

R4D450-AK03-09

# AC centrifugal fan

backward-curved, single-intake



R4D450-AK03-09 ebmpapst Datasheet

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## Nominal data

|                             |                       |      |      |      |      |
|-----------------------------|-----------------------|------|------|------|------|
| <b>Type</b>                 | <b>R4D450-AK03-09</b> |      |      |      |      |
| <b>Motor</b>                | <b>M4D110-GF</b>      |      |      |      |      |
| Phase                       |                       | 3~   | 3~   | 3~   | 3~   |
| Nominal voltage             | VAC                   | 400  | 400  | 480  | 480  |
| Wiring                      |                       | Δ    | Y    | Δ    | Y    |
| Frequency                   | Hz                    | 50   | 50   | 60   | 60   |
| Method of obtaining data    |                       | ml   | ml   | ml   | ml   |
| Valid for approval/standard |                       | CE   | CE   | CE   | CE   |
| Speed (rpm)                 | min <sup>-1</sup>     | 1350 | 1090 | 1580 | 1205 |
| Power consumption           | W                     | 730  | 510  | 1180 | 770  |
| Current draw                | A                     | 1.48 | 0.88 | 1.8  | 1.17 |
| Min. back pressure          | Pa                    | 0    | 0    | 0    | 0    |
| Min. back pressure          | inH2O                 | 0    | 0    | 0    | 0    |
| Min. ambient temperature    | °C                    | -40  | -40  | -40  | -40  |
| Max. ambient temperature    | °C                    | 80   | 80   | 55   | 55   |
| Starting current            | A                     | 6.5  |      | 7.5  |      |

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 $\eta_{es}$ | %      | 51.1      | 50 | 09 Power consumption $P_e$    | kW                | 0.72 |
| 02 Measurement category           |        | A         |    | 09 Air flow $q_v$             | m <sup>3</sup> /h | 3810 |
| 03 Efficiency category            |        | Static    |    | 09 Pressure increase $p_{fs}$ | Pa                | 350  |
| 04 Efficiency grade N             |        | 63.1      | 62 | 10 Speed (rpm) n              | min <sup>-1</sup> | 1350 |
| 05 Variable speed drive           |        | No        |    | 11 Specific ratio*            |                   | 1.00 |

Data obtained at optimum efficiency level.  
 The ErP data is determined using a motor-impeller combination in a standardized measurement setup.

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

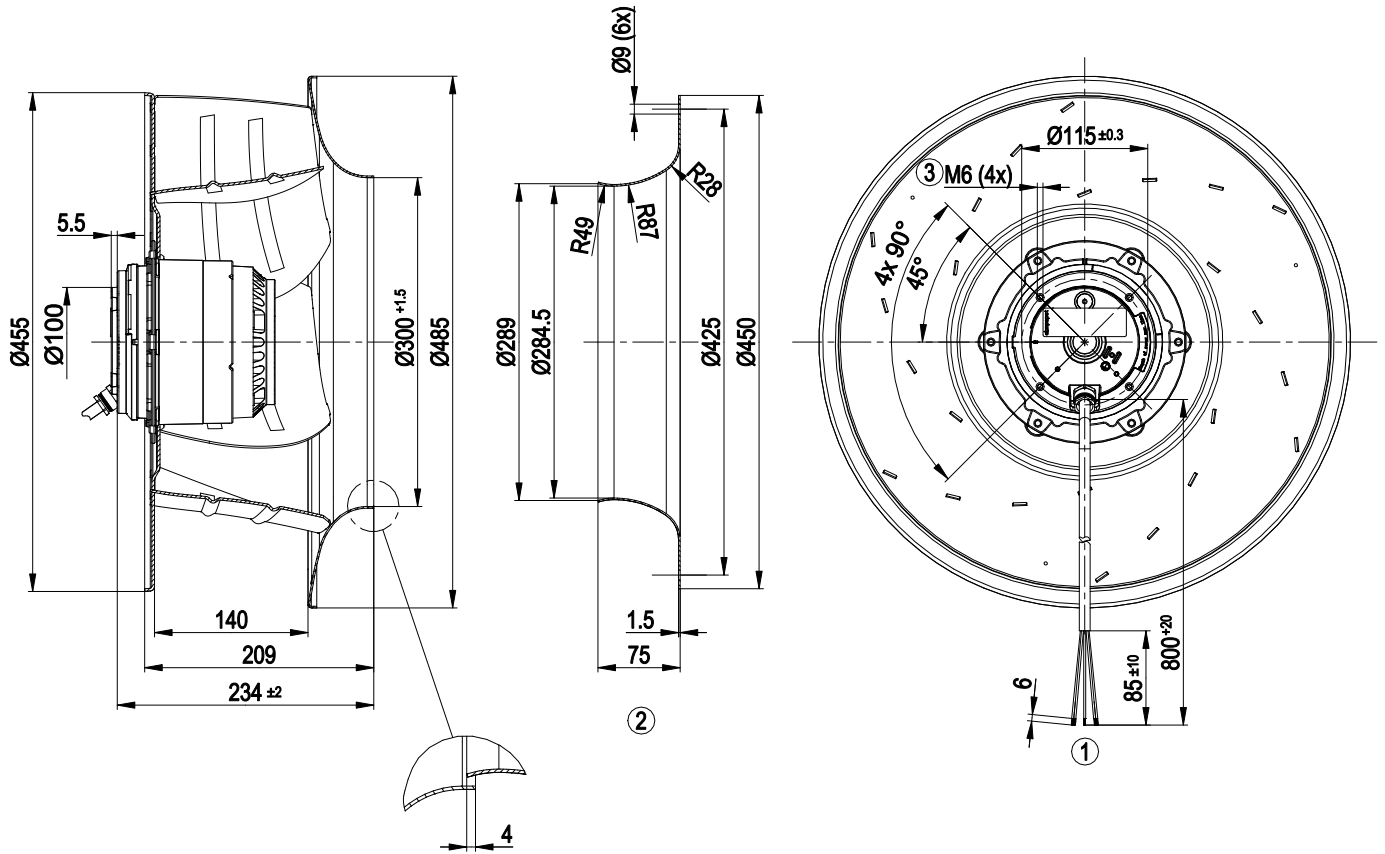
LU-72617



### Technical description

|  |  |
|--|--|
| Weight   | 12.1 kg  |
| Fan size   | 450 mm   |
| Rotor surface  | Painted black  |
| Impeller material  | Sheet aluminum   |
| Number of blades   | 6  |
| Direction of rotation  | Clockwise, viewed toward rotor                               |
| Degree of protection   | IP54   |
| Insulation class   | "F"  |
| Moisture (F) / Environmental (H) protection class                          | F3-1   |
| Max. permitted ambient temp. for motor (transport/storage)                 | + 80 °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  | On rotor side  |
| Mode   | S1   |
| Motor bearing  | Ball bearing   |
| Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system) | <= 3.5 mA  |
| Motor protection   | Thermal overload protector (TOP) with basic insulation       |
| With cable   | Variable   |
| Protection class   | I (with customer connection of protective earth)             |
| Conformity with standards  | EN 61800-5-1; CE   |
| Approval   | VDE  |

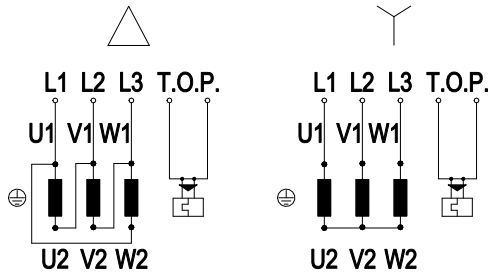
Product drawing



|   |   |
|---|---|
| 1 | Cable XLPE/XLPO 9G 0.75 mm <sup>2</sup> , 9x crimped splices  |
| 2 | Accessory part: Inlet ring 63045-2-4013 not included in scope of delivery, other inlet rings on request |
| 3 | Max. clearance for screw 12 mm  |



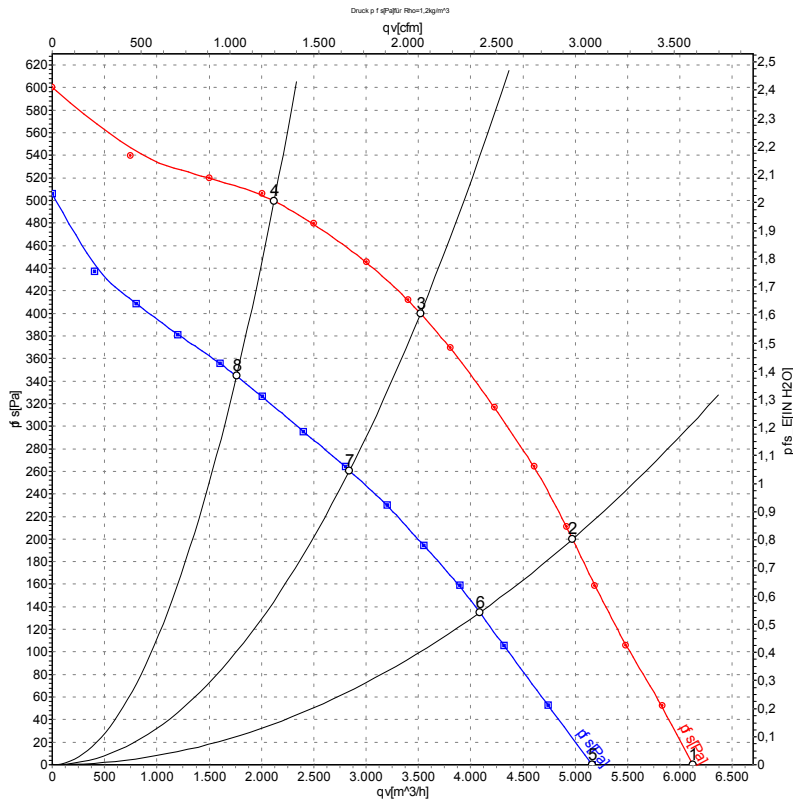
## Connection diagram



Note: Change of rotation direction by reversing two phases

|    |                  |    |                 |     |       |
|----|------------------|----|-----------------|-----|-------|
| Δ  | Delta connection | Y  | Star connection | L1  | black |
| L2 | blue             | L3 | brown           | U1  | black |
| V1 | blue             | W1 | brown           | U2  | green |
| V2 | white            | W2 | yellow          | TOP | gray  |

## Curves: Air performance 50 Hz Δ



Measurement: LU-72617-1  
Measurement: LU-72618-1

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.

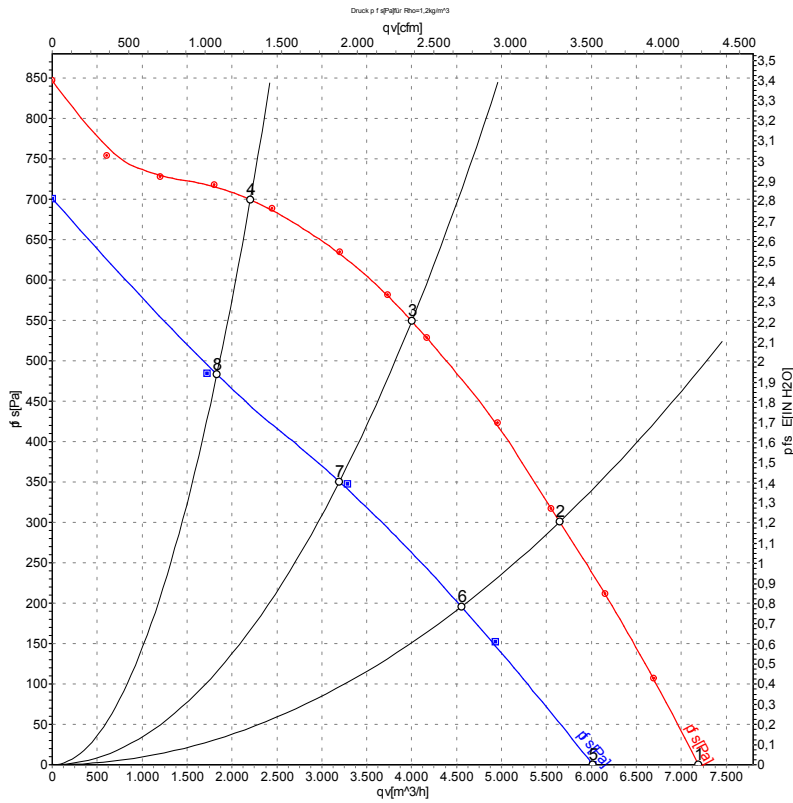
## Measured values

|   | Wired | U   | f  | n                 | P <sub>e</sub> | I    | qv                | p <sub>fs</sub> | qv   | p <sub>fs</sub>    |
|---|-------|-----|----|-------------------|----------------|------|-------------------|-----------------|------|--------------------|
|   |       | V   | Hz | min <sup>-1</sup> | W              | A    | m <sup>3</sup> /h | Pa              | CFM  | inH <sub>2</sub> O |
| 1 | Δ     | 400 | 50 | 1390              | 564            | 1.27 | 6120              | 0               | 3600 | 0.00               |
| 2 | Δ     | 400 | 50 | 1365              | 678            | 1.40 | 4975              | 200             | 2930 | 0.80               |
| 3 | Δ     | 400 | 50 | 1350              | 730            | 1.48 | 3520              | 400             | 2070 | 1.61               |
| 4 | Δ     | 400 | 50 | 1370              | 648            | 1.36 | 2120              | 500             | 1250 | 2.01               |
| 5 | Y     | 400 | 50 | 1185              | 426            | 0.72 | 5160              | 0               | 3040 | 0.00               |
| 6 | Y     | 400 | 50 | 1120              | 483            | 0.82 | 4085              | 135             | 2405 | 0.54               |
| 7 | Y     | 400 | 50 | 1090              | 510            | 0.88 | 2840              | 261             | 1670 | 1.05               |
| 8 | Y     | 400 | 50 | 1135              | 469            | 0.79 | 1760              | 344             | 1035 | 1.38               |

Wired = Wiring · U = Power supply · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · qv = Air flow · p<sub>fs</sub> = Pressure increase



## Curves: Air performance 60 Hz Δ



Measurement: LU-72619-1  
Measurement: LU-121125-1

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>e</sub> | I    | qv                | p <sub>fs</sub> | qv   | p <sub>fs</sub> |
|---|-------|-----|----|-------------------|----------------|------|-------------------|-----------------|------|-----------------|
|   |       | V   | Hz | min <sup>-1</sup> | W              | A    | m <sup>3</sup> /h | Pa              | CFM  | inH2O           |
| 1 | Δ     | 480 | 60 | 1635              | 918            | 1.49 | 7195              | 0               | 4235 | 0.00            |
| 2 | Δ     | 480 | 60 | 1595              | 1119           | 1.71 | 5645              | 300             | 3325 | 1.20            |
| 3 | Δ     | 480 | 60 | 1580              | 1180           | 1.80 | 4000              | 550             | 2355 | 2.21            |
| 4 | Δ     | 480 | 60 | 1615              | 1018           | 1.59 | 2205              | 700             | 1295 | 2.81            |
| 5 | Y     | 480 | 60 | 1370              | 660            | 0.92 | 6015              | 0               | 3540 | 0.00            |
| 6 | Y     | 480 | 60 | 1290              | 735            | 1.05 | 4555              | 197             | 2680 | 0.79            |
| 7 | Y     | 480 | 60 | 1205              | 770            | 1.17 | 3195              | 355             | 1880 | 1.43            |
| 8 | Y     | 480 | 60 | 1320              | 702            | 1.00 | 1830              | 475             | 1080 | 1.91            |

Wired = Wiring · U = Power supply · f = Frequency · n = Speed (rpm) · P<sub>e</sub> = Power consumption · I = Current draw · qv = Air flow · p<sub>fs</sub> = Pressure increase

