

8300100077  
VBS0400CTRNS

# EC centrifugal fan - RadiPac

backward-curved, single-intake

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## Nominal data

Item	8300100077	
Motor	E11233-80	
Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Speed (rpm)	min <sup>-1</sup>	3540
Power consumption	W	3740
Current draw	A	5.8
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 $\eta_{es}$	%	68.8	57.4	09 Power consumption $P_{ed}$	kW	3.65
02 Measurement category		A		09 Air flow $q_v$	m <sup>3</sup> /h	7030
03 Efficiency category		Static		09 Pressure increase $p_{fs}$	Pa	1232
04 Efficiency grade N		73.4	62	10 Speed (rpm) n	min <sup>-1</sup>	3540
05 Variable speed drive		Yes		11 Specific ratio <sup>*</sup>		1.01

Data obtained at optimum efficiency level.

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

LU-215179

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

<b>Weight</b>	13.5 kg
<b>Size</b>	400 mm
<b>Motor size</b>	112
<b>Rotor surface</b>	Painted black
<b>Electronics housing material</b>	Die-cast aluminum
<b>Impeller material</b>	PP plastic
<b>Number of blades</b>	5
<b>Direction of rotation</b>	Clockwise, viewed toward rotor
<b>Degree of protection</b>	IP55
<b>Insulation class</b>	"F"
<b>Moisture (F) / Environmental (H) protection class</b>	H1
<b>Ambient temperature note</b>	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.
<b>Max. permitted ambient temp. for motor (transport/storage)</b>	+80 °C
<b>Min. permitted ambient temp. for motor (transport/storage)</b>	-40 °C
<b>Installation position</b>	Shaft horizontal or rotor on bottom; rotor on top on request
<b>Condensation drainage holes</b>	On rotor side
<b>Mode</b>	S1
<b>Motor bearing</b>	Ball bearing
<b>Technical features</b>	<ul style="list-style-type: none"><li>- Operation and alarm display with LED</li><li>- External 15-50 VDC input (parameterization)</li><li>- Alarm relay</li><li>- Integrated PI controller</li><li>- Configurable inputs/outputs (I/O)</li><li>- MODBUS V6.3</li><li>- Motor current limitation</li><li>- RS-485 MODBUS-RTU</li><li>- Soft start</li><li>- Voltage output 3.3-24 VDC, Pmax = 800 mW</li><li>- Control interface with SELV potential safely disconnected from the mains</li><li>- Thermal overload protection for electronics/motor</li><li>- Line undervoltage / phase failure detection</li><li>- Vibration sensor</li></ul>
<b>EMC immunity to interference</b>	According to EN 61000-6-2 (industrial environment)
<b>EMC interference emission</b>	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
<b>Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)</b>	<= 3.5 mA
<b>Electrical hookup</b>	Terminal box
<b>Motor protection</b>	Electronic motor protection



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<b>Protection class assignment</b>	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.
<b>Conformity with standards</b>	EN 61800-5-1; CE; UKCA
<b>Approval</b>	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

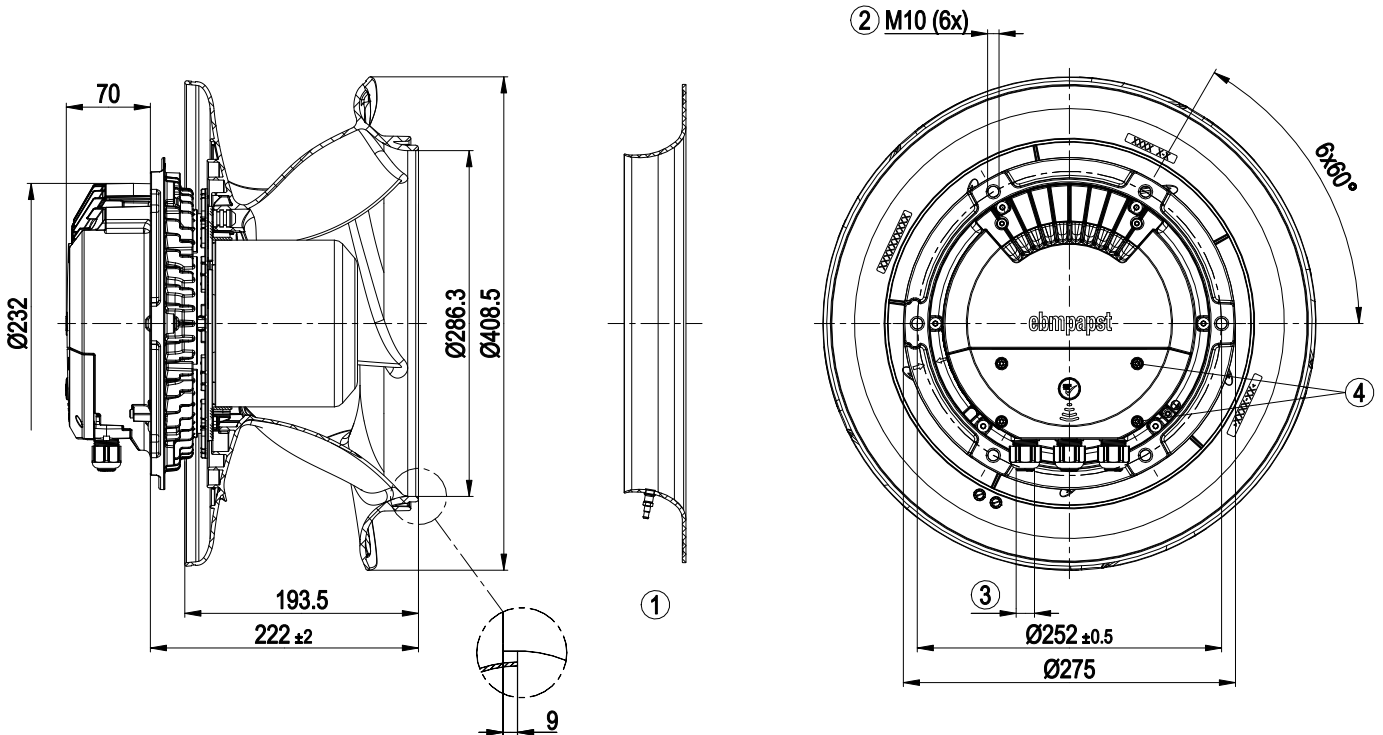


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## Product drawing



1	Accessory part: Inlet ring 8217102241 with pressure tap (k-factor: 190) (not included in scope of delivery)
2	Max. clearance for screw 20 mm
3	Cable diameter min. 4 mm, max. 10 mm, tightening torque $4 \pm 0.6$ Nm (The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
4	Tightening torque $1.5 \pm 0.2$ Nm

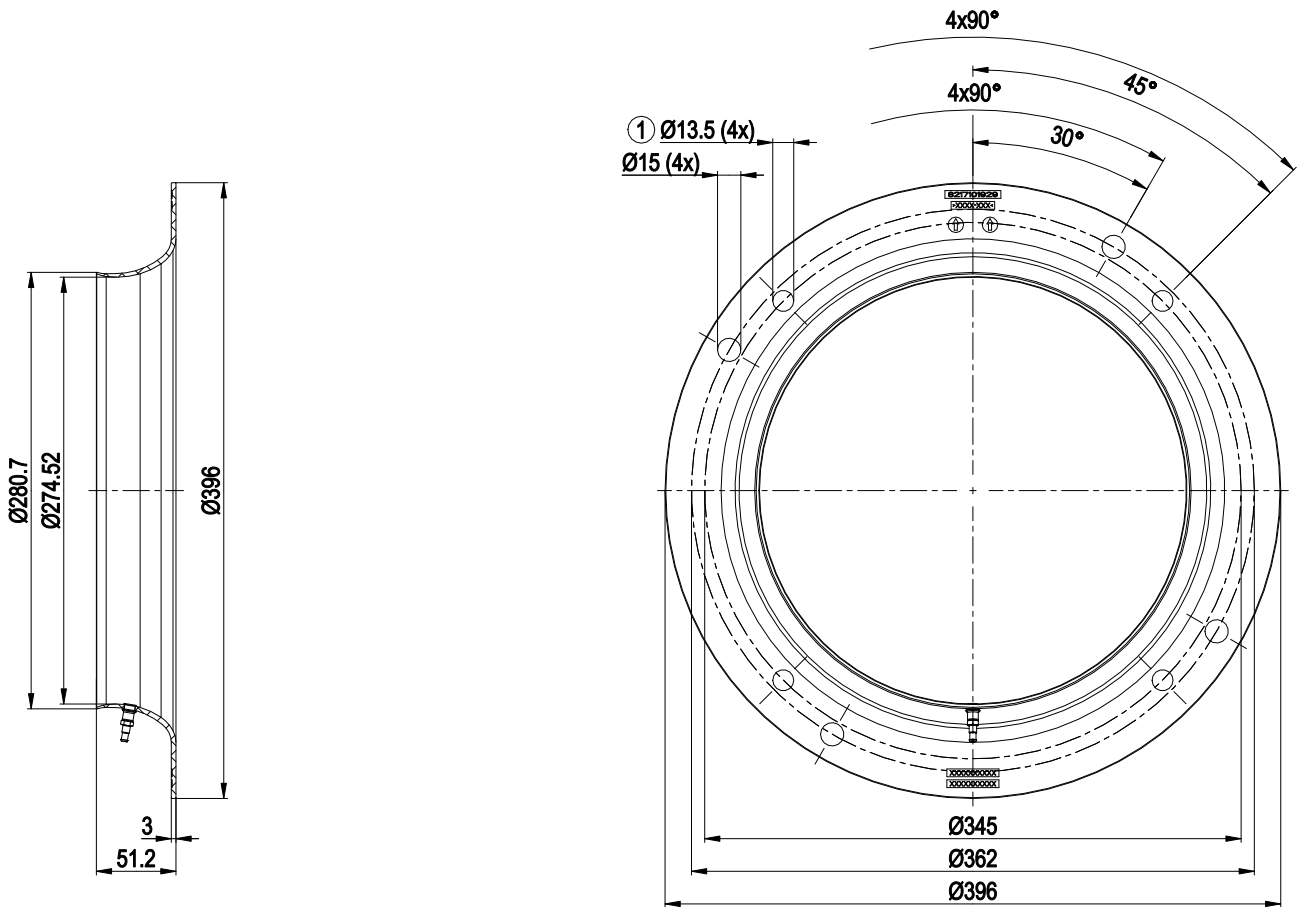


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## Accessory part

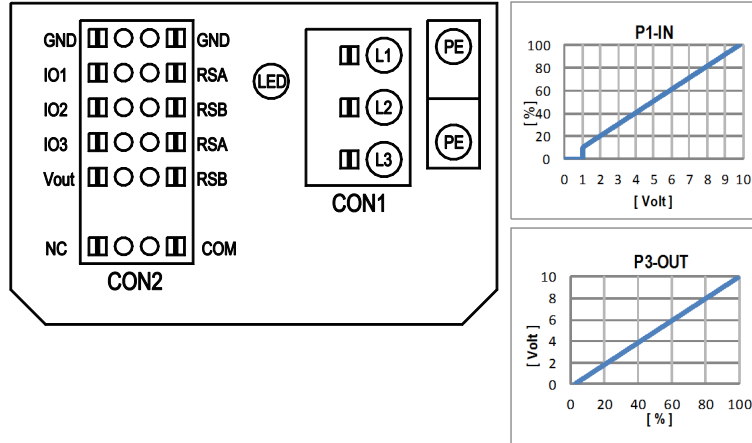


Inlet ring 8217102241 with pressure tap (k-factor: 190)

- |   |  |
|---|--|
| 1 | Fastening holes for FlowGrid 00400-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required |
|---|--|



## 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

## Terminal/plug assignment

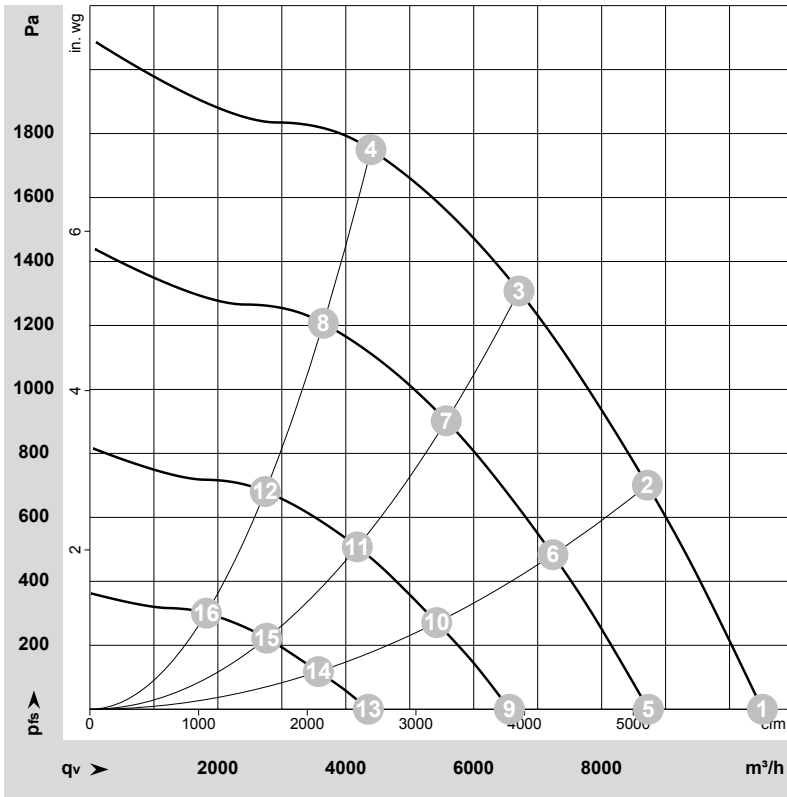
CON2	configurable IO mode	electrical specification	configurable IO functions: normal / inverse	MODBUS Register for IO mode configuration	
				D158 [0]	D158 [1]
IO1	○ Din1 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	
	○ Ain1 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV			
	○ Tach out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV		○	
	○ Diagnostics out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV			
IO2	○ Din2 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	
	○ Ain2 0-10V/PWM: analog input	RI = 100k, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$ , SELV			
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV		○	
	○ Din3 (active high), digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC			
IO3	○ Din3 (active low), digital input	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage < 1.5VDC		○	
	○ PWMIn3: digital input, idle level high	PWM = 40Hz - 10kHz, characteristics parameterizable			
	○ PWMIn3: digital input, idle level low	active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV		○	
	○ Aout3 0-10V: analog output	function parameterizable, max. 5mA max output frequency 300Hz, SELV			
RSA	○ Tacho out (pulses), analog output	0-10V/max. 5mA max output frequency 300Hz, SELV			
	○ Diagnostics out (pulses)	0-10V/max. 5mA max output frequency 300Hz, SELV			
	○ Diagnostics out (pulses)	MODBUS RTU, specification V6.3, SELV			
RSB	RS485 bus connection,				
Vout	voltage output	voltage parameterizable 3.3...24VDC +/- 5%, Pmax=600mW, short-circuit-proof, supply for external devices, SELV			
	alternatively: Input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage	15...50VDC			

IO	Signal	Direction	Notes
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	○	
(selected directly via IO mode)	signal: tach out		○
(selected directly via IO mode)	signal: diagnostics out		○
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	○	
D00C [1]	pulse input for auto-addressing	○	
D130 [4]	pulse output for auto-addressing		○

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



## Curves: Air performance 50 Hz



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

Measurement: LU-215179-1

Air performance measured according to ISO 5801 installation category A. For detailed information on the measurement setup, contact ebmpapst. 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	$\text{min}^{-1}$	W	A	dB(A)	dB(A)	dB(A)	dB	$\text{m}^3/\text{h}$	Pa	cfm	in. wg
1	3~	400	50	3540	2882	4.42	93	101	103	105	10515	0	6190	0.00
2	3~	400	50	3540	3448	5.30	85	93	97	98	8715	700	5130	2.81
3	3~	400	50	3540	3740	5.80	81	89	93	94	6710	1300	3950	5.22
4	3~	400	50	3540	3570	5.48	82	89	94	96	4395	1750	2585	7.03
5	3~	400	50	2940	1680	2.66	88	95	98	100	8730	0	5140	0.00
6	3~	400	50	2940	2001	3.14	80	88	92	93	7240	483	4260	1.94
7	3~	400	50	2940	2135	3.34	76	84	88	90	5570	903	3280	3.63
8	3~	400	50	2940	2073	3.25	77	85	90	91	3650	1207	2150	4.85
9	3~	400	50	2210	777	1.40	79	87	90	92	6560	0	3860	0.00
10	3~	400	50	2210	903	1.57	72	80	84	85	5420	271	3190	1.09
11	3~	400	50	2210	957	1.64	69	76	81	82	4180	508	2460	2.04
12	3~	400	50	2210	935	1.61	70	77	82	83	2740	681	1615	2.73
13	3~	400	50	1470	272	0.69	68	76	80	81	4355	0	2560	0.00
14	3~	400	50	1470	304	0.75	61	69	73	75	3570	118	2100	0.47
15	3~	400	50	1470	321	0.77	58	65	70	71	2765	222	1625	0.89
16	3~	400	50	1470	316	0.76	58	66	70	72	1820	300	1070	1.20

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

