# Product Data Sheet 4118 NHU-294

ebmpapst

The engineer's choice



GREEN TECH

**4118 NHU-294**
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## 1 General

| | | |
|---|---|---|
| Fan type | Fan | |
| Rotating direction looking at rotor | Clockwise | |
| Airflow direction | Air intake over struts | |
| Bearing system | Ball bearing | |
| Mounting position - shaft | Any | |

## 2 Mechanics

### 2.1 General

| | | |
|---|---|---|
| Width | 119,0 mm | |
| Height | 119,0 mm | |
| Depth | 38,0 mm | |
| Mass | 0,420 kg | |
| Housing material | Metal | |
| Impeller material | Plastic | |
| Max. torque when mounted across both mounting flanges<br>Screw size | wire outlet corner: 450 Ncm<br>remaining corners: 600 Ncm<br>ISO 4762 - M4 degreased, without an additional brace and without washer | |

### 2.2 Connections

| | | |
|---|---|---|
| Electrical connection | Wires | |
| Lead wire length<br>Tolerance | L = 600 mm<br>+- 10,0 mm | |
| Wire size (AWG) | 24 | |
| Insulation diameter | 1,5 mm | |
| Contact | See drawing | |






| Wire | Colour | Operation |
|---|---|---|
| 1 | red | + UB |
| 2 | blue | - GND |

## 3 Operating Data

### 3.1 Electrical Operating Data

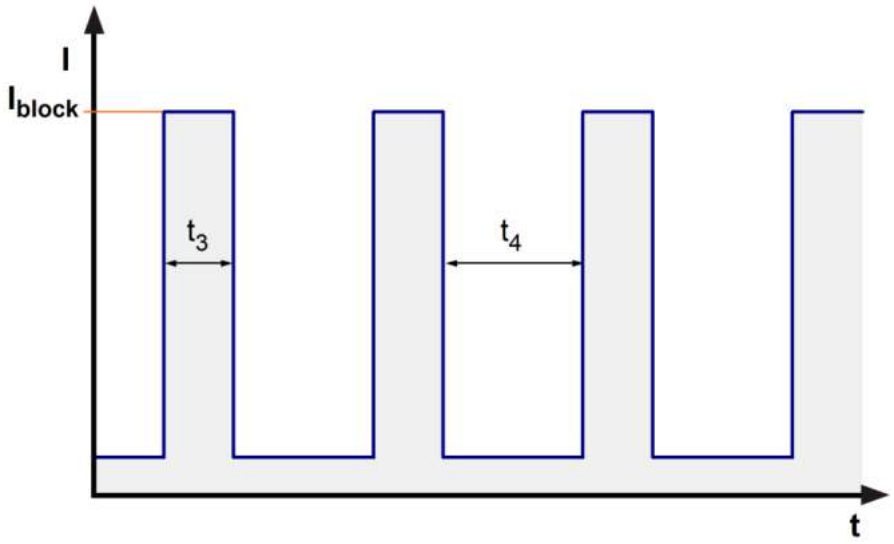
Measurement conditions: Normal air density = 1,2 kg/m3; Temperature 23°C +/- 3°C; Motor axis horizontal; warm-up time before measuring 5 minutes (unless otherwise specified). In the intake and outlet area should not be any solid obstruction within 0,5 m.

Δp = 0: corresp. to free air flow (see section 3.5)
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 | 6,9 W<br>+- 25 % | 10 W<br>+- 25 % | 10,9 W<br>+- 25 % |
| Current consumption<br>Tolerance | Δp = 0<br>0010 | I | 192 mA<br>+- 25 % | 210 mA<br>+- 25 % | 195 mA<br>+- 25 % |
| Speed<br>Tolerance | Δp = 0<br>0010 | n | 3.650 1/min<br>+- 12,5 % | 4.400 1/min<br>+- 2 % | 4.400 1/min<br>+- 2 % |

### 3.2 Electrical Features

| | | |
|---|---|---|
| Electronic function | Speed-Controlled | |
| Reversed polarity protection<br>Max. residual current at $U_N$ | Rectifying diode<br>$I_F$ <= 50 uA | |
| Locked rotor protection | Auto restart | |
| Locked rotor current at $U_N$ | $I_{block}$ approx. 1.200 mA | |
| Clock signal at locked rotor | $t_3$ / $t_4$ Typical: 0,4 s / 20 s | |



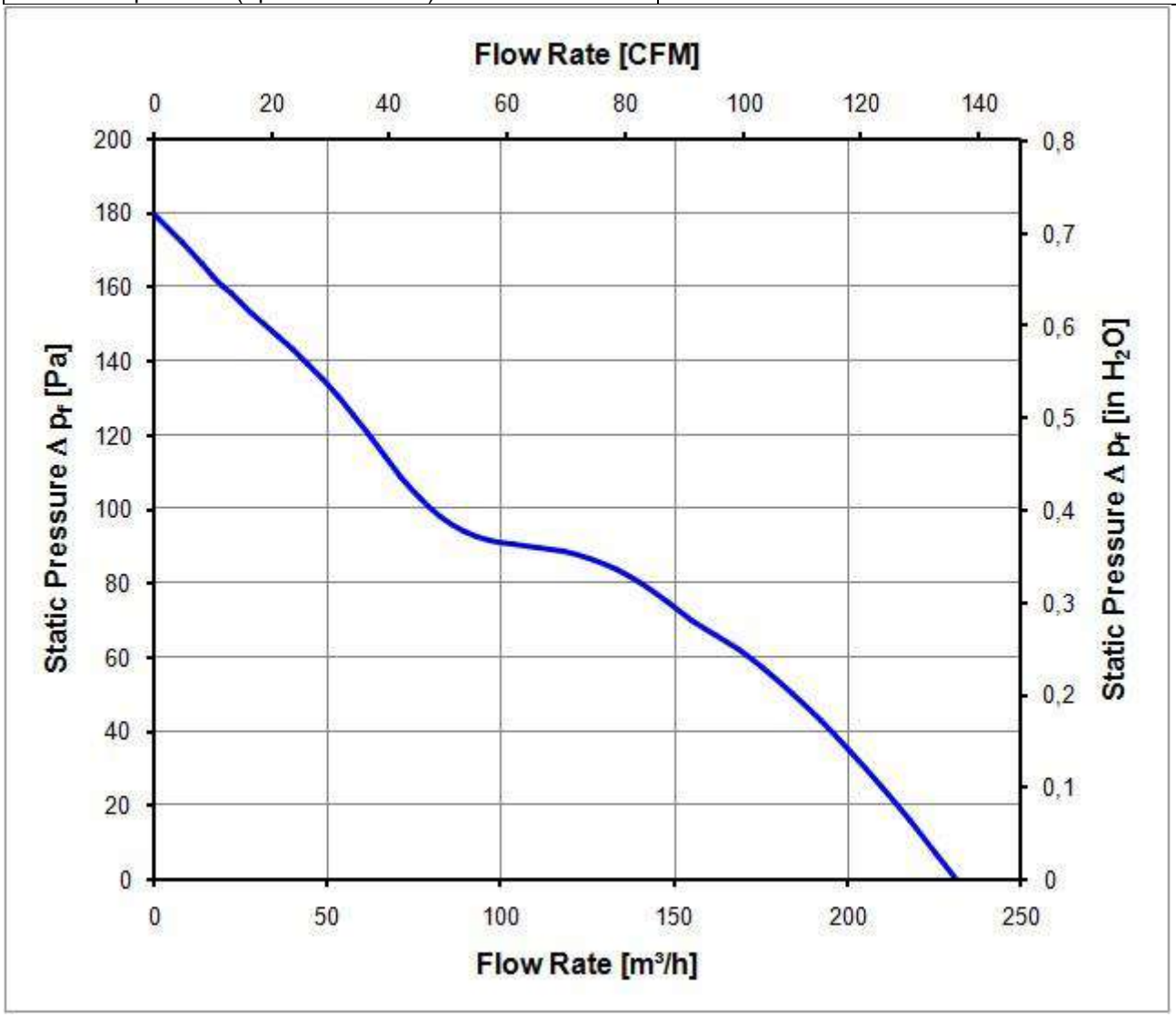
### 3.3 Aerodynamics

| | |
|---|---|
| Measurement conditions: | Measured with a double chamber intake rig acc. to DIN EN ISO 5801.<br>Normal 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.<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. |

a.) Operation condition:

| |
|---|
| 4.400 1/min at free air flow |

| | | |
|---|---|---|
| Max. free-air flow (Δp = 0 / $\dot{V}$ = max.) | 227,0 m3/h | |
| Max. static pressure (Δp = max. / $\dot{V}$ =0) | 180 Pa | |



### 3.4 Sound Data

| | |
|---|---|
| Measurement conditions: | Sound pressure level: 1 Meter distance between microphone and the air intake.<br>Sound power level: Acc. to DIN 45635 part 38 (ISO 10302)<br>Measured in a semianchoic chamber with a background noise level of Lp(A) < 5 dB(A)<br>For further measurement conditions see section 3.5 |

a.) Operation condition:

| |
|---|
| 4.400 1/min at free air flow |

| | | |
|---|---|---|
| Optimal operating point | 130,0 m3/h @ 79 Pa | |
| Sound power level at the optimal operating point | 6,2 bel(A) | |
| Sound pressure level at free air flow, measured in rubber bands | 56,0 dB(A) | |

## 4 Environment

### 4.1 General

| | | |
|---|---|---|
| Min. permitted ambient temperature TU min. | -20 °C | |
| Max. permitted ambient temperature TU max. | 55 °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) **) | |
| Humidity requirements | humid temperature, cyclic; according to DIN EN 60068-2-38, 10 cycle and condensation water check; according to DIN EN ISO 6270-2, 14 days | |
| Salt fog requirements | None | |

*) Permittet application area:
The product is for the use in partial sheltered rooms or open, roofed areas. Direct exposure to water is allowed provided that this does not prevent the normal operation. Saline ambient conditions must be avoided.

Pollution degree 3 (according DIN EN 60664-1)
It occurs conductive pollution or dry non-conductive pollution which becomes conductive due to condensation.

**) 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.

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

## 5 Safety

### 5.1 Electrical Safety

| | | |
|---|---|---|
| Dielectric strength<br>DIN EN 60950 (VDE 0805) and DIN EN 60335 (VDE 0700)<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>500 VAC / 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 / 1,5 mm | |
| Protection class | III | |

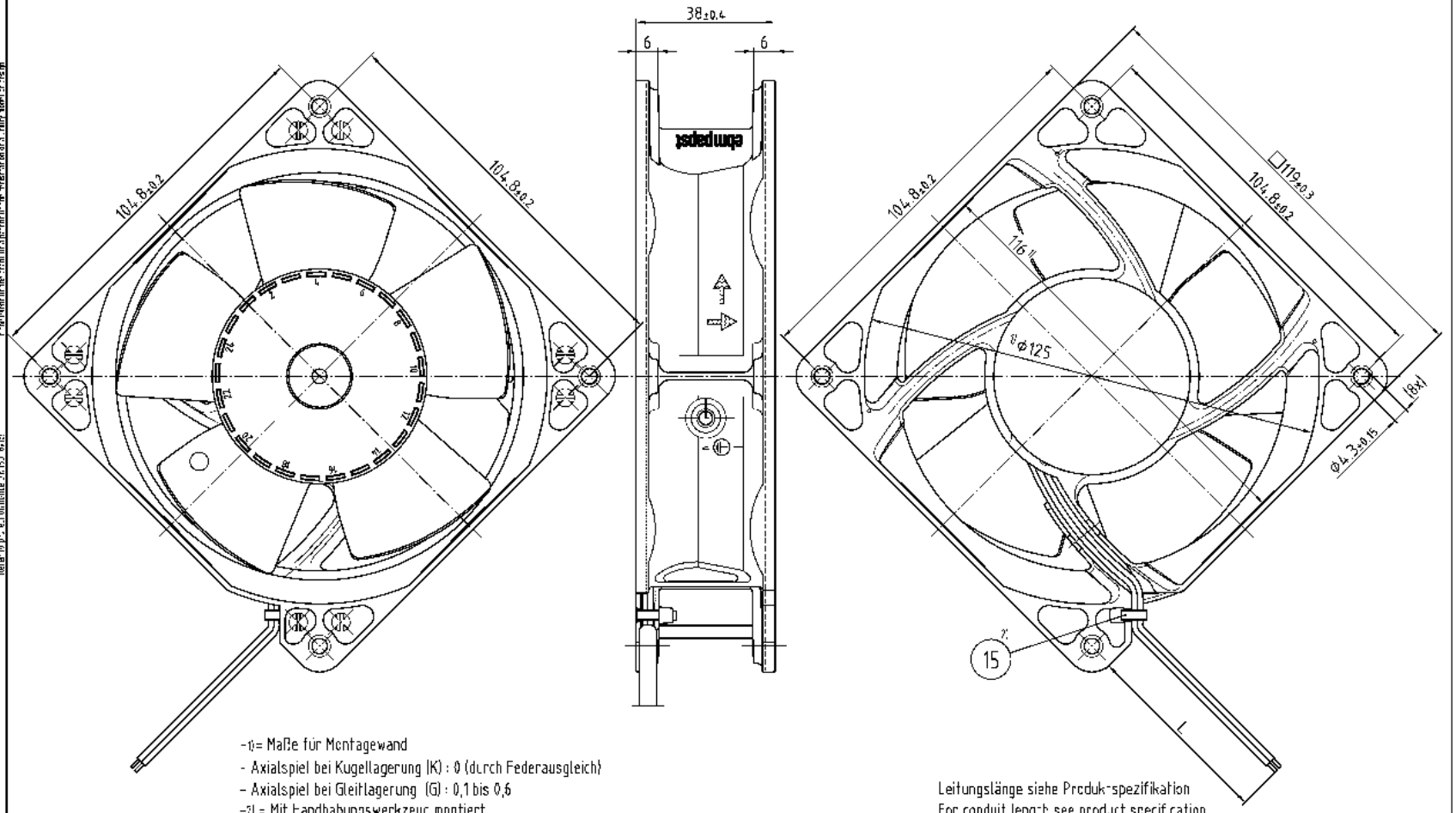
### 5.2 Approval Tests

| | | |
|---|---|---|
| CE | EC Declaration of Conformity | Yes |
| EAC | Eurasian Conformity | Yes |
| UL | Underwriters Laboratories | Yes / UL507, Electric Fans |
| VDE | Association for Electrical, Electronic and Information Technologies | Yes / Approval acc. to EN 60950 (VDE 0805) - Information technology equipment |
| CSA | Canadian Standards Association | Yes / C22.2 No. 113 Fans and Ventilators |
| CCC | China Compulsory Certification | Yes / GB 12350 Safety Requirements for small Power Motors |

## 6 Reliability

### 6.1 General

| | | |
|---|---|---|
| Life expectancy L10 at TU = 40 °C | 70.000 h | |
| Life expectancy L10 at TU max. | 50.000 h | |
| Life expectancy L10 acc. to IPC 9591 at TU = 40 °C | 117.500 h | |




-1)= Maße für Montagewand
- Axialspiel bei Kugellagerung (K) : 0 (durch Federausgleich)
- Axialspiel bei Gleitlagerung (G) : 0,1 bis 0,6
-2) = Mit Handhabungswerkzeug montiert,
Kopf darf nach Montage nicht über Außenkontur des Lüftergehäuses stehen

-1)= Measures for prefab wal.
- Axial play with ball bearing (K) 0 (by spring compensation)
- Axial play with sleeve bearing (G): 0,1 to 0,6
-2) = With handling tool installed,
Head may not stand over outer contour of the fan housing after assembly

Leitungslänge siehe Produkt-spezifikation
For conduit length see product specification

| | | | | | |
|---|---|---|---|---|---|
| | | | ebmpapst | Werkstoff/Material: | Vc Line 1/Vc Line 1 [m³] |
| SAP-Status/Scale | Kund.-Änderungs-Nr. | Art/CAD-Symbol-Marker | CAD Umgebung/ CAD Environment | | Gewicht/Mass [g] |
| | | Datum/Date | Name/Name | | |
| Toleranzen/Tolerances: Allgemeintoleranzen/Gen. tolerances DIN ISO 2768-1 u. 2-mK | | Bearb./ Drawn | | Artikel/Title: axial compact fan | |
| | | Gepr./ Checked | | | |
| | | Freig./ Released | | | |
| ebmpapst | | | | Zeichn.-Nr./ Drawing-No.: | Ers. f. Zeichn./ Replaces |
| ebm-papst St. Georgen GmbH & Co. KG | | | | Dokumentenart/Type of Document | Format/Size |

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