**K3G310-BB49-32**

# EC centrifugal module

backward-curved, single-intake

with support bracket



**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

ErP2015 EXCEEDS THE NORM

## Nominal data

| | |
|---|---|
| **Type** | **K3G310-BB49-32** |
| **Motor** | **M3G112-GA** |

| | | |
|---|---|---|
| Phase | | 3~ |
| Nominal voltage | VAC | 400 |
| Nominal voltage range | VAC | 380 .. 480 |
| Frequency | Hz | 50/60 |
| Method of obtaining data | | ml |
| Speed (rpm) | $min^{-1}$ | 3140 |
| Power consumption | W | 1650 |
| Current draw | A | 2.5 |
| Min. ambient temperature | °C | -25 |
| Max. ambient temperature | °C | 60 |

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 $\eta_{es}$ | % | 61.1 | 53.8 |
| 02 Measurement category | | A | |
| 03 Efficiency category | | Static | |
| 04 Efficiency grade N | | 69.3 | 62 |
| 05 Variable speed drive | | Yes | |

| | | |
|---|---|---|
| 09 Power consumption $P_{ed}$ | kW | 1.66 |
| 09 Air flow $q_v$ | $m^3/h$ | 3035 |
| 09 Pressure increase $p_{fs}$ | Pa | 1124 |
| 10 Speed (rpm) n | $min^{-1}$ | 3160 |
| 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-129524

# EC centrifugal module

backward-curved, single-intake

with support bracket

## Technical description

| | |
|---|---|
| **Weight** | 22.1 kg |
| **Fan size** | 310 mm |
| **Rotor surface** | Painted black |
| **Electronics housing material** | Die-cast aluminum, painted black |
| **Impeller material** | Sheet aluminum, painted black |
| **Support plate material** | Sheet steel, galvanized and painted black |
| **Support bracket material** | Steel, galvanized and painted black |
| **Inlet nozzle 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** | F4-2 |
| **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>- Input for sensor 0-10 V or 4-20 mA<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>- 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 interference emission** | According to EN 61000-6-3 (household 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 |
| **Protection class** | I (with customer connection of protective earth) |
| **Conformity with standards** | EN 61800-5-1; CE |
| **Approval** | EAC; UL 1004-7 + 60730 |



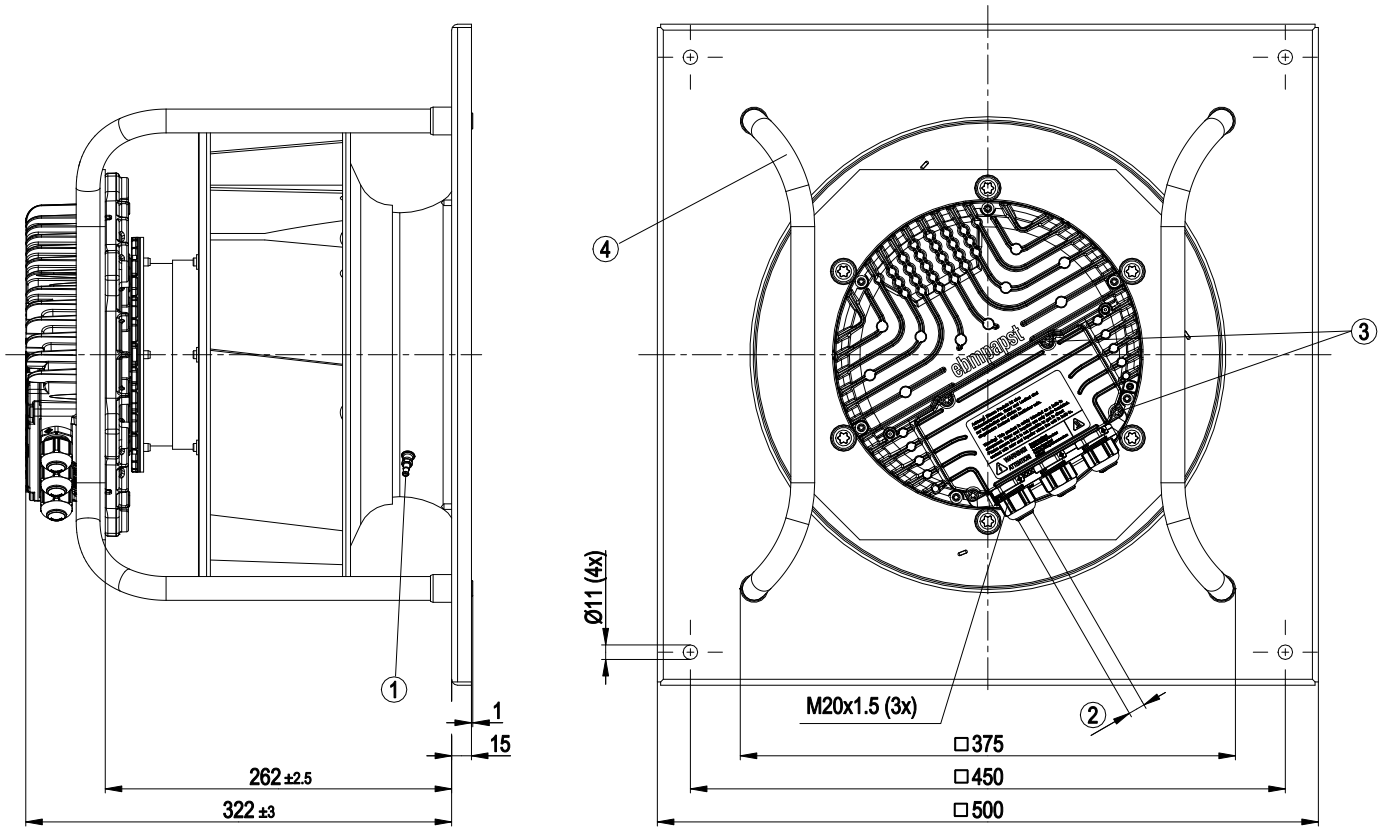
ebm-papst Mulfingen GmbH & Co. KG · Bachmühle 2 · D-74673 Mulfingen · Phone +49 (0) 7938 81-0 · Fax +49 (0) 7938 81-110 · info1@de.ebmpapst.com · www.ebmpapst.com

# EC centrifugal module

backward-curved, single-intake

with support bracket

## Product drawing




| | |
|---|---|
| 1 | Inlet ring with pressure tap (k-factor: 116) |
| 2 | Cable diameter min. 4 mm, max. 10 mm, tightening torque 2.5±0.4 Nm |
| 3 | Tightening torque 3.5±0.5 Nm |
| 4 | Installed position: Shaft horizontal (only install support struts vertically as illustrated) or rotor on bottom; rotor on top on request |



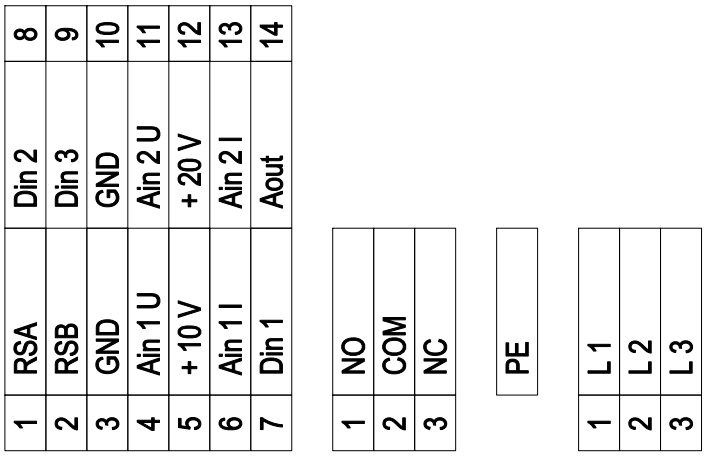
ebm-papst Mulfingen GmbH & Co. KG · Bachmühle 2 · D-74673 Mulfingen · Phone +49 (0) 7938 81-0 · Fax +49 (0) 7938 81-110 · info1@de.ebmpapst.com · www.ebmpapst.com

# EC centrifugal module

backward-curved, single-intake

with support bracket

## Connection diagram




| No. | Conn. | Designation | Function/assignment |
|---|---|---|---|
| KL 1 | 1 | L1 | Supply connection, power supply 3-phase 380-480 VAC, 50/60 Hz |
| KL 1 | 2 | L2 | Supply connection, power supply 3-phase 380-480 VAC, 50/60 Hz |
| KL 1 | 3 | L3 | Supply connection, power supply 3-phase 380-480 VAC, 50/60 Hz |
| PE | | PE | Ground connection, PE connection |
| KL 2 | 1 | NO | Status relay, floating status contact; make for failure |
| KL2 | 2 | COM | Status relay, floating status contact; changeover contact; common connection; contact rating 250 VAC / max. 2 A (AC1) / min. 10 mA |
| KL2 | 3 | NC | Status relay, floating status contact; break for failure |
| KL 3 | 1 | RSA | Bus connection RS485, RSA, MODBUS-RTU; SELV |
| KL 3 | 2 | RSB | Bus connection RS485, RSB, MODBUS-RTU; SELV |
| KL 3 | 3 / 10 | GND | Reference ground for control interface; SELV |
| KL 3 | 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 |
| KL 3 | 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 |
| KL 3 | 6 | Ain1 I | Analog input 1, set value: 4-20 mA, Ri = 100 Ω, adjustable curve, only usable as alternative to input Ain1U; SELV |
| KL 3 | 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 |
| KL 3 | 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 |
| KL 3 | 9 | Din3 | Digital input 3: according to EEPROM setting, the integrated controller's direction of action can be selected as normal/inverse via bus or digital input<br>normal: pin open or applied voltage 5-50 VDC<br>inverse: bridge to GND or applied voltage < 1 VDC; SELV |
| KL 3 | 11 | Ain2 U | Analog input 2, measured value: 0-10 V, Ri = 100 kΩ, adjustable curve, only usable as alternative to input Ain2I; SELV |
| KL 3 | 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 |



ebm-papst Mulfingen GmbH & Co. KG · Bachmühle 2 · D-74673 Mulfingen · Phone +49 (0) 7938 81-0 · Fax +49 (0) 7938 81-110 · info1@de.ebmpapst.com · www.ebmpapst.com

| No. | Conn. | Designation | Function/assignment |
|---|---|---|---|
| KL 3 | 13 | Ain2 I | Analog input 2, measured value: 4-20 mA, Ri = 100 Ω, adjustable curve, only usable as alternative to input Ain2U; SELV |
| KL 3 | 14 | Aout | Analog output 0-10 VDC, max. 5 mA, output of current motor modulation level / motor speed adjustable curve; SELV |



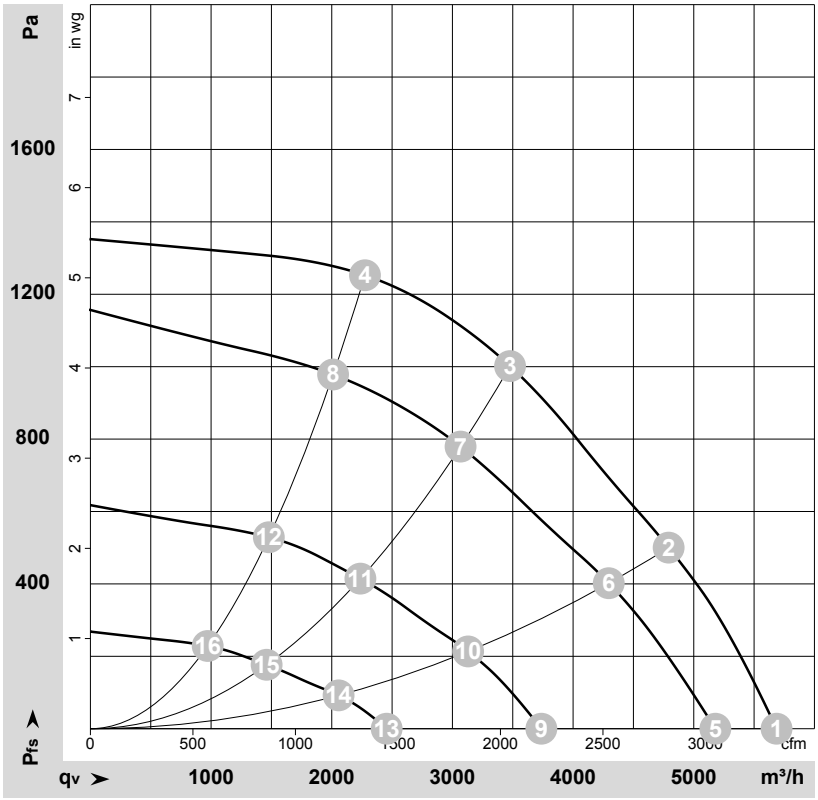
ebm-papst Mulfingen GmbH & Co. KG · Bachmühle 2 · D-74673 Mulfingen · Phone +49 (0) 7938 81-0 · Fax +49 (0) 7938 81-110 · info1@de.ebmpapst.com · www.ebmpapst.com

# EC centrifugal module

backward-curved, single-intake

with support bracket

## Curves: Air performance 50 Hz




ρ = 1.15 kg/m³ ± 2 %

Measurement: LU-159001-1

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 | $LpA_{in}$ | $LwA_{in}$ | $LwA_{out}$ | qv | $p_{fs}$ | qv | $p_{fs}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | V | Hz | $min^{-1}$ | W | A | dB(A) | dB(A) | dB(A) | $m^3/h$ | Pa | CFM | inH2O |
| 1 | 400 | 50 | 3140 | 1192 | 1.85 | 81 | 89 | 94 | 5685 | 0 | 3345 | 0.00 |
| 2 | 400 | 50 | 3140 | 1442 | 2.22 | 78 | 86 | 91 | 4790 | 500 | 2820 | 2.01 |
| 3 | 400 | 50 | 3140 | 1650 | 2.50 | 76 | 83 | 89 | 3480 | 1000 | 2045 | 4.01 |
| 4 | 400 | 50 | 3140 | 1604 | 2.46 | 79 | 87 | 92 | 2275 | 1250 | 1340 | 5.02 |
| 5 | 400 | 50 | 2860 | 896 | 1.40 | 79 | 87 | 92 | 5180 | 0 | 3050 | 0.00 |
| 6 | 400 | 50 | 2825 | 1049 | 1.63 | 76 | 84 | 89 | 4295 | 408 | 2530 | 1.64 |
| 7 | 400 | 50 | 2785 | 1163 | 1.80 | 73 | 81 | 86 | 3065 | 779 | 1805 | 3.13 |
| 8 | 400 | 50 | 2795 | 1128 | 1.75 | 75 | 83 | 89 | 2010 | 978 | 1185 | 3.93 |
| 9 | 400 | 50 | 2090 | 395 | 0.71 | 74 | 81 | 85 | 3735 | 0 | 2200 | 0.00 |
| 10 | 400 | 50 | 2070 | 455 | 0.79 | 68 | 76 | 81 | 3130 | 217 | 1840 | 0.87 |
| 11 | 400 | 50 | 2065 | 503 | 0.85 | 66 | 74 | 80 | 2235 | 415 | 1315 | 1.67 |
| 12 | 400 | 50 | 2060 | 496 | 0.84 | 68 | 75 | 81 | 1480 | 529 | 870 | 2.12 |
| 13 | 400 | 50 | 1380 | 142 | 0.35 | 63 | 70 | 75 | 2455 | 0 | 1445 | 0.00 |
| 14 | 400 | 50 | 1365 | 159 | 0.37 | 59 | 67 | 72 | 2055 | 94 | 1210 | 0.38 |
| 15 | 400 | 50 | 1360 | 172 | 0.39 | 57 | 65 | 70 | 1460 | 177 | 860 | 0.71 |
| 16 | 400 | 50 | 1360 | 170 | 0.39 | 58 | 66 | 71 | 970 | 229 | 570 | 0.92 |

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 · qv = Air flow · $p_{fs}$ = Pressure increase



ebm-papst Mulfingen GmbH & Co. KG · Bachmühle 2 · D-74673 Mulfingen · Phone +49 (0) 7938 81-0 · Fax +49 (0) 7938 81-110 · info1@de.ebmpapst.com · www.ebmpapst.com