

8300100082
VBH0500CTTLS

EC centrifugal module - RadiPac

backward-curved, single-intake
with support bracket

ebm-papst Mulfingen GmbH & Co. KGaA & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

info1@de.ebmpapst.com

www.ebmpapst.com

Limited partnership · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH & Co. KGaA · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

Nominal data

Item	8300100082	
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	50

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	4.073
02 Measurement category		A		09 Air flow q_v	m ³ /h	10612
03 Efficiency category		Static		09 Pressure increase p_{fs}	Pa	994
04 Efficiency grade N		78.9	62	10 Speed (rpm) n	min ⁻¹	2478
05 Variable speed drive		Yes		11 Specific ratio*		1.01

Data obtained at optimum efficiency level. (BEP)

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

LU-214635-1

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).

8300100082
VBH0500CTTLS

EC centrifugal module - RadiPac

backward-curved, single-intake
with support bracket

Technical description

Weight	33.3 kg
Size	500 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 = Moist – occasional or constantly high level of humidity
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 V6.6 - 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

8300100082
VBH0500CTTLS

EC centrifugal module - RadiPac

backward-curved, single-intake
with support bracket

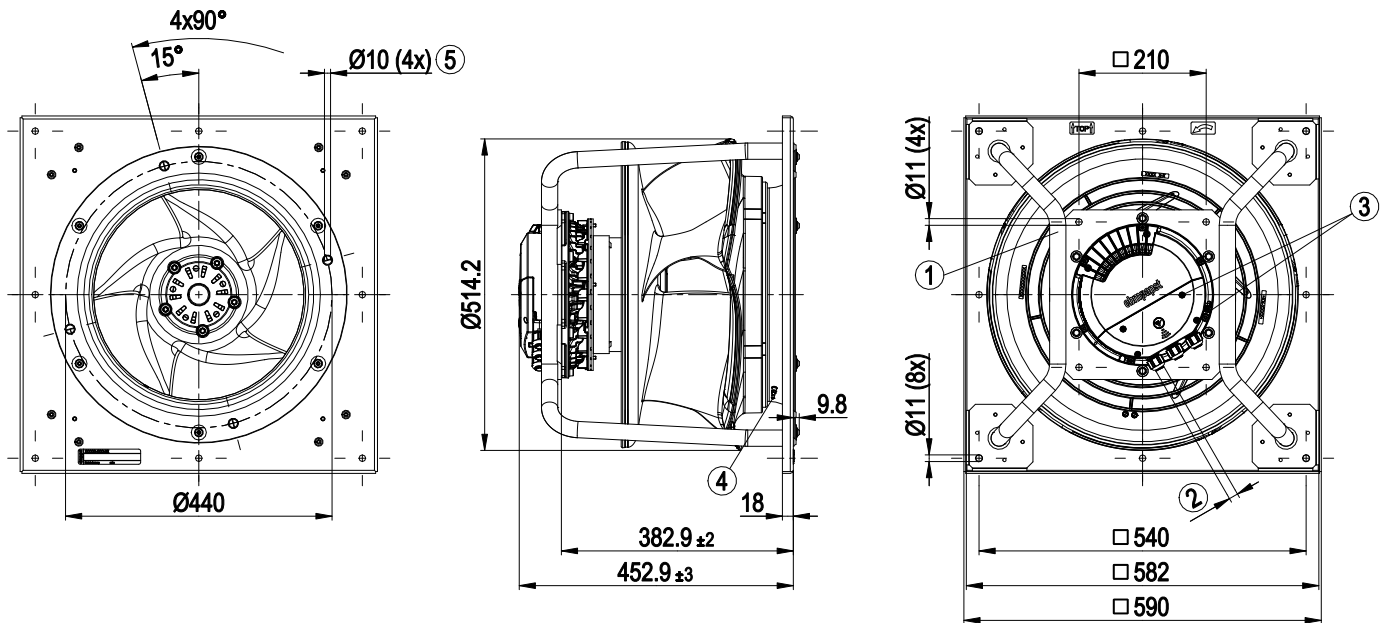
Protection class assignment	I; If a protective earth is connected. The built-in component has several local protection class assignments. The final protection class is determined by the intended installation.
Conformity with standards	EN 61800-5-1; CE; UKCA
Approval	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

8300100082
VBH0500CTTLS

EC centrifugal module - RadiPac

backward-curved, single-intake
with support bracket

Product drawing

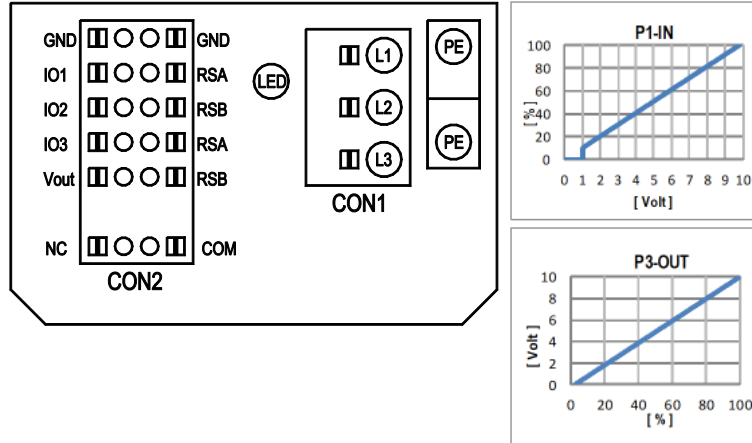


1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque 4 ± 0.6 Nm (The tightening torque is designed for PVC cables. If the cable materials are different, the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

EC centrifugal module - RadiPac

backward-curved, single-intake
with support bracket

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

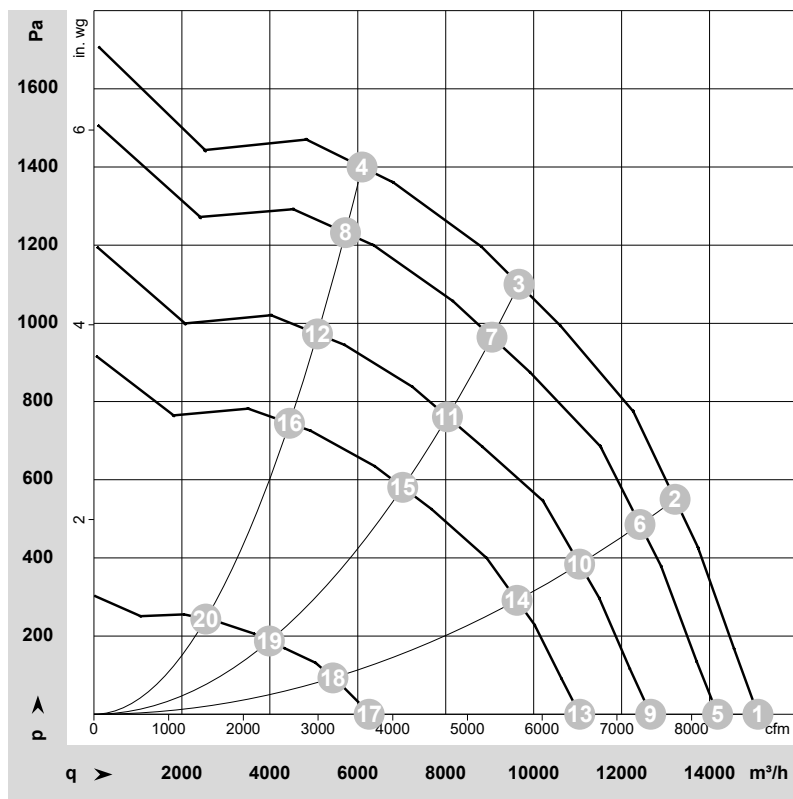
EC centrifugal module - RadiPac

backward-curved, single-intake
with support bracket

Terminal/plug assignment

		configurable IO functions		MODBUS Register		IO functions	
CON2	configurable IO mode	electrical specification	MODBUS Register	electrical specification	MODBUS Register	IO functions	IO functions
IO1	◦ Din1 (active high): digital input	active: applied voltage 3.5-50 VDC not active: pin open or applied voltage < 1.5 VDC, SELV	D158 [0]			source: set value	D101 [...]
	◦ Ain1 0-10 V/PWM: analog input	Ri = 100 k Ω , characteristic curve parameterizable, f_{PWM} = 1 k - 10 kHz, SELV	D158 [2]			source: sensor value	D147 [...]
	◦ Tach out (open collector output)	Umax = 50 VDC, Imax = 20 mA, SELV	D158 [5]			source: temperature	D40C [...]
	◦ Diagnostics out (open collector output)	Umax = 50 VDC, Imax = 20 mA, SELV	D158 [6]			switch: parameter set: #1 / #2	D104 [...]
	◦ Alarm out (open collector)	Umax = 50 VDC, Imax = 20 mA, SELV	D158 [10]			switch: control function: heating (pos.) / cooling (neg.)	D12E [...]
IO2	◦ DCI out (open collector)	Umax = 50 VDC, Imax = 20 mA, SELV	D158 [12]			switch: direction of rotation: cw / ccw	D148 [...]
	◦ Din2 (active high): digital input	active: applied voltage 3.5 - 50 VDC not active: pin open or applied voltage < 1.5 VDC, SELV	D159 [0]			switch: set value source	D16C [...]
	◦ Ain2 0-10V/PWM: analog input	Ri = 100 k Ω , characteristic curve parameterizable, f_{PWM} = 1 k - 10 kHz, SELV	D159 [2]			switch: fan enable / disable	D16A [...]
	◦ Ain2 4-20mA: analog input	Ri = 125 Ω , characteristic curve parameterizable, SELV	D159 [3]			source: MODBUS write protection	D643 [...]
	◦ Din3 (active high): digital input	active: applied voltage 3.5 - 50 VDC not active: pin open or applied voltage < 1.5 VDC, SELV	D15A [0]			source: input for auto-addressing	D00C [1]
IO3	◦ Din3 (active low): digital input	active: applied voltage < 1.5 VDC not active: pin open or applied voltage 3.5 - 50 VDC, SELV	D15A [1]			source: DCI input	D638 [...]
	◦ PWMIn3: digital PWM input, idle level high	f_{PWM} = 40 Hz - 10 kHz, characteristics parameterizable active: pin open or applied voltage 3.5 - 50 VDC not active: applied voltage < 1.5 VDC, SELV	D15A [7]			signal: tach out	
	◦ PWMIn3: digital PWM input, idle level low	f_{PWM} = 40 Hz - 10 kHz, characteristics parameterizable active: applied voltage 3.5 - 50 VDC not active: pin open or applied voltage < 1.5 VDC, SELV	D15A [8]			signal: diagnostics out	
	◦ Aout3 0-10V: analog output	function parameterizable, max. 5 mA, max output frequency 300 Hz, SELV	D15A [4]			signal: alarm out	
	◦ Tacho out (pulses)	0 - 10 V max. 5 mA, max output frequency 300 Hz, SELV	D15A [5]			signal: fan modulation level %	D130 [0]
RSA RSB	◦ Diagnostics out (pulses)	0 - 10 V max. 5 mA, max output frequency 300 Hz, SELV	D15A [6]			signal: actual speed	D130 [1]
	◦ Alarm out (pulses)	0 - 10 V max. 5 mA, max output frequency 300 Hz, SELV	D15A [10]			signal: system modulation level %	D130 [2]
	◦ DCI out (pulses)	0 - 10 V max. 5 mA, max output frequency 300 Hz, SELV	D15A [12]			signal: pulse output for auto-addressing	D130 [4]
	◦ RS485 bus connection	MODBUS RTU, parameter specification V6.6, SELV				signal: remote control output 0-10V	D130 [5]
						signal: run monitoring	D145
COM NC	Relay	250 VAC / 2 A (AC1)				signal: status	D623, D624, D635
Vout	Voltage output	Voltage parameterizable 3.3 - 24 VDC, SELV	D16E [...]				
	Alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15 - 50 VDC					

Curves: Air performance 50 Hz



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

Measurement: LU-214635-1
Date: 2021-07-06
Nozzle: 8217101923

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 _{ed}	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	m³/h	Pa	cfm	in. wg
1	3~	400	50	2475	2549	3.94	86	94	97	99	15100	0	8890	0.00
2	3~	400	50	2475	3643	5.57	80	88	92	94	13215	550	7780	2.21
3	3~	400	50	2475	4108	6.26	75	82	87	88	9665	1100	5690	4.42
4	3~	400	50	2475	3857	5.88	79	86	91	92	6095	1400	3590	5.62
5	3~	400	50	2320	2124	3.31	84	92	96	97	14185	1	8350	0.00
6	3~	400	50	2320	3015	4.63	79	87	90	92	12420	485	7310	1.95
7	3~	400	50	2320	3382	5.18	73	80	86	87	9050	965	5330	3.87
8	3~	400	50	2320	3185	4.89	77	83	89	90	5720	1232	3365	4.95
9	3~	400	50	2065	1512	2.42	81	89	92	94	12660	0	7455	0.00
10	3~	400	50	2065	2129	3.32	76	84	87	89	11045	384	6500	1.54
11	3~	400	50	2065	2381	3.70	70	77	83	84	8040	761	4730	3.06
12	3~	400	50	2065	2250	3.50	74	80	85	87	5085	973	2990	3.91
13	3~	400	50	1805	1045	1.76	78	86	89	91	11050	0	6505	0.00
14	3~	400	50	1805	1439	2.32	73	80	84	85	9620	291	5665	1.17
15	3~	400	50	1805	1607	2.56	66	74	79	80	7020	581	4135	2.33
16	3~	400	50	1805	1519	2.44	69	76	81	82	4445	744	2615	2.99
17	3~	400	50	1030	248	0.65	64	73	77	78	6260	0	3685	0.00
18	3~	400	50	1030	313	0.76	59	67	71	73	5435	93	3200	0.37
19	3~	400	50	1030	347	0.81	52	60	65	66	3990	187	2350	0.75
20	3~	400	50	1030	332	0.79	51	58	64	65	2545	244	1495	0.98

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P_{ed} = 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