**Product Data Sheet** **8315100568**
VWCD060KKDFS
AxiForce60

ebmpapst

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**AxiForce60**

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## 1 General

| | | |
|---|---|---|
| Fan type | Axial-Panel-Fan | |
| Rotating direction looking at rotor | Counterclockwise | |
| Airflow direction | Air outlet over struts | |
| Bearing system | Ball bearing | |
| Mounting position - shaft | Any | |

## 2 Mechanics

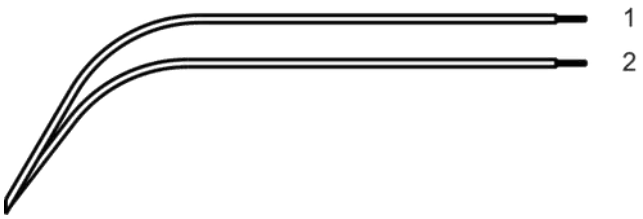
### 2.1 General

| | | |
|---|---|---|
| Width | 60 mm | |
| Height | 60 mm | |
| Depth | 25 mm | |
| Mass | 60,7 g | |
| Housing material | Plastic | |
| Impeller material | Plastic | |
| Max. torque when mounted across both mounting flanges<br>Screw size | Wire outlet corner: 30 Ncm<br>Remaining corners: 30 Ncm<br>ISO 4762 - M3 degreased, without an additional brace and without washer | |

### 2.2 Connections

| | | |
|---|---|---|
| Electrical connection | Wires | |
| Lead wire length<br>Tolerance | L = 310 mm<br>+- 10 mm | |






| Wire | Color | Operation | Wire size | Insulation diameter |
|---|---|---|---|---|
| 1 | red | + UB | AWG 26 | 1,0 mm |
| 2 | blue | - GND | AWG 26 | 1,0 mm |

## 3 Operating Data

### 3.1 Electrical Operating Data

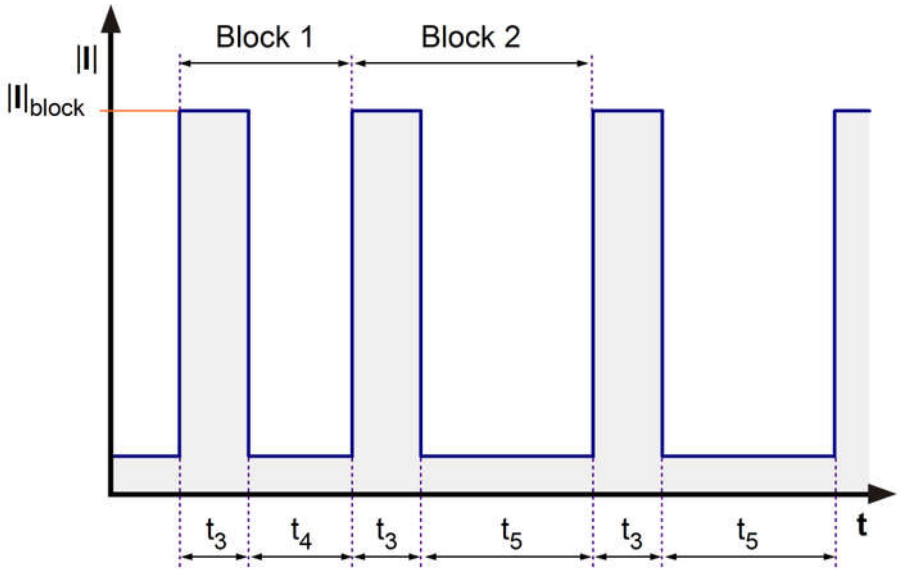
Measurement conditions: Normal air density = 1,2 kg/m3; Temperature 23°C +/- 3°C; Motor axis horizontal; warm-up time before measuring 15 minutes. In the intake and outlet area should not be any solid obstruction within 0,5 m.

Δp = 0: corresp. to free air flow (see chapter aerodynamics)
I: corresp. to arithm. mean current value

| Features | Condition | Symbol | Values | | |
|---|---|---|---|---|---|
| Voltage range | | U | 36 V | | 56 V |
| Nominal voltage | | $U_N$ | | 48 V | |
| Power consumption<br>Tolerance | Δp = 0<br>0010 | P | 1,8 W<br>+- 20 % | 2 W<br>+- 20 % | 2,1 W<br>+- 20 % |
| Current consumption<br>Tolerance | Δp = 0<br>0010 | I | 50 mA<br>+- 20 % | 42 mA<br>+- 20 % | 38 mA<br>+- 20 % |
| Speed<br>Tolerance | Δp = 0<br>0010 | n | 7.000 1/min<br>+- 5,0 % | 7.000 1/min<br>+- 5,0 % | 7.000 1/min<br>+- 5,0 % |
| Starting current consumption | | | | <= 600 mA | |

### 3.2 Electrical Features

| | | |
|---|---|---|
| Electronic function | Speed-Controlled | |
| Reversed polarity protection<br>Max. residual current at $U_N$ | N-CH FET<br>$I_F$ <= 1 mA | |
| Locked rotor protection | Auto restart | |
| Locked rotor current at $U_N$ | $I_{block}$ approx. 300 mA | |
| Clock signal at locked rotor<br>Extended Downtime | $t_3$ / $t_4$ typical: 0,33 s / 0,33 s<br>$t_5$: 9,4 s after 3 start-up tests | |
| Internal fuse | None | |




Block1: (The first 2 cycles) t3/t4 = 0,33s/0,33s;
Block2: locked rotor protection t3/t5 = 0,33s/9,4s

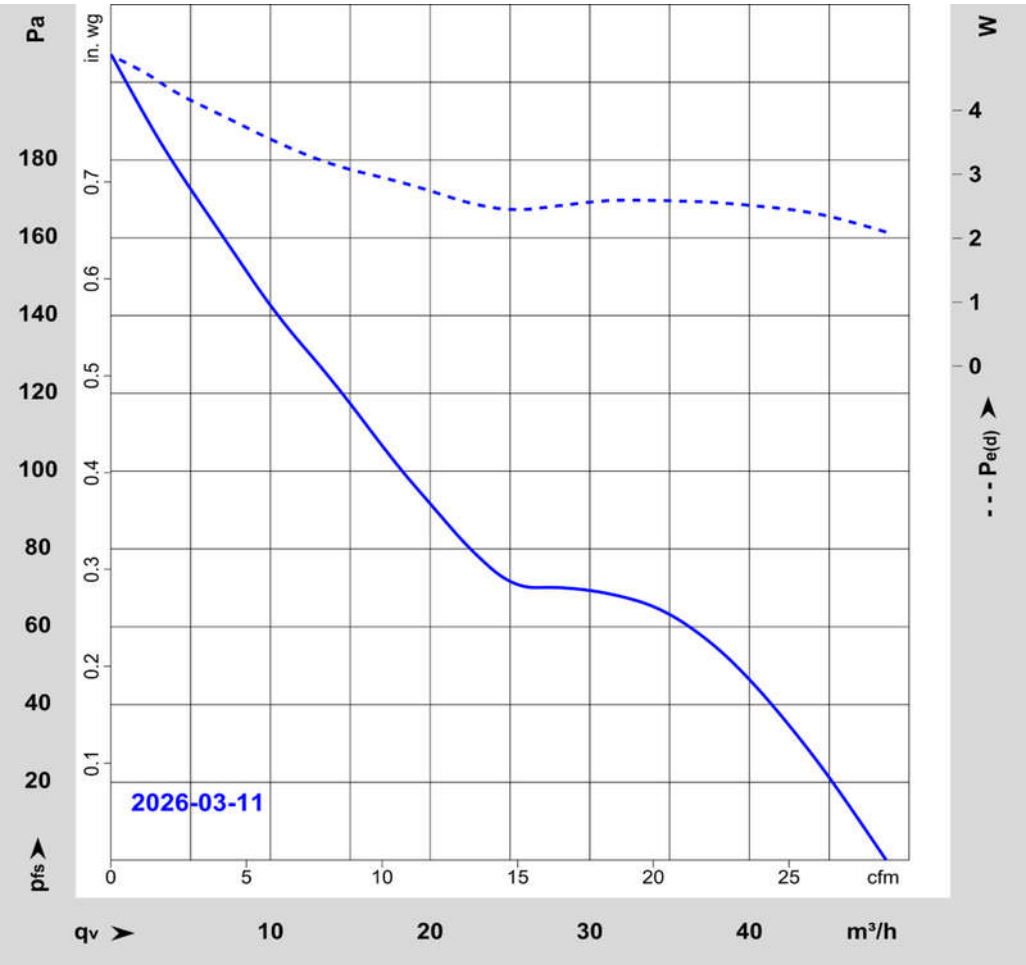
### 3.3 Aerodynamics

| | |
|---|---|
| Measurement conditions: | Measured with a double chamber intake rig acc. to DIN EN ISO 5801.<br>Air density = 1,2 kg/m3; Temperature 23°C +/- 3°C;<br>In the intake and outlet area should not be any solid obstruction within 0,5 m. Motor shaft horizontal.<br>The information is only valid under the specified test conditions and may be changed by the installation conditions. If there are deviations from the standard test conditions, the characteristic values must be checked under the installed conditions. Power consumption of the fan motor when operating at normal voltage is shown. Depending on the operating conditions of the application, the power input may be higher. |

a.) Operation condition:

| |
|---|
| 7.000 1/min at free air flow |

| | | |
|---|---|---|
| Max. free-air flow (Δp = 0 / $\dot{V}$ = max.) | 48,5 m3/h | |
| Max. static pressure (Δp = max. / $\dot{V}$ =0) | 205 Pa | |



### 3.4 Sound Data

| | |
|---|---|
| Measurement conditions: | Sound pressure level: 1 meter distance between microphone and the air intake.<br>Sound power level: According to ISO 10302-1<br>Measured in a semianechoic chamber with a background noise level of Lp(A) < 5 dB(A)<br>For further measurement conditions see chapter aerodynamics. |

a.) Operation condition:

| |
|---|
| 7.000 1/min at free air flow |

| | | |
|---|---|---|
| Optimal operating point | 38 m3/h @ 56 Pa | |
| Sound power level at the optimal operating point | 5,1 bel(A) | |
| Sound pressure level at free air flow, measured in rubber bands | 39 dB(A) | |

## 4 Environment

### 4.1 General

| | | |
|---|---|---|
| Min. permitted ambient temperature TU min. | -40 °C | |
| Max. permitted ambient temperature TU max. | 70 °C | |
| Min. permitted storage temperature TL min. | -40 °C | |
| Max. permitted storage temperature TL max. | 80 °C | |

### 4.2 Climatic Requirements

| | | |
|---|---|---|
| IP-protection type (certified) | IP 68 (for  fan only, not for connector if applicable) **) | |
| Environmental class | H2 | |

**) The specification of the IP protection refers to the conditions mentioned in certification of the fan. The above mentioned short description of the protection scope is not final. For detailed information of the respective protection scope and definitions, see certification as well as DIN EN 60529 (protection by housings) and ISO 20653 (for vehicles) with the letter K.

**Short description of the IP-protection type:**
Solid particle Protection: Dust tight.
Protection against deliberate contact: Protected against contact to hazardous parts with a wire.
Protection against water: The fan test according to IP68 (Based on IEC 60529), is conducted in non-operating mode. The fan is tested by a complete immersion in water for a period of 2h at a water-level of 1,2m. Electrical connections are not immersed since they are customer specific.

### 4.3 Mechanical Requirements

Please require severity levels and specification parameters from the responsible development departments.

### 4.4 EMC

| **Kind** | **Radiated Emission; 30 MHz - 1000 MHz (without PE)** |
|---|---|
| According | DIN EN 55032:2016-02 |
| Ceck accuracy / Limit | Class B |
| Result | Below limit Class B |

| **Kind** | **Electrostatic Discharge Immunity Test** |
|---|---|
| According | DIN EN 61000-4-2:2001-12 |
| Ceck accuracy / Limit | Contact Discharge +/- 4 kV; Air Discharge +/- 8 kV |
| Result | A: The monitored function operates as designed during and after exposure to a disturbance. |

| **Kind** | **Electromagnetic Field Immunity Test** |
|---|---|
| According | DIN EN 61000-4-3:2006-12 |
| Ceck accuracy / Limit | 10 V/m; 80 - 1000 MHz; AM; m = 0,8; f = 1 kHz; 1%; t = 3 s |
| Result | A: The monitored function operates as designed during and after exposure to a disturbance. |

| **Kind** | **Electrical Fast Transient / Burst Immunity Test** |
|---|---|
| According | DIN EN 61000-4-4:2005-07 |
| Ceck accuracy / Limit | +/- 2 kV on Power Lines; Coupling: POS, NEG, {PE}, ALL, 5 kHz and 100 kHz; 1 min |
| Result | A: The monitored function operates as designed during and after exposure to a disturbance. |

| **Kind** | **Immunity to Conducted Disturbances, Induced by RF-Fields** |
|---|---|
| According | DIN EN 61000-4-6:2001-12 |
| Ceck accuracy / Limit | 10 Vrms; 150 kHz - 80 MHz; AM; m = 0,8; f = 1 kHz; 1%; t = 3 s |
| Result | A: The monitored function operates as designed during and after exposure to a disturbance. |

## 5 Safety

### 5.1 Electrical Safety

| | | |
|---|---|---|
| Dielectric strength<br>DIN EN 62368 and DIN EN 60335<br>A.) Type test<br>Measuring conditions: After 48h of storage at 95% R.H. and 25°C.<br>No arcing or breakdown is allowed!<br>All connections together to ground.<br>B.) Routine test<br>Measuring conditions: At indoor climate.<br>No arcing or breakdown is allowed!<br>All connections together to ground. | 500 VAC / 1 Min.<br><br>850 VDC / 1 Sec. | |
| Isolation resistance<br>Measuring conditions: After 48h of storage at 95% R.H. and 25°C measured with U=500 VDC for 1 min. | RI > 10 MOhm | |
| Clearance / creepage distance | 1,0 mm / 1,2 mm | |
| Protection class | III | |

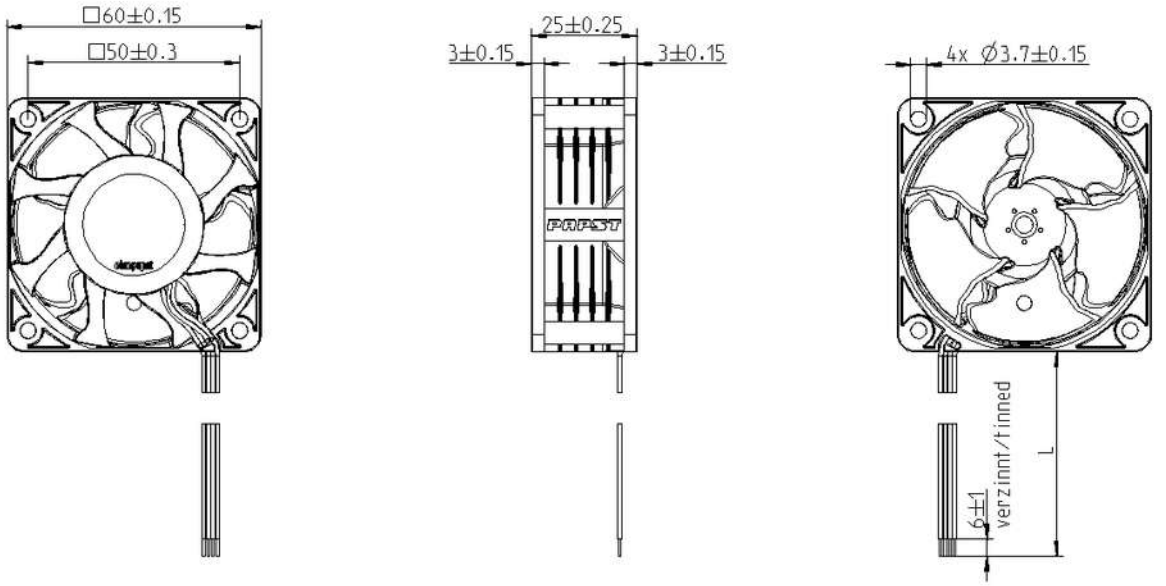
### 5.2 Approval Tests

| | | |
|---|---|---|
| CE | EC Declaration of Conformity | Yes |
| UKCA | UK Conformity Assessed | Yes |
| EAC | Eurasian Conformity | Yes |
| America | UL - Underwriters Laboratories | Yes / UL507, Electric Fans E38324 |
| Europe | VDE - Association for Electrical or<br>UL - Underwriters Laboratories or comparable | Yes / Approval acc. to EN 62368 - Audio/video, information and communication technology equipment |
| Canada | UL - Underwriters Laboratories or<br>CSA - Canadian Standards Association | Yes / CSA audited by UL according to C22.2 No. 113 Fans and Ventilators |
| China | CCC - China Compulsory Certification or<br>CQC - China Quality Certification | Yes / GB 12350 Safety Requirements for small Power Motors |

## 6 Reliability

### 6.1 General

| | | |
|---|---|---|
| Life expectancy L10 at TU = 40 °C | 75.000 h | |
| Life expectancy L10 at TU max. | 37.500 h | |
| Life expectancy L10 acc. to IPC 9591 at TU = 40 °C | 127.500 h | |




- kein Axialspiel der Kugellager durch Federaussgleich /
  No axial clearance of the ball bearings due to a pre-load spring

- Anzahl und Länge der Litzen siehe Produktspezifikation
  Number an Length of the wires see product specification

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