R3G310-RR05-N1

EC centrifugal fan - RadiCal

backward curved, single inlet

for railway applications

R3G310-RR05-N1 ebmpapst Datasheet
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County court Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen
County court Stuttgart · HRB 590142

Nominal data

Type	**R3G310-RR05-N1**
Motor	**M3G084-DF**

Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Type of data definition		ml
Speed (rpm)	min^{-1}	2650
Power input	W	750
Current draw	A	1.2
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}	%	62.9	50.3
02 Measurement category		A	
03 Efficiency category		Static	
04 Efficiency grade N		74.6	62
05 Variable speed drive		Yes	

09 Power input P_{ed}	kW	0.76
09 Air flow q_v	m^3/h	2410
09 Pressure increase p_{fs}	Pa	661
10 Speed (rpm) n	min^{-1}	2655
11 Specific ratio*		1.01

Data definition with optimum efficiency.
The ErP data is determined using a motor-impeller combination in a standardised measurement configuration.

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

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Technical features

Mass	6.0 kg
Size	310 mm
Motor size	84
Surface of rotor	Coated in black
Material of impeller	PA UL94 V0 plastic
Housing material	Die-cast aluminium
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 - Alarm relay - Integrated PID controller - Run monitoring - Output limit - Motor current limit - Emergency operation - PFC, passive - 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 / phase failure detection
EMC directives	According to EN 50121-3-2
Touch current acc. IEC 60990 (measuring network Fig. 4, TN system)	<= 3.5 mA
Motor protection	Thermal overload protector (TOP) wired internally
Cable exit	Variable
Protection class	I (if protective earth is connected by customer)
Product conforming to standard	EN 15085-1, CPC3: 2013; EN 45545-2, HL3: 2013 + A1:2015; EN 50155: 2008; EN 61373, Cat. 1B: 2010; CE
Approval	EAC

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Remark	A prerequisite for operation is a Class 1 vehicle electrical system architecture according to EN 50533; if voltage (e.g. 230 VAC) is passed through the alarm relay, the reinforced insulation property of the SELV signal wires will be lost and they will then 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.

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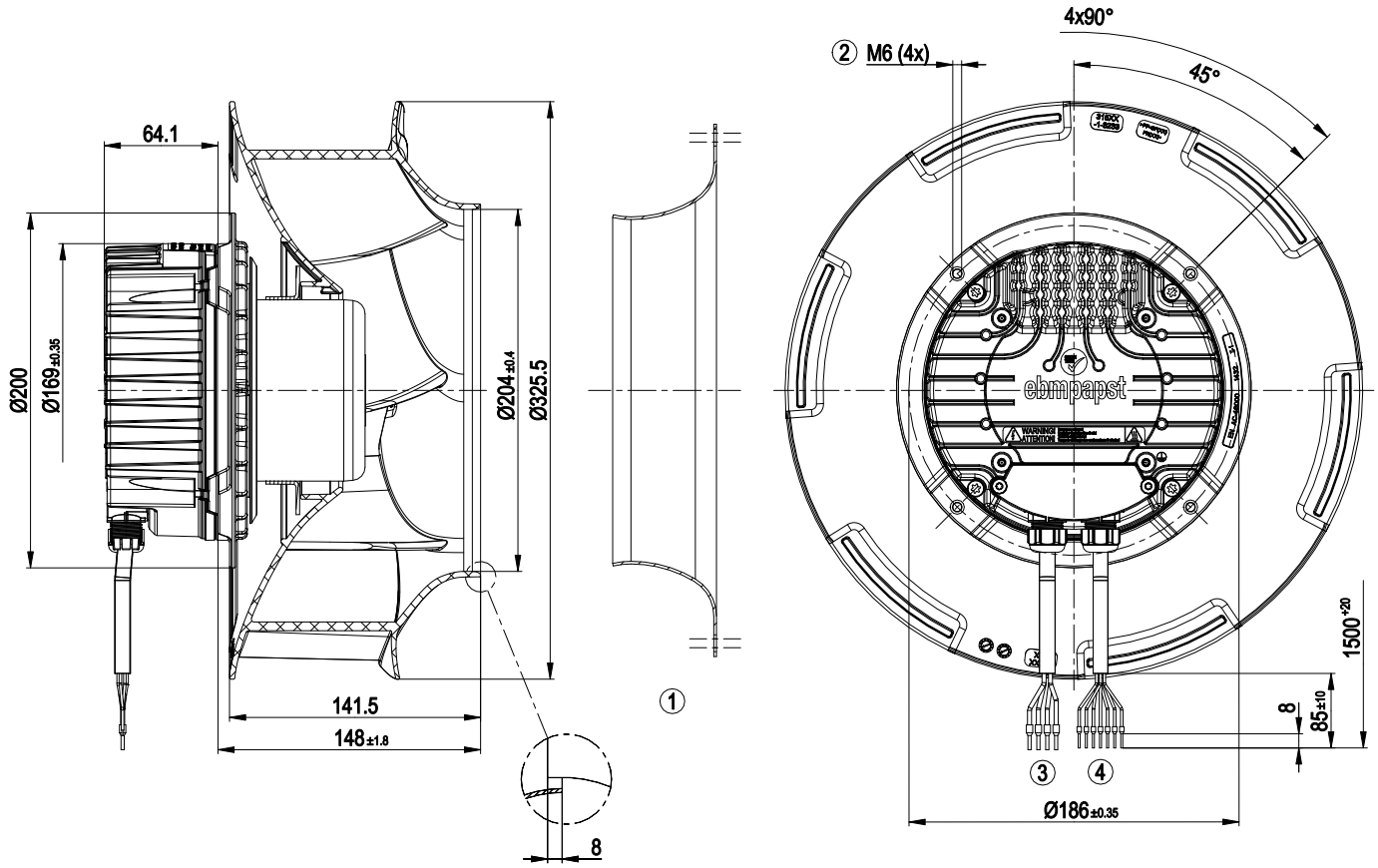
Product drawing



1	Accessory part: Inlet nozzle 31000-2-4013 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
	4x core-end sleeve
4	Connection line, halogen-free, railway application EN 45545, 7x 0.5 mm²
	7x core-end sleeve

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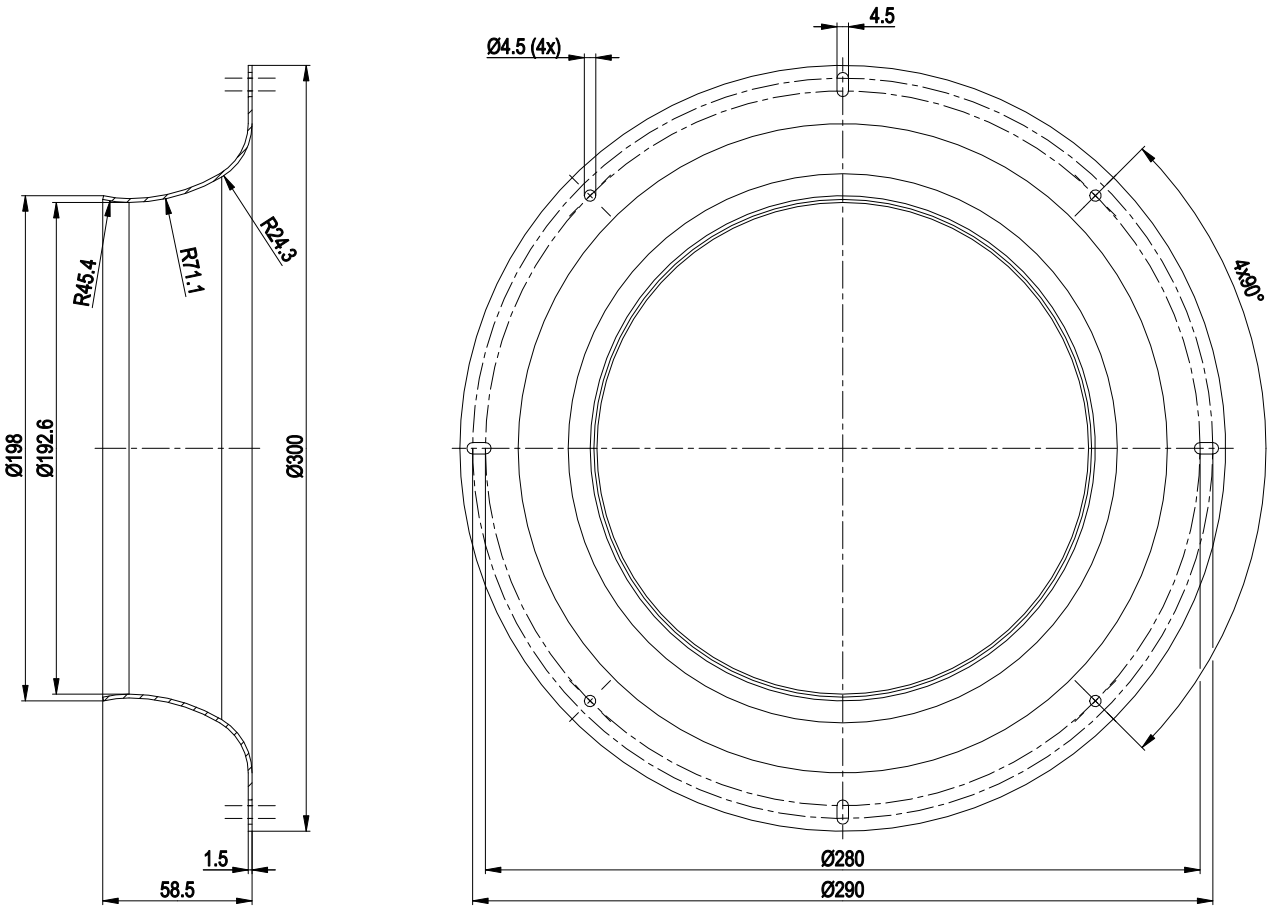
Accessory part



Accessory part: Inlet nozzle 31000-2-4013 not included in scope of delivery

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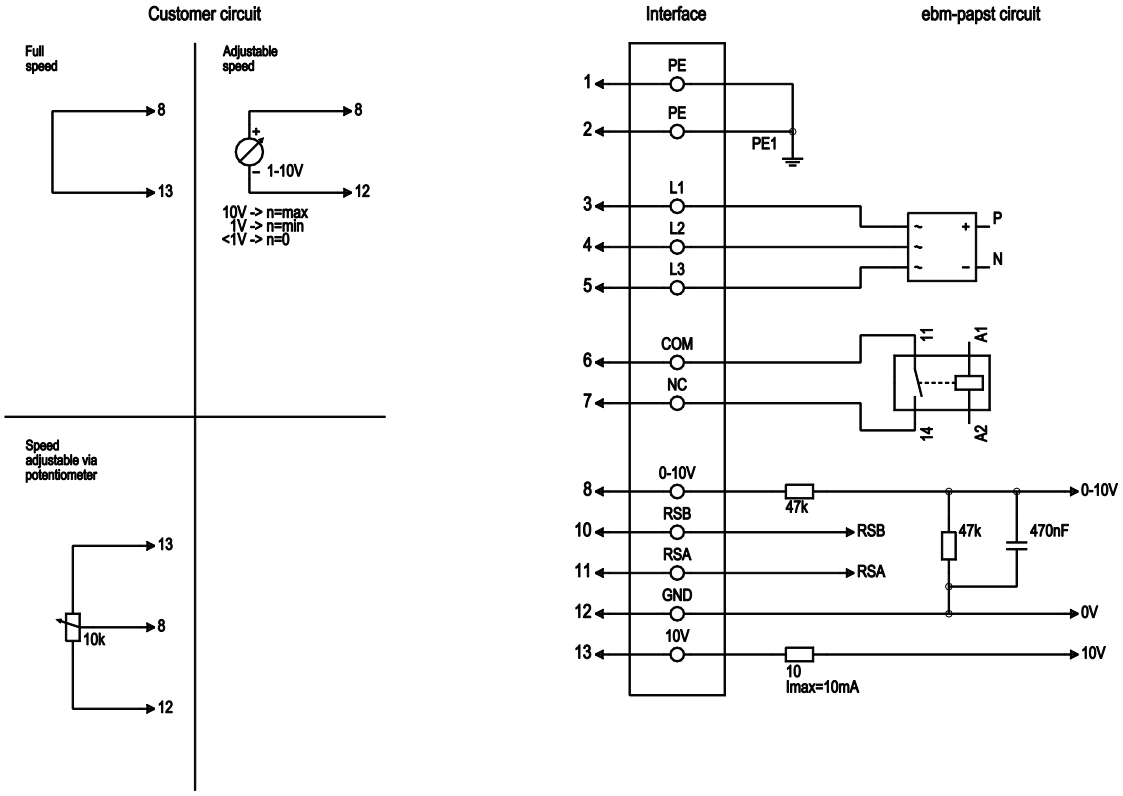
Connection screen



No.	Conn.	Designation	Colour	Function / assignment
1	1, 2	PE	green/yellow	Protective earth
1	3	L1	black	Power supply, phase, 50/60 Hz
1	4	L2	blue	Power supply, phase, 50/60 Hz
1	5	L3	brown	Power supply, phase, 50/60 Hz
2	6	COM	grey	Status relay, floating status contact, common connection, contact rating 250 VAC / 30 VDC 5 A minimum contact gap 1 mA / 5 VDC, reinforced insulation with respect to mains, basic insulation with respect to control interface
2	7	NC	orange	Status relay, floating status contact, break for failure, contact rating 250 VAC / 30 VDC 5 A minimum contact gap 1 mA / 5 VDC, reinforced insulation with respect to mains, basic insulation with respect to control interface
2	8	0-10V	yellow	Analogue input (set value) SELV, 0-10 V, Ri=100kΩ, parametrisable curve
2	10	RSB	brown	RS-485 interface for MODBUS, RSB; SELV
2	11	RSA	white	RS-485 interface for MODBUS, RSA; SELV
2	12	GND	blue	Signal ground for control interface, SELV
2	13	+10V	red	Fixed voltage output 10 VDC, +10 V +/-3 %, max. 10 mA, short-circuit-proof, power supply for ext. devices (e.g. potentiometer); SELV

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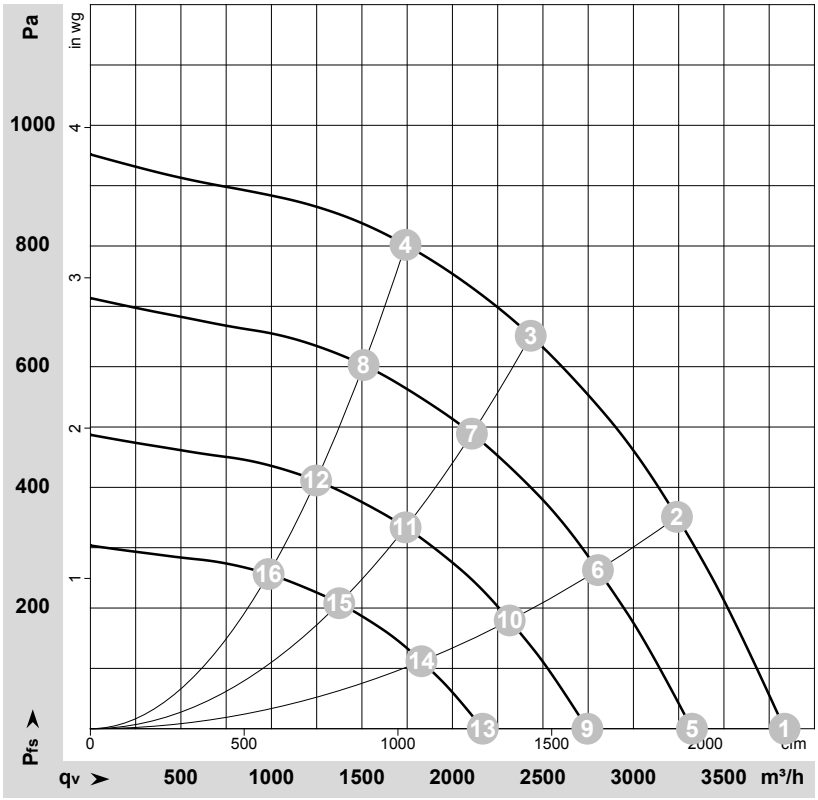
Charts: Air flow 50 Hz



ρ = 1.15 kg/m³ ± 2 %

Measurement: LU-178976-1

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	f	n	P_{ed}	I	LpA_{in}	LwA_{in}	q_V	p_{fs}	q_V	p_{fs}
	V	Hz	min^{-1}	W	A	dB(A)	dB(A)	m^3/h	Pa	cfm	in. wg
1	400	50	2650	538	0.88	75	83	3835	0	2255	0.00
2	400	50	2650	683	1.11	72	79	3240	350	1910	1.41
3	400	50	2650	750	1.20	68	75	2435	650	1430	2.61
4	400	50	2650	721	1.17	70	78	1740	800	1025	3.21
5	400	50	2300	350	0.58	72	79	3325	0	1955	0.00
6	400	50	2300	443	0.72	68	75	2805	263	1650	1.06
7	400	50	2300	499	0.81	65	72	2110	490	1240	1.97
8	400	50	2300	470	0.76	67	74	1510	603	890	2.42
9	400	50	1900	197	0.32	67	74	2745	0	1615	0.00
10	400	50	1900	249	0.40	63	70	2315	180	1365	0.72
11	400	50	1900	281	0.45	60	67	1740	335	1025	1.34
12	400	50	1900	265	0.43	62	69	1245	412	735	1.65
13	400	50	1500	97	0.16	61	68	2170	0	1275	0.00
14	400	50	1500	123	0.20	57	64	1830	112	1075	0.45
15	400	50	1500	138	0.22	54	61	1375	209	810	0.84
16	400	50	1500	130	0.21	56	63	985	257	580	1.03

U = Supply voltage · f = Frequency · 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