# EC centrifugal module - RadiPac

backward-curved, single-intake

with support structure

K3G355-AY43-98 ebmpapst Datasheet
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## Nominal data

| | |
|---|---|
| **Type** | **K3G355-AY43-98** |
| **Motor** | **M3G112-GA** |

| | | |
|---|---|---|
| Phase | | 1~ |
| Nominal voltage | VAC | 230 |
| Nominal voltage range | VAC | 200 .. 277 |
| Frequency | Hz | 50/60 |
| Method of obtaining data | | ml |
| Speed (rpm) | $min^{-1}$ | 2450 |
| Power consumption | W | 1400 |
| Current draw | A | 6.0 |
| 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 ErP Directive

| | | Actual | Req. 2015 |
|---|---|---|---|
| 01 Overall efficiency $\eta_{es}$ | % | 63.5 | 53 |
| 02 Measurement category | | A | |
| 03 Efficiency category | | Static | |
| 04 Efficiency grade N | | 72.5 | 62 |
| 05 Variable speed drive | | Yes | |

| | | |
|---|---|---|
| 09 Power consumption $P_{ed}$ | kW | 1.4 |
| 09 Air flow $q_v$ | $m^3/h$ | 3755 |
| 09 Pressure increase $p_{fs}$ | Pa | 794 |
| 10 Speed (rpm) n | $min^{-1}$ | 2380 |
| 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-131069

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## Technical description

| | |
|---|---|
| **Weight** | 23.5 kg |
| **Fan size** | 355 mm |
| **Rotor surface** | Painted black |
| **Electronics housing material** | Die-cast aluminum |
| **Impeller material** | Sheet aluminum |
| **Support plate material** | Sheet steel, galvanized |
| **Support bracket material** | Steel, painted black |
| **Inlet nozzle material** | Sheet steel, galvanized |
| **Support structure material** | Sheet steel, galvanized and painted black |
| **Number of blades** | 7 |
| **Direction of rotation** | Clockwise, viewed toward rotor |
| **Degree of protection** | IP54 |
| **Insulation class** | "B" |
| **Moisture (F) / Environmental (H) protection class** | F4-1 |
| **Max. permitted ambient temp. for motor (transport/storage)** | +80 °C |
| **Min. permitted ambient temp. for motor (transport/storage)** | -40 °C |
| **Installation position** | See product drawing |
| **Condensation drainage holes** | On rotor side |
| **Mode** | S1 |
| **Motor bearing** | Ball bearing |
| **Technical features** | - Output 10 VDC, max. 10 mA<br>- Output 20 VDC, max. 50 mA<br>- Output for slave 0-10 V<br>- Tach output<br>- Input for sensor 0-10 V or 4-20 mA<br>- External 24 V input (parameter setting)<br>- External release input<br>- Alarm relay<br>- Integrated PID controller<br>- Power limiter<br>- Motor current limitation<br>- PFC, active<br>- RS-485 MODBUS-RTU<br>- Soft start<br>- Control input 0-10 VDC / PWM<br>- Control interface with SELV potential safely disconnected from supply<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 circuit feedback** | According to EN 61000-3-2/3 |
| **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 |
| **Electrical hookup** | Via terminal box |
| **Motor protection** | Thermal overload protector (TOP) internally connected |

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| | |
|---|---|
| **Protection class** | I (with customer connection of protective earth) |
| **Conformity with standards** | EN 61800-5-1; CE |
| **Approval** | UL 1004-7 + 60730; EAC |



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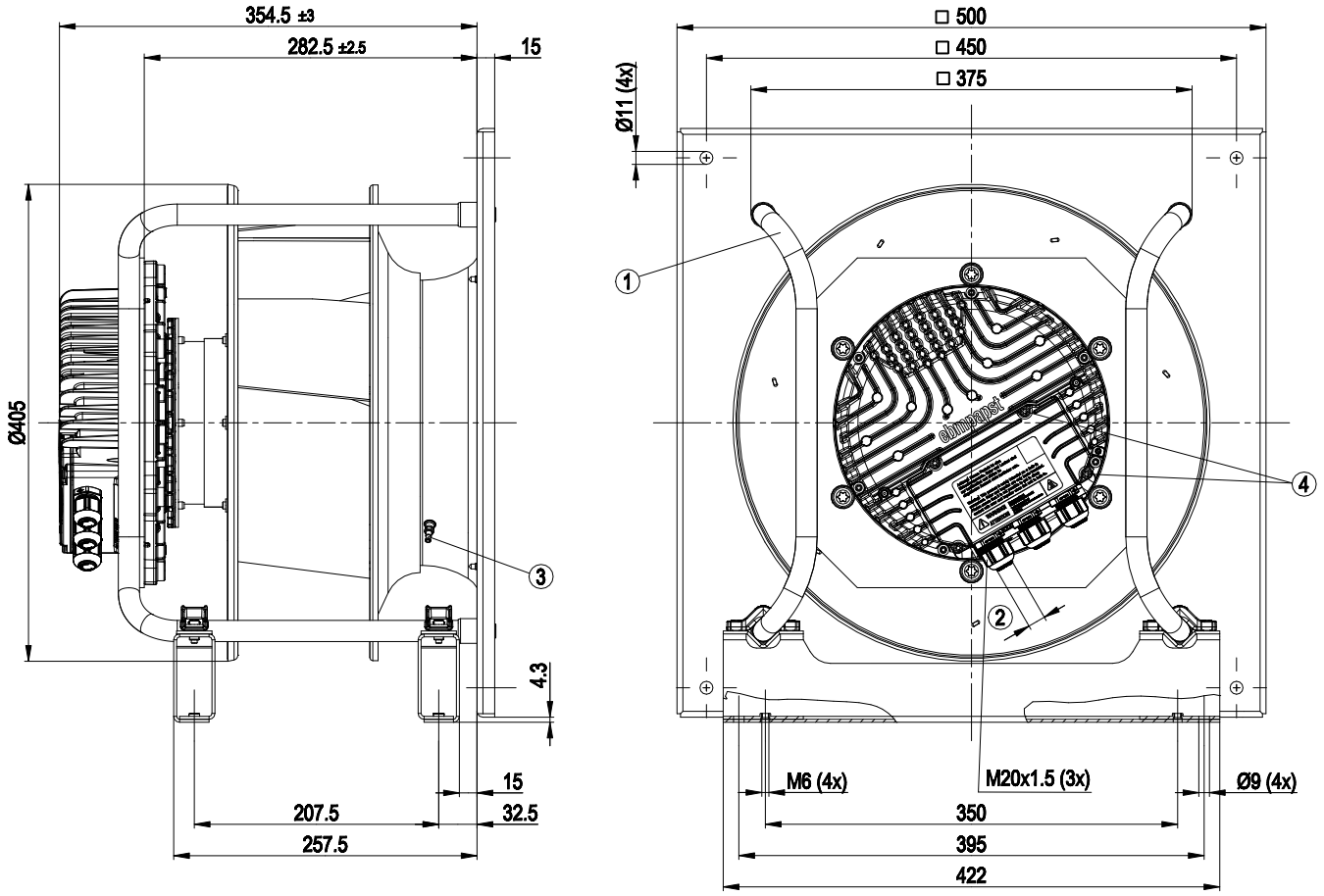
## Product drawing




| | |
|---|---|
| 1 | Installation position: Shaft horizontal (only install support struts vertically as illustrated) or rotor on bottom; rotor on top on request |
| 2 | Cable diameter min. 4 mm, max. 10 mm, tightening torque 4 ± 0.6 Nm |
| 3 | Inlet ring with pressure tap (k-factor: 148) |
| 4 | Tightening torque 3.5 ± 0.5 Nm |



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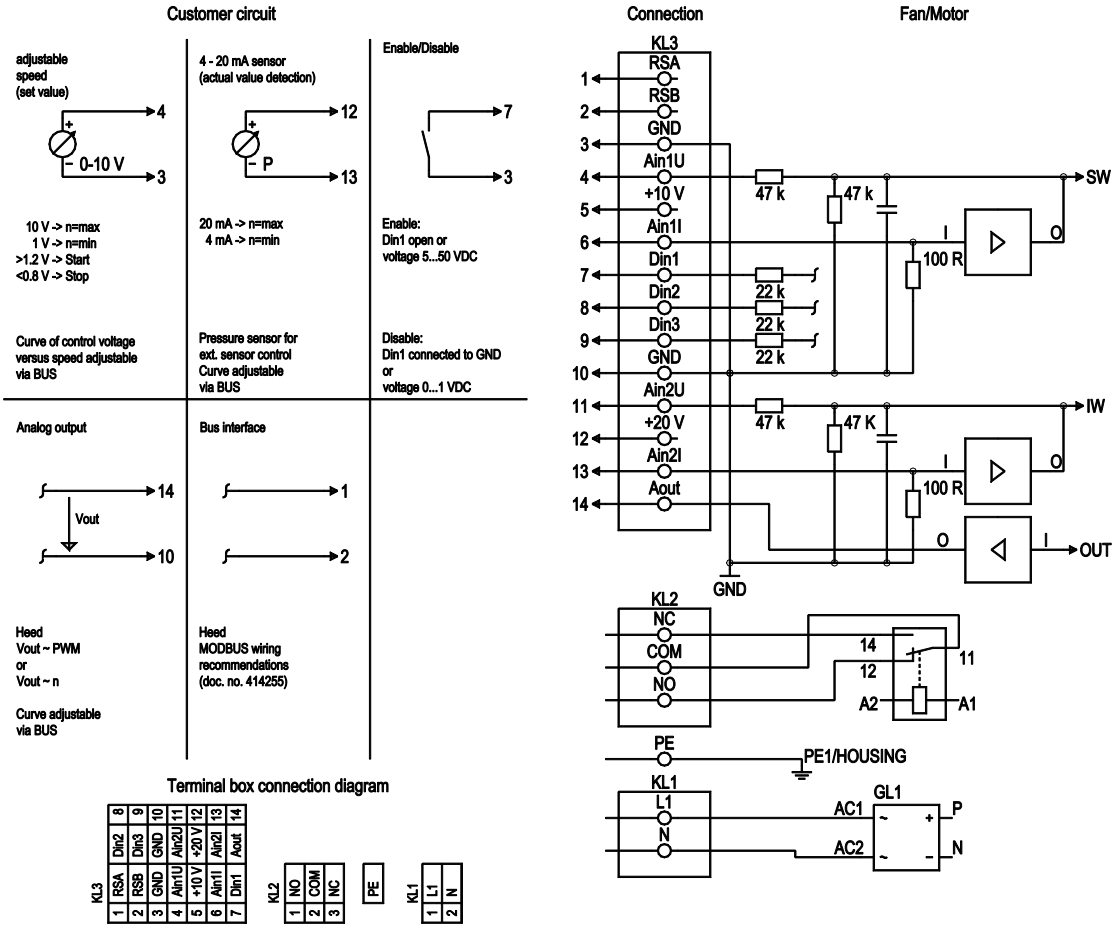
## Connection diagram




| No. | Conn. | Designation | Function/assignment |
|---|---|---|---|
| KL1 | 1 | L1 | Power supply, phase |
| KL1 | 2 | N | Power supply, neutral conductor |
| PE | PE | PE | Ground connection, PE connection |
| KL2 | 1 | NO | Status relay, floating status contact, make for failure |
| KL2 | 2 | COM | Status relay, floating status contact, changeover contact, common connection, contact rating max. 250 VAC / 2 A (AC1) / min. 10 mA |
| KL2 | 3 | NC | Status relay, floating status contact, break for failure |
| KL3 | 1 | RSA | Bus connection RS485, RSA, MODBUS-RTU; SELV |
| KL3 | 2 | RSB | Bus connection RS485, RSB, MODBUS-RTU; SELV |
| KL3 | 3 | GND | Reference ground for control interface, SELV |
| KL3 | 4 | Ain1 U | Analog input 1, set value: 0-10 V, Ri = 100 kΩ, adjustable curve, only usable as alternative to input Ain1 I; SELV |
| KL3 | 5 | +10 V | Fixed voltage output 10 VDC, +10 V ± 3%, max. 10 mA, short-circuit-proof, power supply for external devices (e.g. pot); SELV |
| KL3 | 6 | Ain1 I | Analog input 1, set value: 4-20 mA, Ri = 100 Ω, adjustable curve, only usable as alternative to input Ain1 U; SELV |
| KL3 | 7 | Din1 | Digital input 1: enable electronics,<br>enable: pin open or applied voltage 5-50 VDC<br>disable: bridge to GND or applied voltage < 1 VDC<br>reset function: triggers software reset after a level change to < 1 VDC; SELV |



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| No. | Conn. | Designation | Function/assignment |
|---|---|---|---|
| KL3 | 8 | Din2 | Digital input 2: Switching parameter sets 1/2, according to EEPROM setting, the valid or used parameter set can be selected via bus or via digital input DIN2.<br>Parameter set 1: pin open or applied voltage 5-50 VDC<br>Parameter set 2: bridge to GND or applied voltage < 1 VDC; SELV |
| KL3 | 9 | Din3 | Digital input 3: according to EEPROM setting, the integrated controller's direction of action can be selected via bus or digital input Din3;<br>normal: pin open or applied voltage 5-50 VDC<br>inverse: bridge to GND or applied voltage < 1 VDC; SELV |
| KL3 | 10 | GND | Reference ground for control interface, SELV |
| KL3 | 11 | Ain2 U | Analog input 2, measured value: 0-10 V, Ri = 100 kΩ, adjustable curve, only usable as alternative to input Ain2 I; SELV |
| KL3 | 12 | +20 V | Fixed voltage output 20 VDC, +20 V +25/-10%, max. 50 mA, short-circuit-proof power supply for external devices (e.g. sensors); SELV<br>or: +24 VDC input for parameter setting via MODBUS without line voltage |
| KL3 | 13 | Ain2 I | Analog input 2, measured value: 4-20 mA, Ri = 100 Ω, adjustable curve, only usable as alternative to input Ain2 U; SELV |
| KL3 | 14 | Aout | Analog output 0-10 VDC, max. 5 mA, output of current motor modulation level / motor speed adjustable curve; SELV |

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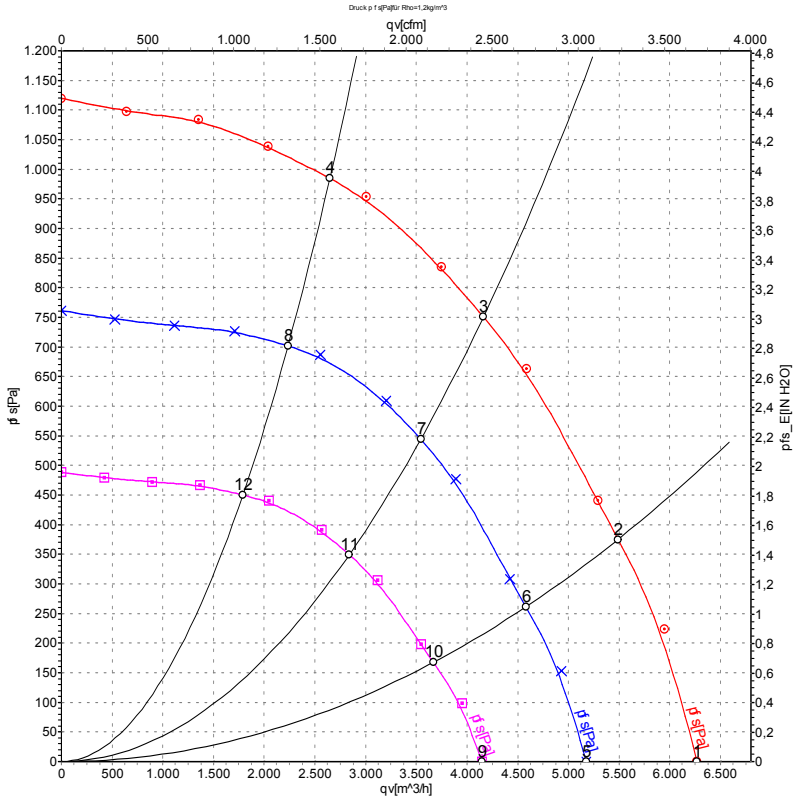
## Curves: Air performance 50 Hz




Measurement: LU-131069-1

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 | inH2O |
| 1 | 230 | 50 | 2450 | 998 | 4.33 | 79 | 86 | 93 | 6265 | 0 | 3690 | 0.00 |
| 2 | 230 | 50 | 2450 | 1232 | 5.35 | 75 | 82 | 89 | 5490 | 375 | 3230 | 1.51 |
| 3 | 230 | 50 | 2450 | 1400 | 6.00 | 72 | 79 | 86 | 4165 | 750 | 2450 | 3.01 |
| 4 | 230 | 50 | 2450 | 1344 | 5.84 | 74 | 82 | 89 | 2645 | 985 | 1560 | 3.95 |
| 5 | 230 | 50 | 2035 | 562 | 2.44 | 75 | 82 | 89 | 5175 | 0 | 3045 | 0.00 |
| 6 | 230 | 50 | 2035 | 715 | 3.11 | 71 | 78 | 85 | 4580 | 261 | 2695 | 1.05 |
| 7 | 230 | 50 | 2035 | 855 | 3.72 | 68 | 76 | 83 | 3545 | 544 | 2085 | 2.18 |
| 8 | 230 | 50 | 2035 | 810 | 3.52 | 71 | 78 | 85 | 2235 | 702 | 1315 | 2.82 |
| 9 | 230 | 50 | 1630 | 289 | 1.25 | 70 | 77 | 84 | 4145 | 0 | 2440 | 0.00 |
| 10 | 230 | 50 | 1630 | 368 | 1.60 | 66 | 73 | 81 | 3670 | 167 | 2160 | 0.67 |
| 11 | 230 | 50 | 1630 | 440 | 1.91 | 64 | 71 | 78 | 2840 | 349 | 1670 | 1.40 |
| 12 | 230 | 50 | 1630 | 416 | 1.81 | 66 | 73 | 80 | 1790 | 450 | 1055 | 1.81 |

U = Power supply · 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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