R3G250-RR09-P1

EC centrifugal fan - RadiCal

backward curved, single inlet

for railway applications



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Nominal data

Type	**R3G250-RR09-P1**
Motor	**M3G084-DF**

Nominal voltage	VDC	110
Nominal voltage range	VDC	77 .. 138
Type of data definition		ml
Speed (rpm)	min^{-1}	3800
Power input	W	540
Current draw	A	4.9
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	60

ml = Max. load · me = Max. efficiency · fa = Running at free air · cs = Customer specs · cu = Customer unit
Subject to alterations

Data in accordance with ecodesign regulation EU 327/2011 (EN 17166)

		Actual	Request 2015
01 Overall efficiency η_{es}	%	56.8	48.6
02 Measurement category		A	
03 Efficiency category		Static	
04 Efficiency grade N		70.2	62
05 Variable speed drive		Yes	

09 Power input P_e	kW	0.53
09 Air flow q_v	m^3/h	1210
09 Pressure increase p_{fs}	Pa	813
10 Speed (rpm) n	min^{-1}	3805
11 Specific ratio*		1.01

Data definition with optimum efficiency.

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

LU-172878

The indicated efficiency values for obtaining conformity with the Ecodesign Directive EU 327/2011 were achieved with defined air conduction components (e.g. inlet nozzles).
The dimensions are to be requested from ebm-papst. If other air guide geometries are used on the installation side, the ebm-papst evaluation loses its validity/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 features

Mass	4.1 kg
Size	250 mm
Motor size	84
Surface of rotor	Coated in black
Material of electronics housing	Die-cast aluminium
Material of impeller	PA UL94 V0 plastic
Number of blades	7
Direction of rotation	Clockwise, seen on rotor
Type of protection	IP55
Insulation class	"F"
Humidity (F) / environmental protection class (H)	H3
Max. permissible ambient motor temp. (transp./ storage)	+80 °C
Min. permissible ambient motor temp. (transp./storage)	-40 °C
Mounting position	Shaft horizontal or rotor on bottom; rotor on top on request
Condensation drainage holes	Rotor-side
Operation mode	S1
Motor bearing	Ball bearing; (sealed)
Technical features	- Output 10 VDC, max. 10 mA - Operation and alarm display - Alarm relay - Run monitoring - Output limit - Motor current limit - RS485 MODBUS RTU - Soft start -Maximum EEPROM write cycles 100,000 - Control input 0-10 VDC / PWM - Control interface with SELV potential safely disconnected from the mains - Overvoltage detection - Over-temperature protected electronics / motor - Line undervoltage detection - Reverse polarity protection
EMC directives	According to EN 50121-3-2
Motor protection	Thermal overload protector (TOP) wired internally
Cable exit	Lateral
Safety classification	I; If a protective earth is connected by the customer This component to be built-in can have several local protection class ratings. The specification refers to the basic design of this component. The final protection class is based on the intended installation and connection of the component.
Product conforming to standard	EN 15085-1, CPC3; EN 45545-2, HL3; EN 50155; EN 61373, Cat. 1B; CE
Approval	EAC

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Remark	If voltage (e.g. 230 VAC) is passed through the alarm relay, the SELV signal wires lose their property of reinforced insulation, meaning they only have 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; speed limitation 4000 rpm

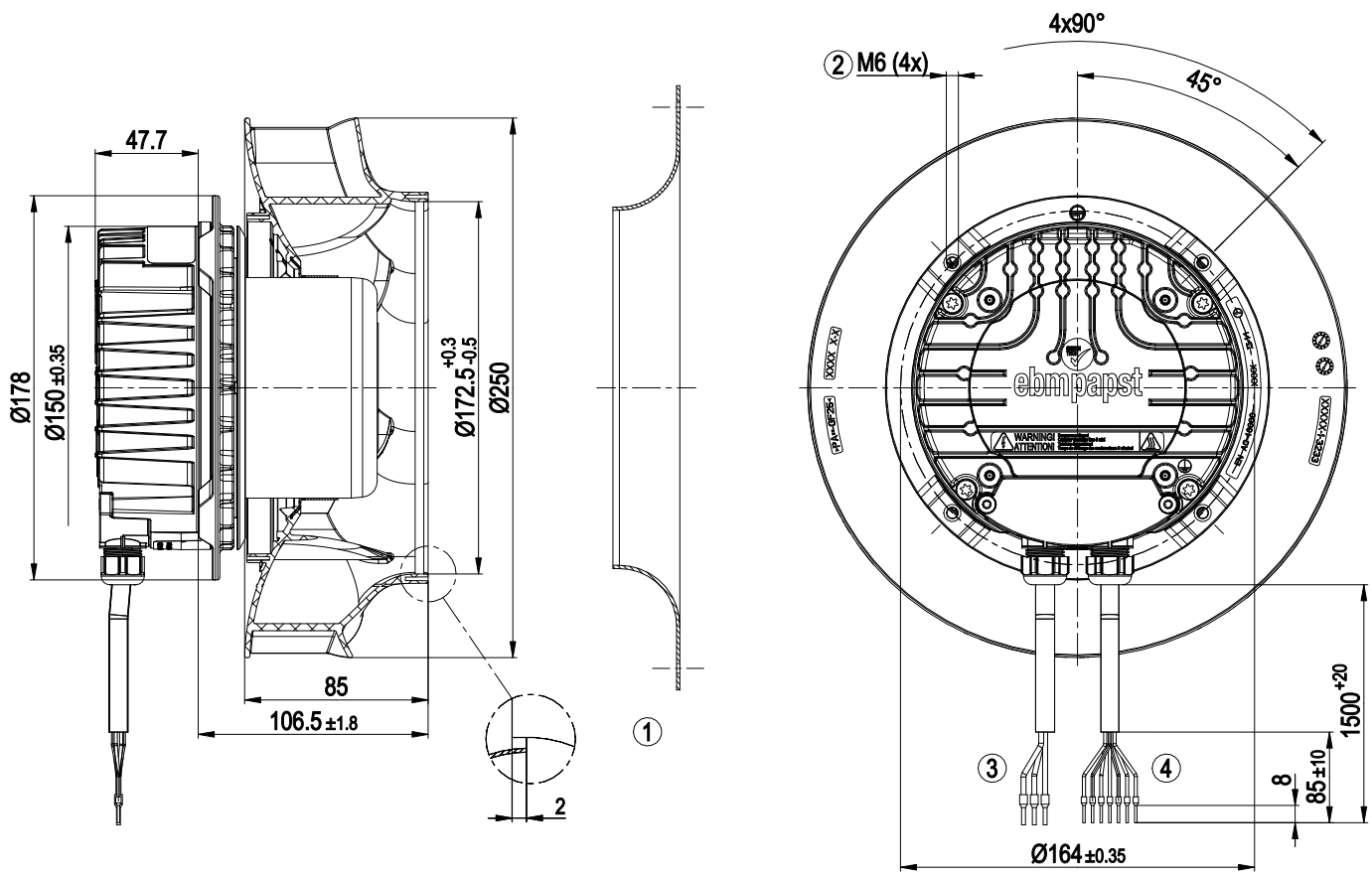
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Product drawing



1	Accessory part: Inlet nozzle 96420-2-4013 (not included in scope of delivery)
2	Thread reach max. 16 mm
3	Connection line, halogen-free, railway application EN 45545, 4G 1.5 mm²
	3x core-end sleeve, 1x lead not brought out
4	Connection line, halogen-free, railway application EN 45545, 7x 0.5 mm²
	7x core-end sleeve

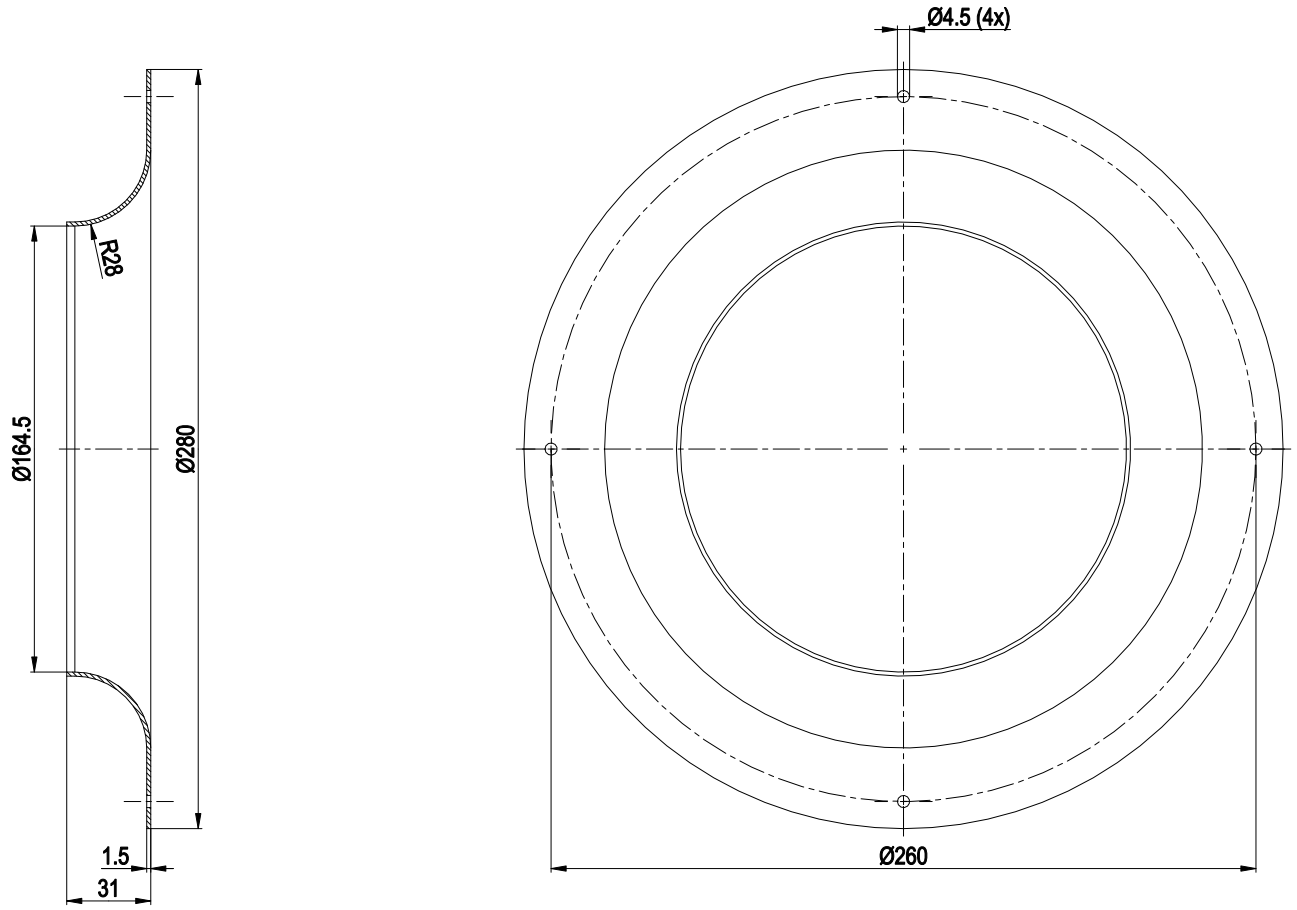
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Accessory part



	Inlet nozzle 96420-2-4013

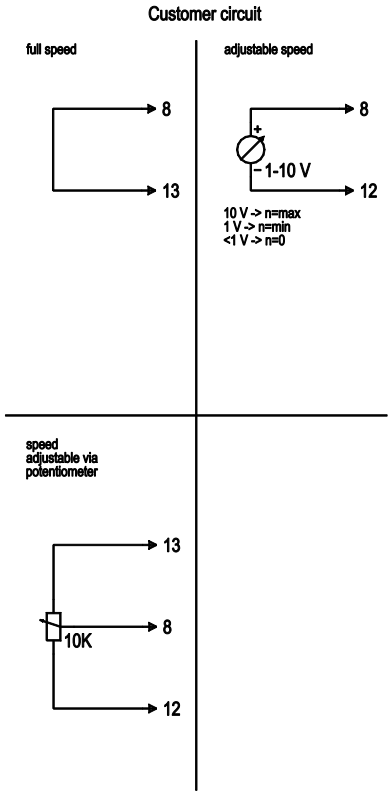
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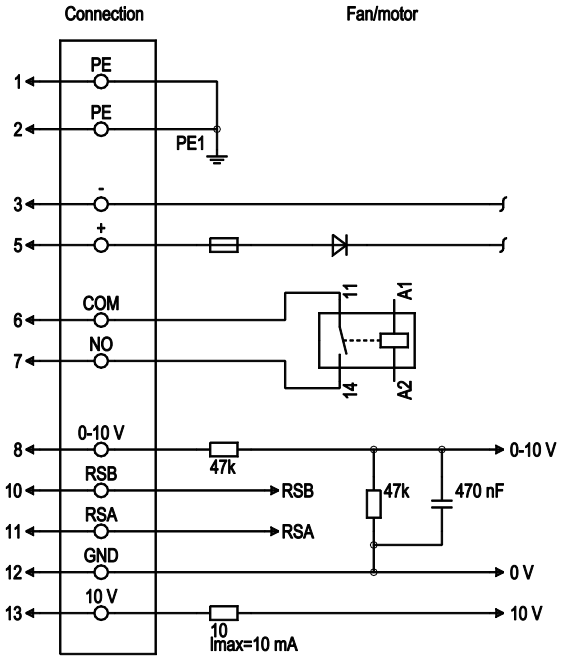
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Connection screen





No.	Conn.	Designation	Colour	Function / assignment
1	1	PE	green/yellow	Protective earth
1	2	PE	-	not brought out via lead
1	3	-	black	Power supply, GND, see type plate for voltage range
1	5	+	brown	Power supply, see type plate for voltage range
2	6	COM	grey	Status relay, floating status contact, common connection, contact rating 250 VAC/ 30 VDC max. 2 A (AC1), min. 1 mA/5 VDC, reinforced insulation with respect to control interface, basic insulation on mains side in accordance with EN 50124-1
2	7	NO	orange	Status relay, floating status contact, make contact, contact rating 250 VAC/30 VDC max. 2 A (AC1), min. 1 mA/5 VDC, reinforced insulation with respect to control interface, basic insulation on mains side in accordance with EN 50124-1
2	8	0-10 V	yellow	Analogue input (set value) SELV, 0-10 V, Ri=100kΩ, parametrisable curve
2	10	RSB	brown	RS 485 interface for MODBUS, RSB; SELV, bus termination resistor provided by customer
2	11	RSA	white	RS 485 interface for MODBUS, RSA; SELV, bus termination resistor provided by customer
2	12	GND	blue	Reference ground for control interface; SELV
2	13	+10 V	red	Fixed voltage output 10 VDC, SELV, +10 V +/-3%, max. 10 mA, short-circuit-proof, power supply for external devices (e.g. potentiometers)

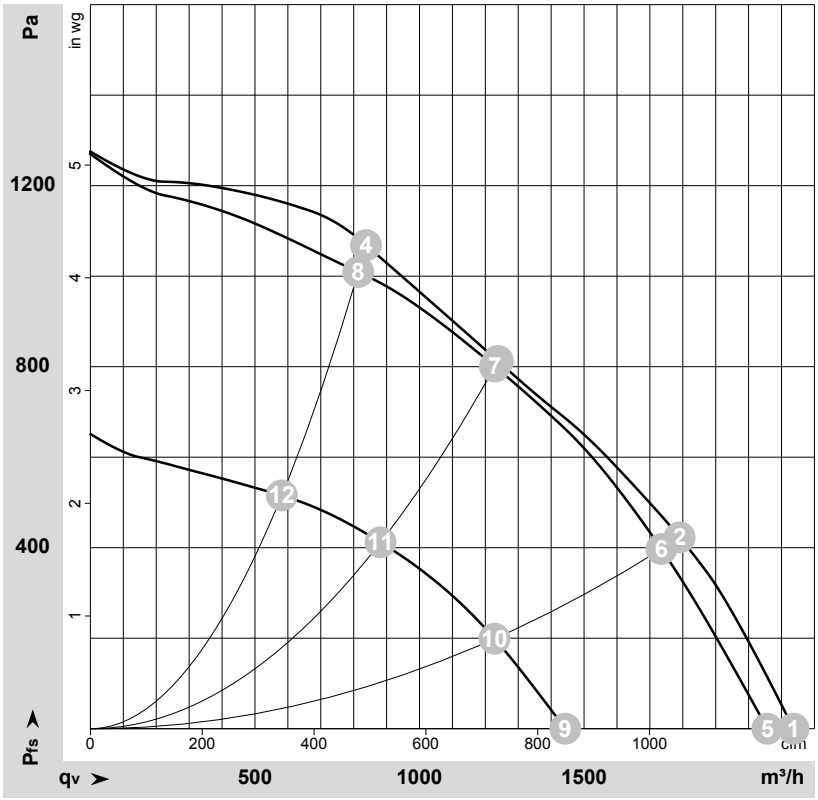
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Charts: Air flow



ρ = 1.15 kg/m³ ± 2 %

Measurement: LU-172892-1
Measurement: LU-172878-1
Measurement: LU-172890-1

Air performance measured as per ISO 5801 Installation category A. For detailed information on the measuring set-up, please contact ebm-papst. Suction-side noise levels: LwA measured as per ISO 13347 / LpA measured with 1m distance to fan axis. The values given are valid under the measuring conditions mentioned above and may vary according to the actual installation situation. With any deviation from the standard set-up, the specific values have to be checked and reviewed with the unit installed.

Measured values

	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	in. wg
1	138	4000	492	3.56			2135	0	1255	0.00
2	138	3945	557	4.04			1790	426	1055	1.71
3	138	3835	555	4.02			1240	813	730	3.26
4	138	3955	553	4.00			835	1069	495	4.29
5	110	3860	447	4.06	78	86	2055	0	1210	0.00
6	110	3815	510	4.64	75	83	1735	400	1020	1.61
7	110	3800	540	4.90	72	80	1230	800	725	3.21
8	110	3840	510	4.63	74	82	815	1000	480	4.01
9	77	2755	173	2.25			1445	0	850	0.00
10	77	2735	197	2.56			1230	200	725	0.80
11	77	2725	211	2.73			880	412	520	1.65
12	77	2735	197	2.56			580	516	345	2.07

U = Supply voltage · n = Speed (rpm) · P_{ed} = Power input · I = Current draw · LpA_{in} = Sound pressure level inlet side · LwA_{in} = Sound power level inlet side · q_V = Air flow · p_{fs} = Pressure increase

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