**R3G146-EC50-01**

# EC centrifugal fan

forward-curved, single-intake

Automotive



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## Nominal data

| | |
|---|---|
| **Type** | **R3G146-EC50-01** |
| **Motor** | **M3G084-BF** |

| | | |
|---|---|---|
| Nominal voltage | VDC | 26 |
| Nominal voltage range | VDC | 16 .. 32 |
| Method of obtaining data | | fa |
| Status | | prelim. |
| Speed (rpm) | $min^{-1}$ | 2750 |
| Power consumption | W | 280 |
| Current draw | A | 10.8 |
| Min. back pressure | Pa | 0 |
| Min. back pressure | in. wg | 0 |
| Min. ambient temperature | °C | -40 |
| Max. ambient temperature | °C | 85 |

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 $\eta_{es}$ | % | 46.1 | 34.1 |
| 02 Measurement category | | A | |
| 03 Efficiency category | | Static | |
| 04 Efficiency grade N | | 56 | 44 |
| 05 Variable speed drive | | Yes | |

| | | |
|---|---|---|
| 09 Power consumption $P_e$ | kW | 0.27 |
| 09 Air flow $q_v$ | $m^3/h$ | 420 |
| 09 Pressure increase $p_{fs}$ | Pa | 962 |
| 10 Speed (rpm) n | $min^{-1}$ | 3975 |
| 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-186494

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## Technical description

| | |
|---|---|
| **Weight** | 1.5 kg |
| **Fan size** | 146 mm |
| **Cover material** | PP plastic |
| **Blade material** | PA plastic |
| **Balancing grade according to DIN ISO 1940-1** | G 10 |
| **Direction of rotation** | Clockwise, viewed toward rotor |
| **Degree of protection** | IP24 KM; (motor); electronics IP 6K9K |
| **Insulation class** | "B" |
| **Moisture (F) / Environmental (H) protection class** | H4 |
| **Ambient temperature note** | Over +75°C with power derating |
| **Max. permitted ambient temp. for motor (transport/storage)** | +90 °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** | None, open rotor |
| **Cooling hole/opening** | On rotor side |
| **Mode** | S1 |
| **Motor bearing** | Ball bearing; (sealed) |
| **Life expectancy** | 40,000 h (typical) |
| **Technical features** | - Tach output<br>- Power limiter<br>- Load dump (58 V)<br>- Motor current limitation<br>- Soft start<br>- Control input 0-10 VDC / PWM<br>- Temperature derating<br>- Overvoltage detection<br>- Thermal overload protection for electronics<br>- Reverse polarity protection |
| **Electrical hookup** | With plug; Standby current less than 500 µA |
| **Motor protection** | Reverse polarity and locked-rotor protection |
| **Comment** | E1 approval in preparation |



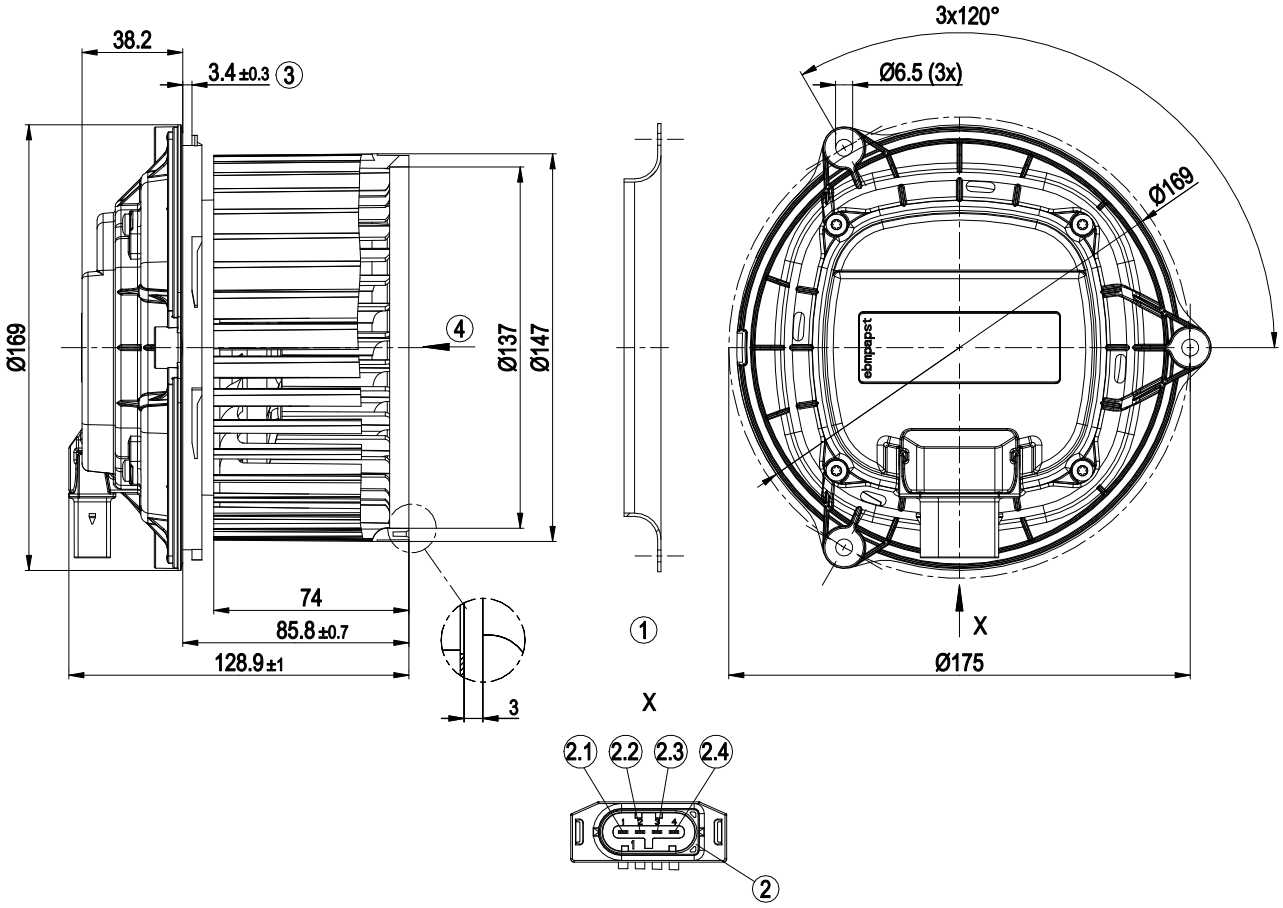
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## Product drawing




| | |
|---|---|
| 1 | Accessory part: inlet ring 09576-2-4013 not included in scope of delivery |
| 2 | 4-pole plug, pluggable with cable from accessories |
| 2.1 | Diagnostic output |
| 2.2 | PWM |
| 2.3 | + UB |
| 2.4 | GND |
| | Cable from accessories not included in scope of delivery |
| | Mating connector TE MCP 2.8, 4-pole 1-1718628-1 |
| | Plug contacts: 2.8 mm TE 1-968855-1 and TE 1-968857-1 |
| | Seal: TE 828904-1 and TE 828905-1 |
| 3 | Bayonet attachment for metal or plastic |
| | A detailed drawing of the recess required for bayonet attachment can be obtained from ebm-papst. |
| 4 | Max. permissible axial bearing loads: 50 N (brief periods during handling or installation) |



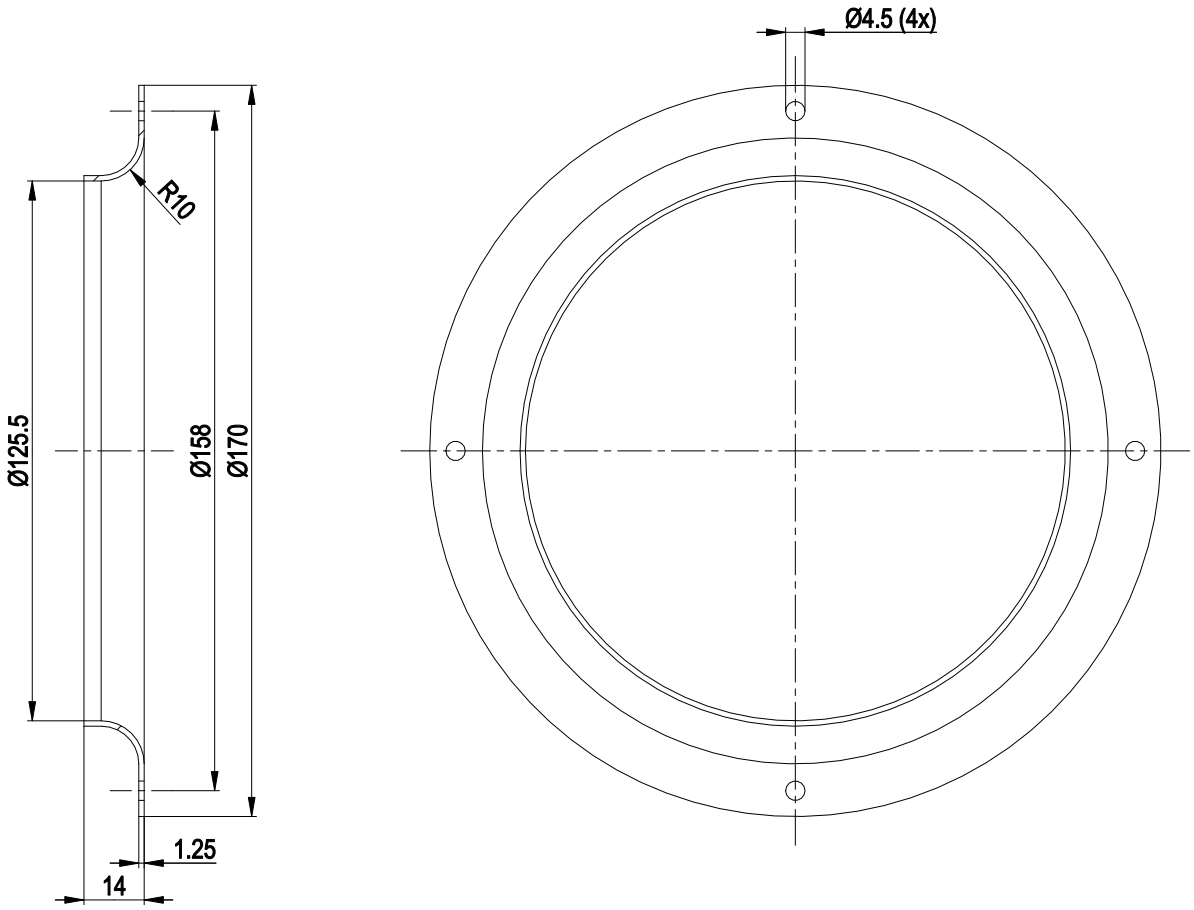
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## Accessory part




| | |
|---|---|
| 1 | Accessory part: inlet ring 09576-2-4013 not included in scope of delivery |



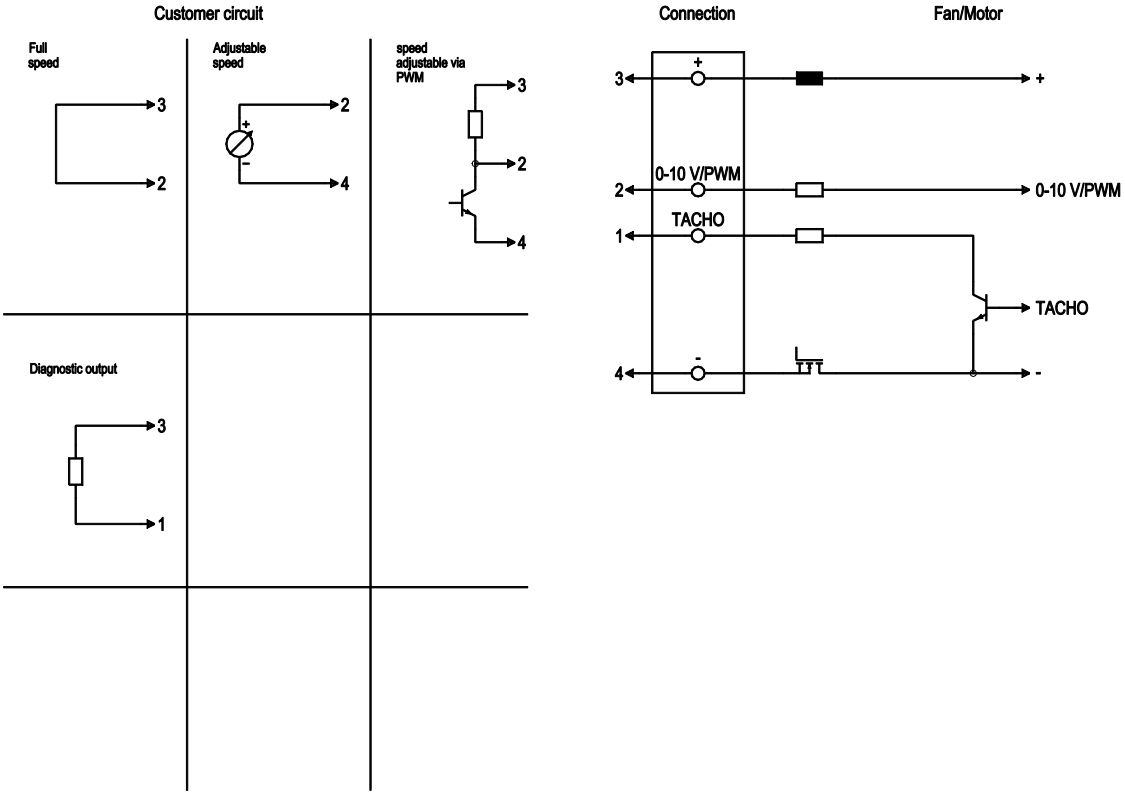
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## Connection diagram




| No. | Conn. | Designation | Function/assignment |
|---|---|---|---|
| | 3 | + | Power supply + |
| | 2 | 0-10 V / PWM | Control input Ri > 36 kΩ<br>0-10 V<br>__typ. < 1 V ⇒ n=0<br>__1,5 V ⇒ n=min<br>__>9.5 V ⇒ n=max) or<br>PWM (> 10 V; 1-10 kHz<br>__typ. < 4 % ⇒ n=0<br>__10 % ⇒ n=min<br>__> 95% ⇒ n=max) |
| | 1 | Tacho | Tach output: open collector, 1 pulse per revolution, Isink max = 10 mA, Ri = 2.1 kΩ |
| | 4 | - | Power supply - |



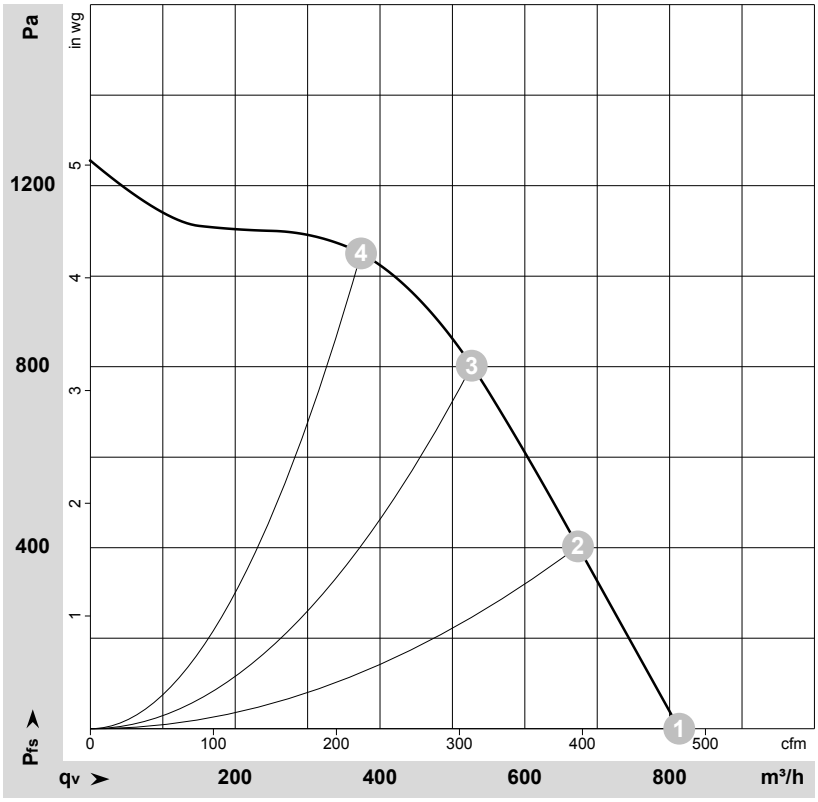
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## Curves: Air performance




ρ = 1.15 kg/m³ ± 2 %

Measurement: LU-178834-1

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 | n | $P_{ed}$ | I | $LpA_{in}$ | $LwA_{in}$ | $q_V$ | $p_{fs}$ | $q_V$ | $p_{fs}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| | V | $min^{-1}$ | W | A | dB(A) | dB(A) | $m^3/h$ | Pa | cfm | in. wg |
| 1 | 26 | 2750 | 280 | 10.80 | 73 | 79 | 815 | 0 | 480 | 0.00 |
| 2 | 26 | 3245 | 280 | 10.80 | 72 | 78 | 675 | 400 | 395 | 1.61 |
| 3 | 26 | 3815 | 280 | 10.80 | 72 | 78 | 525 | 800 | 310 | 3.21 |
| 4 | 26 | 4225 | 245 | 9.55 | 72 | 79 | 375 | 1050 | 220 | 4.22 |

U = Power supply · 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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