8300100891

VBH0500CSPLS

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	**8300100891**
Motor	**E09002-55**

Phase		1~
Nominal voltage	VAC	230
Nominal voltage range	VAC	200 .. 277
Frequency	Hz	50/60
Method of obtaining data		ml
Status		prelim.
Speed (rpm)	min^{-1}	1190
Power consumption	W	500
Current draw	A	2.2
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	55

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}	%	71.8	48.3
02 Measurement category		A	
03 Efficiency category		Static	
04 Efficiency grade N		85.5	62
05 Variable speed drive		Yes	

09 Power consumption P_{ed}	kW	0.49
09 Air flow q_v	m^3/h	4600
09 Pressure increase p_{fs}	Pa	250
10 Speed (rpm) n	min^{-1}	1190
11 Specific ratio*		1.00

Data obtained at optimum efficiency level.

* Specific ratio = 1 + p_{fs} / 100 000 Pa

LU-223320

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	17.4 kg
Size	500 mm
Motor size	90
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	- Output 10 VDC, max. 10 mA - Operation and alarm display with LED - Locked-rotor detection - Speed control - External 15-30 VDC input (parameterization) - Alarm relay - Configurable inputs/outputs (I/O) - Power limiter - MODBUS - Motor current limitation - PFC, active - RS-485 MODBUS-RTU - Soft start - Control interface with SELV potential safely disconnected from the mains - Temperature derating - Thermal overload protection for electronics/motor - Line undervoltage / phase failure detection
Power Factor Correction (PFC)	Active
Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)	<= 3.5 mA
Motor protection	Electronic motor protection
With cable	Lateral

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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 60335-1; EN 61800-5-1; CE; UKCA
Approval	CSA C22.2 No. 77 + CAN/CSA-E60730-1; UL 1004-7 + 60730-1

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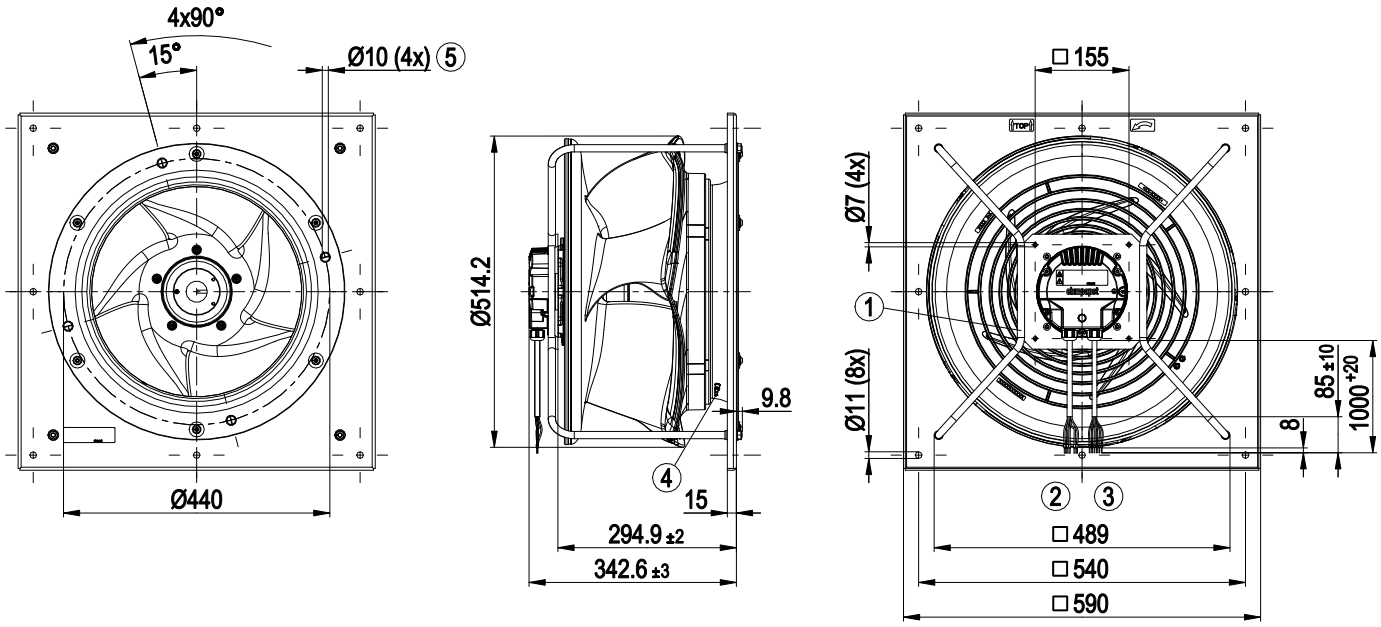
Product drawing



1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Supply line (PWR) PVC AWG18
	5x wire-end ferrule
3	Control wire (CTRL) PVC AWG22
	6x wire-end ferrule
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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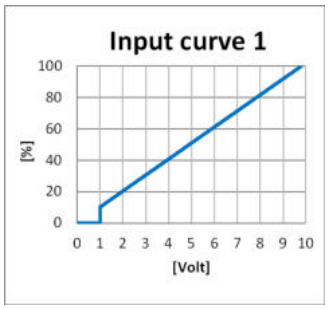
Connection diagram



No.	Conn.	Designation	Color	Function/assignment
	PWR	PE	green/yellow	Protective earth
	PWR	L	black	Power supply, phase, see nameplate for voltage range
	PWR	N	blue	Power supply, neutral conductor, see nameplate for voltage range
	PWR	COM	orange	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
	PWR	NC	orange	Status relay, floating status contact, break for failure
	CTRL	GND	blue	Reference ground for control interface, SELV
	CTRL	Vout	red	Voltage output 10 VDC +/-3%, Imax=10 mA Short-circuit-proof, power supply for external devices, SELV alternative: 15-30 VDC input for parameterization via MODBUS without line voltage
	CTRL	IO1	yellow	Factory setting: Analog input 0-10 V / PWM, Ri=100 kΩ, function: set value Characteristic curve parameterizable (see input characteristic curve "Input curve 1"), SELV Function parameterizable (see table Optional interface functions)
	CTRL	IO2	white	Factory setting: Open collector output, Umax=50 VDC, Imax=20 mA, function:Tacho output 1 pulse/revolution, SELV Function parameterizable (see table Optional interface functions)
	CTRL	RSA	gray	RS-485 interface for MODBUS RSA, SELV dielectric strength to MODBUS RSB +/-14 V, dielectric strength to GND +/-7 V
	CTRL	RSB	brown	RS-485 interface for MODBUS RSB, SELV dielectric strength to MODBUS RSA +/-14 V, dielectric strength to GND +/-7 V
		LED		green: status = good, ready for operation orange: status = warning red: status = failure

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Terminal/plug assignment

Medium (M2)

Functions and parameter description
MODBUS V7.1

○ *configurable function*
(○) *function to be activated via IO Mode*

configurable IO functions: normal / inverse

Terminal	configurable IO mode	electrical specification	MODBUS Register for IO mode configuration	INPUT: source: set value (D101 [...])	INPUT: source: sensor value (D147 [...])	INPUT: switch: parameter set: #1 / #2 (D104 [...])	INPUT: switch: control function: heating (pos.) /cooling (neg.) (D12E [...])	INPUT: switch: direction of rotation: cw / ccw (D148 [...])	INPUT: switch: set value source (D16C [...])	INPUT: switch: fan enable / disable (D16A [...])	INPUT: source: input pulses autoaddressing (D00C [1])	INPUT: source: DCI in (D638 [...])	OUTPUT: signal: tach out (selection direct via IO)	OUTPUT: signal: diagnostics out (selection direct via IO)	OUTPUT: signal: alarm out (selection direct via IO)	OUTPUT: signal: output pulses autoaddressing (D130 [4])	OUTPUT: signal: DCI out (D61B)	OUTPUT: signal: fan modulation level % (D130 [0])	OUTPUT: signal: actual speed 1/min (D130 [1])	OUTPUT: signal: system modulation level % (D130 [2])	OUTPUT: signal: remote control output 0-10 V (D130 [5])	OUTPUT: signal: run monitoring (D145)	OUTPUT: signal: status
IO1	○ **Din1 (high active):** digital input	active: applied voltage 3.5 - 50 VDC not active: pin open or applied voltage < 1.5 VDC, SELV	D158 [0]			○	○	○	○	○	○	○											
IO1	○ **Din1 (low active):** digital input	active: applied voltage < 1.5 VDC not active: pin open or applied voltage 3.5 - 50 VDC, SELV	D158 [1]			○	○	○	○	○	○	○											
IO1	○ **Ain1 0-10 V/PWM:** analog input	Ri = 100 kΩ, characteristic curve parametrizable, f_{PWM} = 1 k - 10 kHz, SELV	D158 [2]	○	○																		
IO1	○ **Ain1 0-10 V/PWM (with pull up):** analog input	Ri = 100 kΩ, characteristic curve parametrizable, f_{PWM} = 1 k - 10 kHz, SELV	D158 [9]	○	○																		
IO2	○ **Din1 (active high):** digital input	active: applied voltage 3.5 - 50 VDC not active: pin open or applied voltage < 1.5 VDC, SELV	D159 [0]			○	○	○	○	○													
IO2	○ **Ain1 0-10 V/PWM:** analog input	Ri = 100 kΩ, characteristic curve parametrizable, f_{PWM} = 1 k - 10 kHz, SELV	D159 [2]	○	○																		
IO2	○ **Tach out** (open collector)	Umax = 50 VDC, Imax = 20 mA, SELV	D159 [5]										(○)										
IO2	○ **Diagnostics out** (open collector)	Umax = 50 VDC, Imax = 20 mA, SELV	D159 [6]											(○)									
IO2	○ **Alarm out** (open collector)	Umax = 50 VDC, Imax = 20 mA, SELV	D159 [10]												(○)								
IO2	○ **Autoadressing pulse output** (open collector)	Umax = 50 VDC, Imax = 20 mA, SELV	D159 [11]													(○)							
IO2	○ **DCI-output** (open collector)	Umax = 50 VDC, Imax = 20 mA, SELV	D159 [12]														(○)						
RSA RSB	**RS485 bus connection**	MODBUS RTU, parameter specification V7.1, SELV		○		○	○	○	○	○													
COM NC	**Relay**	250 VAC / 2 A (AC1)																				○	○
Vout	**Voltage output**	Voltage 10 VDC, SELV																					
Vout	**Alternatively:** Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15 - 30 VDC																					

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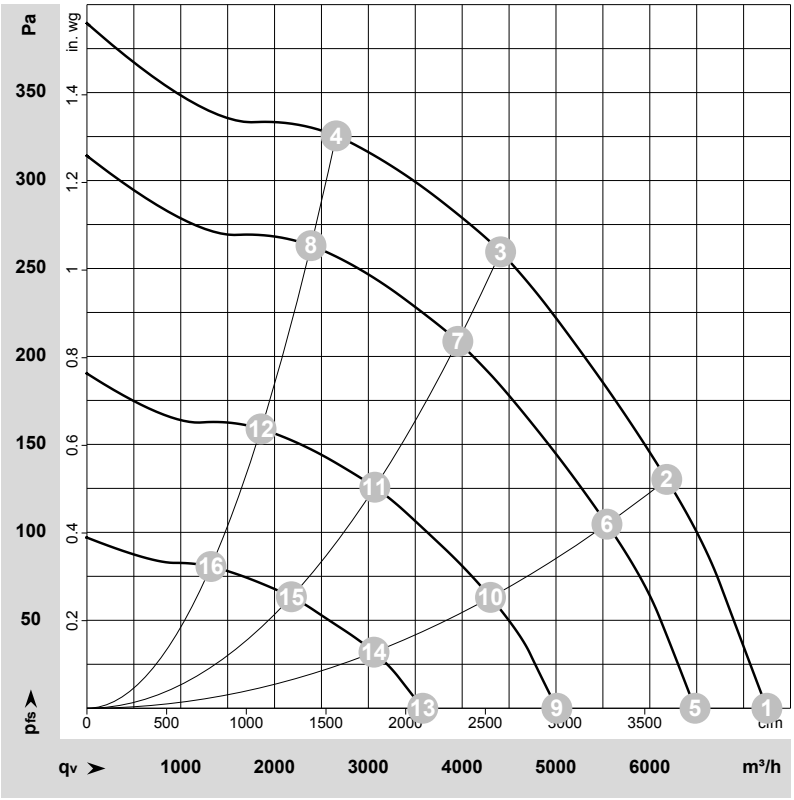
Curves: Air performance 50 Hz



ρ = 1.15 kg/m³ ± 2 %

Measurement: LU-223320-1
Date: 2022-10-13
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_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	1~	230	50	1190	320	1.43	68	76	80	81	7250	0	4265	0.00
2	1~	230	50	1190	426	1.88	63	71	75	76	6180	130	3640	0.52
3	1~	230	50	1190	500	2.20	57	64	69	70	4410	260	2595	1.04
4	1~	230	50	1190	449	1.98	58	65	70	71	2655	326	1565	1.31
5	1~	230	50	1070	236	1.07	65	73	77	79	6480	0	3815	0.00
6	1~	230	50	1070	310	1.38	60	68	72	73	5545	105	3260	0.42
7	1~	230	50	1070	356	1.58	54	61	66	67	3955	209	2325	0.84
8	1~	230	50	1070	326	1.45	55	62	66	68	2390	263	1405	1.06
9	1~	230	50	830	120	0.57	60	68	72	74	5010	0	2950	0.00
10	1~	230	50	830	151	0.70	54	63	67	68	4300	63	2530	0.25
11	1~	230	50	830	171	0.78	48	56	60	62	3070	126	1805	0.51
12	1~	230	50	830	158	0.73	49	55	60	61	1855	159	1090	0.64
13	1~	230	50	595	51	0.32	52	60	66	67	3580	0	2105	0.00
14	1~	230	50	595	62	0.36	46	53	59	60	3060	32	1800	0.13
15	1~	230	50	595	68	0.38	41	48	54	55	2180	63	1285	0.25
16	1~	230	50	595	64	0.36	40	46	51	52	1320	81	780	0.33

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

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