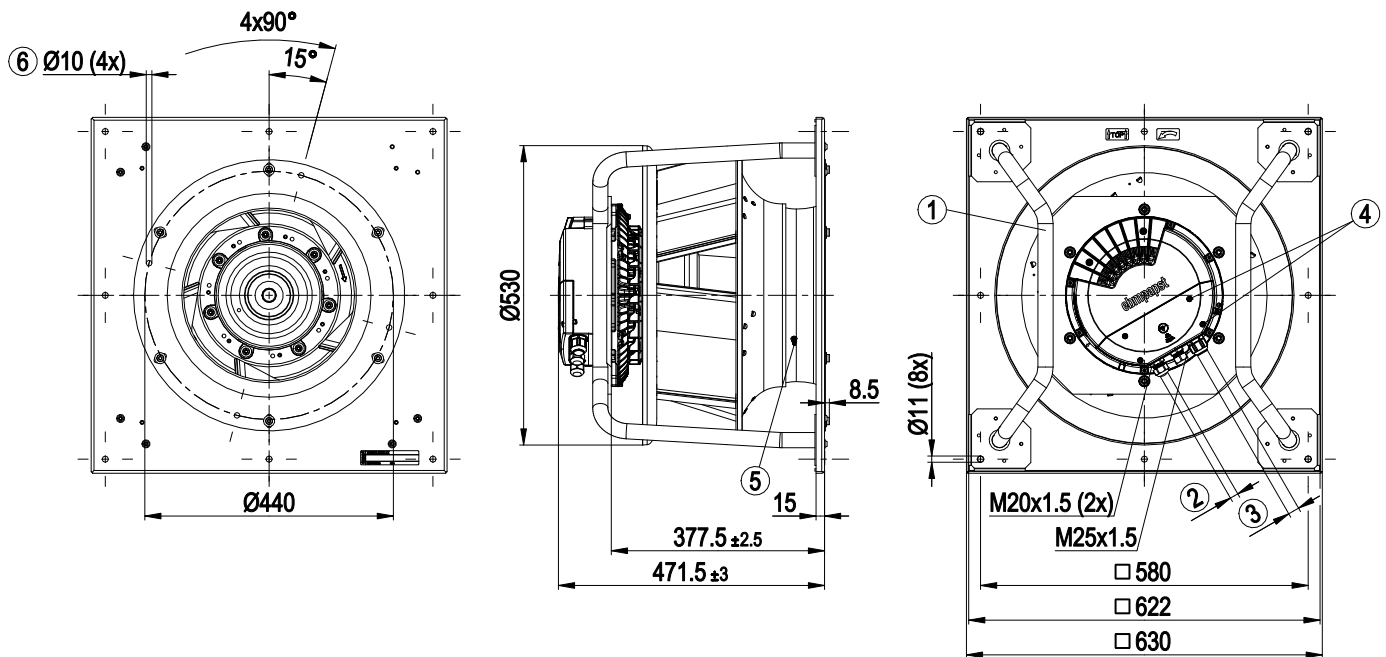
Protection class assignment	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
Conformity with standards	EN 61800-5-1; UKCA; CE
Approval	UL 1004-7 + 60730-1; EAC; CSA C22.2 No. 77 + CAN/CSA-E60730-1
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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Product drawing

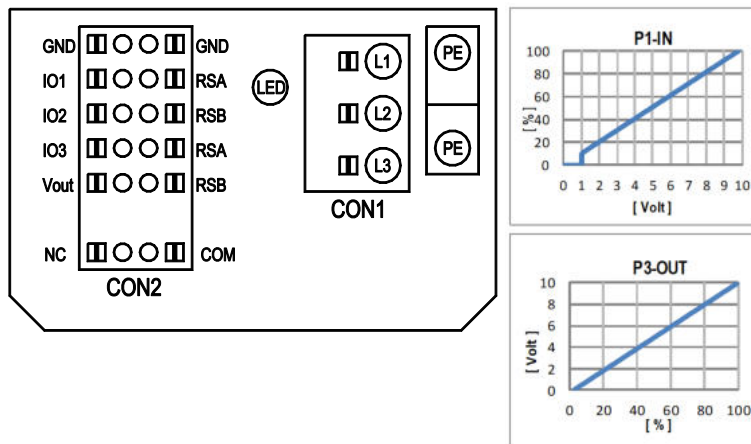


1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque 4 ± 0.6 Nm
3	Cable diameter min. 5 mm, max. 14 mm, tightening torque 6 ± 0.9 Nm
	(The tightening torque 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: 240)
6	Attachment holes for FlowGrid 35505-2-2957 (not included in scope of delivery)

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Connection diagram

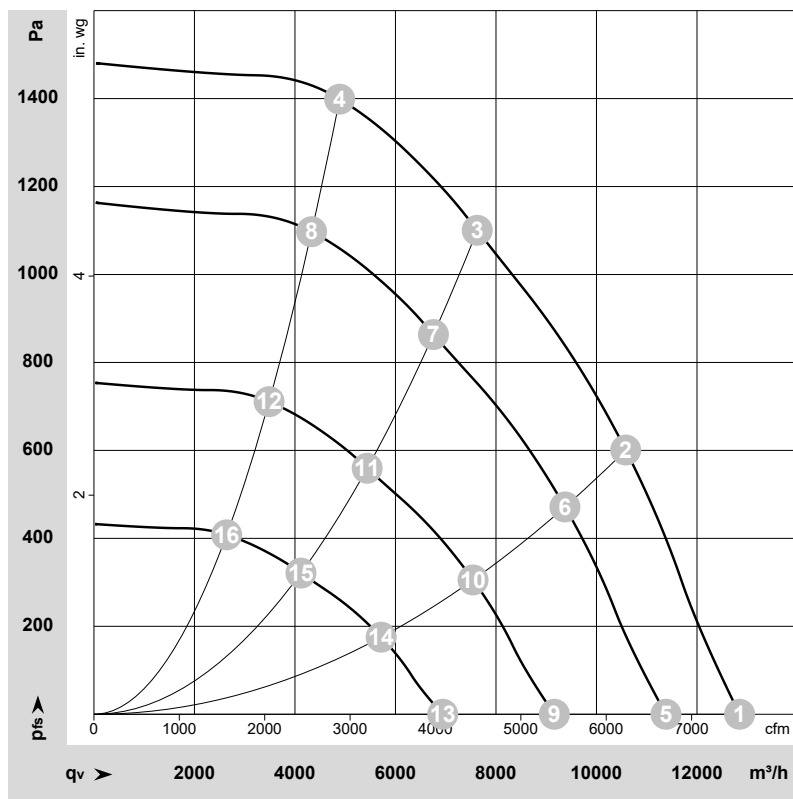


No.	Conn.	Designation	Function/assignment
	CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function 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			configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	electrical specification										
CON2	configurable IO mode	◦ 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	signal: tach out (selected directly via IO mode)	signal: fan modulation level %	signal: actual speed	signal: system modulation level %	signal: remote control output 0-10V	pulse input for auto-addressing	D130 [4]
		◦ Ain1 0-10V/PWM: analog input			RI = 100K, characteristic curve parameterizable, f _{PWM} = 1k..10KHz, SELV	D158 [2]	◦	switch: set value source	signal: tach out (selected directly via IO mode)	signal: fan modulation level %	signal: actual speed	signal: system modulation level %	signal: remote control output 0-10V	pulse input for auto-addressing	D130 [4]
		◦ Tach out (open collector output)			Umax = 50VDC, Imax = 20mA, SELV	D158 [5]	◦	switch: direction of rotation: cw / ccw	signal: tach out (selected directly via IO mode)	signal: fan modulation level %	signal: actual speed	signal: system modulation level %	signal: remote control output 0-10V	pulse input for auto-addressing	D130 [4]
		◦ Diagnostics out (open collector output)			Umax = 50VDC, Imax = 20mA, SELV	D158 [6]	◦	switch: control function: heating (pos.) / cooling (neg.)	signal: tach out (selected directly via IO mode)	signal: fan modulation level %	signal: actual speed	signal: system modulation level %	signal: remote control output 0-10V	pulse input for auto-addressing	D130 [4]
IO1	configurable IO mode	◦ Din2 (active high): digital input			active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC	D159 [0]	◦	switch: parameter set: #1 / #2	source: sensor value						
		◦ Ain2 0-10V/PWM: analog input			RI = 100K, characteristic curve parameterizable, f _{PWM} = 1k..10KHz, SELV	D159 [2]	◦	switch: set value source	source: sensor value						
		◦ Ain2 4-20mA: analog input			RI = 125R, characteristic curve parameterizable, SELV	D159 [3]	◦	switch: direction of rotation: cw / ccw	source: sensor value						
		◦ Din3 (active high): digital input			active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC	D15A [0]	◦	switch: control function: heating (pos.) / cooling (neg.)	source: sensor value						
IO2	configurable IO mode	◦ Din3 (active low): digital input			active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage < 1.5VDC	D15A [1]	◦	switch: parameter set: #1 / #2	source: sensor value						
		◦ 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]	◦	switch: set value source	source: sensor value								
		◦ 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]	◦	switch: direction of rotation: cw / ccw	source: sensor value								
		◦ Aout3 0-10V: analog output	function parameterizable, max. 5mA max output frequency 300Hz, SELV	D15A [4]	◦	switch: control function: heating (pos.) / cooling (neg.)	source: sensor value								
IO3	configurable IO mode	◦ Tacho out (pulses), analog output	0-10Vmax. 5mA max output frequency 300Hz, SELV	D15A [5]	◦	switch: set value source	source: sensor value								
		◦ Diagnostics out (pulses)	0-10Vmax. 5mA max output frequency 300Hz, SELV	D15A [6]	◦	switch: direction of rotation: cw / ccw	source: sensor value								
		◦ Aout3 0-10V: analog output	function parameterizable, max. 5mA max output frequency 300Hz, SELV	D15A [4]	◦	switch: control function: heating (pos.) / cooling (neg.)	source: sensor value								
		◦ Diagnostics out (pulses)	0-10Vmax. 5mA max output frequency 300Hz, SELV	D15A [6]	◦	switch: set value source	source: sensor value								
RSA	RS485 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												

Curves: Air performance 50 Hz



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

Measurement: LU-223231-1
Date: 2022-09-30
Nozzle: 45070-2-4013

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	2320	2185	3.16	87	95	96	98	12850	0	7565	0.00
2	3~	400	50	2320	3223	4.65	79	87	91	92	10580	600	6230	2.41
3	3~	400	50	2320	3700	5.30	74	82	88	89	7625	1100	4490	4.42
4	3~	400	50	2320	3400	4.90	81	88	93	94	4890	1400	2880	5.62
5	3~	400	50	2050	1520	2.19	84	92	93	95	11385	0	6700	0.00
6	3~	400	50	2050	2240	3.23	76	84	87	89	9375	473	5515	1.90
7	3~	400	50	2050	2531	3.65	71	79	85	86	6755	863	3975	3.46
8	3~	400	50	2050	2363	3.41	78	85	90	91	4330	1097	2550	4.40
9	3~	400	50	1650	792	1.14	79	86	87	90	9160	0	5395	0.00
10	3~	400	50	1650	1168	1.68	71	78	82	84	7545	306	4440	1.23
11	3~	400	50	1650	1320	1.90	66	73	80	81	5435	559	3200	2.24
12	3~	400	50	1650	1232	1.78	73	80	84	86	3485	711	2050	2.85
13	3~	400	50	1250	345	0.50	72	79	80	83	6940	0	4085	0.00
14	3~	400	50	1250	508	0.73	64	71	75	77	5715	176	3365	0.71
15	3~	400	50	1250	574	0.83	59	66	73	74	4120	321	2425	1.29
16	3~	400	50	1250	536	0.77	66	73	77	79	2640	408	1555	1.64

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