

8300101252
VBH0500CTTLS

EC centrifugal module - RadiPac

backward-curved, single-intake
with support bracket

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Amtsgericht (court of registration) Stuttgart · HRB 590142

Nominal data

Item	8300101252	
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 ⁻¹	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 η_{es}	%	74.8	57.9	09 Power consumption P_{ed}	kW	4.07
02 Measurement category		A		09 Air flow q_v	m ³ /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 ⁻¹	2480
05 Variable speed drive		Yes		11 Specific ratio*		1.01

Data obtained at optimum efficiency level.

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

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).



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Technical description

Size	500 mm
Motor size	150
Rotor surface	Painted black
Electronics housing material	Die-cast aluminum, painted gray
Impeller material	PP plastic
Support plate material	Sheet steel, galvanized and painted light gray (RAL 7035)
Support bracket material	Steel, painted light gray (RAL 7035)
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	H2+S
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 V6.3 - 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; UL 1004-7 + 60730-1; EAC

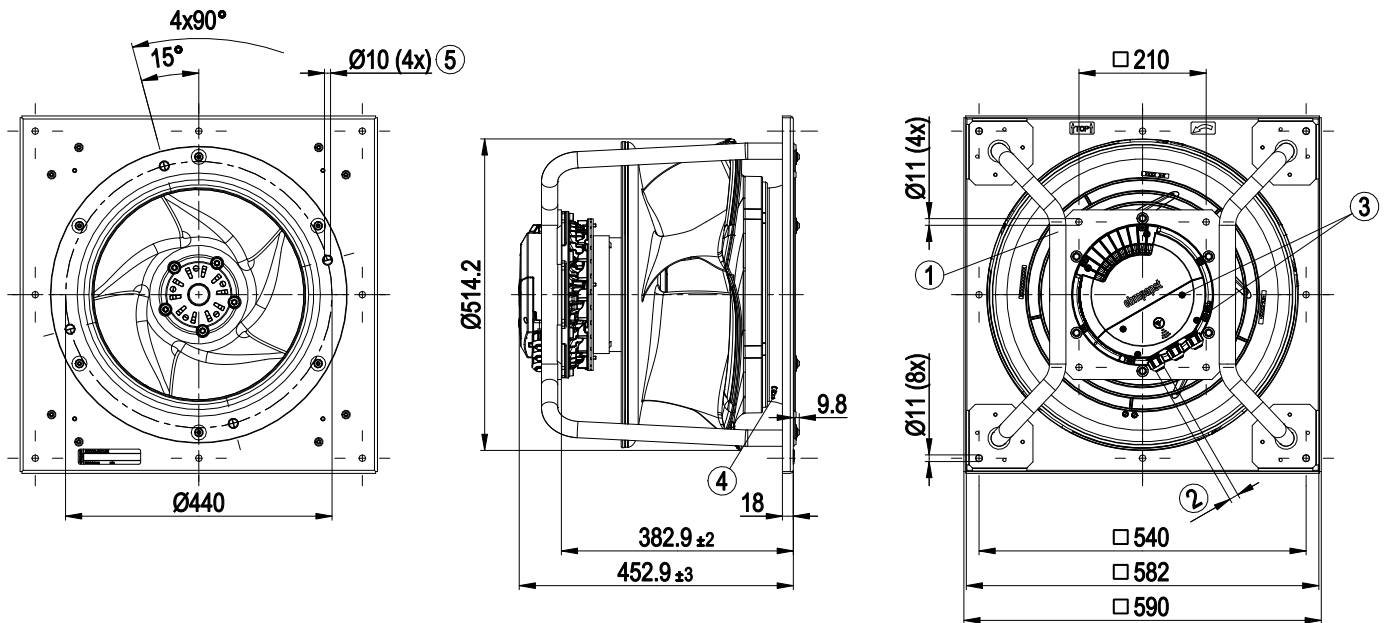


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Product drawing



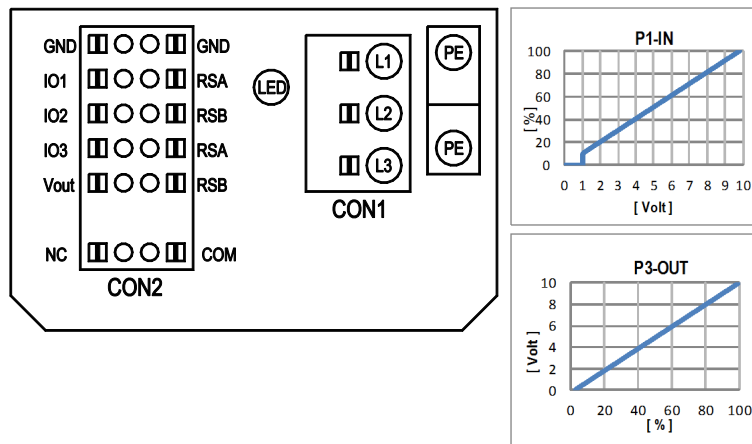
1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque 4 ± 0.6 Nm (The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
3	Tightening torque 1.5 ± 0.2 Nm
4	Inlet ring with pressure tap (k-factor: 290)
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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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 IO functions: normal / inverse	MODBUS Register for IO mode configuration	electrical specification	configurable IO mode															
					configurable IO mode															
CON2	IO1	Din1 (active high): digital input	D158 [0]	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1,5VDC	source: set value D101 [...] source: sensor value D147 [...] switch: parameter set: #1 / #2 D104 [...] switch: control function: heating (pos.) / cooling (neg.) D12E [...] switch: direction of rotation: cw / ccw D148 [...] switch: set value source D16C [...] switch: fan enable / disable D16A [...]	(selected directly via IO mode)	signal: tach out (selected directly via IO mode)	signal: diagnostics out (selected directly via IO mode)	D130 [0]	signal: fan modulation level % D130 [1]	signal: actual speed D130 [1]	signal: system modulation level % D130 [2]	signal: remote control output 0-10V D130 [5]	D00C [1]	pulse input for auto-addressing D130 [4]					
IO2	IO1	Ain1 0-10V/PWM: analog input Tach out (open collector output) Diagnostics out (open collector output)	D158 [2] D158 [5] D158 [6]	RI = 100K, characteristic curve parameterizable, f _{PWM} = 1k..10KHz, SELV U _{max} = 50VDC, I _{max} = 20mA, SELV	source: set value D101 [...] source: sensor value D147 [...] switch: parameter set: #1 / #2 D104 [...] switch: control function: heating (pos.) / cooling (neg.) D12E [...] switch: direction of rotation: cw / ccw D148 [...] switch: set value source D16C [...] switch: fan enable / disable D16A [...]	(selected directly via IO mode)	signal: tach out (selected directly via IO mode)	signal: diagnostics out (selected directly via IO mode)	D130 [0]	signal: fan modulation level % D130 [1]	signal: actual speed D130 [1]	signal: system modulation level % D130 [2]	signal: remote control output 0-10V D130 [5]	D00C [1]	pulse input for auto-addressing D130 [4]					
IO3	IO2	Din2 (active high): digital input Ain2 0-10V/PWM: analog input Ain2 4-20mA: analog input	D159 [0] D159 [2] D159 [3]	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1,5VDC RI = 100K, characteristic curve parameterizable, f _{PWM} = 1k..10KHz, SELV RI = 125R, characteristic curve parameterizable, SELV	source: set value D101 [...] source: sensor value D147 [...] switch: parameter set: #1 / #2 D104 [...] switch: control function: heating (pos.) / cooling (neg.) D12E [...] switch: direction of rotation: cw / ccw D148 [...] switch: set value source D16C [...] switch: fan enable / disable D16A [...]	(selected directly via IO mode)	signal: tach out (selected directly via IO mode)	signal: diagnostics out (selected directly via IO mode)	D130 [0]	signal: fan modulation level % D130 [1]	signal: actual speed D130 [1]	signal: system modulation level % D130 [2]	signal: remote control output 0-10V D130 [5]	D00C [1]	pulse input for auto-addressing D130 [4]					
IO3	IO3	Din3 (active high): digital input Din3 (active low): digital input PWMIn3: digital input, idle level high PWMMin3: digital input, idle level low	D15A [0] D15A [1] D15A [7] D15A [8]	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1,5VDC active: applied voltage < 1,5VDC, SELV not active: pin open or applied voltage 3.5-50VDC PWM = 40Hz - 10KHz, characteristics parameterizable active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV 40Hz - 10KHz, characteristics parameterizable active: applied voltage 3.5-50VDC not active: pin open or applied voltage < 1.5VDC, SELV	source: set value D101 [...] source: sensor value D147 [...] switch: parameter set: #1 / #2 D104 [...] switch: control function: heating (pos.) / cooling (neg.) D12E [...] switch: direction of rotation: cw / ccw D148 [...] switch: set value source D16C [...] switch: fan enable / disable D16A [...]	(selected directly via IO mode)	signal: tach out (selected directly via IO mode)	signal: diagnostics out (selected directly via IO mode)	D130 [0]	signal: fan modulation level % D130 [1]	signal: actual speed D130 [1]	signal: system modulation level % D130 [2]	signal: remote control output 0-10V D130 [5]	D00C [1]	pulse input for auto-addressing D130 [4]					
RSA	RSB	RS485 bus connection,		MODBUS RTU, specification V6.3, SELV																
Vout		voltage output		voltage parameterizable 3.3...24VDC +/- 5%, P _{max} =800mW, short-circuit-proof, supply for external devices, SELV																
		alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage		15...50VDC																

o configurable option

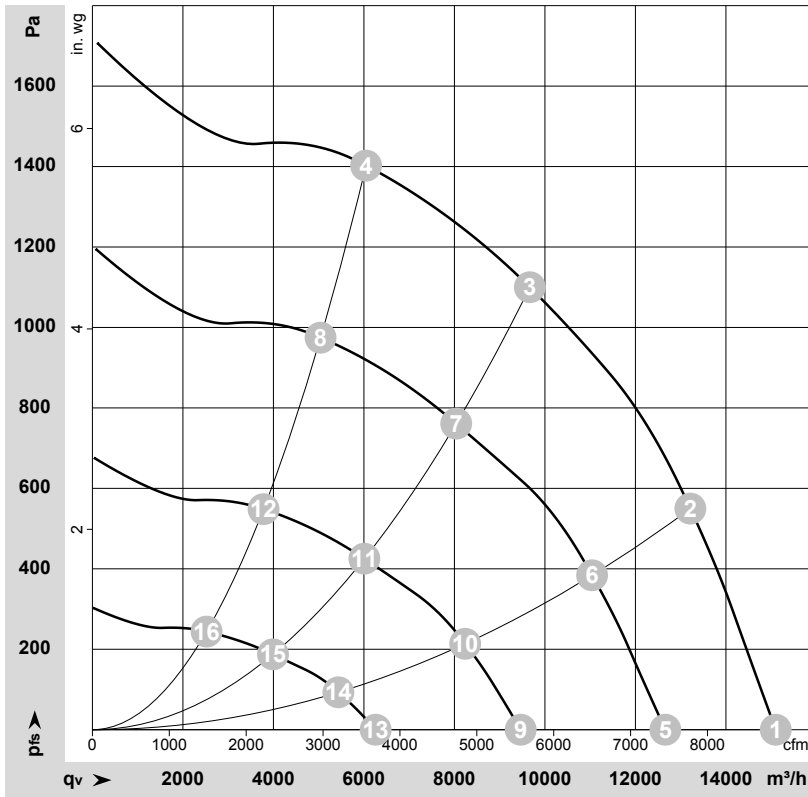
For further information and additional functions see EC Control Software, Fan-Set-App,
or MODBUS Parameter Specification V6.3

o configurable option

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or MODBUS Parameter Specification V6.3



Curves: Air performance 50 Hz



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

Measurement: LU-214635-1

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	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
5	3~	400	50	2065	1512	2.42	81	89	92	12660	0	7455	0.00
6	3~	400	50	2065	2130	3.32	76	84	87	11045	384	6500	1.54
7	3~	400	50	2065	2381	3.70	70	77	83	8040	761	4730	3.06
8	3~	400	50	2065	2245	3.49	74	80	85	5040	975	2970	3.91
9	3~	400	50	1550	694	1.29	74	82	86	9465	0	5570	0.00
10	3~	400	50	1550	939	1.62	69	77	80	8240	214	4850	0.86
11	3~	400	50	1550	1047	1.77	62	70	75	6010	425	3535	1.71
12	3~	400	50	1550	994	1.69	64	71	78	3780	548	2225	2.20
13	3~	400	50	1030	248	0.65	64	73	77	6260	0	3685	0.00
14	3~	400	50	1030	313	0.76	59	67	71	5435	93	3200	0.37
15	3~	400	50	1030	347	0.81	52	60	65	3990	187	2350	0.75
16	3~	400	50	1030	331	0.79	51	58	64	2525	244	1485	0.98

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