

8300100047
VBH0560CTTPS

EC centrifugal module - RadiPac

backward-curved, single-intake
with support bracket

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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 ⁻¹	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 η_{es}	%	71.9	58	09 Power consumption P_{ed}	kW	4.16
02 Measurement category		A		09 Air flow q_v	m³/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 ⁻¹	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).



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Technical description

Weight	42 kg
Size	560 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 V6.3 - 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
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 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.
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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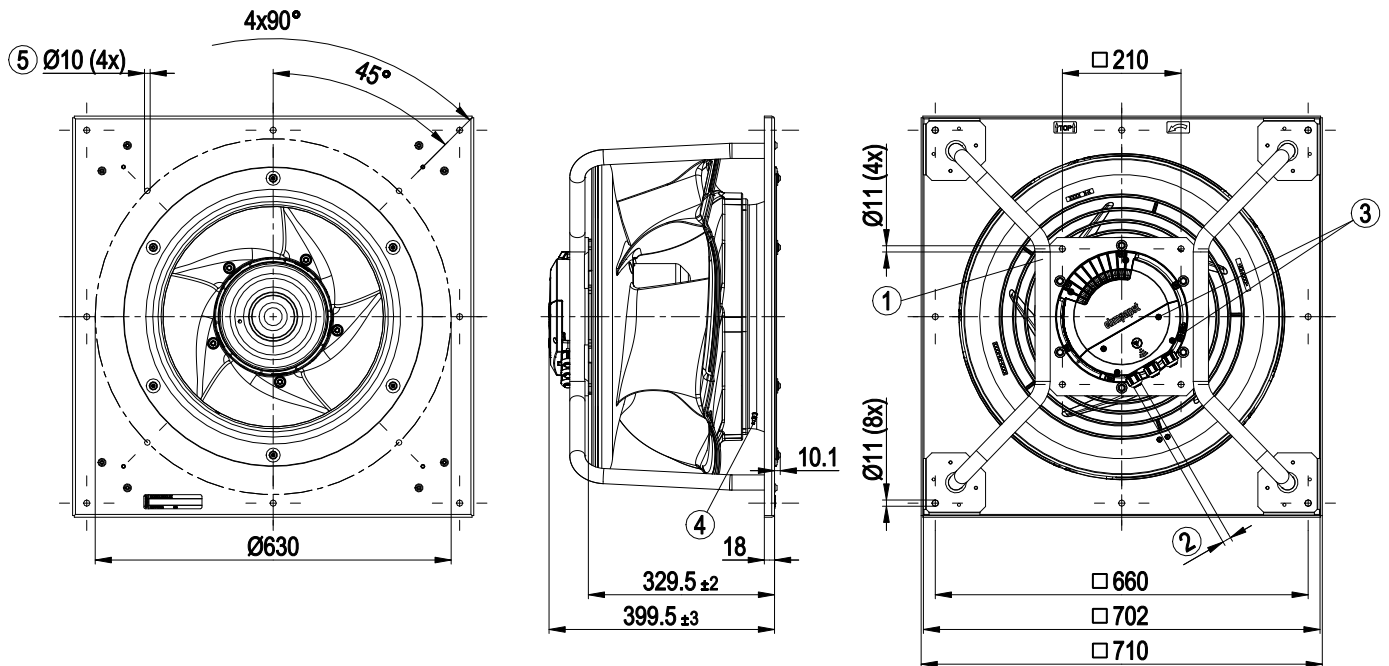
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Product drawing



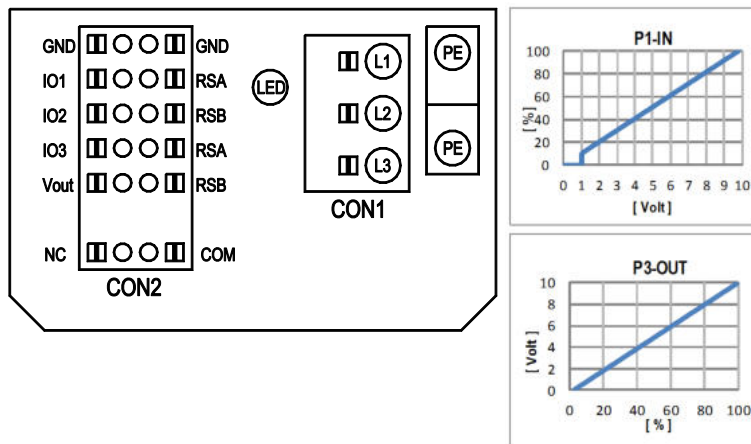
- | | |
|---|---|
| 1 | Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request |
| 2 | Cable diameter min. 4 mm, max. 10 mm, tightening torque 4 ± 0.6 Nm
(The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted) |
| 3 | Tightening torque 1.5 ± 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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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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Terminal/plug assignment

configurable option		For further information and additional functions see EC Control Software, Fan-Set-App, or MODBUS Parameter Specification V6.3		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	D130 [4]	pulse output for auto-addressing	D00C [1]	○	INPUT						OUTPUT								
	○ 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 [0]	signal: tach out	D16A [...]	switch: direction of rotation: cw / ccw	D148 [...]	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D101 [...]	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]		switch: set value source	D16C [...]	switch: fan enable / disable	D16A [...]	signal: tach out	(selected directly via IO mode)	D130 [0]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse output for auto-addressing	D00C [1]
	○ Tach out (open collector output)	U _{max} = 50VDC, I _{max} = 20mA, SELV	D158 [5]	○	switch: set value source	D16C [...]	(selected directly via IO mode)	D130 [0]	signal: tach out	D16A [...]	switch: direction of rotation: cw / ccw	D148 [...]	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D101 [...]	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]		switch: set value source	D16C [...]	switch: fan enable / disable	D16A [...]	signal: tach out	(selected directly via IO mode)	D130 [0]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse output for auto-addressing	D00C [1]
	○ Diagnostics out (open collector output)	U _{max} = 50VDC, I _{max} = 20mA, SELV	D158 [6]	○	switch: set value source	D16C [...]	(selected directly via IO mode)	D130 [0]	signal: tach out	D16A [...]	switch: direction of rotation: cw / ccw	D148 [...]	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D101 [...]	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]		switch: set value source	D16C [...]	switch: fan enable / disable	D16A [...]	signal: tach out	(selected directly via IO mode)	D130 [0]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse output for auto-addressing	D00C [1]
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: set value source	D16C [...]	(selected directly via IO mode)	D130 [0]	signal: tach out	D16A [...]	switch: direction of rotation: cw / ccw	D148 [...]	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D101 [...]	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]	switch: set value source	D16C [...]	switch: fan enable / disable	D16A [...]	signal: tach out	(selected directly via IO mode)	D130 [0]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse output for auto-addressing	D00C [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 [0]	signal: tach out	D16A [...]	switch: direction of rotation: cw / ccw	D148 [...]	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D101 [...]	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]	switch: set value source	D16C [...]	switch: fan enable / disable	D16A [...]	signal: tach out	(selected directly via IO mode)	D130 [0]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse output for auto-addressing	D00C [1]	
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV	D159 [3]	○	switch: set value source	D16C [...]	(selected directly via IO mode)	D130 [0]	signal: tach out	D16A [...]	switch: direction of rotation: cw / ccw	D148 [...]	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D101 [...]	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]	switch: set value source	D16C [...]	switch: fan enable / disable	D16A [...]	signal: tach out	(selected directly via IO mode)	D130 [0]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse output for auto-addressing	D00C [1]	
	○ Din3 (active high): digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC	D15A [0]	○	switch: set value source	D16C [...]	(selected directly via IO mode)	D130 [0]	signal: tach out	D16A [...]	switch: direction of rotation: cw / ccw	D148 [...]	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D101 [...]	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]	switch: set value source	D16C [...]	switch: fan enable / disable	D16A [...]	signal: tach out	(selected directly via IO mode)	D130 [0]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse output for auto-addressing	D00C [1]	
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 [0]	signal: tach out	D16A [...]	switch: direction of rotation: cw / ccw	D148 [...]	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D101 [...]	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]	switch: set value source	D16C [...]	switch: fan enable / disable	D16A [...]	signal: tach out	(selected directly via IO mode)	D130 [0]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse output for auto-addressing	D00C [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 [0]	signal: tach out	D16A [...]	switch: direction of rotation: cw / ccw	D148 [...]	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D101 [...]	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]	switch: set value source	D16C [...]	switch: fan enable / disable	D16A [...]	signal: tach out	(selected directly via IO mode)	D130 [0]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse output for auto-addressing	D00C [1]	
	○ 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: set value source	D16C [...]	(selected directly via IO mode)	D130 [0]	signal: tach out	D16A [...]	switch: direction of rotation: cw / ccw	D148 [...]	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D101 [...]	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]	switch: set value source	D16C [...]	switch: fan enable / disable	D16A [...]	signal: tach out	(selected directly via IO mode)	D130 [0]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse output for auto-addressing	D00C [1]	
	○ Aout3 0-10V: analog output	active: applied voltage 3.5-50VDC not active: pin open or applied voltage < 1.5VDC, SELV	D15A [4]	○	switch: set value source	D16C [...]	(selected directly via IO mode)	D130 [0]	signal: tach out	D16A [...]	switch: direction of rotation: cw / ccw	D148 [...]	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D101 [...]	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]	switch: set value source	D16C [...]	switch: fan enable / disable	D16A [...]	signal: tach out	(selected directly via IO mode)	D130 [0]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse output for auto-addressing	D00C [1]	
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 [0]	signal: tach out	D16A [...]	switch: direction of rotation: cw / ccw	D148 [...]	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D101 [...]	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]	switch: set value source	D16C [...]	switch: fan enable / disable	D16A [...]	signal: tach out	(selected directly via IO mode)	D130 [0]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse output for auto-addressing	D00C [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 [0]	signal: tach out	D16A [...]	switch: direction of rotation: cw / ccw	D148 [...]	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D101 [...]	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]	switch: set value source	D16C [...]	switch: fan enable / disable	D16A [...]	signal: tach out	(selected directly via IO mode)	D130 [0]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse output for auto-addressing	D00C [1]	
Vout	○ RS485 bus connection,	MODBUS RTU, specification V6.3, SELV		○	switch: set value source	D16C [...]	(selected directly via IO mode)	D130 [0]	signal: tach out	D16A [...]	switch: direction of rotation: cw / ccw	D148 [...]	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D101 [...]	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]	switch: set value source	D16C [...]	switch: fan enable / disable	D16A [...]	signal: tach out	(selected directly via IO mode)	D130 [0]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse output for auto-addressing	D00C [1]	
	○ voltage output	voltage parameterizable 3.3..24VDC +/- 5%, P _{max} =800mW, short-circuit-proof, supply for external devices, SELV	D16E [...]	○	switch: set value source	D16C [...]	(selected directly via IO mode)	D130 [0]	signal: tach out	D16A [...]	switch: direction of rotation: cw / ccw	D148 [...]	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D101 [...]	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]	switch: set value source	D16C [...]	switch: fan enable / disable	D16A [...]	signal: tach out	(selected directly via IO mode)	D130 [0]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse output for auto-addressing	D00C [1]	
Vout	○ 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 [0]	signal: tach out	D16A [...]	switch: direction of rotation: cw / ccw	D148 [...]	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D101 [...]	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]	switch: set value source	D16C [...]	switch: fan enable / disable	D16A [...]	signal: tach out	(selected directly via IO mode)	D130 [0]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse output for auto-addressing	D00C [1]	
	○			○	switch: set value source	D16C [...]	(selected directly via IO mode)	D130 [0]	signal: tach out	D16A [...]	switch: direction of rotation: cw / ccw	D148 [...]	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D101 [...]	switch: control function: heating (pos.) / cooling (neg.)	D12E [...]	switch: set value source	D16C [...]	switch: fan enable / disable	D16A [...]	signal: tach out	(selected directly via IO mode)	D130 [0]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse output for auto-addressing	D00C [1]	



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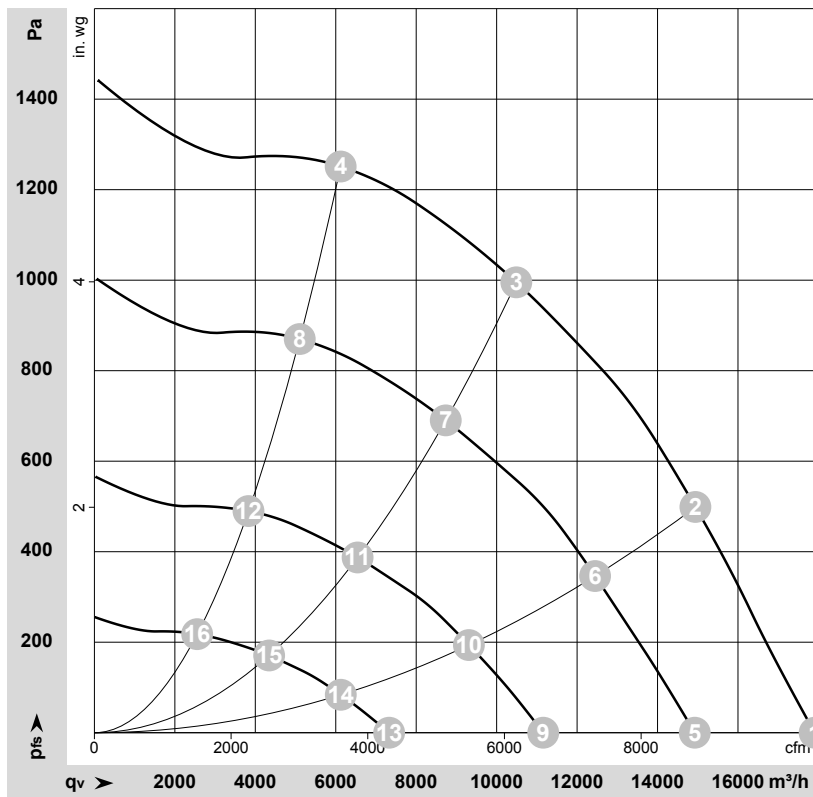
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Curves: Air performance 50 Hz



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

Measurement: LU-213515-1

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}	q _v	p _{fs}	q _v	p _{fs}
		V	Hz	min ⁻¹	W	A	dB(A)	dB(A)	dB(A)	m ³ /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
5	3~	400	50	1735	1740	2.75	81	89	93	14925	0	8785	0.00
6	3~	400	50	1735	2205	3.43	74	82	86	12445	347	7325	1.39
7	3~	400	50	1735	2470	3.83	72	78	83	8735	692	5140	2.78
8	3~	400	50	1735	2229	3.47	75	82	86	5105	870	3005	3.49
9	3~	400	50	1300	784	1.40	74	82	85	11160	0	6565	0.00
10	3~	400	50	1300	984	1.67	67	75	79	9310	194	5480	0.78
11	3~	400	50	1300	1092	1.82	65	71	76	6545	389	3850	1.56
12	3~	400	50	1300	993	1.69	67	74	78	3830	490	2255	1.97
13	3~	400	50	865	280	0.70	64	72	76	7325	0	4315	0.00
14	3~	400	50	865	332	0.79	57	65	69	6125	84	3605	0.34
15	3~	400	50	865	363	0.84	55	61	66	4345	171	2555	0.69
16	3~	400	50	865	336	0.79	56	62	66	2555	218	1505	0.88

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

