

Fan housing with guard grille

ebm-papst Mulfingen GmbH & Co. KG

Bachmühle 2 · D-74673 Mulfingen

Phone +49 7938 81-0

Fax +49 7938 81-110

info1@de.fansco.com

www.fansco.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

Nominal data

|                             |                   |      |      |      |      |
|-----------------------------|-------------------|------|------|------|------|
| Type                        | W4D500-ZL09-01    |      |      |      |      |
| Motor                       | M4D110-GF         |      |      |      |      |
| 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> | 1340 | 1070 | 1560 | 1190 |
| Power consumption           | W                 | 695  | 475  | 1090 | 700  |
| Current draw                | A                 | 1.4  | 0.8  | 1.65 | 1.0  |
| Max. back pressure          | Pa                | 220  | 140  | 240  | 140  |
| Max. back pressure          | in. wg            | 0.88 | 0.56 | 0.96 | 0.56 |
| Min. ambient temperature    | °C                | -40  | -40  | -40  | -40  |
| Max. ambient temperature    | °C                | 60   | 60   | 40   | 40   |
| Starting current            | A                 | 5.5  | 1.7  | 6.0  | 1.9  |

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 $\eta_{es}$ | %      | 44.6   | 32.6      | 09 Power consumption $P_e$    | kW                | 0.67 |
| 02 Measurement category           | A      |        |           | 09 Air flow $q_v$             | m <sup>3</sup> /h | 5810 |
| 03 Efficiency category            | Static |        |           | 09 Pressure increase $p_{fs}$ | Pa                | 188  |
| 04 Efficiency grade N             | 52     |        | 40        | 10 Speed (rpm) n              | min <sup>-1</sup> | 1345 |
| 05 Variable speed drive           | No     |        |           | 11 Specific ratio*            |                   | 1.00 |

Data obtained at optimum efficiency level.

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).

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

LU-210496

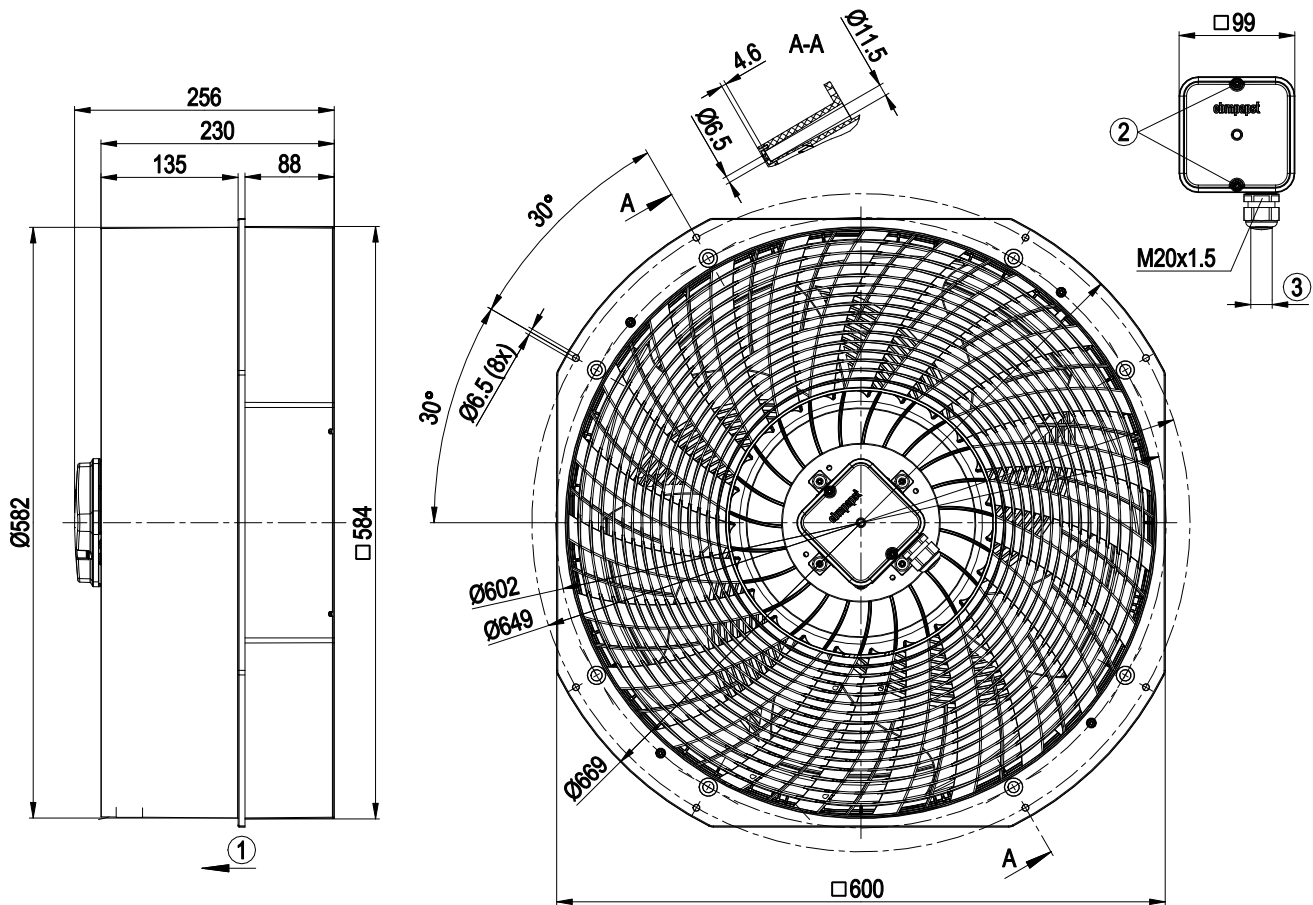


## Technical description

|                                                                            |                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Weight                                                                     | 14.58 kg                                                                                                                                                                                                                                                                                       |
| Size                                                                       | 500 mm                                                                                                                                                                                                                                                                                         |
| Motor size                                                                 | 110                                                                                                                                                                                                                                                                                            |
| Rotor surface                                                              | Painted black                                                                                                                                                                                                                                                                                  |
| Terminal box material                                                      | PP plastic                                                                                                                                                                                                                                                                                     |
| Impeller material                                                          | PP plastic, galvanized sheet-metal plate                                                                                                                                                                                                                                                       |
| Fan housing material                                                       | PP plastic                                                                                                                                                                                                                                                                                     |
| Number of blades                                                           | 5                                                                                                                                                                                                                                                                                              |
| Airflow direction                                                          | V                                                                                                                                                                                                                                                                                              |
| Direction of rotation                                                      | Clockwise, viewed toward rotor                                                                                                                                                                                                                                                                 |
| Degree of protection                                                       | IP54                                                                                                                                                                                                                                                                                           |
| Insulation class                                                           | "F"                                                                                                                                                                                                                                                                                            |
| Moisture (F) / Environmental (H) protection class                          | H2                                                                                                                                                                                                                                                                                             |
| 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                                                      | 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                                                                                                                                                                                                                                                                                      |
| Electrical hookup                                                          | Terminal box                                                                                                                                                                                                                                                                                   |
| Motor protection                                                           | Thermal switch auto reset, lead out, with basic insulation                                                                                                                                                                                                                                     |
| With cable                                                                 | Axial                                                                                                                                                                                                                                                                                          |
| Protection class assignment                                                | I; If a protective earth is connected by the customer<br>This component for installation may have several local protection classes. This information relates to this component's basic design.<br>The final protection class is based on the component's intended installation and connection. |
| Motor capacitor according to EN 60252-1 in safety protection class         | S0                                                                                                                                                                                                                                                                                             |
| Conformity with standards                                                  | EN 60034-1; CE                                                                                                                                                                                                                                                                                 |
| Approval                                                                   | CSA C22.2 No. 100; EAC; UL 1004-1                                                                                                                                                                                                                                                              |

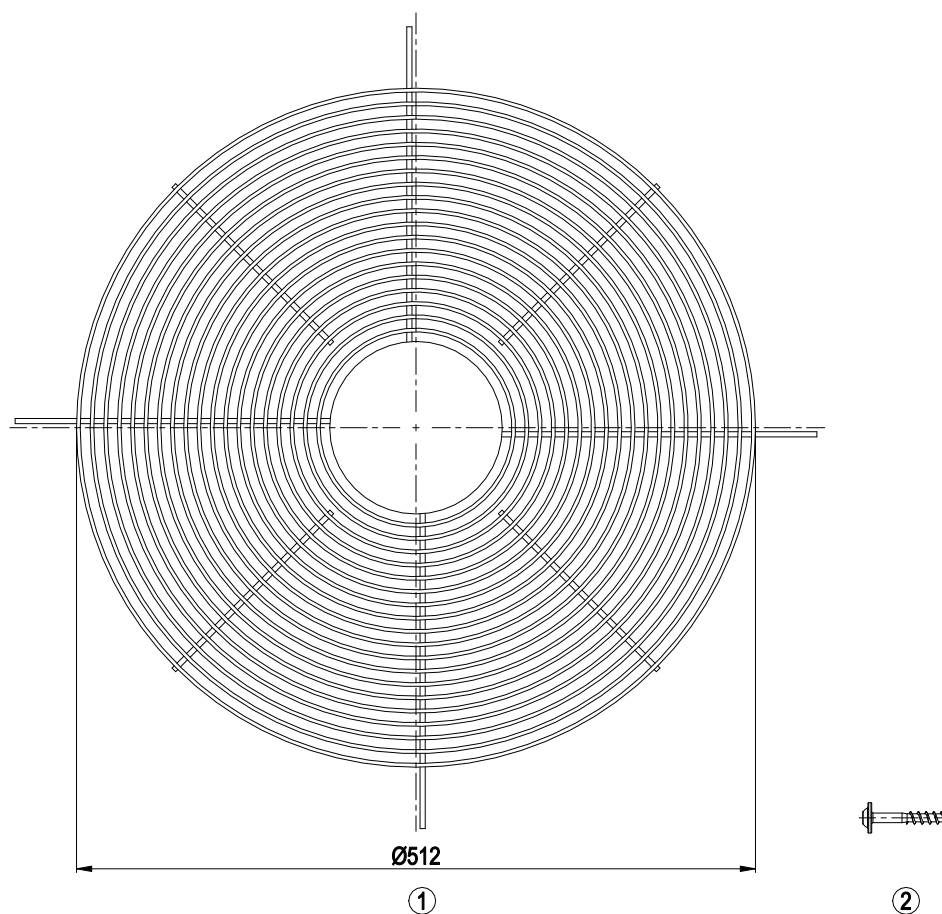


## Product drawing



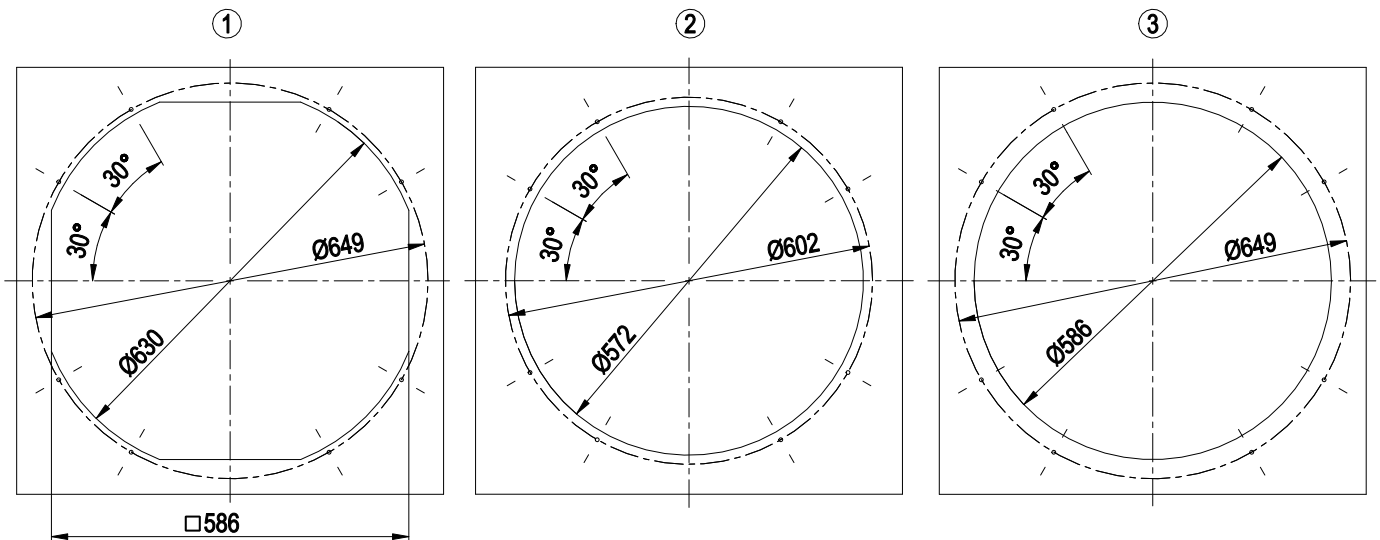
|   |                                                                                                                                                          |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Airflow direction "V"                                                                                                                                    |
| 2 | Tightening torque $1.5 \pm 0.2$ Nm                                                                                                                       |
| 3 | Cable diameter min. 6 mm, max. 12 mm, tightening torque $2 \pm 0.3$ Nm                                                                                   |
|   | Accessory part: Guard grill 50070-2-4039 with oval head screw 60080-7-6201 (4x), can be fitted on the intake side.<br>Not included in scope of delivery. |
|   | The installation of accessories may change the air performance and noise values.                                                                         |

## Accessory part



|   |                                   |
|---|-----------------------------------|
| 1 | Guard grill 50070-2-4039          |
| 2 | Oval head screw 60080-7-6201 (4x) |

## Mounting dimensions



All 8 holes on the relevant pitch circle must always be used for all types of fastening.

1 intake-side mounting on flange

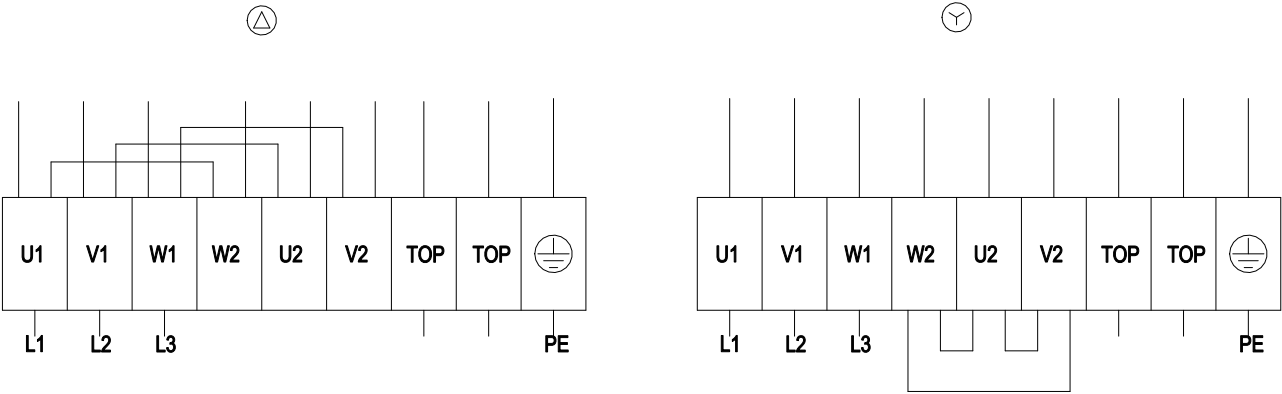
2 intake-side mounting on suction nozzle

The Ø6.5 mm holes must be pierced from the underside with a mandrel or similar tool.

We recommend using M6 cheese-head screws with hexagon socket (DIN 912/DIN EN ISO 4762) for fastening.

3 outlet-side mounting on flange

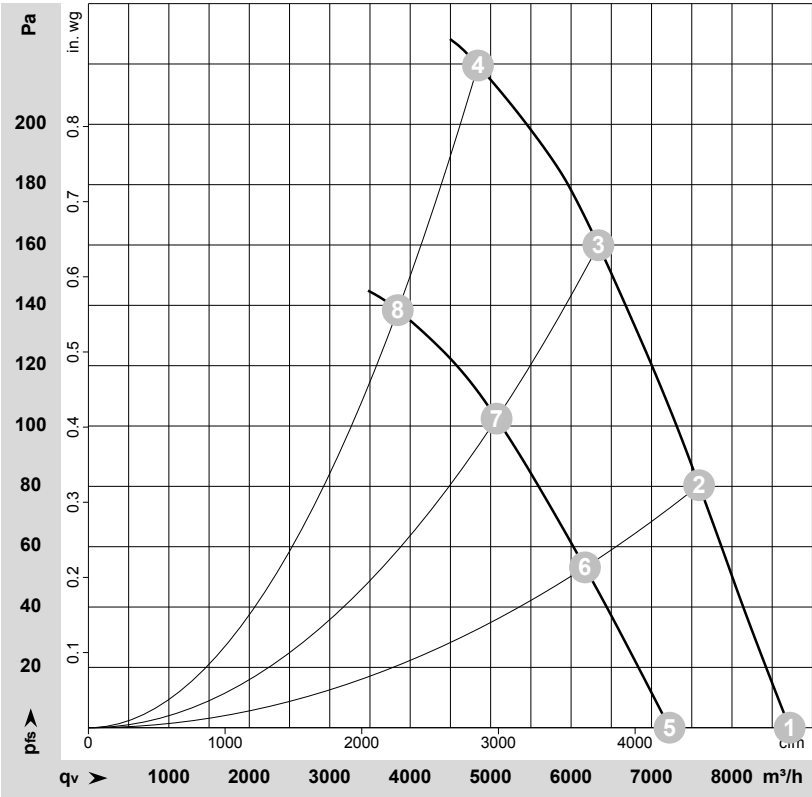
Connection diagram



|    |                  |    |                 |     |              |
|----|------------------|----|-----------------|-----|--------------|
| Δ  | Delta connection | Y  | Star connection | L1  | = U1 = black |
| L2 | = V1 = blue      | L3 | = W1 = brown    | W2  | yellow       |
| U2 | green            | V2 | white           | TOP | 2x gray      |
| PE | green/yellow     |    |                 |     |              |



Curves: Air performance 50 Hz



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

Measurement: LU-210496-1  
Measurement: LU-213509-1

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.

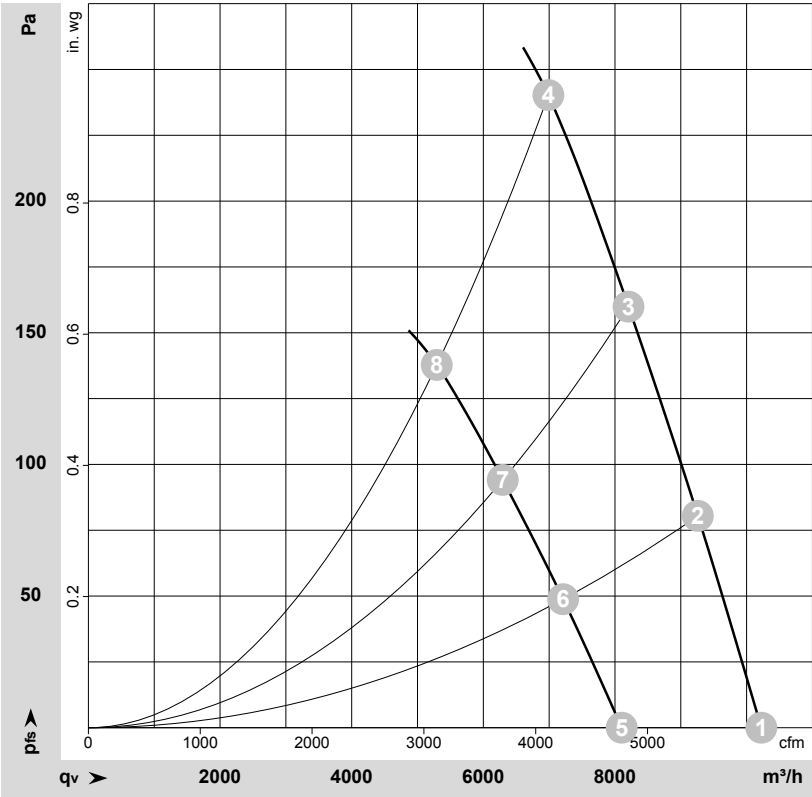
Measured values

|   | Wired | U   | f  | n                 | P <sub>e</sub> | I    | LpA <sub>in</sub> | LwA <sub>in</sub> | LwA <sub>out</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)             | dB(A)              | m <sup>3</sup> /h | Pa              | cfm            | in. wg          |
| 1 | Δ     | 400 | 50 | 1370              | 574            | 1.20 | 72                | 78                | 79                 | 8715              | 0               | 5130           | 0.00            |
| 2 | Δ     | 400 | 50 | 1355              | 629            | 1.26 | 70                | 76                | 78                 | 7590              | 80              | 4470           | 0.32            |
| 3 | Δ     | 400 | 50 | 1350              | 668            | 1.32 | 69                | 75                | 77                 | 6340              | 160             | 3730           | 0.64            |
| 4 | Δ     | 400 | 50 | 1340              | 695            | 1.40 | 70                | 77                | 78                 | 4845              | 220             | 2850           | 0.88            |
| 5 | Y     | 400 | 50 | 1140              | 415            | 0.68 | 68                | 74                | 75                 | 7225              | 0               | 4250           | 0.00            |
| 6 | Y     | 400 | 50 | 1105              | 443            | 0.72 | 65                | 71                | 73                 | 6175              | 53              | 3635           | 0.21            |
| 7 | Y     | 400 | 50 | 1085              | 460            | 0.75 | 63                | 70                | 71                 | 5075              | 102             | 2985           | 0.41            |
| 8 | Y     | 400 | 50 | 1070              | 475            | 0.80 | 64                | 70                | 72                 | 3845              | 140             | 2265           | 0.56            |

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



Curves: Air performance 60 Hz



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

Measurement: LU-213506-1  
Measurement: LU-213513-1

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    | LpA <sub>in</sub> | LwA <sub>in</sub> | LwA <sub>out</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)             | dB(A)              | m <sup>3</sup> /h | Pa              | cfm            | in. wg          |
| 1 | Δ     | 480 | 60 | 1605              | 930            | 1.44 | 76                | 82                | 83                 | 10225             | 0               | 6020           | 0.00            |
| 2 | Δ     | 480 | 60 | 1585              | 1002           | 1.52 | 75                | 81                | 82                 | 9260              | 80              | 5450           | 0.32            |
| 3 | Δ     | 480 | 60 | 1575              | 1051           | 1.58 | 73                | 80                | 81                 | 8205              | 160             | 4830           | 0.64            |
| 4 | Δ     | 480 | 60 | 1560              | 1090           | 1.65 | 73                | 79                | 81                 | 6990              | 240             | 4115           | 0.96            |
| 5 | Y     | 480 | 60 | 1280              | 644            | 0.88 | 71                | 77                | 78                 | 8105              | 0               | 4770           | 0.00            |
| 6 | Y     | 480 | 60 | 1240              | 668            | 0.91 | 69                | 75                | 76                 | 7210              | 49              | 4245           | 0.20            |
| 7 | Y     | 480 | 60 | 1215              | 686            | 0.94 | 66                | 73                | 74                 | 6295              | 94              | 3705           | 0.38            |
| 8 | Y     | 480 | 60 | 1190              | 700            | 1.00 | 65                | 72                | 74                 | 5290              | 140             | 3115           | 0.56            |

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

