

8300100883  
VBH0400CSPHS

# EC centrifugal module - RadiPac

backward-curved, single-intake  
with support bracket

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## Nominal data

|       |            |  |
|-------|------------|--|
| Item  | 8300100883 |  |
| Motor | E09002-40  |  |

|                          |                   |            |
|--------------------------|-------------------|------------|
| Phase                    |                   | 1~         |
| Nominal voltage          | VAC               | 230        |
| Nominal voltage range    | VAC               | 200 .. 277 |
| Frequency                | Hz                | 50/60      |
| Method of obtaining data |                   | ml         |
| Status                   |                   | prelim.    |
| Speed (rpm)              | min <sup>-1</sup> | 1780       |
| Power consumption        | W                 | 500        |
| Current draw             | A                 | 2.2        |
| Min. ambient temperature | °C                | -40        |
| 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 Commission Regulation (EU) 327/2011 (prEN 17166)

|                                   |   | Actual | Req. 2015 |                               |                   |      |
|-----------------------------------|---|--------|-----------|-------------------------------|-------------------|------|
| 01 Overall efficiency $\eta_{es}$ | % | 70.9   | 48.3      | 09 Power consumption $P_{ed}$ | kW                | 0.49 |
| 02 Measurement category           |   | A      |           | 09 Air flow $q_v$             | m³/h              | 3595 |
| 03 Efficiency category            |   | Static |           | 09 Pressure increase $p_{fs}$ | Pa                | 319  |
| 04 Efficiency grade N             |   | 84.6   | 62        | 10 Speed (rpm) n              | min <sup>-1</sup> | 1780 |
| 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-224465

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).

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## Technical description

|                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Size                                                                       | 400 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Motor size                                                                 | 90                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Rotor surface                                                              | Painted black                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Electronics housing material                                               | Die-cast aluminum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Impeller material                                                          | PP plastic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Support plate material                                                     | Sheet steel, galvanized                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Support bracket material                                                   | Steel, painted black                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Inlet nozzle material                                                      | ABS plastic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Number of blades                                                           | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 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                                                      | See legend on product drawing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Condensation drainage holes                                                | On rotor side                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Mode                                                                       | S1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Motor bearing                                                              | Ball bearing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Technical features                                                         | <ul style="list-style-type: none"> <li>- Output 10 VDC, max. 10 mA</li> <li>- Operation and alarm display with LED</li> <li>- Locked-rotor detection</li> <li>- Speed control</li> <li>- External 15-30 VDC input (parameterization)</li> <li>- Alarm relay</li> <li>- Configurable inputs/outputs (I/O)</li> <li>- Power limiter</li> <li>- MODBUS</li> <li>- Motor current limitation</li> <li>- PFC, active</li> <li>- RS-485 MODBUS-RTU</li> <li>- Soft start</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Temperature derating</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage / phase failure detection</li> </ul> |
| Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system) | <= 3.5 mA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Motor protection                                                           | Electronic motor protection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| With cable                                                                 | Lateral                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

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|                             |                                                                                                                                                                                            |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Protection class assignment | I; If a protective earth is connected.<br>The built-in component has several local protection class assignments.<br>The final protection class is determined by the intended installation. |
| Conformity with standards   | EN 60335-1; EN 61800-5-1; UKCA; CE                                                                                                                                                         |
| Approval                    | UL 1004-7 + 60730-1; CSA C22.2 No. 77 + CAN/CSA-E60730-1                                                                                                                                   |

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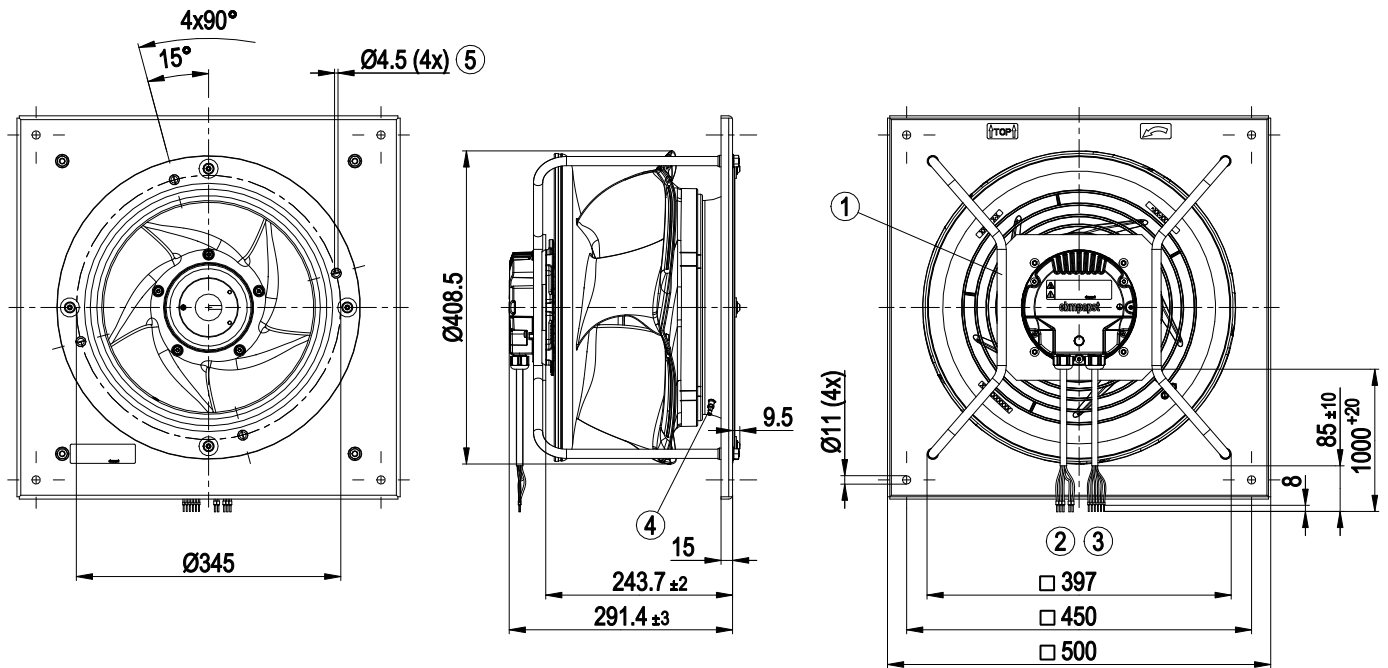
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## Product drawing



|   |                                                                                                                                          |
|---|------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request |
| 2 | Supply line (PWR) PVC AWG18                                                                                                              |
|   | 5x wire-end ferrule                                                                                                                      |
| 3 | Control wire (CTRL) PVC AWG22                                                                                                            |
|   | 6x wire-end ferrule                                                                                                                      |
| 4 | Inlet ring with pressure tap (k-factor: 190)                                                                                             |
| 5 | Fastening holes for FlowGrid 00400-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required   |

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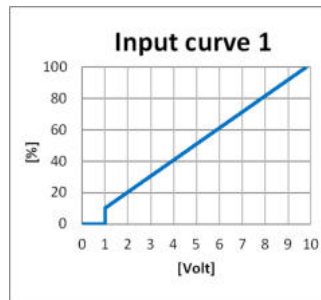
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## Connection diagram



| No. | Conn. | Designation | Color        | Function/assignment                                                                                                                                                                                                                                            |
|-----|-------|-------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     | PWR   | PE          | green/yellow | Protective earth                                                                                                                                                                                                                                               |
|     | PWR   | L           | black        | Power supply, phase, see nameplate for voltage range                                                                                                                                                                                                           |
|     | PWR   | N           | blue         | Power supply, neutral conductor, see nameplate for voltage range                                                                                                                                                                                               |
|     | PWR   | COM         | orange       | Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side                                                                                  |
|     | PWR   | NC          | orange       | Status relay, floating status contact, break for failure                                                                                                                                                                                                       |
|     | CTRL  | GND         | blue         | Reference ground for control interface, SELV                                                                                                                                                                                                                   |
|     | CTRL  | Vout        | red          | Voltage output 10 VDC +/-3%, I <sub>max</sub> =10 mA<br>Short-circuit-proof, power supply for external devices, SELV<br>alternative: 15-30 VDC input for parameterization via MODBUS without line voltage                                                      |
|     | CTRL  | IO1         | yellow       | Factory setting:<br>Analog input 0-10 V / PWM, R <sub>i</sub> =100 kΩ, function: set value<br>Characteristic curve parameterizable (see input characteristic curve "Input curve 1"), SELV<br>Function parameterizable (see table Optional interface functions) |
|     | CTRL  | IO2         | white        | Factory setting:<br>Open collector output, U <sub>max</sub> =50 VDC, I <sub>max</sub> =20 mA, function:Tacho output<br>1 pulse/revolution, SELV<br>Function parameterizable (see table Optional interface functions)                                           |
|     | CTRL  | RSA         | gray         | RS-485 interface for MODBUS RSA, SELV<br>dielectric strength to MODBUS RSB +/-14 V,<br>dielectric strength to GND +/-7 V                                                                                                                                       |
|     | CTRL  | RSB         | brown        | RS-485 interface for MODBUS RSB, SELV<br>dielectric strength to MODBUS RSA +/-14 V,<br>dielectric strength to GND +/-7 V                                                                                                                                       |
|     |       | LED         |              | green: status = good, ready for operation<br>orange: status = warning<br>red: status = failure                                                                                                                                                                 |



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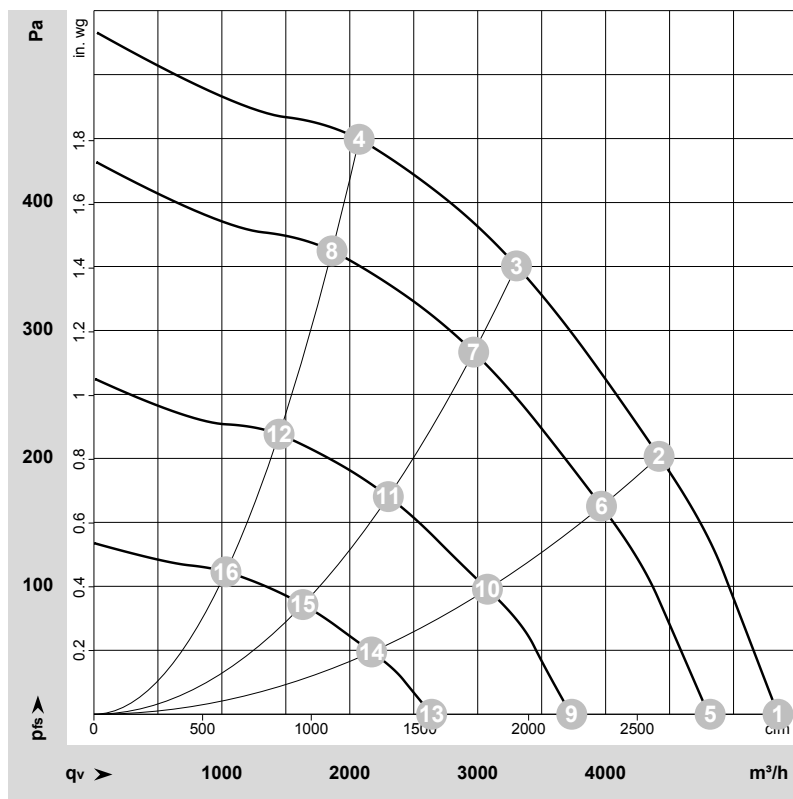
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## Curves: Air performance 50 Hz



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

Measurement: LU-224465-1

Date: 2022-12-08

Nozzle: 8217101929

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>e</sub> | I    | LpA <sub>in</sub> | LwA <sub>in</sub> | LwA <sub>out</sub> | LwA | 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)             | dB(A)              | dB  | m³/h           | Pa              | cfm            | in. wg          |
| 1  | 1~    | 230 | 50 | 1780              | 346            | 1.54 | 70                | 78                | 82                 | 84  | 5350           | 0               | 3150           | 0.00            |
| 2  | 1~    | 230 | 50 | 1780              | 449            | 1.98 | 63                | 71                | 76                 | 77  | 4420           | 200             | 2600           | 0.80            |
| 3  | 1~    | 230 | 50 | 1780              | 500            | 2.20 | 60                | 67                | 73                 | 74  | 3305           | 350             | 1945           | 1.41            |
| 4  | 1~    | 230 | 50 | 1780              | 474            | 2.09 | 63                | 70                | 75                 | 76  | 2075           | 450             | 1220           | 1.81            |
| 5  | 1~    | 230 | 50 | 1600              | 254            | 1.14 | 68                | 76                | 79                 | 81  | 4815           | 0               | 2835           | 0.00            |
| 6  | 1~    | 230 | 50 | 1600              | 329            | 1.46 | 60                | 68                | 73                 | 74  | 3970           | 163             | 2335           | 0.65            |
| 7  | 1~    | 230 | 50 | 1600              | 364            | 1.62 | 58                | 65                | 70                 | 71  | 2970           | 283             | 1745           | 1.14            |
| 8  | 1~    | 230 | 50 | 1600              | 346            | 1.53 | 60                | 67                | 72                 | 73  | 1860           | 362             | 1095           | 1.45            |
| 9  | 1~    | 230 | 50 | 1245              | 127            | 0.60 | 61                | 70                | 74                 | 76  | 3735           | 0               | 2200           | 0.00            |
| 10 | 1~    | 230 | 50 | 1245              | 160            | 0.74 | 54                | 63                | 67                 | 69  | 3075           | 98              | 1810           | 0.39            |
| 11 | 1~    | 230 | 50 | 1245              | 176            | 0.80 | 52                | 59                | 64                 | 65  | 2300           | 170             | 1355           | 0.68            |
| 12 | 1~    | 230 | 50 | 1245              | 169            | 0.77 | 53                | 60                | 65                 | 66  | 1445           | 219             | 850            | 0.88            |
| 13 | 1~    | 230 | 50 | 890               | 55             | 0.33 | 55                | 62                | 67                 | 68  | 2640           | 0               | 1555           | 0.00            |
| 14 | 1~    | 230 | 50 | 890               | 66             | 0.37 | 48                | 55                | 60                 | 61  | 2170           | 49              | 1280           | 0.20            |
| 15 | 1~    | 230 | 50 | 890               | 72             | 0.39 | 45                | 52                | 57                 | 58  | 1635           | 86              | 960            | 0.35            |
| 16 | 1~    | 230 | 50 | 890               | 70             | 0.38 | 44                | 51                | 56                 | 57  | 1030           | 111             | 605            | 0.45            |

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