**S4D450-AO14-90**

# AC axial fan

sickled blades (S series)

with guard grille for short nozzle

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## Nominal data

| | | | | | |
|---|---|---|---|---|---|
| **Type** | **S4D450-AO14-90** | | | | |
| **Motor** | **M4D094-HA** | | | | |
| Phase | | 3~ | 3~ | 3~ | 3~ |
| Nominal voltage | VAC | 400 | 400 | 400 | 400 |
| Connection | | Δ | Y | Δ | Y |
| Frequency | Hz | 50 | 50 | 60 | 60 |
| Type of data definition | | ml | ml | ml | ml |
| Valid for approval / standard | | CE | CE | CE | CE |
| Speed (rpm) | $min^{-1}$ | 1360 | 1110 | 1510 | 1060 |
| Power input | W | 480 | 340 | 690 | 400 |
| Current draw | A | 0.98 | 0.58 | 1.2 | 0.72 |
| Max. back pressure | Pa | 140 | 90 | 145 | 70 |
| Min. ambient temperature | °C | -40 | -40 | -40 | -40 |
| Max. ambient temperature | °C | 65 | 65 | 50 | 50 |
| Starting current | A | 3.9 | 1.3 | 3.5 | 1.2 |

ml = Max. load · me = Max. efficiency · fa = Running at free air · cs = Customer specs · cu = Customer unit
Subject to alterations

## Data in accordance with ecodesign regulation EU 327/2011 (prEN 17166)

| | | Actual | Request 2015 |
|---|---|---|---|
| 01 Overall efficiency $\eta_{es}$ | % | 32.5 | 31.6 |
| 02 Measurement category | | A | |
| 03 Efficiency category | | Static | |
| 04 Efficiency grade N | | 40.9 | 40 |
| 05 Variable speed drive | | No | |

| | | |
|---|---|---|
| 09 Power input $P_e$ | kW | 0.46 |
| 09 Air flow $q_v$ | $m^3/h$ | 4535 |
| 09 Pressure increase $p_{fs}$ | Pa | 121 |
| 10 Speed (rpm) n | $min^{-1}$ | 1375 |
| 11 Specific ratio* | | 1.00 |

Data definition with optimum efficiency.

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

LU-197524

The indicated efficiency values for obtaining conformity with the Ecodesign Directive EU 327/2011 were achieved with defined air conduction components (e.g. inlet nozzles).
The dimensions are to be requested from ebm-papst. If other air guide geometries are used on the installation side, the ebm-papst evaluation loses its validity/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 features

| | |
|---|---|
| **Mass** | 9.85 kg |
| **Size** | 450 mm |
| **Motor size** | 94 |
| **Material of terminal box** | Die-cast aluminium |
| **Material of blades** | Press-fitted sheet steel blank, sprayed with PP plastic |
| **Material of guard grille** | Steel, coated in black plastic (RAL9005) |
| **Number of blades** | 5 |
| **Direction of air flow** | V |
| **Direction of rotation** | Counter-clockwise, seen on rotor |
| **Type of protection** | IP54 |
| **Insulation class** | "F" |
| **Humidity (F) / environmental protection class (H)** | H2 |
| **Note ambient temperature** | Occasional start-up between -40 °C and -25 °C is permissible. For continuous operation at ambient temperatures below -25 °C (e.g. refrigeration applications), a fan version with special low-temperature bearings must be used. |
| **Max. permissible ambient motor temp. (transp./ storage)** | +80 °C |
| **Min. permissible ambient motor temp. (transp./storage)** | -40 °C |
| **Mounting position** | Shaft horizontal or rotor on bottom; rotor on top on request |
| **Condensation drainage holes** | Rotor-side |
| **Operation mode** | S1 |
| **Motor bearing** | Ball bearing |
| **Touch current acc. IEC 60990 (measuring network Fig. 4, TN system)** | <= 3.5 mA |
| **Electrical connection** | Terminal box |
| **Motor protection** | Thermal overload protector (TOP) brought out, basic insulation |
| **Safety classification** | I; If a protective earth is connected by the customer<br>This component to be built-in can have several local protection class ratings. The specification refers to the basic design of this component.<br>The final protection class is based on the intended installation and connection of the component. |
| **Product conforming to standard** | EN 60034-1 (2010); CE |
| **Standard conformity** | UKCA |
| **Approval** | CSA C22.2 no. 100; EAC; UL 1004-1 |



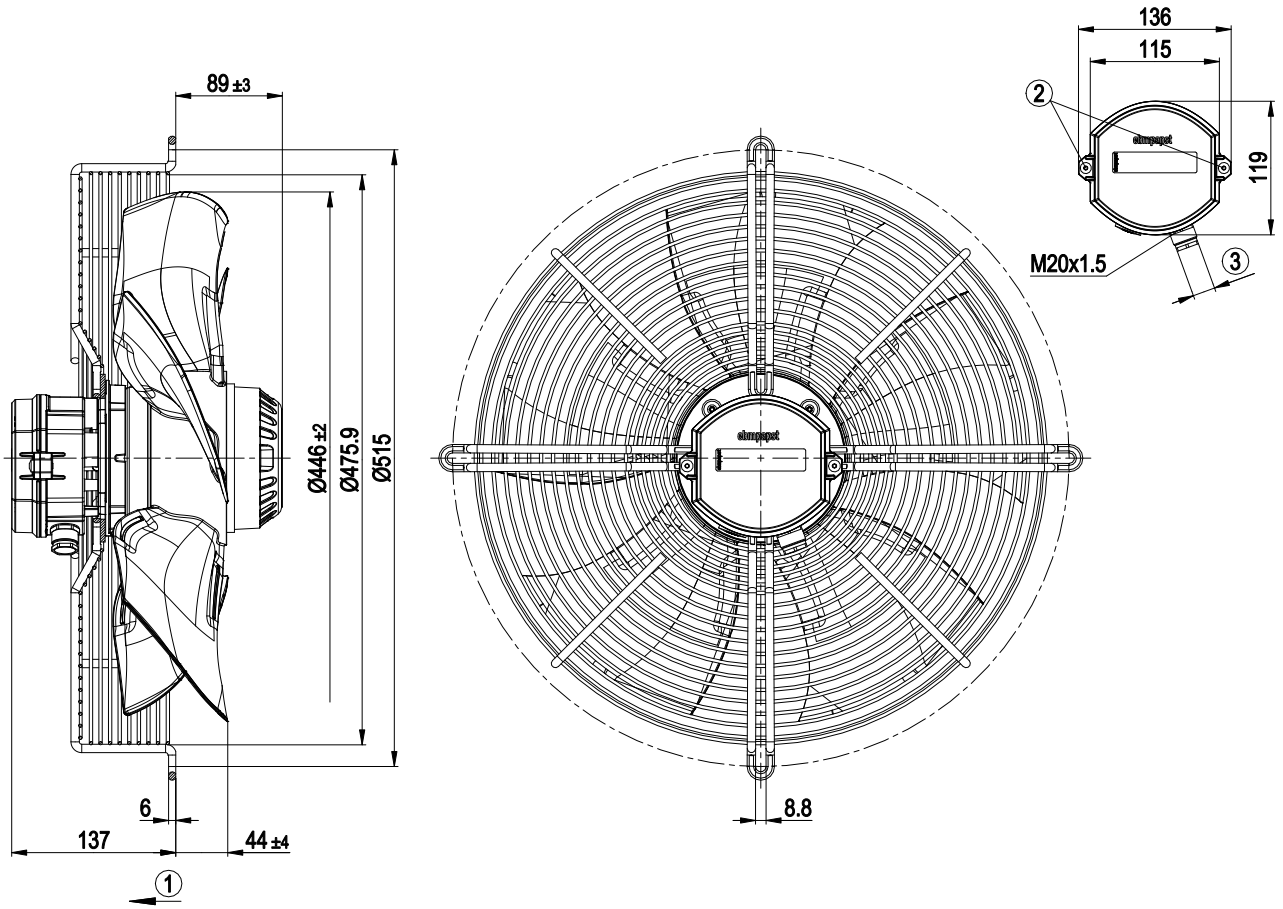
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## Product drawing




| | |
|---|---|
| 1 | Direction of air flow "V" |
| 2 | Tightening torque 2.5±0.4 Nm |
| 3 | Cable diameter min. 10 mm, max. 12 mm, tightening torque 4±0.6 Nm |



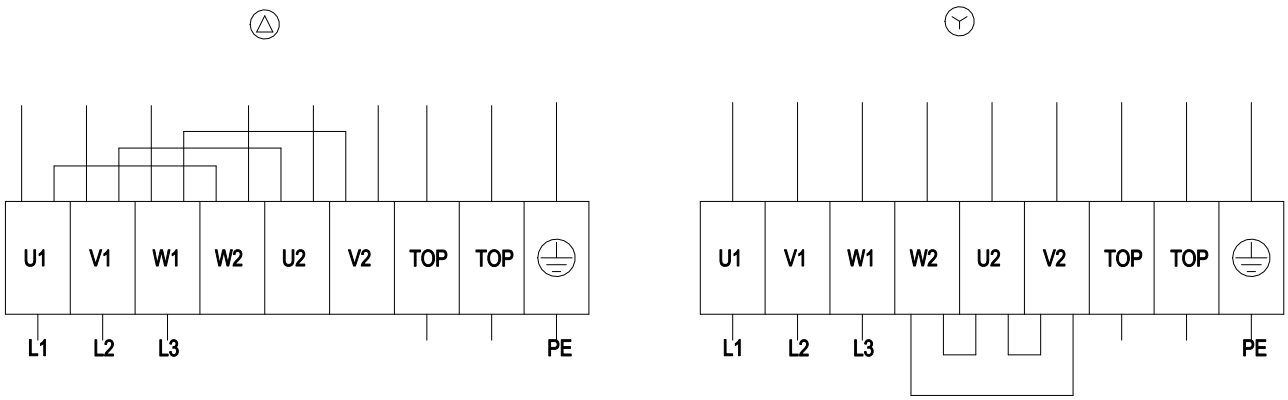
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## Connection screen




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



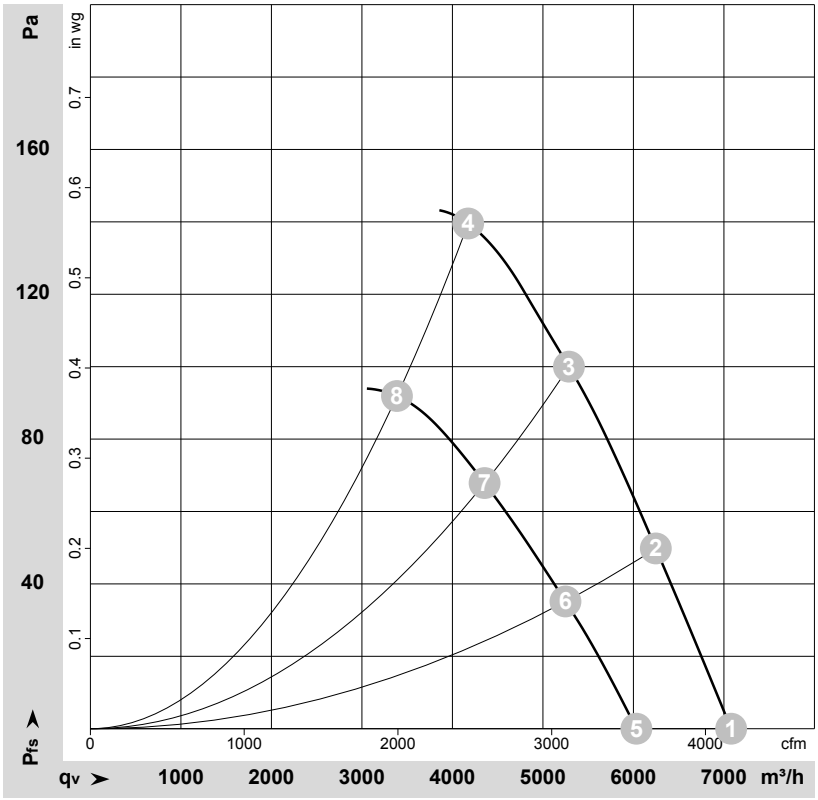
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## Charts: Air flow 50 Hz




ρ = 1.19 kg/m³ ± 2 %

Measurement: LU-107893-1
Measurement: LU-107309-1

Air performance measured as per ISO 5801 Installation category A. For detailed information on the measuring set-up, please contact ebm-papst. Suction-side noise levels: LwA measured as per ISO 13347 / LpA measured with 1m distance to fan axis. The values given are valid under the measuring conditions mentioned above and may vary according to the actual installation situation. With any deviation from the standard set-up, the specific values have to be checked and reviewed with the unit installed.

## Measured values

| | Conn. | U | f | n | $P_e$ | 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 | in. wg |
| 1 | Δ | 400 | 50 | 1400 | 386 | 0.88 | 65 | 71 | 72 | 7080 | 0 | 4165 | 0.00 |
| 2 | Δ | 400 | 50 | 1385 | 423 | 0.91 | 62 | 68 | 69 | 6250 | 50 | 3675 | 0.20 |
| 3 | Δ | 400 | 50 | 1370 | 456 | 0.95 | 61 | 68 | 68 | 5290 | 100 | 3110 | 0.40 |
| 4 | Δ | 400 | 50 | 1360 | 480 | 0.98 | 63 | 69 | 70 | 4175 | 140 | 2455 | 0.56 |
| 5 | Y | 400 | 50 | 1195 | 285 | 0.49 | | | | 6035 | 0 | 3550 | 0.00 |
| 6 | Y | 400 | 50 | 1155 | 309 | 0.52 | | | | 5250 | 35 | 3090 | 0.14 |
| 7 | Y | 400 | 50 | 1130 | 328 | 0.55 | | | | 4355 | 68 | 2565 | 0.27 |
| 8 | Y | 400 | 50 | 1110 | 340 | 0.58 | | | | 3385 | 92 | 1995 | 0.37 |

Conn. = Connection · U = Supply voltage · f = Frequency · n = Speed (rpm) · $P_e$ = Power input · I = Current draw · $LpA_{in}$ = Sound pressure level inlet side · $LwA_{in}$ = Sound power level inlet side
$LwA_{out}$ = Sound power level outlet side · $q_V$ = Air flow · $p_{fs}$ = Pressure increase



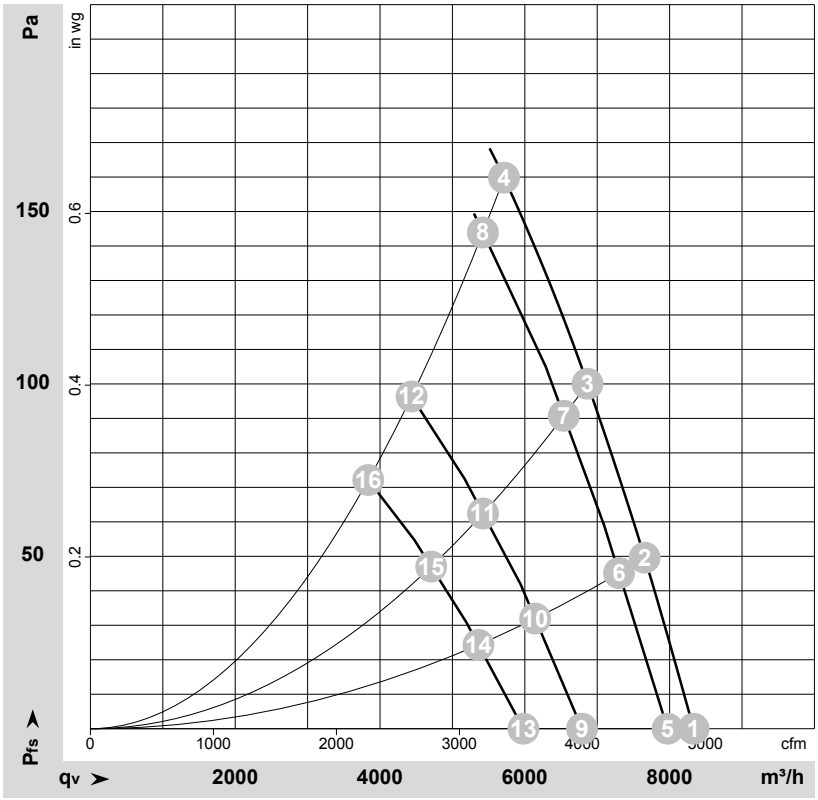
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## Charts: Air flow 60 Hz




ρ = 1.19 kg/m³ ± 2 %

Measurement: LU-107898-1
Measurement: LU-108207-1
Measurement: LU-108205-1
Measurement: LU-108206-1

Air performance measured as per ISO 5801 Installation category A. For detailed information on the measuring set-up, please contact ebm-papst. Suction-side noise levels: LwA measured as per ISO 13347 / LpA measured with 1m distance to fan axis. The values given are valid under the measuring conditions mentioned above and may vary according to the actual installation situation. With any deviation from the standard set-up, the specific values have to be checked and reviewed with the unit installed.

## Measured values

| | Conn. | U | f | n | $P_e$ | 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 | in. wg |
| 1 | Δ | 480 | 60 | 1645 | 628 | 1.03 | 68 | 74 | 76 | 8330 | 0 | 4905 | 0.00 |
| 2 | Δ | 480 | 60 | 1630 | 674 | 1.08 | 66 | 72 | 74 | 7655 | 50 | 4505 | 0.20 |
| 3 | Δ | 480 | 60 | 1615 | 716 | 1.12 | 65 | 71 | 73 | 6865 | 100 | 4040 | 0.40 |
| 4 | Δ | 480 | 60 | 1600 | 760 | 1.17 | 65 | 72 | 72 | 5715 | 160 | 3365 | 0.64 |
| 5 | Δ | 400 | 60 | 1570 | 580 | 1.03 | 67 | 73 | 74 | 7975 | 0 | 4695 | 0.00 |
| 6 | Δ | 400 | 60 | 1550 | 620 | 1.09 | 65 | 71 | 73 | 7300 | 45 | 4295 | 0.18 |
| 7 | Δ | 400 | 60 | 1530 | 657 | 1.15 | 64 | 70 | 71 | 6540 | 90 | 3850 | 0.36 |
| 8 | Δ | 400 | 60 | 1510 | 690 | 1.20 | 64 | 70 | 71 | 5420 | 145 | 3190 | 0.58 |
| 9 | Y | 480 | 60 | 1335 | 459 | 0.65 | 64 | 70 | 71 | 6790 | 0 | 3995 | 0.00 |
| 10 | Y | 480 | 60 | 1300 | 480 | 0.69 | 61 | 67 | 68 | 6145 | 32 | 3615 | 0.13 |
| 11 | Y | 480 | 60 | 1265 | 499 | 0.72 | 60 | 66 | 67 | 5425 | 62 | 3190 | 0.25 |
| 12 | Y | 480 | 60 | 1240 | 520 | 0.75 | 59 | 65 | 65 | 4435 | 96 | 2610 | 0.39 |
| 13 | Y | 400 | 60 | 1175 | 375 | 0.65 | 62 | 67 | 68 | 5980 | 0 | 3520 | 0.00 |
| 14 | Y | 400 | 60 | 1130 | 388 | 0.68 | 59 | 64 | 65 | 5360 | 24 | 3155 | 0.10 |
| 15 | Y | 400 | 60 | 1095 | 398 | 0.70 | 57 | 63 | 63 | 4705 | 47 | 2770 | 0.19 |
| 16 | Y | 400 | 60 | 1060 | 400 | 0.72 | 56 | 62 | 62 | 3840 | 72 | 2260 | 0.29 |

Conn. = Connection · U = Supply voltage · f = Frequency · n = Speed (rpm) · $P_e$ = Power input · I = Current draw · $LpA_{in}$ = Sound pressure level inlet side · $LwA_{in}$ = Sound power level inlet side
$LwA_{out}$ = Sound power level outlet side · $q_V$ = Air flow · $p_{fs}$ = Pressure increase



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