R3G280-RR10-P1

EC centrifugal fan - RadiCal

backward-curved, single-intake

for rail applications

R3G280-RR10-P1 ebmpapst Datasheet
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Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen
Amtsgericht (court of registration) Stuttgart · HRB 590142

Nominal data

Type	**R3G280-RR10-P1**	
Motor	**M3G084-DF**	
Nominal voltage	VDC	110
Nominal voltage range	VDC	77 .. 138
Method of obtaining data		ml
Speed (rpm)	min^{-1}	2600
Power consumption	W	475
Current draw	A	4.3
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	60

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment
Subject to change

Data according to ErP Directive

		Actual	Req. 2015
01 Overall efficiency η_{es}	%	67.5	48.1
02 Measurement category		A	
03 Efficiency category		Static	
04 Efficiency grade N		81.4	62
05 Variable speed drive		Yes	

09 Power consumption P_e	kW	0.47
09 Air flow q_v	m^3/h	1750
09 Pressure increase p_{fs}	Pa	589
10 Speed (rpm) n	min^{-1}	2610
11 Specific ratio*		1.01

Data obtained at optimum efficiency level.
The ErP data is determined using a motor-impeller combination in a standardized measurement setup.

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

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Technical description

Weight	4.2 kg
Fan size	280 mm
Rotor surface	Painted black
Electronics housing material	Die-cast aluminum
Impeller material	PA plastic UL94 V0
Number of blades	6
Direction of rotation	Clockwise, viewed toward rotor
Degree of protection	IP55
Insulation class	"F"
Moisture (F) / Environmental (H) protection class	H3
Max. permitted ambient temp. for motor (transport/storage)	+80 °C
Min. permitted ambient temp. for motor (transport/storage)	-40 °C
Installation position	Shaft horizontal or rotor on bottom; rotor on top on request
Condensation drainage holes	On rotor side
Mode	S1
Motor bearing	Ball bearing; (sealed)
Technical features	- Output 10 VDC, max. 10 mA - Operation and alarm display - Alarm relay - Run monitoring - Power limiter - Motor current limitation - RS-485 MODBUS-RTU - Soft start - EEPROM write cycles: 100,000 maximum - Control input 0-10 VDC / PWM - Control interface with SELV potential safely disconnected from the mains - Overvoltage detection - Thermal overload protection for electronics/motor - Line undervoltage detection
EMC regulations	According to EN 50121-3-2
Motor protection	Thermal overload protector (TOP) internally connected
With cable	Lateral
Protection class	I (with customer connection of protective earth)
Conformity with standards	EN 15085-1, CPC3: 2007; EN 45545-2, HL3: 2013; EN 50155: 2008; EN 61373, Cat. 1B: 2010
Approval	EAC
Comment	If supply potential (e.g. 230 VAC) is passed through the alarm relay, the SELV signal wires lose their property of reinforced insulation, meaning they then have only basic insulation The SELV property (reinforced insulation) is not lost when voltages of up to 110 VDC are passed through the alarm relay. EMC regulation: EN 50121-3-2 in preparation

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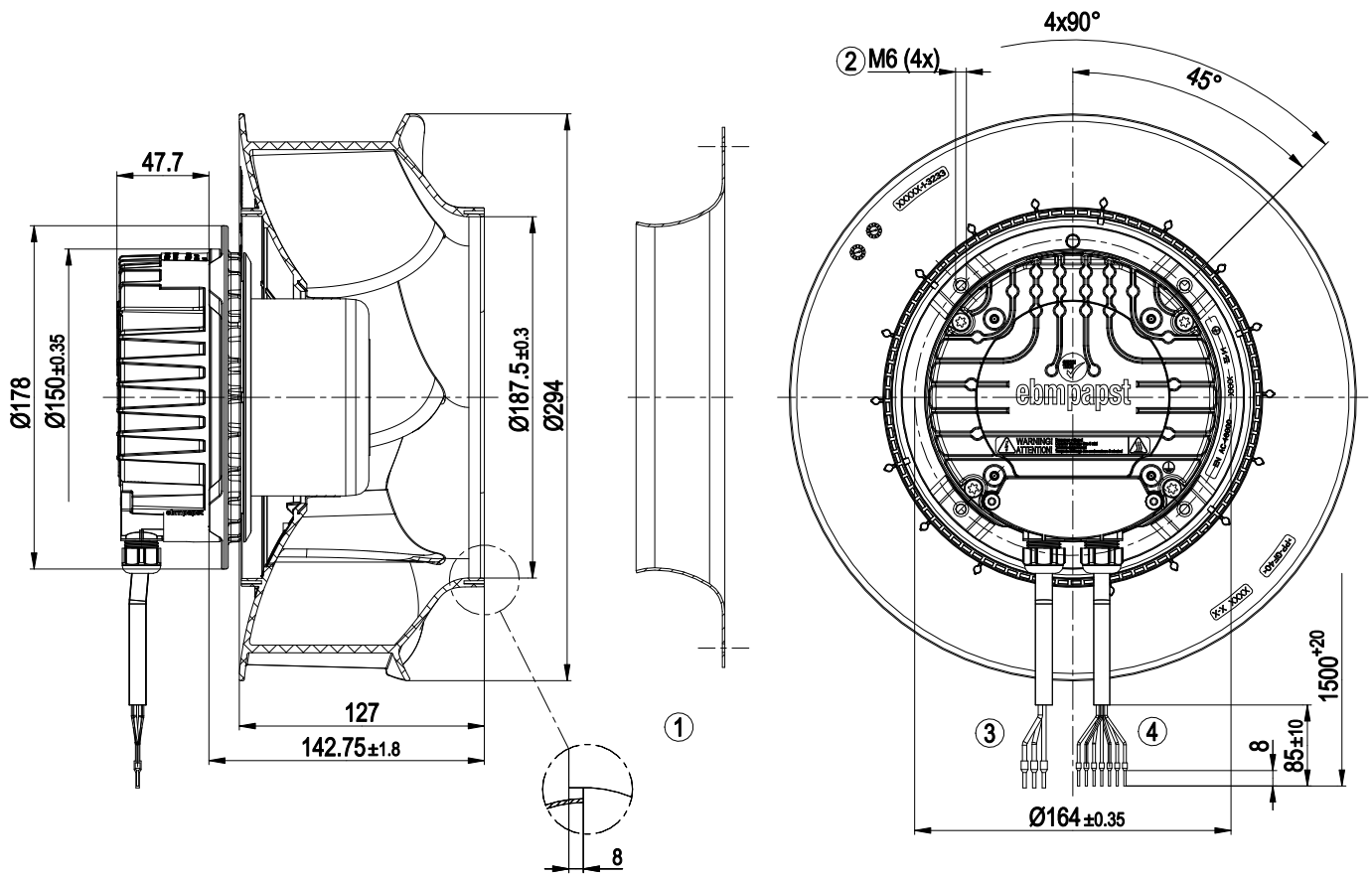
Product drawing



1	Accessory part: inlet ring 28000-2-4013 not included in scope of delivery
2	Max. clearance for screw 16 mm
3	Cable halogen-free, BETAtrans® 3 GKW flex, 4G 1.5 mm², 3x crimped ferrules, 1 lead not brought out
4	Cable halogen-free, BETAtrans® 3 GKW flex, 7x 0.5 mm², 7x crimped ferrules

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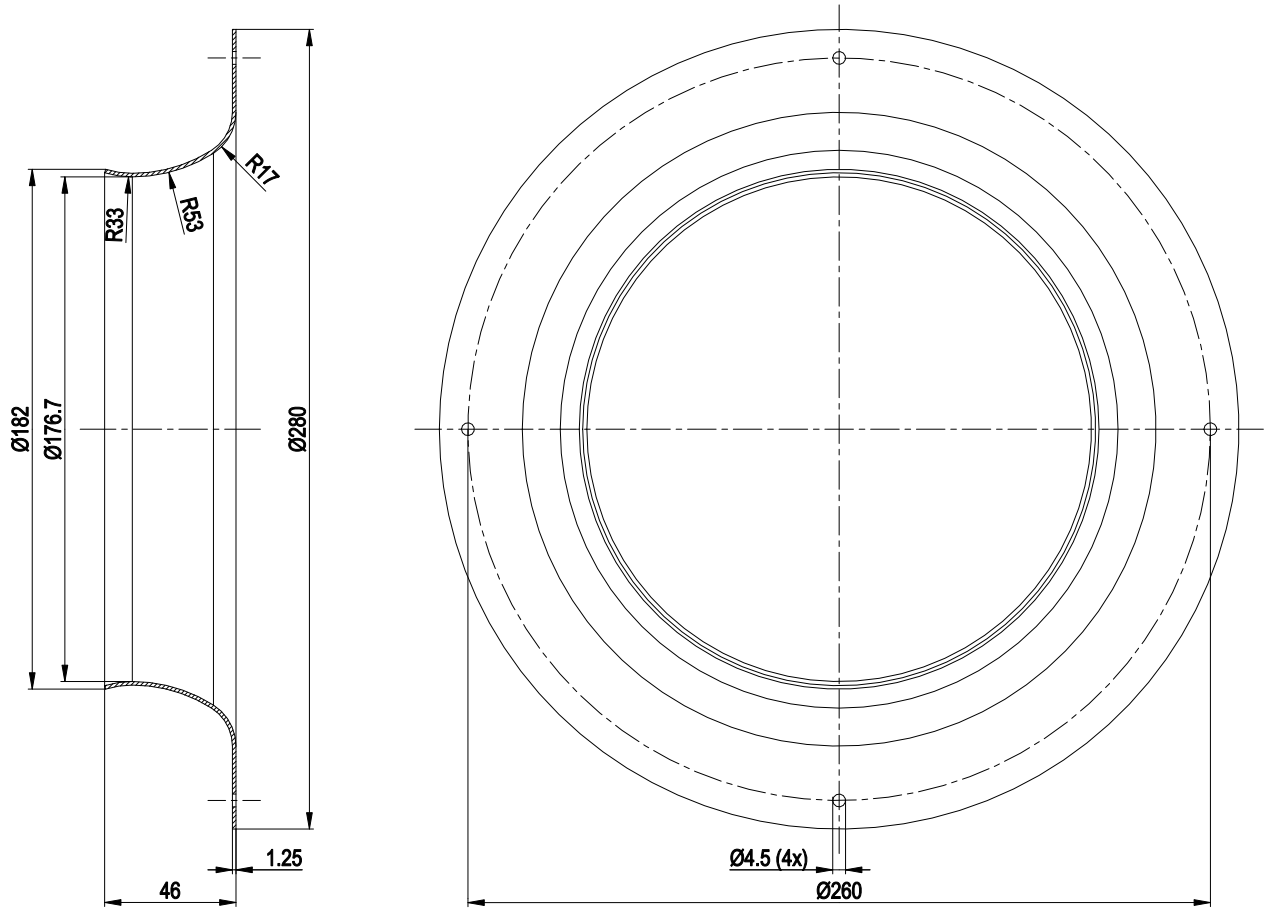
Accessory part



Accessory part: inlet ring 28000-2-4013 not included in scope of delivery

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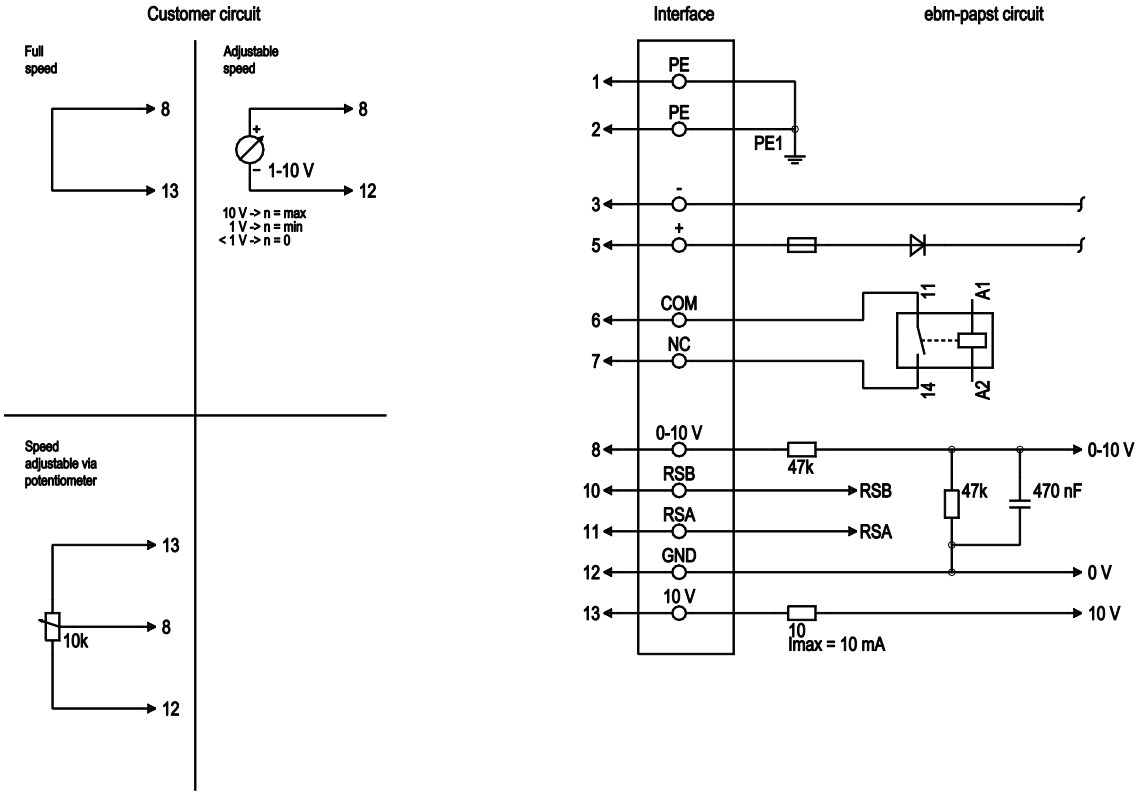
Connection diagram



No.	Conn.	Designation	Color	Function/assignment
1	1, 2	PE	green/yellow	Protective earth
1	3	-	black	Power supply, GND, voltage range see nameplate
1	5	+	brown	Power supply, voltage range see nameplate
2	6	COM	gray	Status relay, floating status contact, break for failure, contact rating 250 VAC / max. 2 A (AC1) / min. 1 mA / 5 V, basic insulation on supply side and on control interface side
2	7	NC	orange	Status relay, floating status contact, common connection, contact rating 250 VAC / max. 2 A (AC1) / min. 1 mA / 5 V, basic insulation on supply side and on control interface side
2	8	0-10 V	yellow	Analog input 1, set value: 0-10 V, Ri = 100 kΩ, adjustable curve; SELV
2	10	RSB	brown	RS485 interface for MODBUS, RSB; SELV
2	11	RSA	white	RS485 interface for MODBUS, RSA; SELV
2	12	GND	blue	Reference ground for control interface; SELV
2	13	+10 V	red	Fixed voltage output 10 VDC, +10 V ±3%, max. 10 mA, short-circuit-proof power supply for external devices (e.g. pot); SELV

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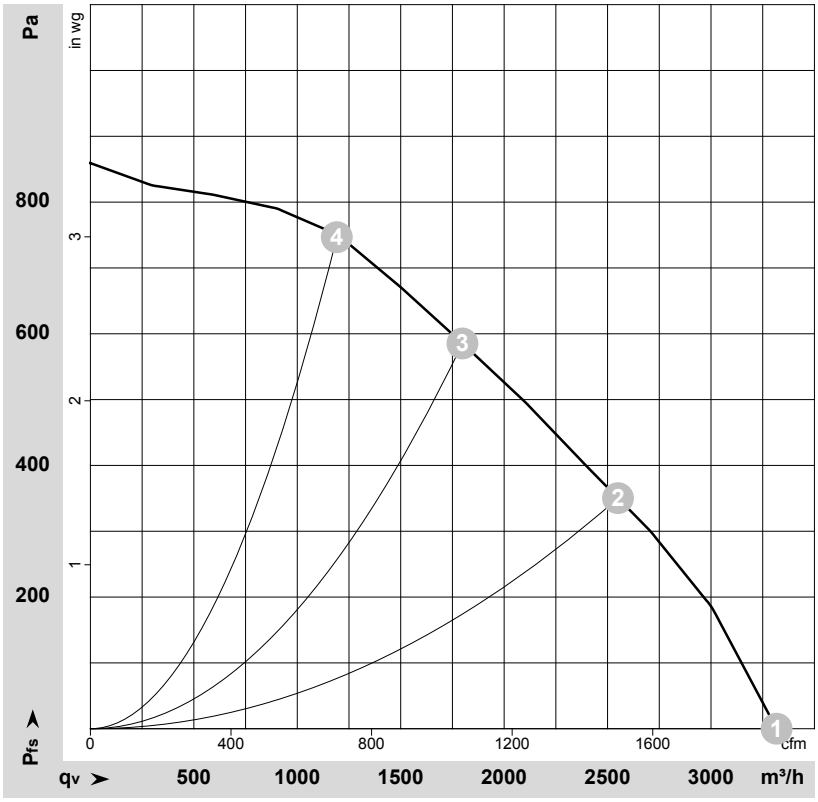
Curves: Air performance



ρ = 1.15 kg/m³ ± 2 %

Measurement: LU-177987-1

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	n	P_{ed}	I	LpA_{in}	LwA_{in}	q_V	p_{fs}	q_V	p_{fs}
		V	min^{-1}	W	A	dB(A)	dB(A)	m^3/h	Pa	cfm	inH2O
1	Y	110	2810	436	3.96	77	84	3315	0	1950	0.00
2	Y	110	2715	496	4.50	70	77	2550	350	1500	1.41
3	Y	110	2635	495	4.50	66	73	1800	586	1060	2.35
4	Y	110	2760	491	4.46	69	75	1190	751	700	3.01

Wired = Wiring · U = Power supply · n = Speed (rpm) · P_{ed} = Power consumption · I = Current draw · LpA_{in} = Sound pressure level intake side · LwA_{in} = Sound power level intake side
q_V = Air flow · p_{fs} = Pressure increase