

K3G220-RD53-03

# EC centrifugal module - RadiCal

backward-curved, single-intake

with housing

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## Nominal data

|                          |                   |            |
|--------------------------|-------------------|------------|
| Type                     | K3G220-RD53-03    |            |
| Motor                    | M3G055-CF         |            |
| Phase                    |                   | 1~         |
| Nominal voltage          | VAC               | 230        |
| Nominal voltage range    | VAC               | 200 .. 240 |
| Frequency                | Hz                | 50/60      |
| Method of obtaining data |                   | ml         |
| Speed (rpm)              | min <sup>-1</sup> | 3230       |
| Power consumption        | W                 | 168        |
| Current draw             | A                 | 1.4        |
| Min. ambient temperature | °C                | -25        |
| Max. ambient temperature | °C                | 50         |

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 (EN 17166)

|                                   |   | Actual | Req. 2015 |                               |                   |      |
|-----------------------------------|---|--------|-----------|-------------------------------|-------------------|------|
| 01 Overall efficiency $\eta_{es}$ | % | 56.7   | 43.3      | 09 Power consumption $P_{ed}$ | kW                | 0.16 |
| 02 Measurement category           |   | A      |           | 09 Air flow $q_v$             | m <sup>3</sup> /h | 805  |
| 03 Efficiency category            |   | Static |           | 09 Pressure increase $p_{fs}$ | Pa                | 366  |
| 04 Efficiency grade N             |   | 75.4   | 62        | 10 Speed (rpm) n              | min <sup>-1</sup> | 3210 |
| 05 Variable speed drive           |   | Yes    |           | 11 Specific ratio*            |                   | 1.00 |

Data obtained at optimum efficiency level.

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

LU-153697

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).  
The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.  
The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).



## Technical description

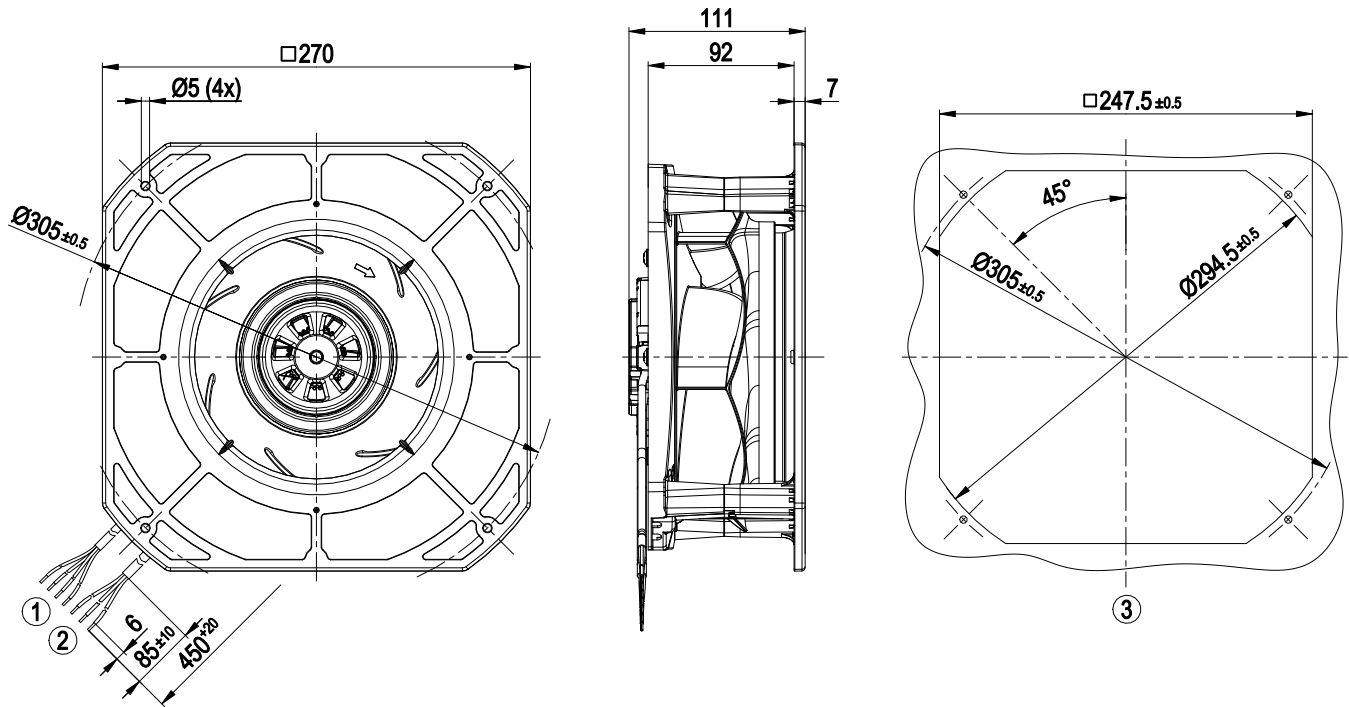
|                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Weight                                                                     | 2.1 kg                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Size                                                                       | 220 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Motor size                                                                 | 55                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Rotor surface                                                              | Thick-film passivated                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Electronics housing material                                               | Die-cast aluminum                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Impeller material                                                          | PP plastic                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Housing material                                                           | PA plastic                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Number of blades                                                           | 7                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Direction of rotation                                                      | Clockwise, viewed toward rotor                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Degree of protection                                                       | IP54                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Insulation class                                                           | "B"                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Moisture (F) / Environmental (H) protection class                          | H1                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Max. permitted ambient temp. for motor (transport/storage)                 | + 80 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Min. permitted ambient temp. for motor (transport/storage)                 | - 40 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Installation position                                                      | Any                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Condensation drainage holes                                                | None, open rotor                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Mode                                                                       | S1                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Motor bearing                                                              | Ball bearing                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Technical features                                                         | <ul style="list-style-type: none"> <li>- Output 10 VDC, max. 10 mA</li> <li>- Tach output</li> <li>- Power limiter</li> <li>- Motor current limitation</li> <li>- Soft start</li> <li>- Control input 0-10 VDC / PWM</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Overvoltage detection</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage detection</li> </ul> |
| EMC immunity to interference                                               | According to EN 61000-6-2 (industrial environment)                                                                                                                                                                                                                                                                                                                                                                                                       |
| EMC interference emission                                                  | According to EN 61000-6-4 (industrial environment)                                                                                                                                                                                                                                                                                                                                                                                                       |
| Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system) | <= 3.5 mA                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Motor protection                                                           | Electronic motor protection                                                                                                                                                                                                                                                                                                                                                                                                                              |
| With cable                                                                 | Variable                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Protection class                                                           | I (with customer connection of protective earth)                                                                                                                                                                                                                                                                                                                                                                                                         |
| Conformity with standards                                                  | EN 60335-1; CE; UKCA                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Approval                                                                   | UL 1004-7 + 60730-1; EAC; CSA C22.2 No. 77 + CAN/CSA-E60730-1; CCC                                                                                                                                                                                                                                                                                                                                                                                       |

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### Product drawing



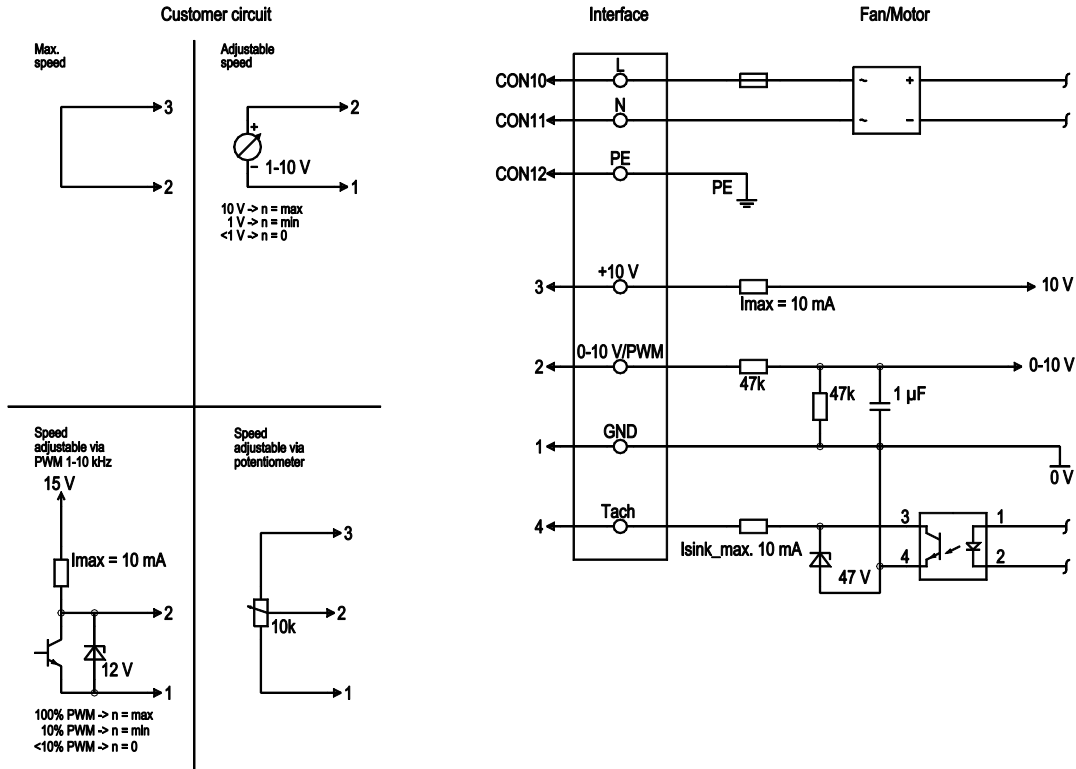
- |   |                                     |
|---|-------------------------------------|
| 1 | Cable PVC AWG22, 4x crimped splices |
| 2 | Cable PVC AWG20, 3x crimped splices |
| 3 | Mounting dimensions                 |



# EC centrifugal module - RadiCal

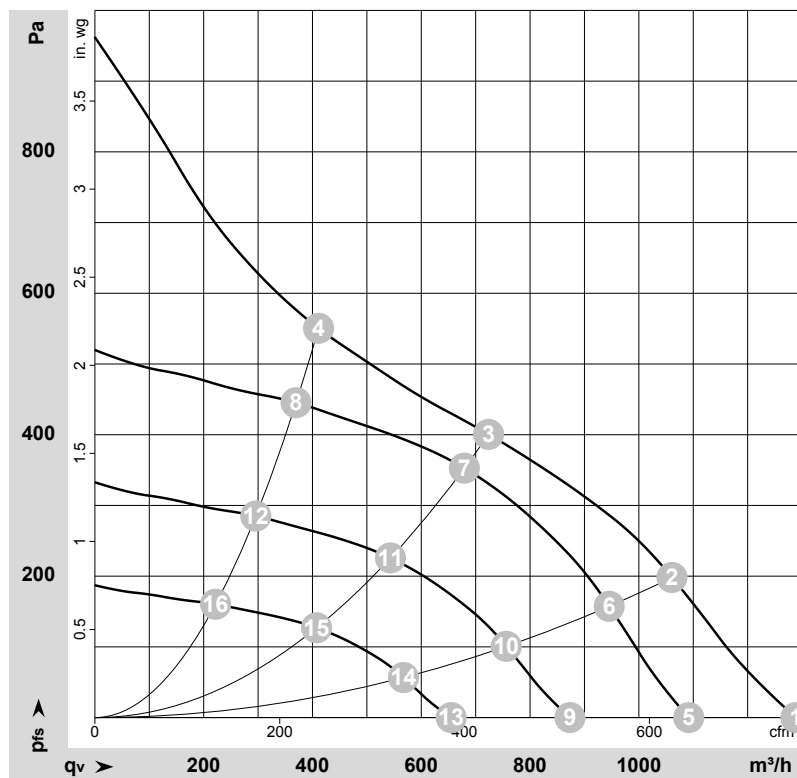
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## Connection diagram



| No. | Conn. | Designation | Color        | Function/assignment                                                                                                                     |
|-----|-------|-------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------|
|     | CON10 | L           | black        | Supply connection, power supply, phase, see nameplate for voltage range                                                                 |
|     | CON11 | N           | blue         | Supply connection, power supply, neutral conductor, see nameplate for voltage range                                                     |
|     | CON12 | PE          | green/yellow | Ground connection                                                                                                                       |
|     | 2     | 0- 10V PWM  | yellow       | 0-10 V / PWM control input, $R_i=100 \text{ k}\Omega$ , SELV                                                                            |
|     | 4     | Tach        | white        | Tach output, open collector, 1 pulse per revolution, $I_{sink \text{ max}} = 10 \text{ mA}$ , SELV                                      |
|     | 3     | +10 V       | red          | Fixed voltage output 10 VDC $\pm 3 \%$ , $I_{max.} 10 \text{ mA}$ , short-circuit-proof, power supply for ext. devices (e.g. pot), SELV |
|     | 1     | GND         | blue         | Reference ground for control interface, SELV                                                                                            |

## Curves: Air performance 50 Hz



$$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$$

Measurement: LU-153697-1

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 <sub>ed</sub> | I    | LpA <sub>in</sub> | LwA <sub>in</sub> | q <sub>v</sub> | P <sub>fs</sub> | q <sub>v</sub> | P <sub>fs</sub> |
|----|-------|-----|----|-------------------|-----------------|------|-------------------|-------------------|----------------|-----------------|----------------|-----------------|
|    |       | V   | Hz | min <sup>-1</sup> | W               | A    | dB(A)             | dB(A)             | m³/h           | Pa              | cfm            | in. wg          |
| 1  | 1~    | 230 | 50 | 3540              | 168             | 1.40 | 70                | 78                | 1290           | 0               | 760            | 0.00            |
| 2  | 1~    | 230 | 50 | 3365              | 168             | 1.40 | 65                | 73                | 1060           | 200             | 625            | 0.80            |
| 3  | 1~    | 230 | 50 | 3230              | 168             | 1.40 | 62                | 70                | 725            | 400             | 425            | 1.61            |
| 4  | 1~    | 230 | 50 | 3330              | 168             | 1.40 | 66                | 74                | 410            | 550             | 240            | 2.21            |
| 5  | 1~    | 230 | 50 | 3000              | 99              | 0.82 | 66                | 73                | 1090           | 0               | 645            | 0.00            |
| 6  | 1~    | 230 | 50 | 3000              | 116             | 0.96 | 62                | 70                | 945            | 157             | 555            | 0.63            |
| 7  | 1~    | 230 | 50 | 3000              | 135             | 1.12 | 61                | 68                | 680            | 353             | 400            | 1.42            |
| 8  | 1~    | 230 | 50 | 3000              | 119             | 0.99 | 63                | 71                | 370            | 446             | 220            | 1.79            |
| 9  | 1~    | 230 | 50 | 2400              | 51              | 0.42 | 60                | 68                | 875            | 0               | 515            | 0.00            |
| 10 | 1~    | 230 | 50 | 2400              | 59              | 0.49 | 57                | 64                | 755            | 101             | 445            | 0.41            |
| 11 | 1~    | 230 | 50 | 2400              | 69              | 0.58 | 55                | 63                | 545            | 226             | 320            | 0.91            |
| 12 | 1~    | 230 | 50 | 2400              | 61              | 0.51 | 57                | 65                | 295            | 286             | 175            | 1.15            |
| 13 | 1~    | 230 | 50 | 1800              | 21              | 0.18 | 53                | 61                | 655            | 0               | 385            | 0.00            |
| 14 | 1~    | 230 | 50 | 1800              | 25              | 0.21 | 49                | 57                | 565            | 57              | 335            | 0.23            |
| 15 | 1~    | 230 | 50 | 1800              | 29              | 0.24 | 48                | 55                | 410            | 127             | 240            | 0.51            |
| 16 | 1~    | 230 | 50 | 1800              | 26              | 0.21 | 50                | 58                | 220            | 161             | 130            | 0.65            |

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>ed</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
q<sub>v</sub> = Air flow · p<sub>fs</sub> = Pressure increase

