R3G310-RR12-P1

EC centrifugal fan - RadiCal

backward-curved, single-intake

for rail applications



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Nominal data

Type	**R3G310-RR12-P1**
Motor	**M3G084-DF**

Nominal voltage	VDC	110
Nominal voltage range	VDC	77 .. 138
Method of obtaining data		ml
Speed (rpm)	min^{-1}	2260
Power consumption	W	465
Current draw	A	4.2
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 Commission Regulation (EU) 327/2011 (EN 17166)

		Actual	Req. 2015
01 Overall efficiency η_{es}	%	65.9	48
02 Measurement category		A	
03 Efficiency category		Static	
04 Efficiency grade N		79.9	62
05 Variable speed drive		Yes	

09 Power consumption P_e	kW	0.46
09 Air flow q_v	m^3/h	2105
09 Pressure increase p_{fs}	Pa	472
10 Speed (rpm) n	min^{-1}	2260
11 Specific ratio*		1.00

Data obtained at optimum efficiency level.

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

LU-160428

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	4.6 kg
Size	310 mm
Motor size	84
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 - Integrated PID controller - 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 supply - 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 assignment	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.
Conformity with standards	EN 15085-1, CPC3; EN 45545-2, HL3; EN 50155; EN 61373, Cat. 1B; CE
Approval	EAC

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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

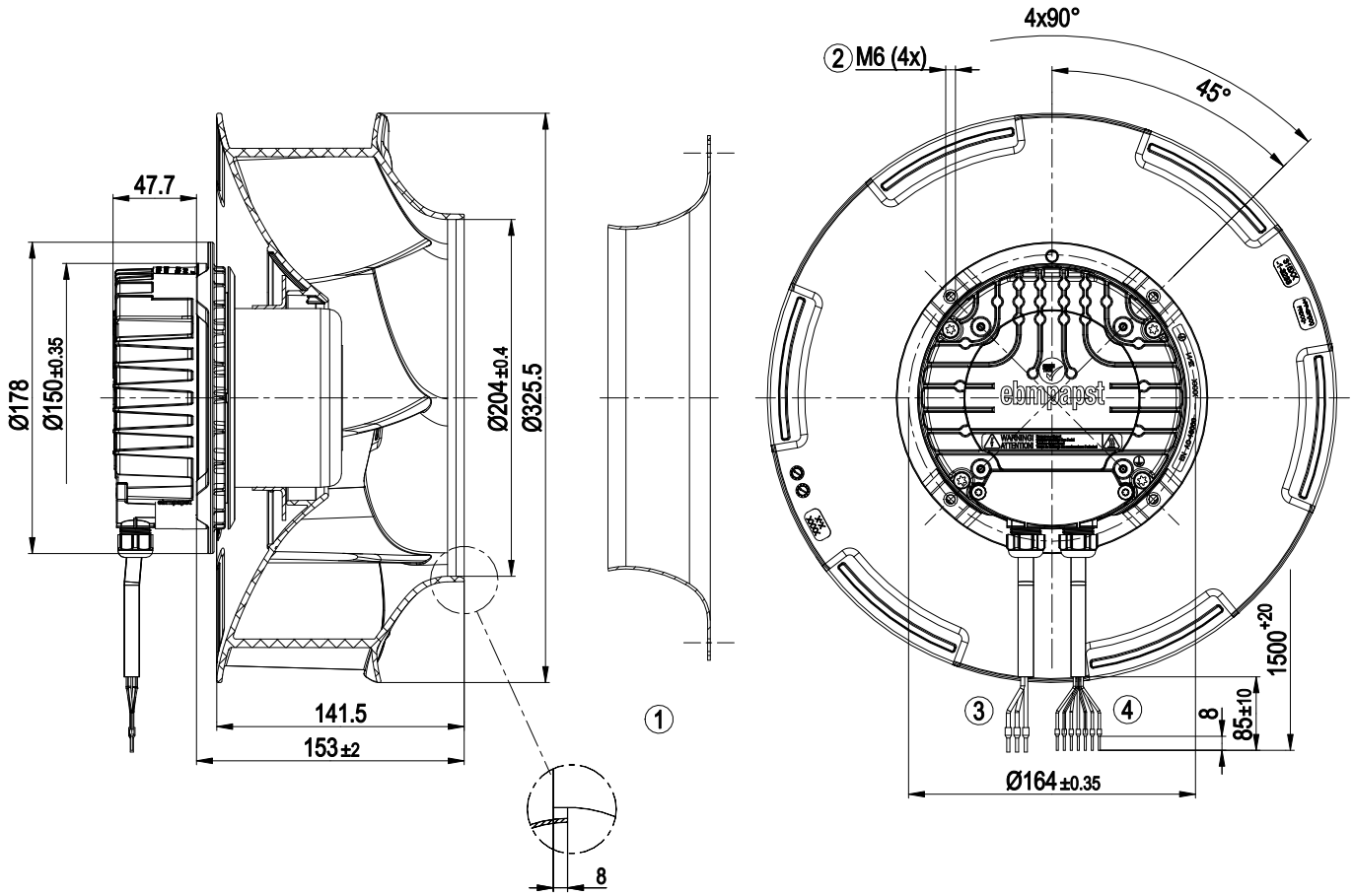
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Product drawing



1	Accessory part: inlet ring 31000-2-4013 not included in scope of delivery
2	Max. clearance for screw 16 mm
3	Cable, halogen-free, railway application EN 45545, 4G 1.5 mm²
	3x wire-end ferrule, 1x wire not routed externally
4	Cable, halogen-free, railway application EN 45545, 7x 0.5 mm²
	7x wire-end ferrule

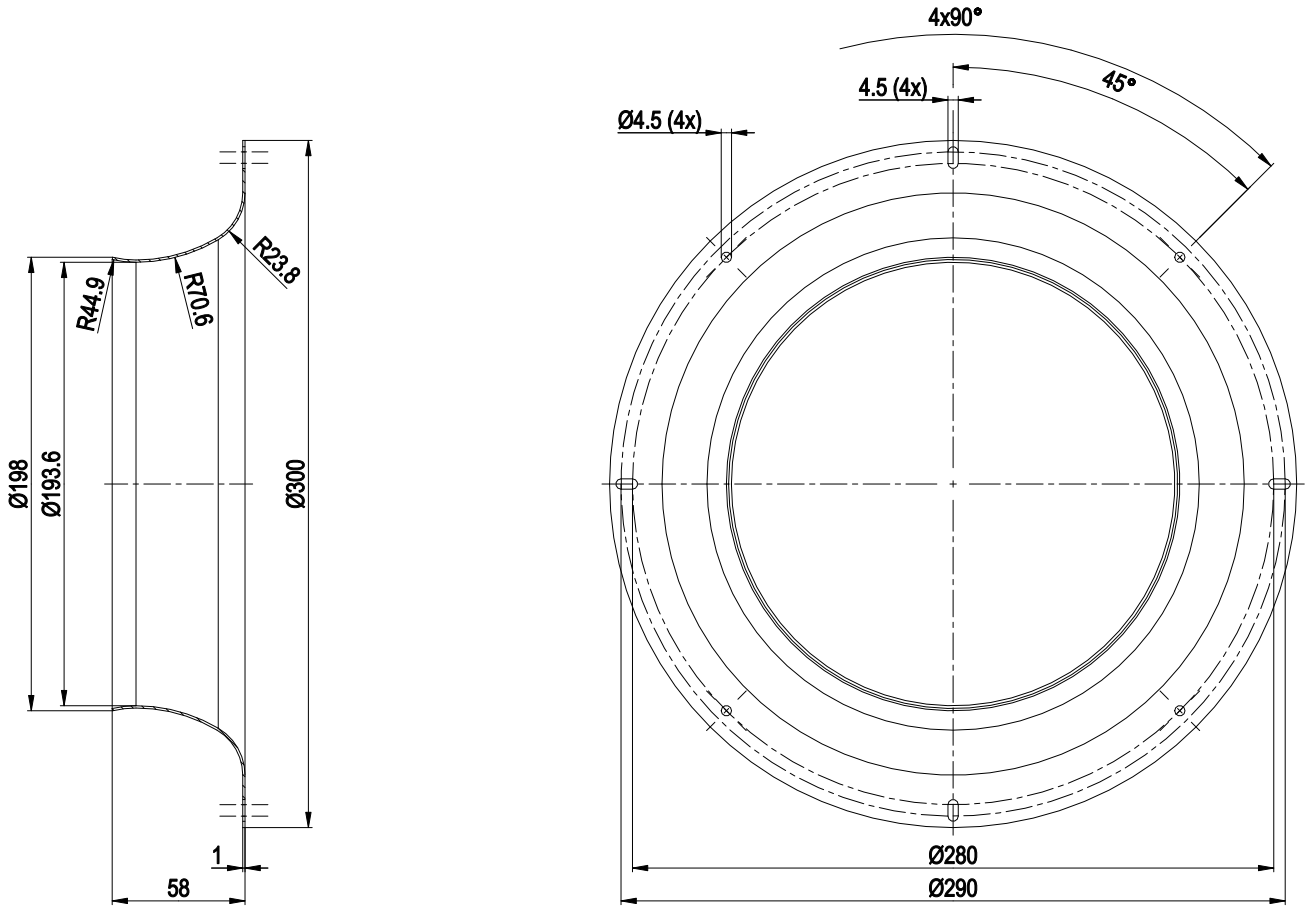
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Accessory part



Inlet ring 31000-2-4013

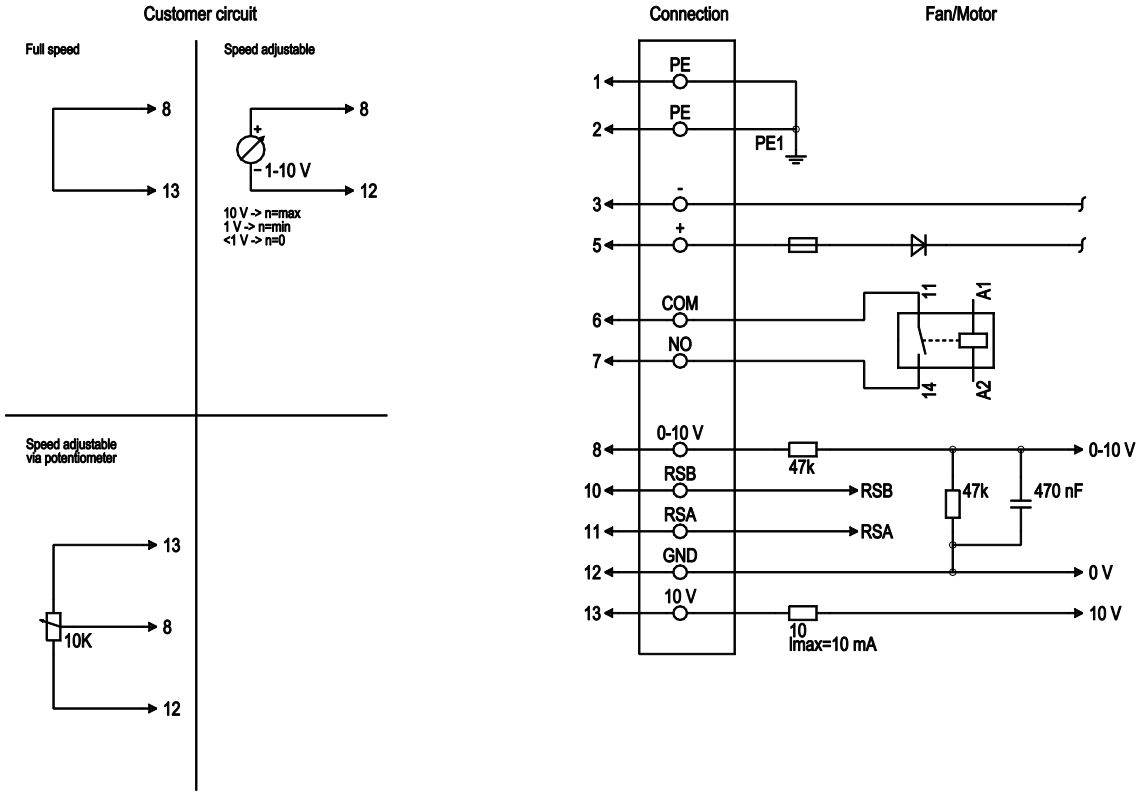
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Connection diagram



No.	Conn.	Designation	Color	Function/assignment
1	1	PE	green/yellow	Protective earth
1	2	PE	-	not brought out via wire
1	3	-	black	Power supply, GND, voltage range see nameplate
1	5	+	brown	Power supply, see nameplate for voltage range
2	6	COM	gray	Status relay, floating status contact, common connection, contact rating 250 VAC/30 VDC max. 2 A (AC1), min. 1 mA/5 VDC, reinforced insulation on control interface side, basic insulation on supply side in accordance with EN 50124-1
2	7	NO	orange	Status relay, floating status contact, normally open contact, contact rating 250 VAC/30 VDC max. 2 A (AC1), min. 1 mA/5 VDC, reinforced insulation on control interface side, basic insulation on supply side in accordance with EN 50124-1
2	8	0-10 V	yellow	Analog input (set value) SELV, 0-10 V, Ri = 100 kΩ, adjustable 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)

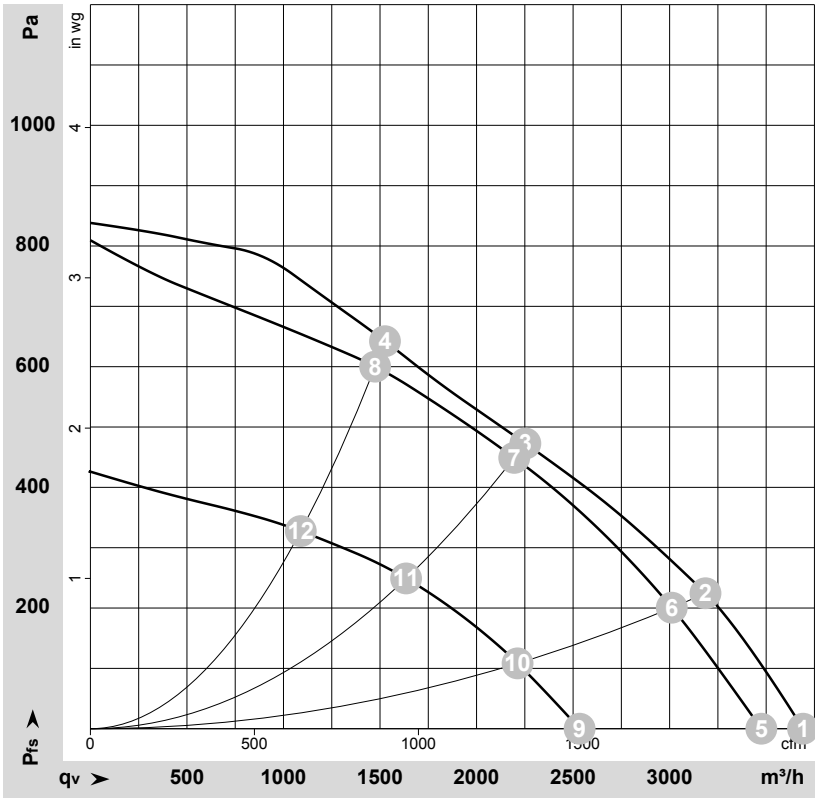
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Curves: Air performance



ρ = 1.15 kg/m³ ± 2 %

Measurement: LU-172392-1
Measurement: LU-160428-1
Measurement: LU-172391-1

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	q_V	p_{fs}	q_V	p_{fs}
		V	min^{-1}	W	A	m^3/h	Pa	cfm	in. wg
1	Y	138	2505	436	3.16	3690	0	2170	0.00
2	Y	138	2440	513	3.71	3185	225	1875	0.90
3	Y	138	2325	513	3.72	2255	473	1325	1.90
4	Y	138	2370	512	3.71	1525	643	900	2.58
5	Y	110	2355	356	3.24	3475	0	2045	0.00
6	Y	110	2295	428	3.89	3010	200	1770	0.80
7	Y	110	2260	465	4.20	2195	450	1290	1.81
8	Y	110	2290	450	4.09	1475	600	870	2.41
9	Y	77	1735	152	1.97	2535	0	1490	0.00
10	Y	77	1705	180	2.34	2210	110	1300	0.44
11	Y	77	1690	198	2.58	1635	249	960	1.00
12	Y	77	1695	191	2.49	1090	328	640	1.32

Wired = Wiring · U = Voltage · n = Speed (rpm) · P_{ed} = Power consumption · I = Current draw · q_V = Air flow · p_{fs} = Pressure increase

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