EC centrifugal fan - RadiPac

backward-curved, single-intake

for rail applications

R3G310-AY90-N2 ebmpapst Datasheet
sales@fansco.com
www.fansco.com

Limited partnership · Headquarters Mulfingen
Amtsgericht (court of registration) Stuttgart · HRA 590344

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

Nominal data

Type	**R3G310-AY90-N2**
Motor	**M3G112-EA**

Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Speed (rpm)	min^{-1}	3000
Power consumption	W	1200
Current draw	A	1.8
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

EC centrifugal fan - RadiPac

backward-curved, single-intake

for rail applications

Technical description

Size	310 mm
Motor size	112
Rotor surface	Painted black
Electronics housing material	Die-cast aluminum
Impeller material	Sheet aluminum
Inlet nozzle material	Sheet steel, galvanized
Number of blades	7
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 - Alarm relay - Integrated PID controller - Run monitoring - Power limiter - Motor current limitation - Emergency operation - PFC, passive - 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 / phase failure detection
EMC regulations	According to EN 50121-3-2
Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)	<= 3.5 mA
Electrical hookup	Plug
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: 2013; EN 45545-2, HL3: 2013; EN 50121-3-2: 2006; EN 50155: 2008; EN 61373, Cat. 1B: 2010; CE
Approval	EAC

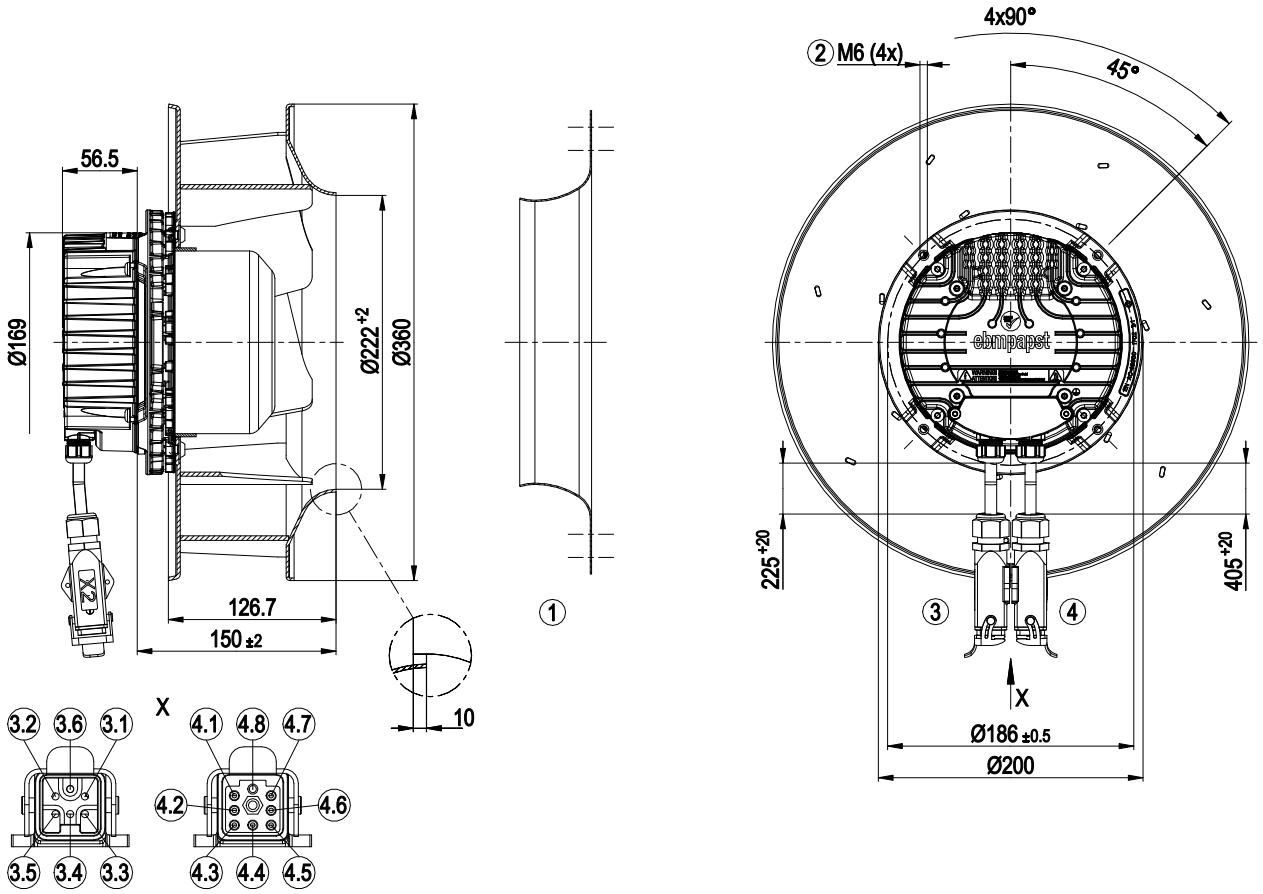
Comment	A prerequisite for operation is a Class 1 vehicle electrical system architecture according to EN 50533; if supply potential (e.g. 230 VAC) is passed through the alarm relay, the SELV signal wires lose their property of reinforced insulation and they then have only basic insulation The SELV property (reinforced insulation) is not lost when voltages of up to 110 VDC are passed through the alarm relay.

EC centrifugal fan - RadiPac

backward-curved, single-intake

for rail applications

Product drawing



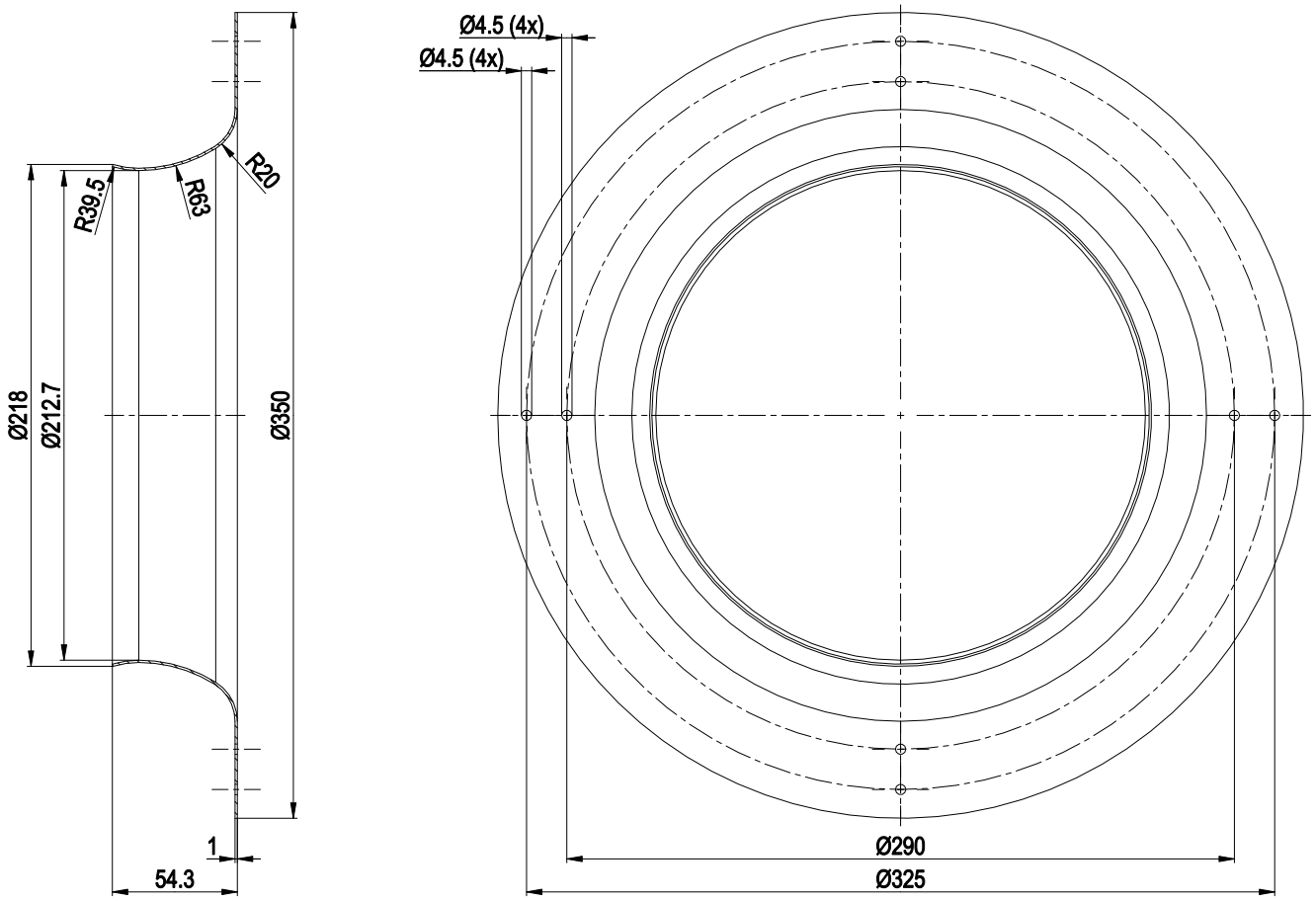
1	Accessory part: inlet ring 31570-2-4013 not included in scope of delivery
2	Max. clearance for screw 10 mm
3	Cable, halogen-free, railway application EN 45545, 4G 1.5 mm²
	Connector housing Harting 19 20 003 1250 incl. flat rubber gasket 34100-4-6730, 6-pole connector 09 12 005 3001, 4x plug pin 09 33 000 6104
3.1	not used
3.2	not used
3.3	L2
3.4	L3
3.5	L1
3.6	PE
4	Cable, halogen-free, railway application EN 45545, 7x 0.5 mm²
	Connector housing Harting 19 20 003 1250 incl. flat rubber gasket 34100-4-6730, 8-pole connector 09 12 007 3001, 8x plug pin 09 33 000 6105
4.1	GND
4.2	0-10 V
4.3	RSB
4.4	+10 V
4.5	RSA
4.6	COM
4.7	NC
4.8	not used

EC centrifugal fan - RadiPac

backward-curved, single-intake

for rail applications

Accessory part



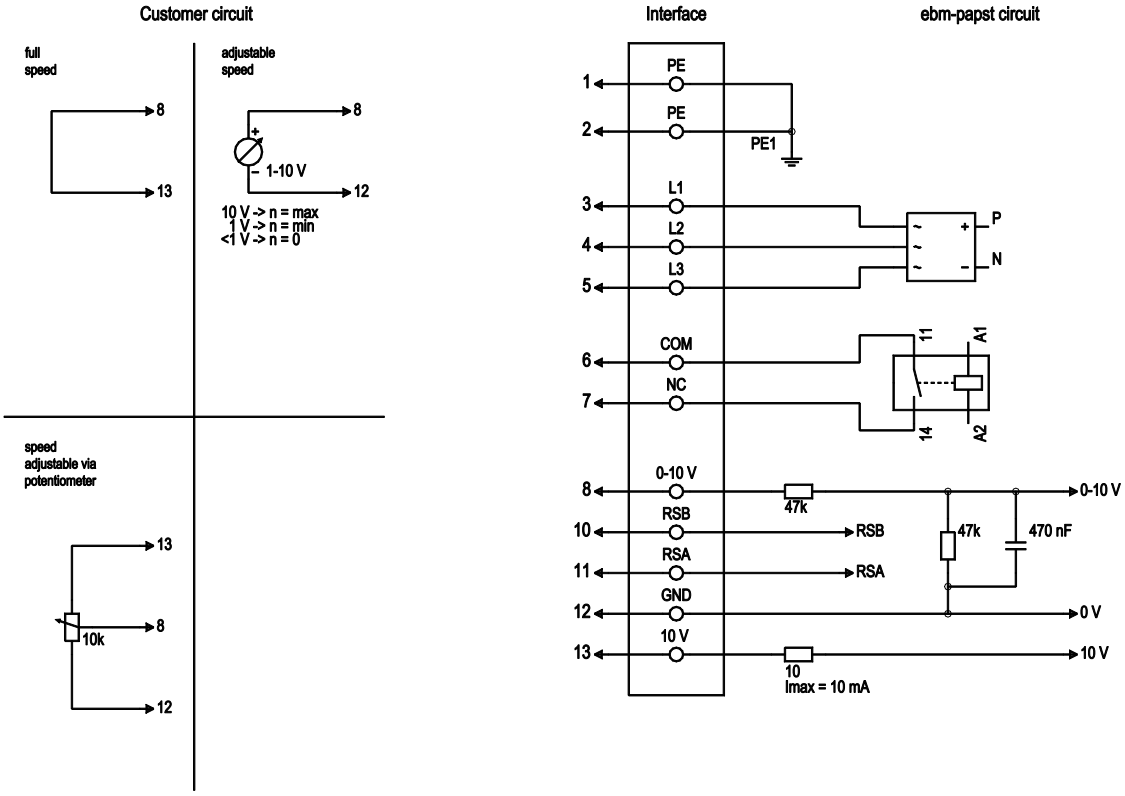
Inlet ring 31570-2-4013

EC centrifugal fan - RadiPac

backward-curved, single-intake

for rail applications

Connection diagram



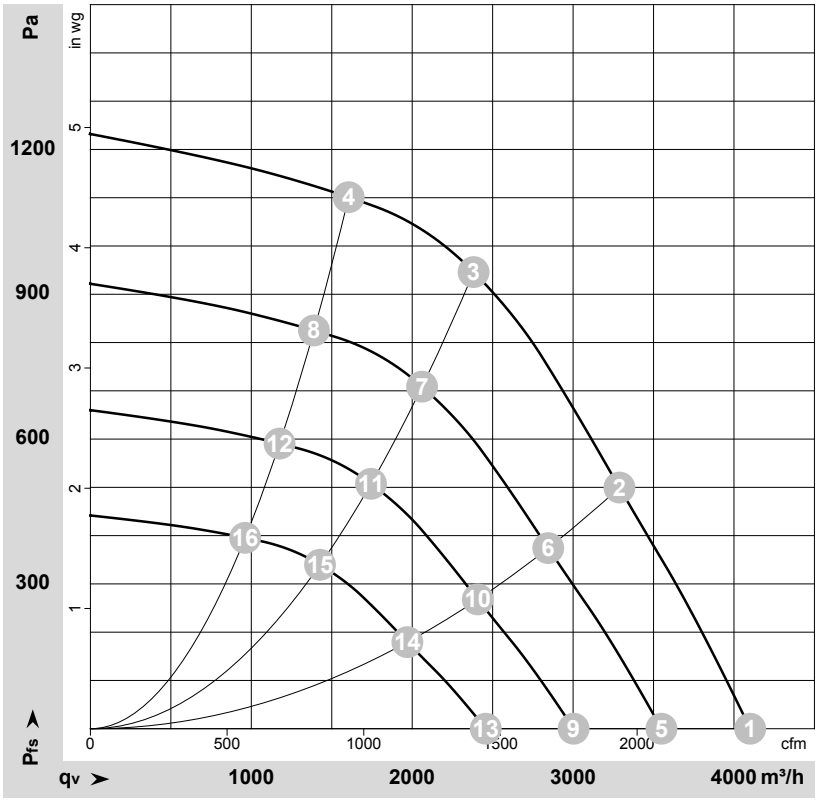
No.	Conn.	Designation	Function/assignment
1	1	PE	Protective earth
1	2	PE	not brought out via wire
1	3	L1	Power supply, phase 50/60 Hz
1	4	L2	Power supply, phase 50/60 Hz
1	5	L3	Power supply, phase 50/60 Hz
2	6	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / max. 2 A (AC1), min. 1 mA / 5 VDC, reinforced insulation on control interface side, basic insulation on supply side according to EN 50124-1
2	7	NC	Status relay, floating status contact, break for failure, contact rating 250 VAC / max. 2 A (AC1), min. 1 mA / 5 VDC, reinforced insulation on control interface side, basic insulation on supply side according to EN 50124-1
2	8	0-10 V	Analog input (set value) SELV, 0-10 V, Ri = 100 kΩ, adjustable curve
2	10	RSB	RS485 interface for MODBUS, RSB; SELV
2	11	RSA	RS485 interface for MODBUS, RSA; SELV
2	12	GND	Reference ground for interface, SELV
2	13	+10 V	Fixed voltage output 10 VDC, SELV, +10 V +/-3%, max. 10 mA, short-circuit-proof, power supply for external devices (e.g. potentiometers)

EC centrifugal fan - RadiPac

backward-curved, single-intake

for rail applications

Curves: Air performance 50 Hz



ρ = 1.173 kg/m³ ± 2 %

Measurement: LU-177434-1

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

	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	in. wg
1	400	50	3000	861	1.33	83	91	95	4100	0	2415	0.00
2	400	50	3000	1054	1.61	78	86	91	3290	500	1935	2.01
3	400	50	3000	1200	1.80	78	87	90	2380	950	1400	3.81
4	400	50	3000	1088	1.66	79	88	92	1605	1100	945	4.42
5	400	50	2600	558	0.86	80	88	92	3550	0	2090	0.00
6	400	50	2600	683	1.05	74	82	87	2845	374	1675	1.50
7	400	50	2600	770	1.18	75	83	86	2060	709	1215	2.85
8	400	50	2600	706	1.08	75	84	88	1390	826	820	3.32
9	400	50	2200	338	0.52	75	83	88	3005	0	1765	0.00
10	400	50	2200	414	0.63	70	78	83	2410	268	1415	1.08
11	400	50	2200	467	0.71	70	79	82	1745	507	1025	2.04
12	400	50	2200	428	0.65	71	80	84	1175	591	690	2.37
13	400	50	1800	185	0.29	70	78	83	2455	0	1445	0.00
14	400	50	1800	227	0.35	65	73	78	1970	179	1160	0.72
15	400	50	1800	256	0.39	65	74	77	1425	340	840	1.36
16	400	50	1800	234	0.36	66	75	79	960	396	565	1.59

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