**R3G250-BB01-N1**

# EC centrifugal fan - RadiPac

backward curved, single inlet

for railway applications

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## Nominal data

| | |
|---|---|
| **Type** | **R3G250-BB01-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) | $min^{-1}$ | 4000 |
| Power input | W | 1050 |
| Current draw | A | 1.6 |
| 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 $\eta_{es}$ | % | 64.3 | 51.7 |
| 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 | 1.04 |
| 09 Air flow $q_v$ | $m^3/h$ | 2255 |
| 09 Pressure increase $p_{fs}$ | Pa | 996 |
| 10 Speed (rpm) n | $min^{-1}$ | 4000 |
| 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

LU-177956

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## Technical features

| | |
|---|---|
| **Mass** | 5.72 kg |
| **Size** | 250 mm |
| **Motor size** | 84 |
| **Surface of rotor** | Coated in black |
| **Material of electronics housing** | Die-cast aluminium |
| **Material of impeller** | Aluminium sheet |
| **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<br>- Alarm relay<br>- Integrated PID controller<br>- Run monitoring<br>- Output limit<br>- Motor current limit<br>- Emergency operation<br>- PFC, passive<br>- RS485 MODBUS RTU<br>- Soft start<br>-Maximum EEPROM write cycles 100,000<br>- Control input 0-10 VDC / PWM<br>- Control interface with SELV potential safely disconnected from the mains<br>- Overvoltage detection<br>- Over-temperature protected electronics / motor<br>- 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) |
| **Product conforming to standard** | EN 15085-1, CPC3; EN 45545-2, HL3; EN 50155; EN 61373, Cat. 1B; 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<br>The SELV property (reinforced insulation) is not lost when voltages of up to 110 VDC are passed through the alarm relay. |



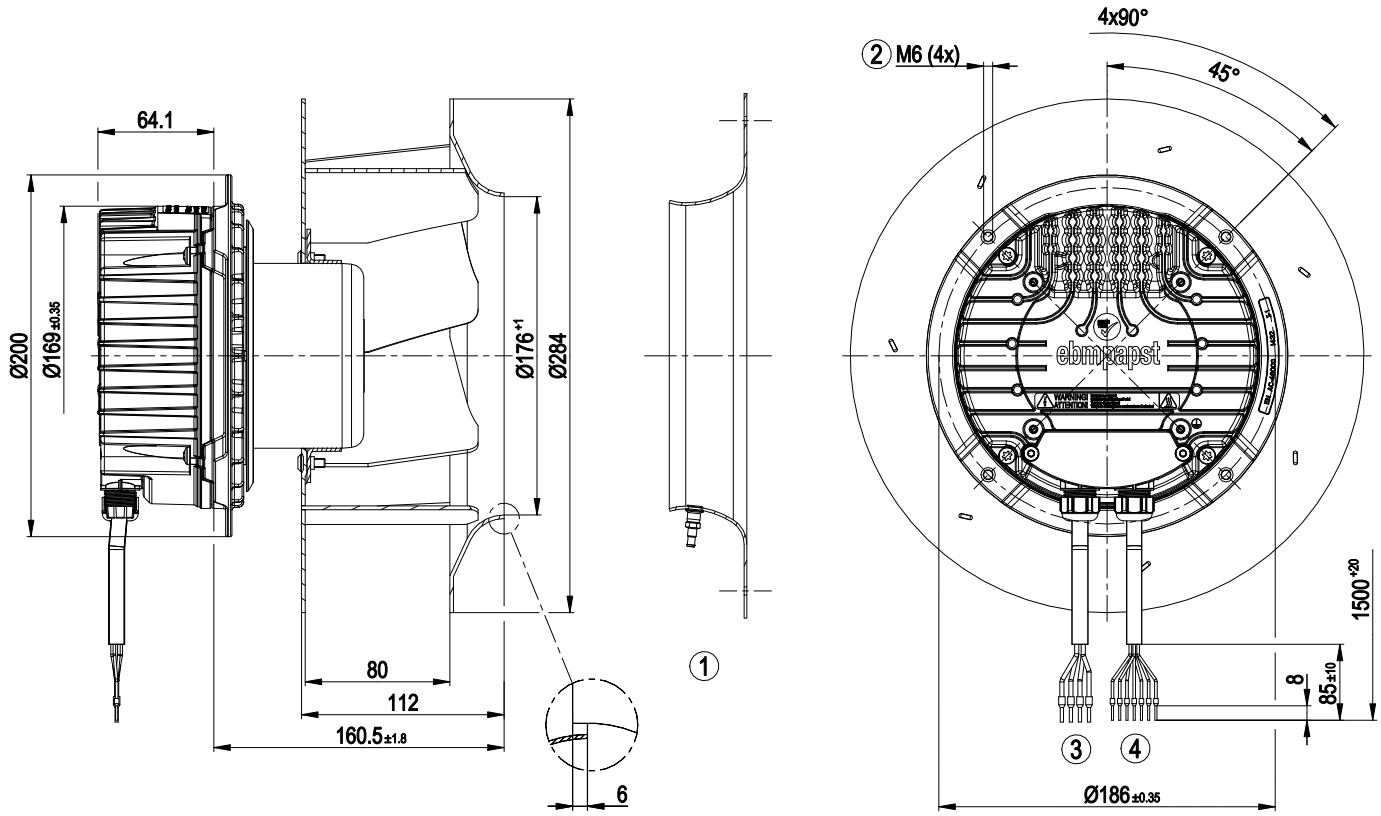
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## Product drawing




| | |
|---|---|
| 1 | Accessory part: Inlet nozzle 25075-2-4013 with pressure tap (k-factor: 70) 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 |



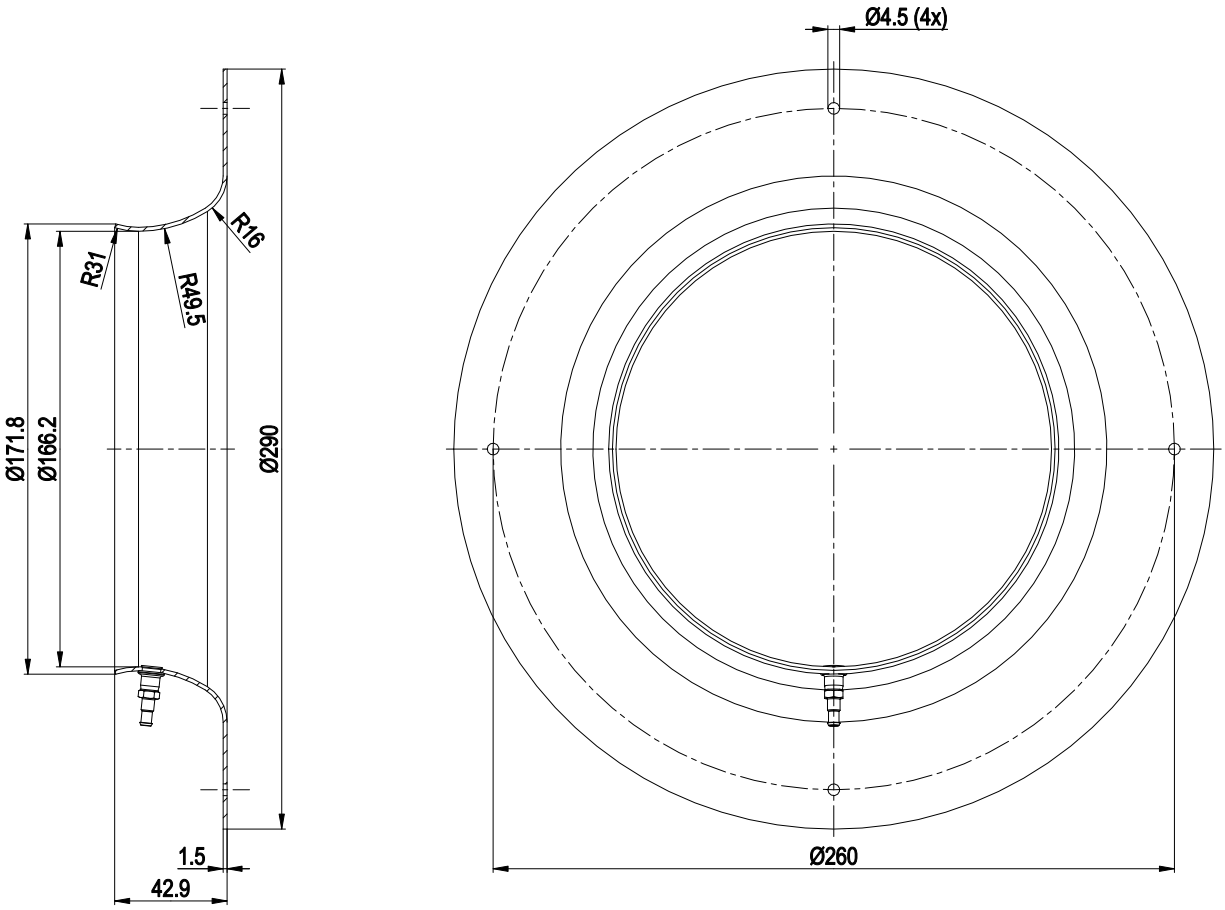
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## Accessory part




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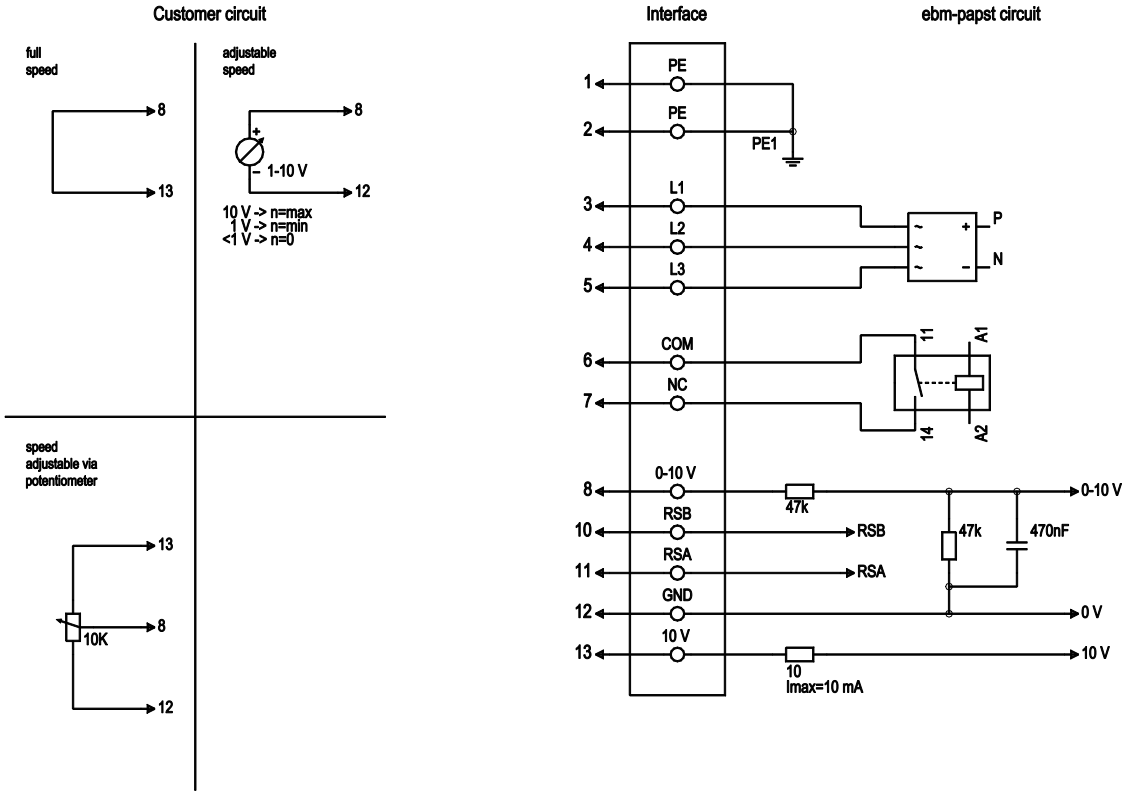
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## Connection screen




| No. | Conn. | Designation | Colour | Function / assignment |
|---|---|---|---|---|
| 1 | 1 | PE | green/yellow | Protective earth |
| 1 | 2 | PE | - | not brought out via lead |
| 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 / max. 2 A (AC1), min. 1 mA / 5 VDC, reinforced insulation with respect to control interface, basic insulation on mains 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 | Analogue input (set value) SELV, 0-10 V, Ri=100kΩ, parametrisable 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 | 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 |



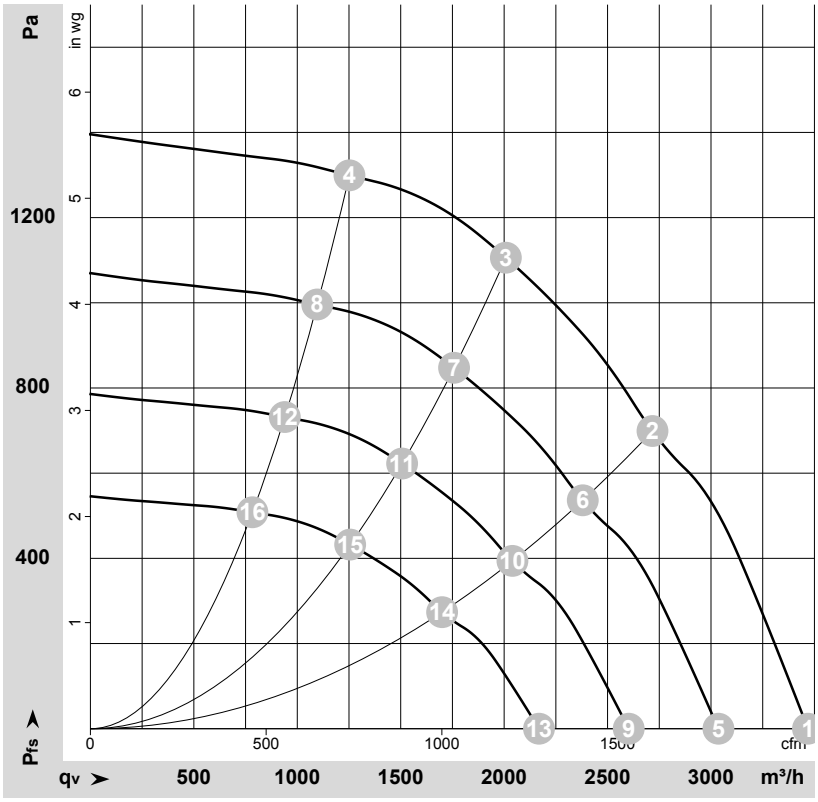
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## Charts: Air flow 50 Hz




ρ = 1.15 kg/m³ ± 2 %

Measurement: LU-177956-1

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 | 4000 | 781 | 1.26 | 80 | 87 | 3470 | 0 | 2040 | 0.00 |
| 2 | 400 | 50 | 4000 | 981 | 1.55 | 75 | 82 | 2715 | 700 | 1600 | 2.81 |
| 3 | 400 | 50 | 4000 | 1050 | 1.60 | 73 | 81 | 2010 | 1100 | 1180 | 4.42 |
| 4 | 400 | 50 | 4000 | 953 | 1.52 | 81 | 89 | 1250 | 1300 | 735 | 5.22 |
| 5 | 400 | 50 | 3500 | 524 | 0.85 | 76 | 84 | 3035 | 0 | 1785 | 0.00 |
| 6 | 400 | 50 | 3500 | 660 | 1.04 | 71 | 79 | 2380 | 532 | 1400 | 2.14 |
| 7 | 400 | 50 | 3500 | 704 | 1.11 | 70 | 77 | 1760 | 849 | 1035 | 3.41 |
| 8 | 400 | 50 | 3500 | 640 | 1.02 | 78 | 86 | 1095 | 996 | 645 | 4.00 |
| 9 | 400 | 50 | 3000 | 330 | 0.53 | 72 | 80 | 2600 | 0 | 1530 | 0.00 |
| 10 | 400 | 50 | 3000 | 415 | 0.66 | 67 | 75 | 2040 | 391 | 1200 | 1.57 |
| 11 | 400 | 50 | 3000 | 444 | 0.70 | 66 | 74 | 1505 | 624 | 885 | 2.51 |
| 12 | 400 | 50 | 3000 | 403 | 0.64 | 74 | 82 | 940 | 732 | 555 | 2.94 |
| 13 | 400 | 50 | 2500 | 191 | 0.31 | 68 | 76 | 2170 | 0 | 1275 | 0.00 |
| 14 | 400 | 50 | 2500 | 240 | 0.38 | 63 | 71 | 1700 | 272 | 1000 | 1.09 |
| 15 | 400 | 50 | 2500 | 257 | 0.40 | 61 | 69 | 1255 | 433 | 740 | 1.74 |
| 16 | 400 | 50 | 2500 | 233 | 0.37 | 69 | 77 | 785 | 508 | 460 | 2.04 |

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



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