**R3G280-BD14-N2**

# EC centrifugal fan - RadiPac

backward-curved, single-intake

for rail applications

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## Nominal data

| | |
|---|---|
| **Type** | **R3G280-BD14-N2** |
| **Motor** | **M3G084-GF** |

| | | |
|---|---|---|
| Phase | | 3~ |
| Nominal voltage | VAC | 400 |
| Nominal voltage range | VAC | 380 .. 480 |
| Frequency | Hz | 50/60 |
| Method of obtaining data | | ml |
| Speed (rpm) | $min^{-1}$ | 3140 |
| Power consumption | W | 900 |
| Current draw | A | 1.4 |
| 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

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## Technical description

| | |
|---|---|
| **Size** | 280 mm |
| **Motor size** | 84 |
| **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 top |
| **Condensation drainage holes** | None |
| **Mode** | S1 |
| **Motor bearing** | Ball bearing; (sealed) |
| **Technical features** | - Output 10 VDC, max. 10 mA<br>- Alarm relay<br>- Integrated PID controller<br>- Run monitoring<br>- Power limiter<br>- Motor current limitation<br>- Emergency operation<br>- PFC, passive<br>- RS-485 MODBUS-RTU<br>- Soft start<br>- EEPROM write cycles: 100,000 maximum<br>- Control input 0-10 VDC / PWM<br>- Control interface with SELV potential safely disconnected from the mains<br>- Overvoltage detection<br>- Thermal overload protection for electronics/motor<br>- Line undervoltage / phase failure detection |
| **Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)** | <= 3.5 mA |
| **Motor protection** | Thermal overload protector (TOP) internally connected |
| **With cable** | Lateral |
| **Protection class assignment** | I; If a protective earth is connected by the customer<br>This component for installation may have several local protection classes. This information relates to this component's basic design.<br>The final protection class is based on the component's intended installation and connection. |
| **Conformity with standards** | EN 15085-1, CPC3: 2013; EN 45545-2, HL3: 2013 + A1:2015; EN 50155: 2008; EN 61373, Cat. 1B: 2010 |
| **Approval** | EAC |



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| | |
|---|---|
| **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<br>The SELV property (reinforced insulation) is not lost when voltages of up to 110 VDC are passed through the alarm relay. |



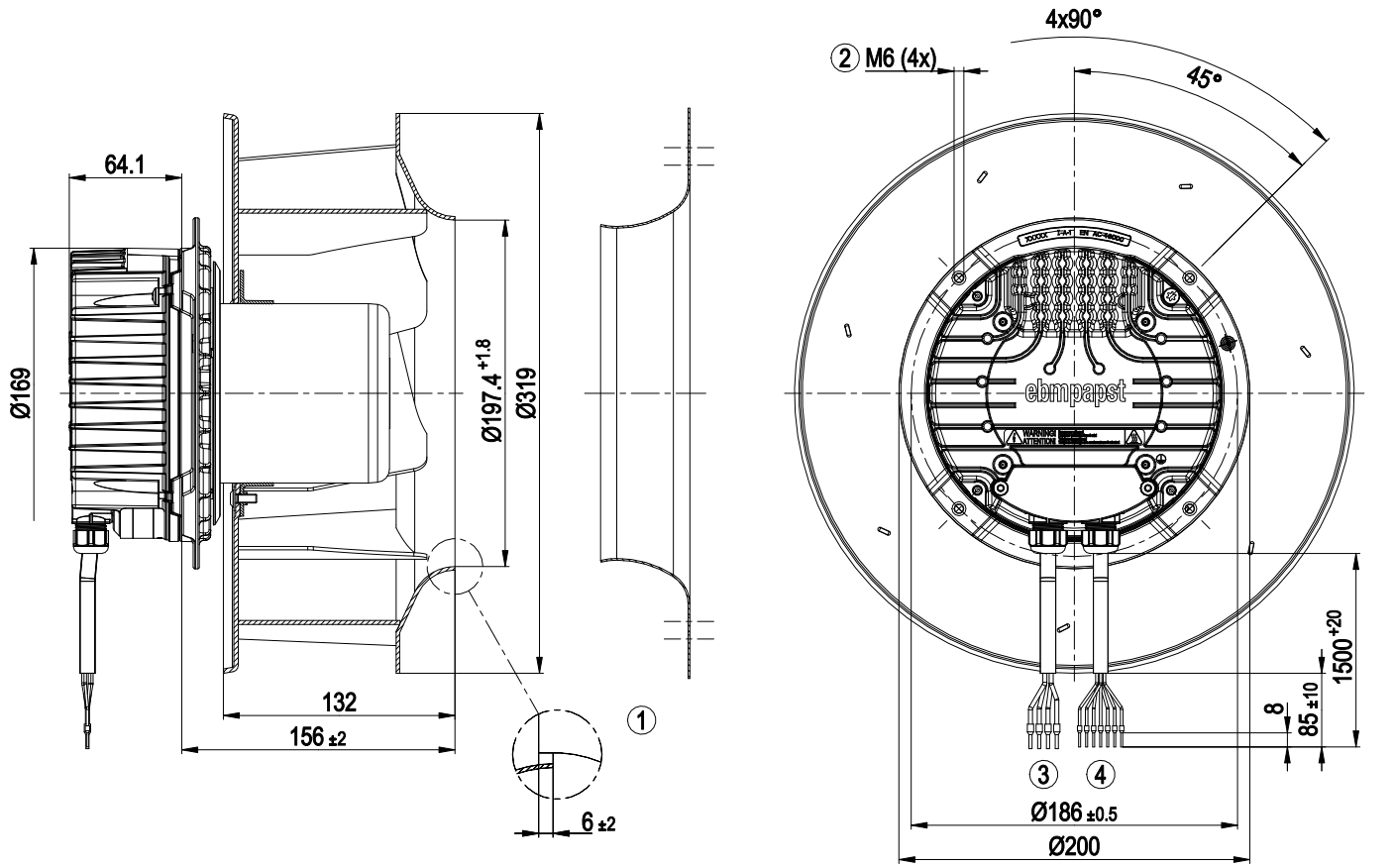
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## Product drawing




| | |
|---|---|
| 1 | Accessory part: Inlet ring 28070-2-4013 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 |
| | 4x wire-end ferrule |
| 4 | Cable, halogen-free, railway application EN 45545, 7x 0.5 mm² |
| | 7x wire-end ferrule |



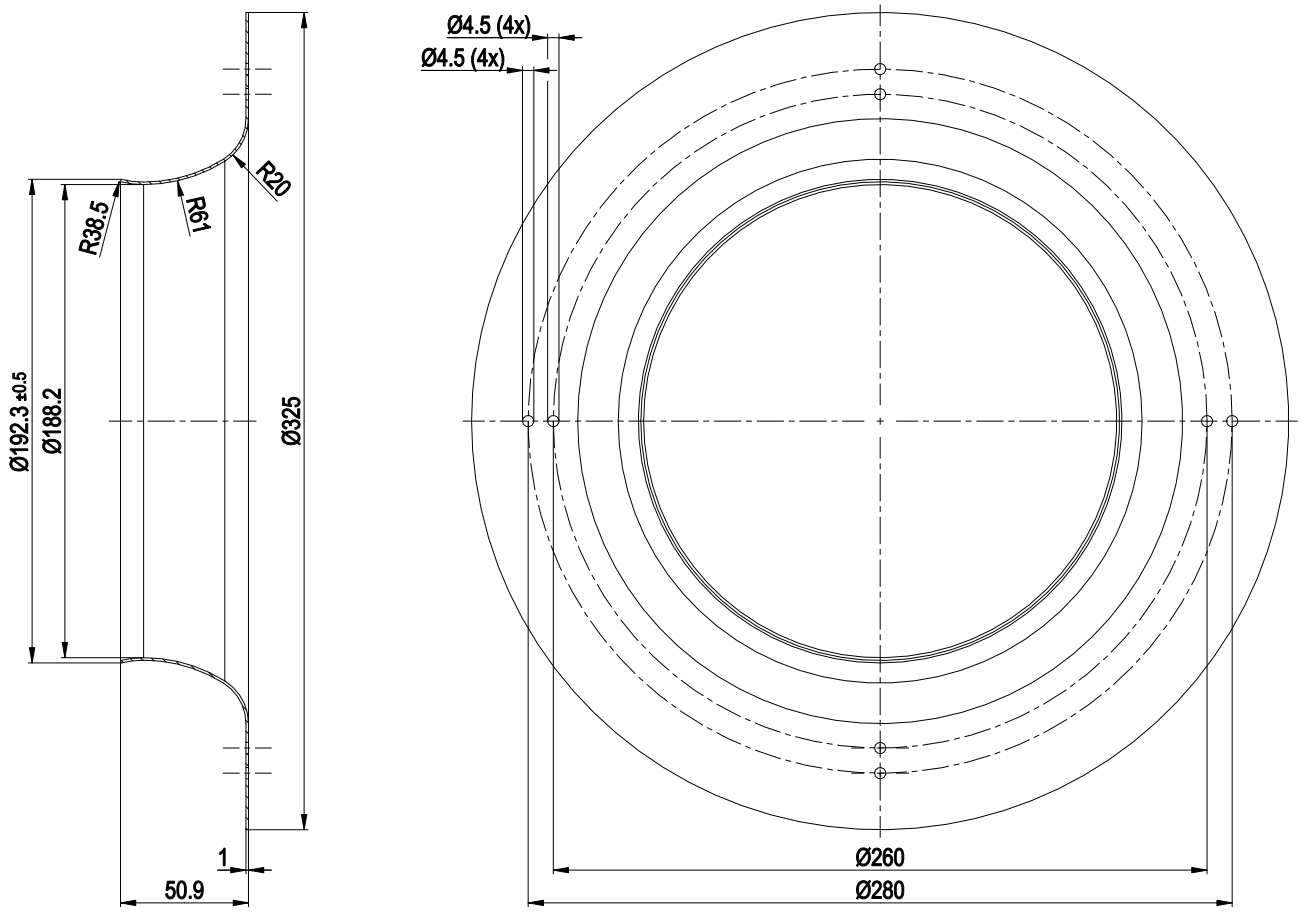
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## Accessory part




Inlet ring 28070-2-4013



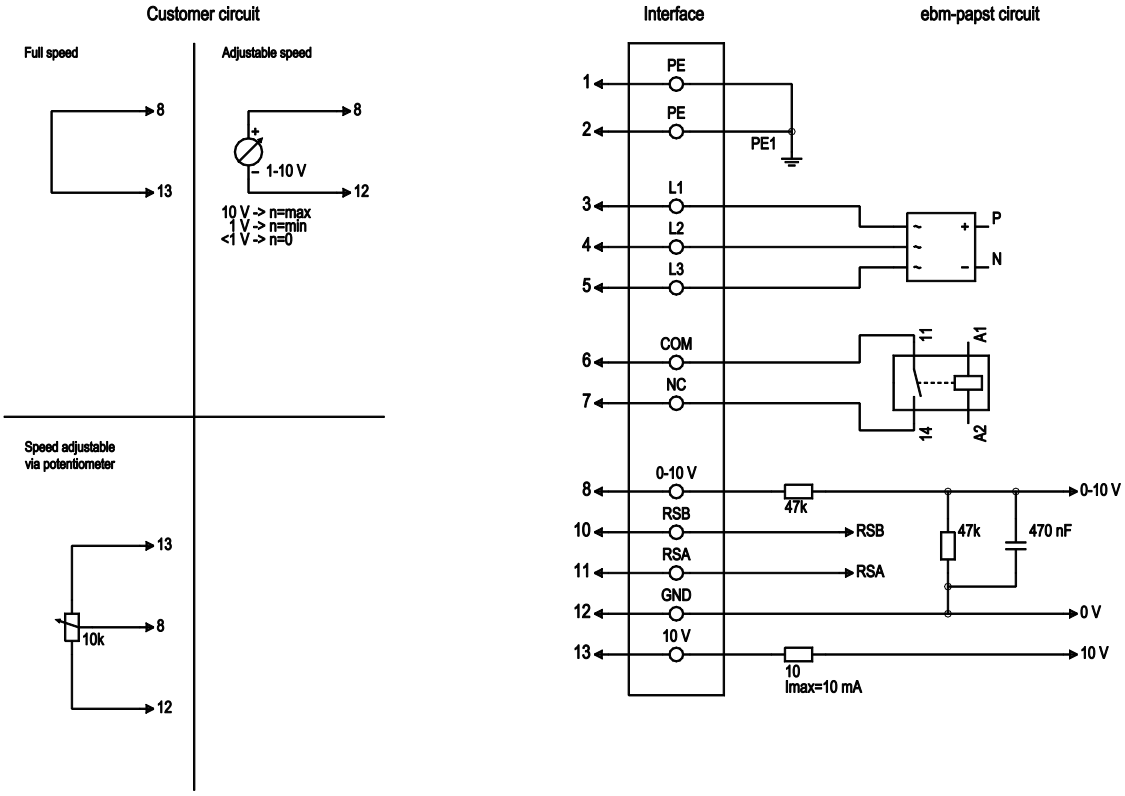
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## Connection diagram




| No. | Conn. | Designation | Color | Function/assignment |
|---|---|---|---|---|
| 1 | 1 | PE | green/yellow | Protective earth |
| 1 | 2 | PE | - | not brought out via wire |
| 1 | 3 | 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 | gray | 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 | orange | 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 | 0-10V | yellow | Analog input (set value) SELV, 0-10 V, Ri = 100 kΩ, adjustable curve |
| 2 | 10 | RSB | brown | RS485 interface for MODBUS, RSB; SELV |
| 2 | 11 | RSA | white | RS485 interface for MODBUS, RSA; SELV |
| 2 | 12 | GND | blue | Reference 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 external devices (e.g. pot); SELV |



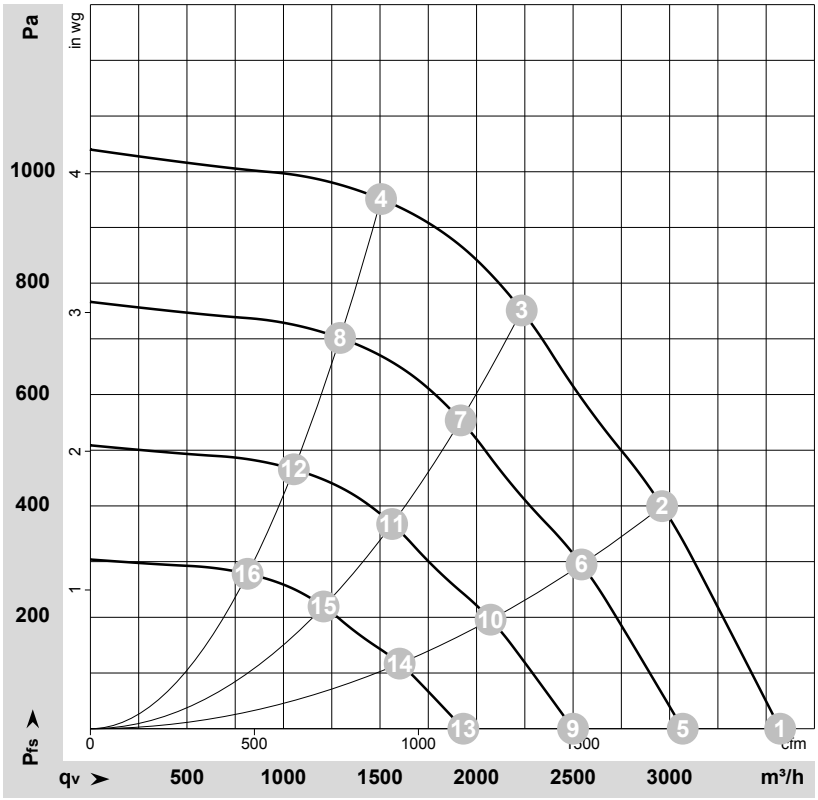
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## Curves: Air performance 50 Hz




ρ = 1.15 kg/m³ ± 2 %

Measurement: LU-174830-1

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 | 3140 | 735 | 1.14 | 77 | 86 | 92 | 3570 | 0 | 2100 | 0.00 |
| 2 | 400 | 50 | 3140 | 879 | 1.36 | 75 | 84 | 90 | 2960 | 400 | 1745 | 1.61 |
| 3 | 400 | 50 | 3140 | 900 | 1.40 | 72 | 81 | 86 | 2235 | 760 | 1315 | 3.05 |
| 4 | 400 | 50 | 3140 | 836 | 1.29 | 73 | 82 | 87 | 1505 | 950 | 885 | 3.81 |
| 5 | 400 | 50 | 2700 | 466 | 0.72 | 74 | 82 | 88 | 3070 | 0 | 1805 | 0.00 |
| 6 | 400 | 50 | 2700 | 557 | 0.86 | 71 | 80 | 86 | 2545 | 302 | 1495 | 1.21 |
| 7 | 400 | 50 | 2700 | 570 | 0.88 | 69 | 77 | 82 | 1920 | 559 | 1130 | 2.24 |
| 8 | 400 | 50 | 2700 | 530 | 0.82 | 70 | 78 | 83 | 1295 | 702 | 760 | 2.82 |
| 9 | 400 | 50 | 2200 | 252 | 0.39 | 68 | 77 | 83 | 2500 | 0 | 1470 | 0.00 |
| 10 | 400 | 50 | 2200 | 301 | 0.47 | 66 | 75 | 81 | 2075 | 201 | 1220 | 0.81 |
| 11 | 400 | 50 | 2200 | 309 | 0.48 | 63 | 72 | 77 | 1565 | 371 | 920 | 1.49 |
| 12 | 400 | 50 | 2200 | 287 | 0.44 | 65 | 73 | 78 | 1055 | 466 | 620 | 1.87 |
| 13 | 400 | 50 | 1700 | 116 | 0.18 | 62 | 70 | 76 | 1930 | 0 | 1135 | 0.00 |
| 14 | 400 | 50 | 1700 | 139 | 0.21 | 60 | 68 | 74 | 1600 | 120 | 945 | 0.48 |
| 15 | 400 | 50 | 1700 | 142 | 0.22 | 57 | 65 | 71 | 1210 | 222 | 710 | 0.89 |
| 16 | 400 | 50 | 1700 | 132 | 0.20 | 58 | 67 | 72 | 815 | 278 | 480 | 1.12 |

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



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