

8300100759
VBH0280CTPHS

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	8300100759	
Motor	E09004-40	

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	4550
Power consumption	W	1500
Current draw	A	2.3
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}	%	69.6	53.3	09 Power consumption P_{ed}	kW	1.5
02 Measurement category		A		09 Air flow q_v	m ³ /h	3075
03 Efficiency category		Static		09 Pressure increase p_{fs}	Pa	1145
04 Efficiency grade N		78.3	62	10 Speed (rpm) n	min ⁻¹	4550
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-225672

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	10.74 kg
Size	280 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 - 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)	Passive (through low-capacitance DC link)
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 61800-5-1; UKCA; CE
Approval	CSA C22.2 No. 77 + CAN/CSA-E60730-1; UL 1004-7 + 60730-1

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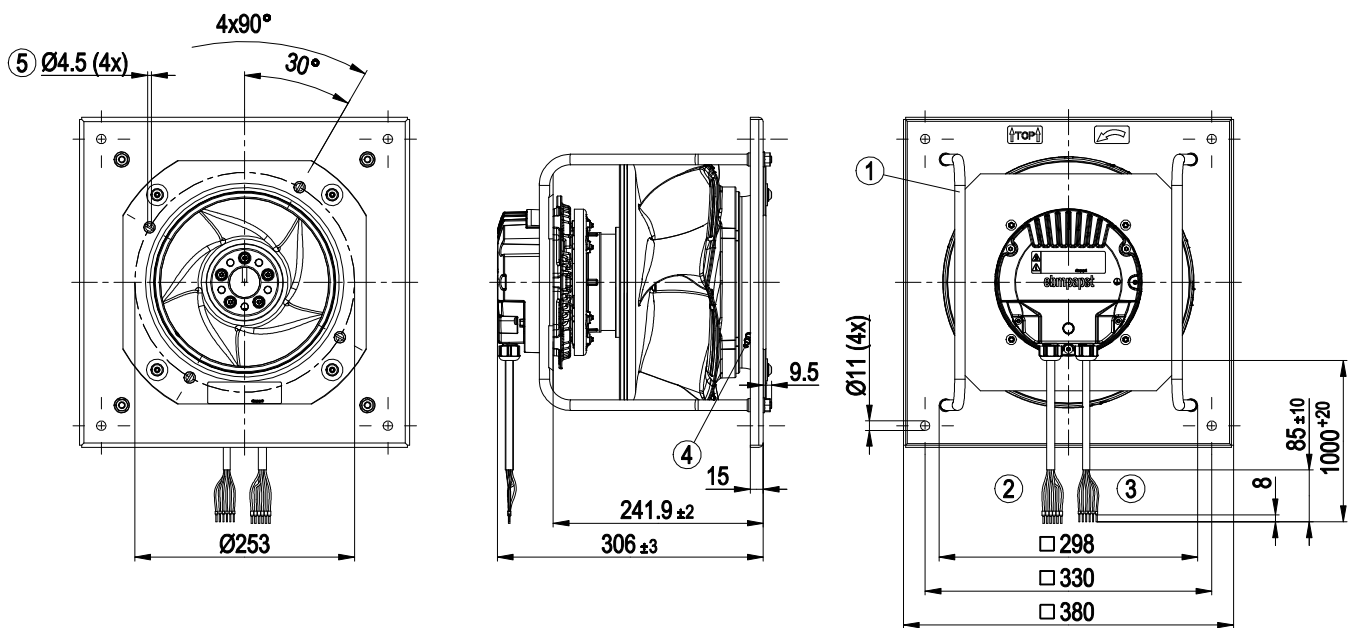
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Product drawing



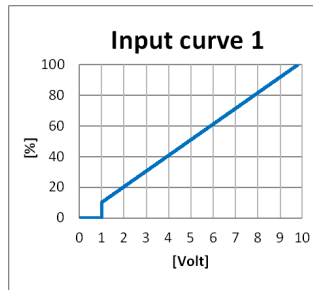
1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Supply line (PWR) PVC AWG18 6x wire-end ferrule
3	Control wire (CTRL) PVC AWG22 6x wire-end ferrule
4	Inlet ring with pressure tap (k-factor: 98)
5	Fastening holes for FlowGrid 20280-2-2957 (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	L1, L2, L3	black 1-3	Power supply, phase, 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%, I _{max} =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, R _i =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, U _{max} =50 VDC, I _{max} =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

Terminal/plug	Signal	Description	IO mode configuration	Electrical specification	Configurable IO mode	Configurable IO functions: normal / inverse
D101 [..]	source: set value					
D147 [..]	source: sensor value					
D104 [..]	switch: parameter set: #1 / #2					
D12E [..]	switch: control function: heating (pos.) / cooling (neg.)					
D148 [..]	switch: direction of rotation: cw / ccw					
D16C [..]	switch: set value source					
D16A [..]	switch: fan enable / disable					
D00C [1]	source: input pulses autoaddressing					
D638 [..]	source: DCI in					
D130 [4]	signal: output pulses autoaddressing					
D61B	signal: DCI out					
D130 [0]	signal: fan modulation level %					
D130 [1]	signal: actual speed 1/min					
D130 [2]	signal: system modulation level %					
D130 [3]	signal: remote control output 0-10 V					
D145	signal: run monitoring					
D623, D624, D635	signal: status					

Medium (M2)

Functions and parameter description
MODBUS V7.2

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

MODBUS Register for IO mode configuration

IO1	IO mode configuration	Electrical specification	Configurable IO mode
	D158 [0]	active: applied voltage 3.5 - 50 VDC not active: pin open or applied voltage < 1.5 VDC, SELV	○ Din1 (high active): digital input
	D158 [1]	active: applied voltage < 1.5 VDC not active: pin open or applied voltage 3.5 - 50 VDC, SELV	○ Din1 (low active): digital input
	D158 [2]	Ri = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1 \text{ k} - 10 \text{ kHz}$, SELV	○ Ain1 0-10 V/PWM: analog input
	D158 [9]	Ri = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1 \text{ k} - 10 \text{ kHz}$, SELV	○ Ain1 0-10 V/PWM (with pull up): analog input
	D159 [0]	active: applied voltage 3.5 - 50 VDC not active: pin open or applied voltage < 1.5 VDC, SELV	○ Din1 (active high): digital input
	D159 [2]	Ri = 100 kΩ, characteristic curve parameterizable, $f_{PWM} = 1 \text{ k} - 10 \text{ kHz}$, SELV	○ Ain1 0-10 V/PWM: analog input
	D159 [5]	Umax = 50 VDC, Imax = 20 mA, SELV	○ Tach out (open collector)
	D159 [6]	Umax = 50 VDC, Imax = 20 mA, SELV	○ Diagnostics out (open collector)
	D159 [10]	Umax = 50 VDC, Imax = 20 mA, SELV	○ Alarm out (open collector)
	D159 [11]	Umax = 50 VDC, Imax = 20 mA, SELV	○ Autoaddressing pulse output (open collector)
	D159 [12]	Umax = 50 VDC, Imax = 20 mA, SELV	○ DCI-output (open collector)
RSA RSB	MODBUS RTU, parameter specification V7.2, SELV		RS485 bus connection
COM NC	250 VAC / 2 A (AC1)		Relay
Vout	Voltage 10 VDC, SELV		Voltage output
	15 - 30 VDC		Alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage

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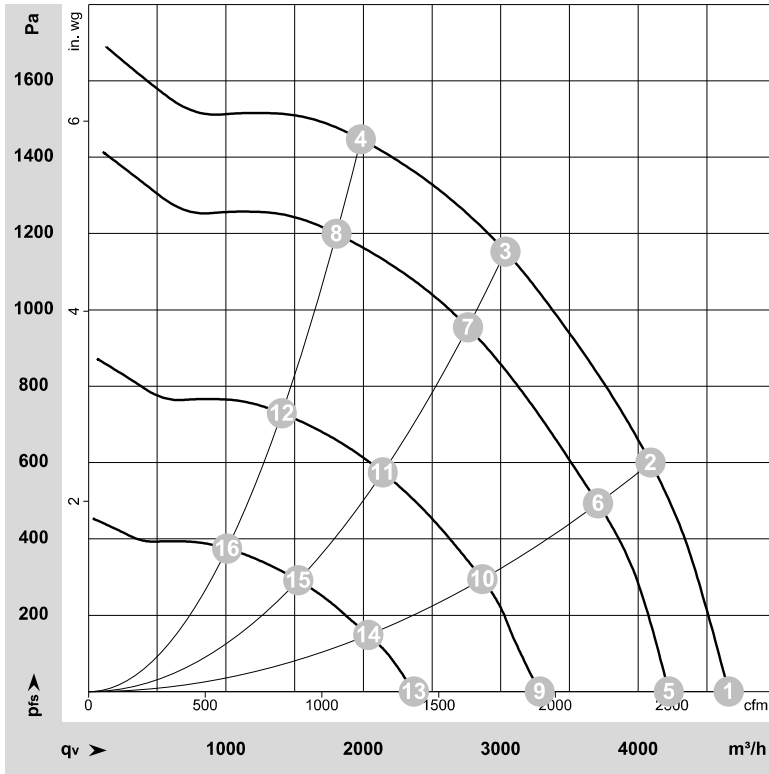
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Curves: Air performance 50 Hz



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

Measurement: LU-225672-1
Date: 2023-02-23
Nozzle: 8217102502

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	4550	1051	1.64	82	91	95	96	4660	0	2740	0.00
2	3~	400	50	4550	1360	2.11	76	84	91	92	4090	600	2405	2.41
3	3~	400	50	4550	1500	2.30	72	80	88	88	3035	1150	1785	4.62
4	3~	400	50	4550	1423	2.20	80	87	94	95	1980	1450	1165	5.82
5	3~	400	50	4140	785	1.26	80	88	93	94	4225	0	2485	0.00
6	3~	400	50	4140	1039	1.65	74	82	88	89	3710	493	2180	1.98
7	3~	400	50	4140	1146	1.81	70	77	85	86	2760	959	1625	3.85
8	3~	400	50	4140	1090	1.73	77	85	91	92	1805	1200	1060	4.82
9	3~	400	50	3220	393	0.68	73	82	86	87	3285	0	1935	0.00
10	3~	400	50	3220	507	0.84	68	76	83	84	2865	295	1685	1.18
11	3~	400	50	3220	562	0.93	65	72	81	82	2140	576	1260	2.31
12	3~	400	50	3220	535	0.89	69	77	84	85	1405	730	830	2.93
13	3~	400	50	2300	171	0.38	65	73	77	78	2365	0	1395	0.00
14	3~	400	50	2300	212	0.44	60	68	73	74	2035	149	1200	0.60
15	3~	400	50	2300	231	0.46	57	64	71	72	1525	293	900	1.18
16	3~	400	50	2300	223	0.45	61	67	73	74	1010	375	595	1.51

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