**R3G310-FS10-J1**

# EC centrifugal fan - RadiCal

backward-curved, single-intake

**ebm-papst Mulfingen GmbH & Co. KG**
Bachmühle 2 · D-74673 Mulfingen
Phone +49 7938 81-0
Fax +49 7938 81-110
info1@de.ebmpapst.com
www.ebmpapst.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-FS10-J1** |
| **Motor** | **M3G084-FA** |

| | | |
|---|---|---|
| Phase | | 3~ |
| Nominal voltage | VAC | 400 |
| Nominal voltage range | VAC | 380 .. 480 |
| Frequency | Hz | 50/60 |
| Method of obtaining data | | ml |
| Status | | prelim. |
| Speed (rpm) | $min^{-1}$ | 3100 |
| Power consumption | W | 1100 |
| Current draw | A | 1.7 |
| Min. ambient temperature | °C | -40 |
| Max. ambient temperature | °C | 40 |

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

| | | Actual | Req. 2015 |
|---|---|---|---|
| 01 Overall efficiency $\eta_{es}$ | % | 69.4 | 51.8 |
| 02 Measurement category | | A | |
| 03 Efficiency category | | Static | |
| 04 Efficiency grade N | | 79.6 | 62 |
| 05 Variable speed drive | | Yes | |

| | | |
|---|---|---|
| 09 Power consumption $P_{ed}$ | kW | 1.06 |
| 09 Air flow $q_v$ | $m^3/h$ | 3165 |
| 09 Pressure increase $p_{fs}$ | Pa | 775 |
| 10 Speed (rpm) n | $min^{-1}$ | 3100 |
| 11 Specific ratio* | | 1.01 |

Data obtained at optimum efficiency level.
The ErP data is determined using a motor-impeller combination in a standardized measurement setup.

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

LU-203767

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## Technical description

| | |
|---|---|
| **Size** | 310 mm |
| **Motor size** | 84 |
| **Rotor surface** | Painted black |
| **Electronics housing material** | Die-cast aluminum |
| **Impeller material** | PP plastic |
| **Number of blades** | 6 |
| **Direction of rotation** | Clockwise, viewed toward rotor |
| **Degree of protection** | IP55 |
| **Insulation class** | "F" |
| **Moisture (F) / Environmental (H) protection class** | H1 |
| **Ambient temperature note** | Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings. |
| **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 |
| **Technical features** | - Output 10 VDC, max. 10 mA<br>- Operation and alarm display<br>- External 24 V input (parameter setting)<br>- Alarm relay<br>- Integrated PID controller<br>- Motor current limitation<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>- Thermal overload protection for electronics/motor<br>- Line undervoltage / phase failure detection |
| **EMC immunity to interference** | According to EN 61000-6-2 (industrial environment) |
| **EMC interference emission** | According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW |
| **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** | Variable |
| **Protection class** | I (with customer connection of protective earth) |
| **Conformity with standards** | EN 61800-5-1; CE |
| **Approval** | CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1 |

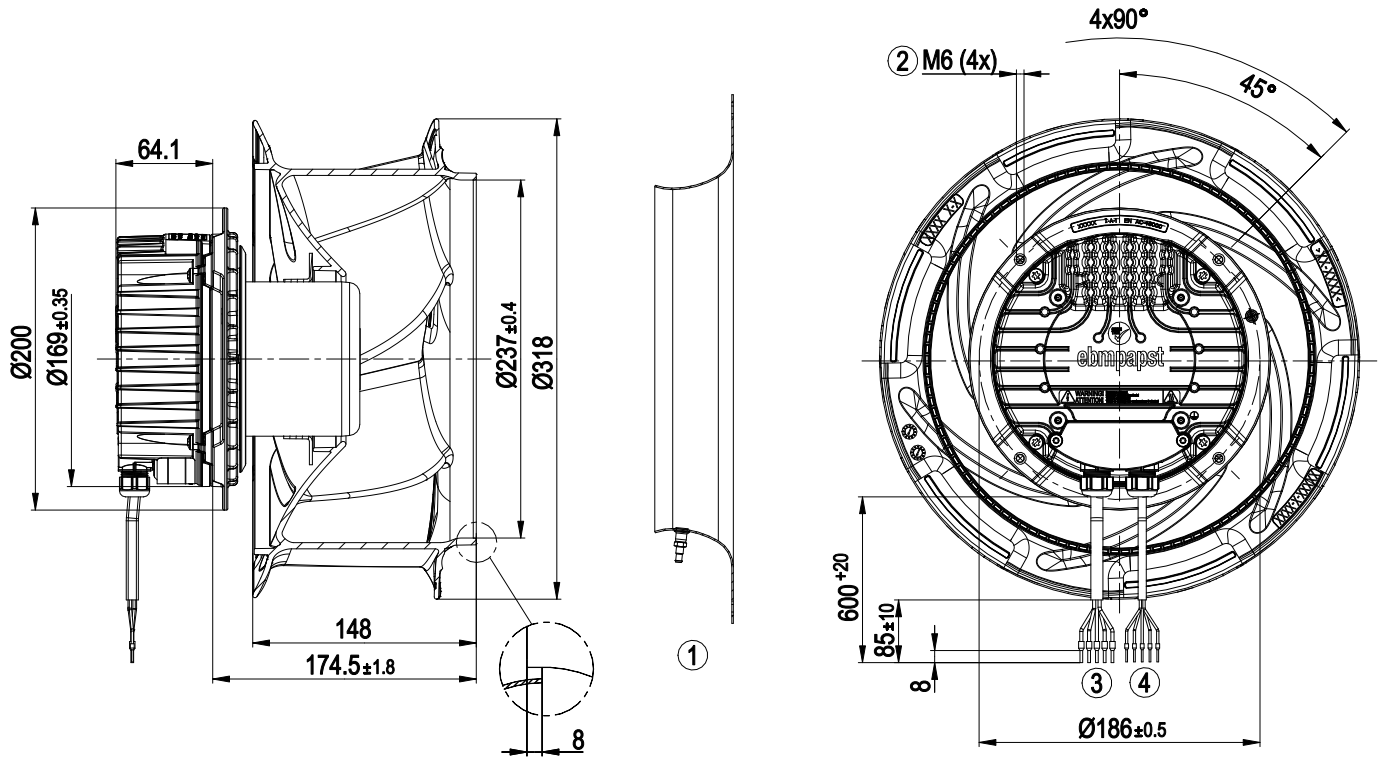


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## Product drawing




| | |
|---|---|
| 1 | Accessory part: Inlet ring 31555-2-4013 with pressure tap (k-factor: 128) not included in scope of delivery |
| 2 | Max. clearance for screw 10 mm |
| 3 | Cable PVC AWG18 |
| | 6x wire-end ferrule |
| 4 | Cable PVC AWG22 |
| | 5x wire-end ferrule |

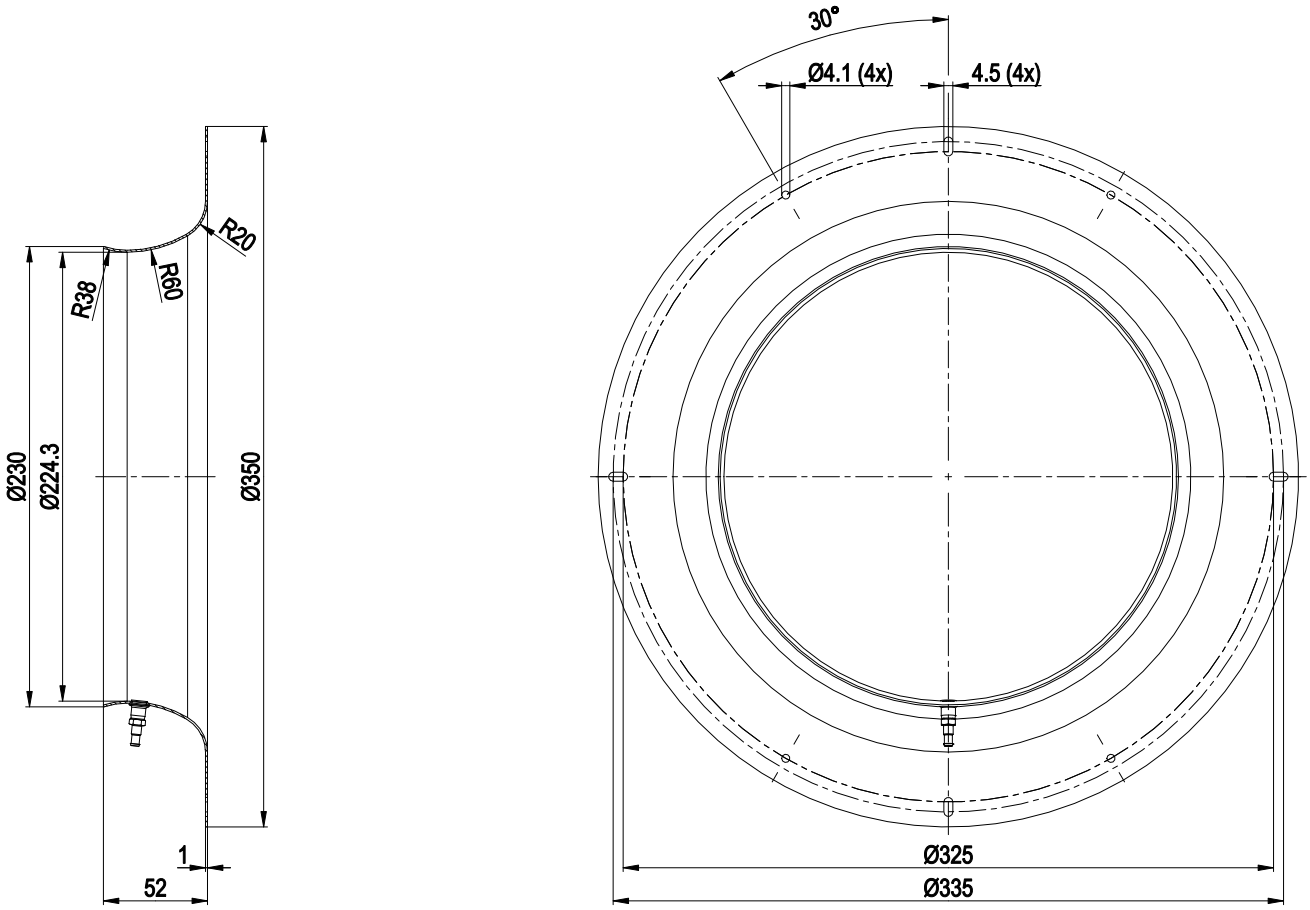


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## Accessory part




Inlet ring 31555-2-4013 with pressure tap (k-factor: 128)

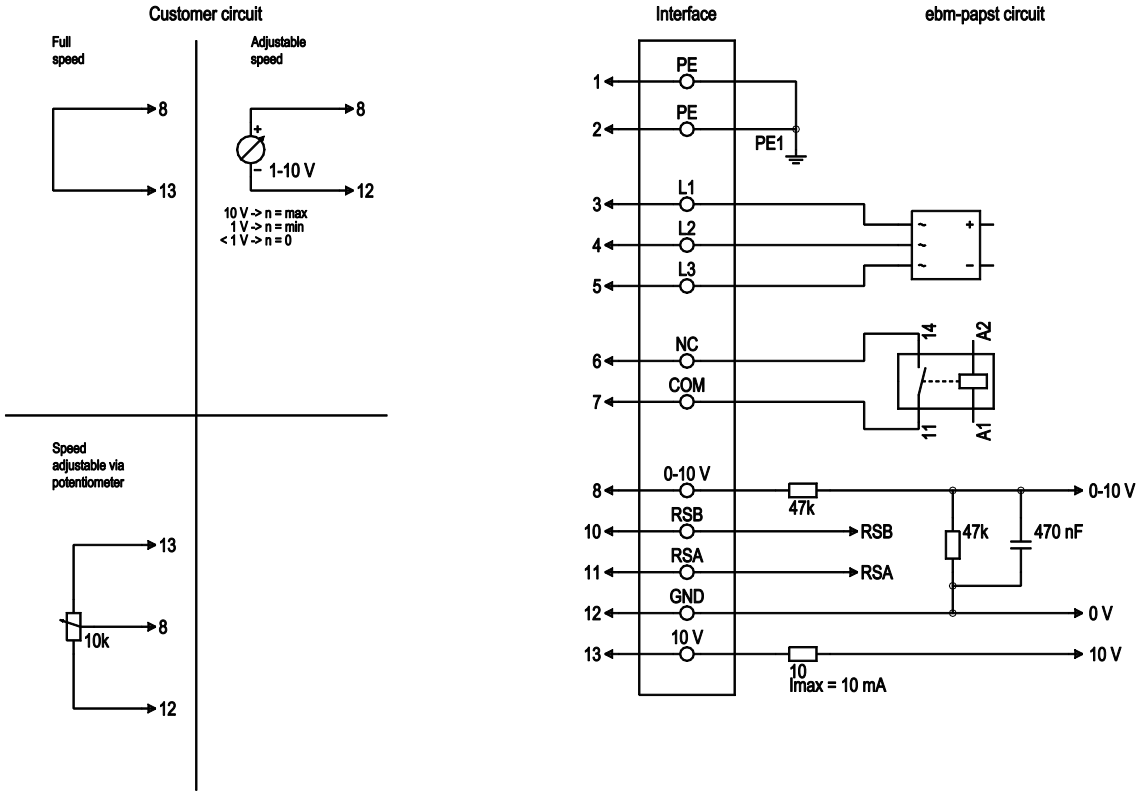


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## Connection diagram




| No. | Conn. | Designation | Color | Function/assignment |
|---|---|---|---|---|
| 1 | 1, 2 | PE | green/yellow | Protective earth |
| 1 | 3 | L1 | black | Power supply |
| 1 | 4 | L2 | black | Power supply |
| 1 | 5 | L3 | black | Power supply |
| 1 | 6 | NC | white 1 | Status relay, floating status contact, break for failure,<br>contact rating 250 VAC / 2 A (AC1) / min. 10 mA; reinforced insulation on supply side and basic insulation on control interface side |
| 1 | 7 | COM | white 2 | Status relay, floating status contact, break for failure,<br>contact rating 250 VAC / 2 A (AC1) / min. 10 mA; reinforced insulation on supply side and basic insulation on control interface side |
| 2 | 8 | 0-10V | yellow | Analog input (set value), 0-10 V, Ri = 100 kΩ, adjustable curve, SELV |
| 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<br>fixed voltage input 24 VDC for setting parameters via MODBUS without line voltage supply |

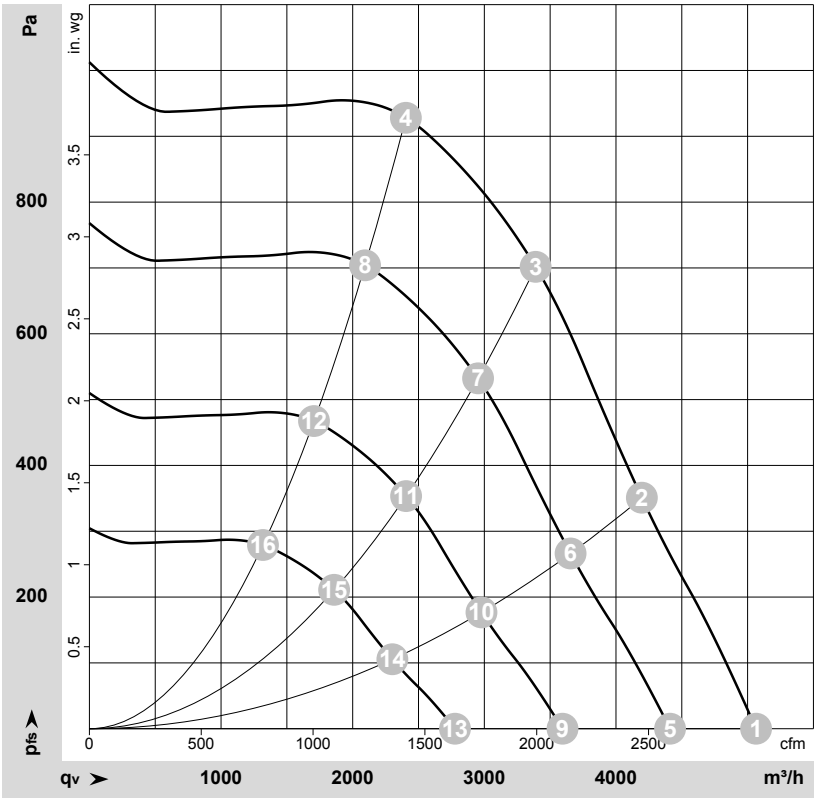


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## Curves: Air performance 50 Hz




ρ = 1.15 kg/m³ ± 2 %

Measurement: LU-203767-1

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 | 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 | 3~ | 400 | 50 | 3100 | 758 | 1.18 | 79 | 85 | 5065 | 0 | 2980 | 0.00 |
| 2 | 3~ | 400 | 50 | 3100 | 978 | 1.50 | 75 | 82 | 4195 | 350 | 2470 | 1.41 |
| 3 | 3~ | 400 | 50 | 3100 | 1100 | 1.70 | 71 | 78 | 3390 | 700 | 1995 | 2.81 |
| 4 | 3~ | 400 | 50 | 3100 | 1048 | 1.61 | 73 | 80 | 2405 | 925 | 1415 | 3.71 |
| 5 | 3~ | 400 | 50 | 2700 | 501 | 0.78 | 75 | 82 | 4410 | 0 | 2595 | 0.00 |
| 6 | 3~ | 400 | 50 | 2700 | 646 | 0.99 | 72 | 79 | 3655 | 266 | 2150 | 1.07 |
| 7 | 3~ | 400 | 50 | 2700 | 718 | 1.10 | 68 | 75 | 2950 | 532 | 1735 | 2.14 |
| 8 | 3~ | 400 | 50 | 2700 | 693 | 1.06 | 69 | 77 | 2095 | 708 | 1230 | 2.84 |
| 9 | 3~ | 400 | 50 | 2200 | 271 | 0.42 | 70 | 77 | 3595 | 0 | 2115 | 0.00 |
| 10 | 3~ | 400 | 50 | 2200 | 350 | 0.54 | 66 | 73 | 2980 | 177 | 1755 | 0.71 |
| 11 | 3~ | 400 | 50 | 2200 | 389 | 0.60 | 63 | 70 | 2405 | 354 | 1415 | 1.42 |
| 12 | 3~ | 400 | 50 | 2200 | 375 | 0.58 | 64 | 71 | 1705 | 470 | 1005 | 1.89 |
| 13 | 3~ | 400 | 50 | 1700 | 125 | 0.19 | 64 | 70 | 2775 | 0 | 1635 | 0.00 |
| 14 | 3~ | 400 | 50 | 1700 | 161 | 0.25 | 60 | 67 | 2300 | 105 | 1355 | 0.42 |
| 15 | 3~ | 400 | 50 | 1700 | 179 | 0.28 | 56 | 63 | 1860 | 211 | 1095 | 0.85 |
| 16 | 3~ | 400 | 50 | 1700 | 173 | 0.27 | 58 | 65 | 1320 | 281 | 775 | 1.13 |

Wired = Wiring · 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
$q_V$ = Air flow · $p_{fs}$ = Pressure increase



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