R3G310-BE90-N1

EC centrifugal fan

backward curved, single inlet

for railway applications

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Nominal data

Type	**R3G310-BE90-N1**
Motor	**M3G112-EA**

Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Type of data definition		ml
State		prelim.
Speed (rpm)	min^{-1}	2900
Power input	W	1300
Current draw	A	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

		Actual	Request 2015
01 Overall efficiency η_{es}	%	62.2	52.6
02 Measurement category		A	
03 Efficiency category		Static	
04 Efficiency grade N		71.6	62
05 Variable speed drive		Yes	

09 Power input P_{ed}	kW	1.26
09 Air flow q_v	m^3/h	3005
09 Pressure increase p_{fs}	Pa	878
10 Speed (rpm) n	min^{-1}	2870
11 Specific ratio*		1.07

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	8.5 kg
Size	310 mm
Surface of rotor	Coated in black
Material of impeller	Aluminium sheet
Housing material	Die-cast aluminium
Number of blades	7
Direction of rotation	Clockwise, seen on rotor
Type of protection	IP 55
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
Condensate discharge 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	Lateral
Protection class	I (if protective earth is connected by customer at the connection point of the housing)
Product conforming to standard	EN 15085-1, CPC3: 2013; EN 45545-2, HL3: 2013; EN 50155: 2008; EN 61373, Cat. 1B: 2010
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.

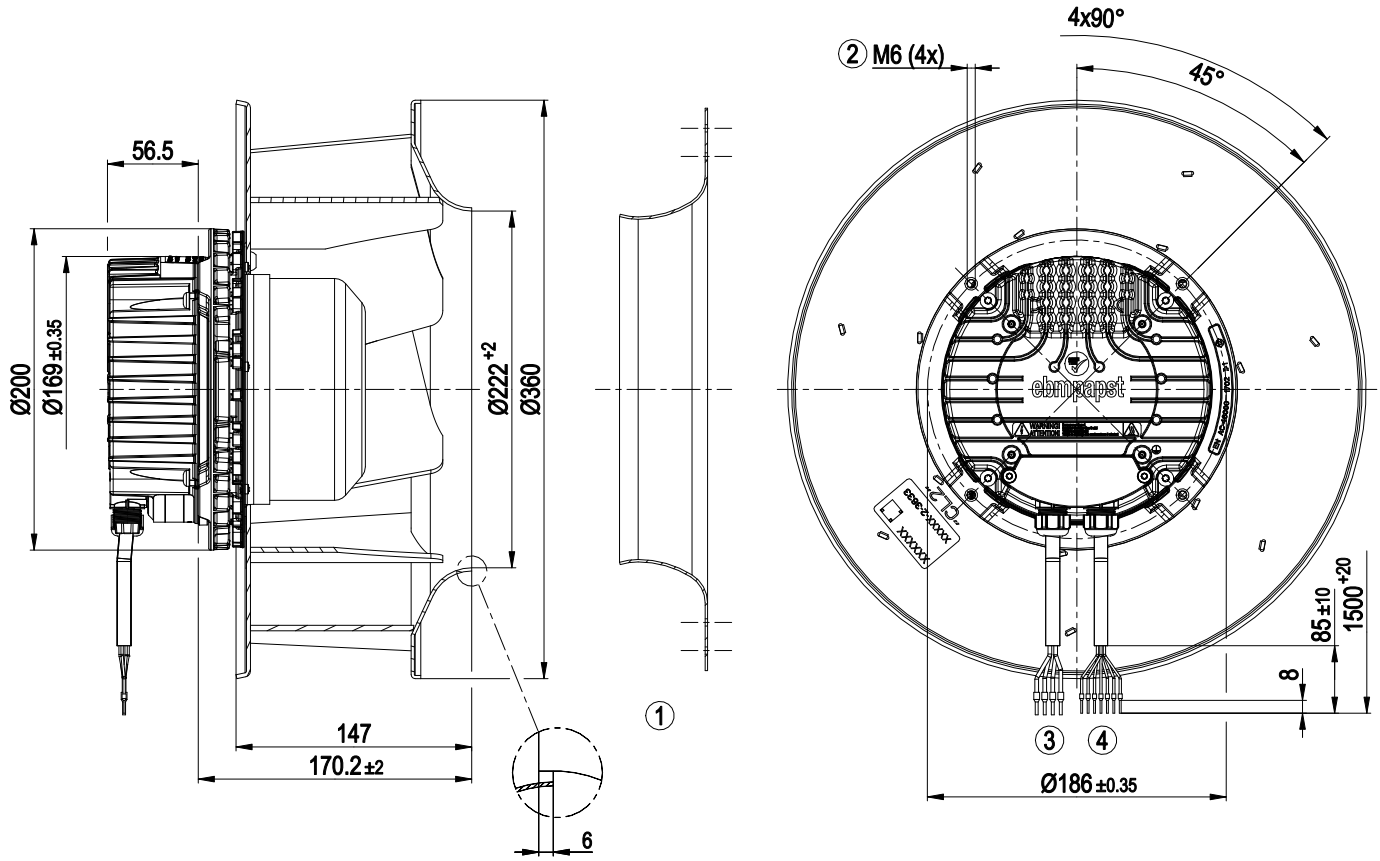
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Product drawing



1	Accessory part: Inlet nozzle 31570-2-4013 not included in scope of delivery
2	Thread reach max. 16 mm
3	Connection line halogen-free, BETAtrans® 3 GKW flex, 4G 1.5 mm², 4x crimped core-end sleeves
4	Connection line halogen-free, BETAtrans® 3 GKW flex, 7x0.5 mm², 7x crimped core-end sleeves

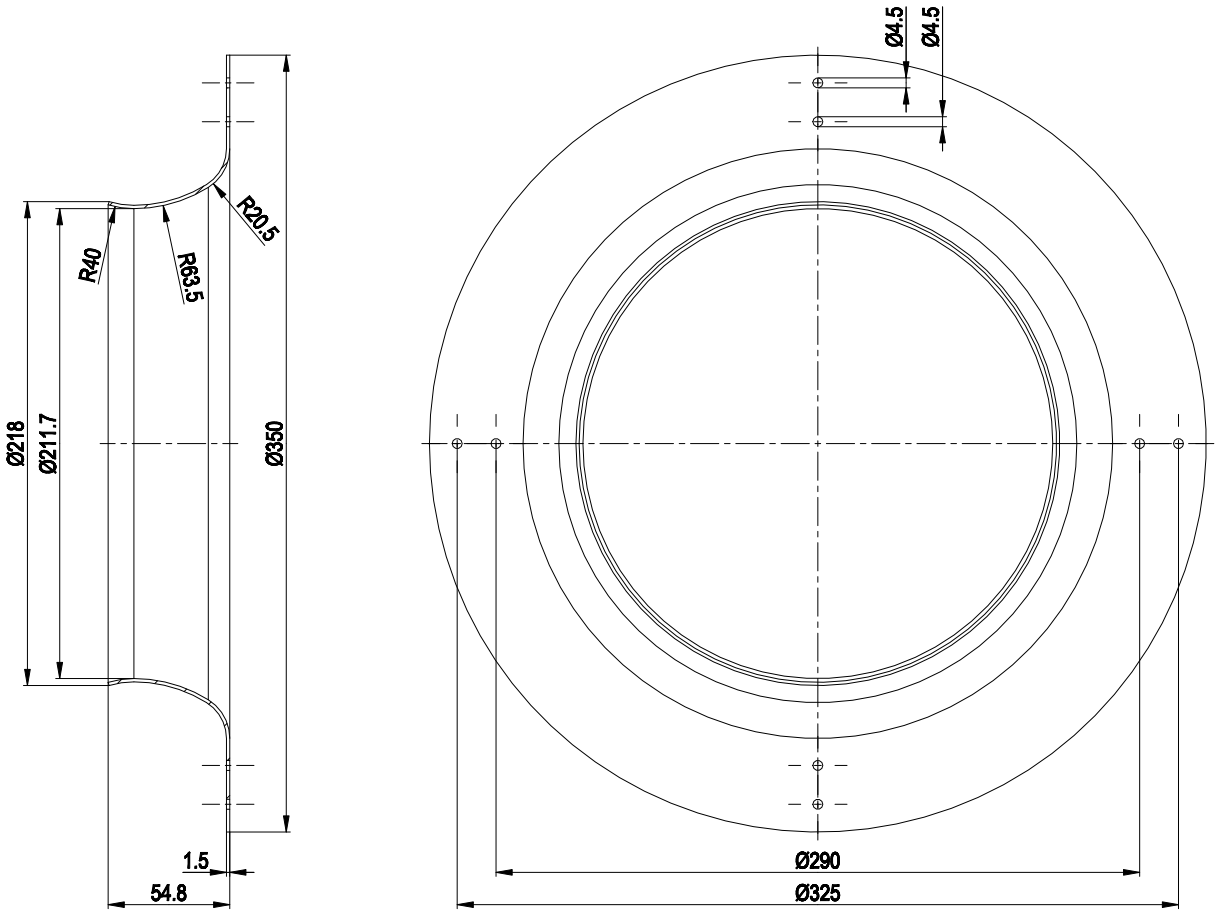
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Accessory part



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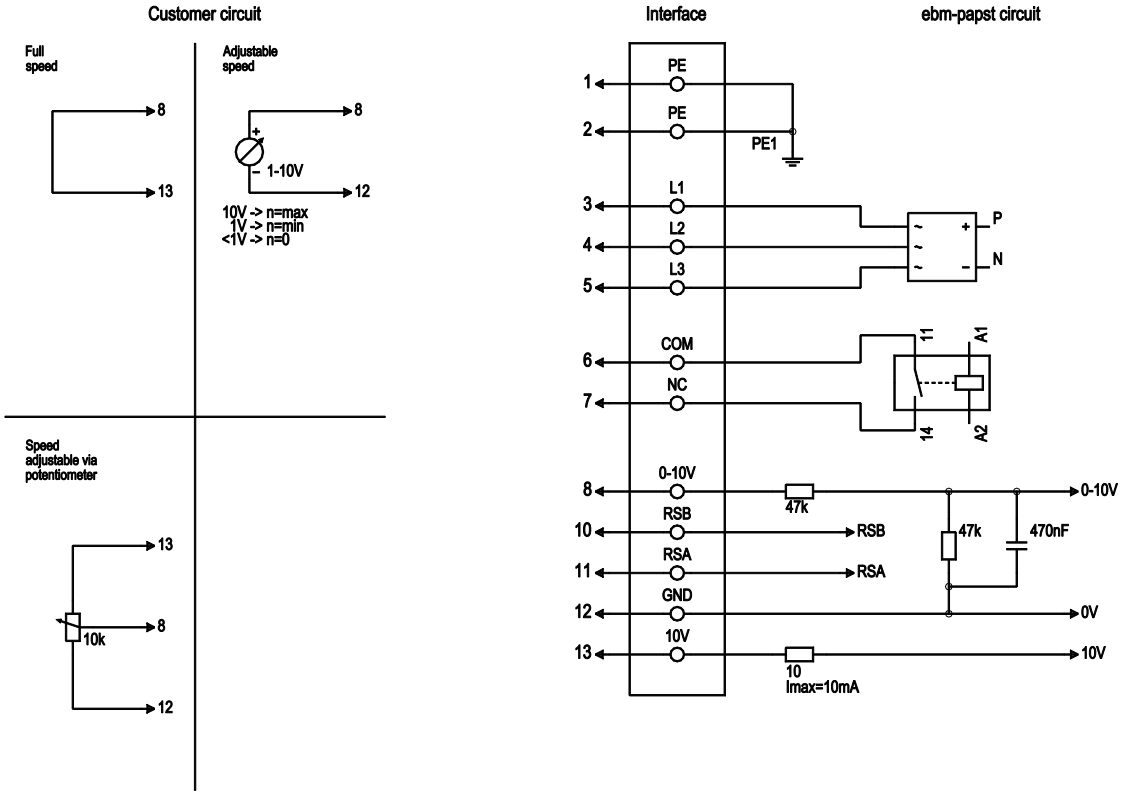
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Connection screen



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

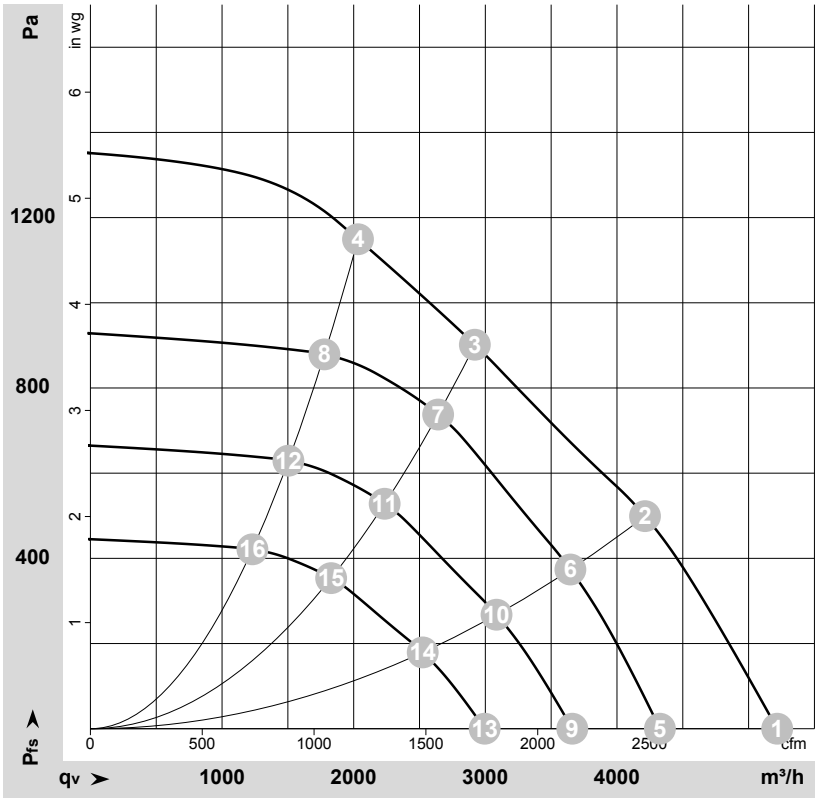
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Charts: Air flow 50 Hz



ρ = 1.15 kg/m³ ± 2 %

Measurement: LU-179252-1

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}	LwA_{out}	q_V	p_{fs}	q_V	p_{fs}
	V	Hz	min^{-1}	W	A	dB(A)	dB(A)	dB(A)	m^3/h	Pa	cfm	inH2O
1	400	50	3135	1229	1.89	82	90	96	5215	0	3070	0.00
2	400	50	3005	1300	2.00	76	85	91	4215	500	2480	2.01
3	400	50	2900	1300	2.00	72	80	86	2920	900	1720	3.61
4	400	50	2970	1300	2.00	76	85	90	2035	1150	1195	4.62
5	400	50	2600	701	1.08	77	85	91	4325	0	2545	0.00
6	400	50	2600	842	1.29	73	81	88	3645	379	2145	1.52
7	400	50	2600	940	1.44	69	77	84	2640	738	1555	2.96
8	400	50	2600	866	1.33	72	82	86	1780	881	1045	3.54
9	400	50	2200	425	0.65	73	81	87	3660	0	2155	0.00
10	400	50	2200	510	0.78	68	77	83	3085	271	1815	1.09
11	400	50	2200	569	0.87	65	73	79	2235	529	1315	2.12
12	400	50	2200	524	0.81	68	77	82	1505	631	885	2.53
13	400	50	1800	233	0.36	68	76	82	2995	0	1765	0.00
14	400	50	1800	279	0.43	63	72	78	2525	181	1485	0.73
15	400	50	1800	312	0.48	60	68	74	1830	354	1075	1.42
16	400	50	1800	287	0.44	63	72	77	1230	422	725	1.69

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 · LwA_{out} = Sound power level outlet side
q_V = Air flow · p_{fs} = Pressure increase

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