



The engineer's choice

**ebmpapst**

# 4114 NHU-295

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**1 General**

Fan type	Fan	
Rotational direction looking at rotor	clockwise	
Airflow direction	Air intake over struts	
Bearing system	Ball bearing	
Mounting position	any	

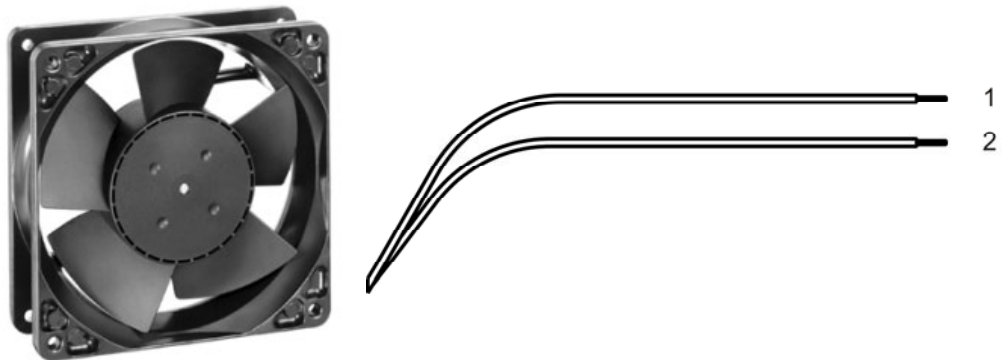
**2 Mechanics**

**2.1 General**

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

**2.2 Connections**

Electrical connection	Wires	
Length of lead wire	L = 600 mm	
Tolerance	+ - 10,0 mm	
Wire gauge (AWG)	24	
Insulation diameter	1,55 mm	



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

**3 Operating Data**

**3.1 Operating Data - Electrical Interface - Input**

Control input	None
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### 3.2 Electrical Operating Data

Measurement conditions: Normal air density = 1,2 kg/m<sup>3</sup>; 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.

$\Delta p = 0$ : corresp. to free air flow (see section 3.5)  
 I: corresp. to arithm. mean current value

Features	Condition	Symbol	Values		
Voltage range	$\Delta p = 0$	U	16,0 V		30,0 V
Nominal voltage	$\Delta p = 0$	$U_N$		24,0 V	
Power consumption	$\Delta p = 0$	P	5,6 W	11,5 W	13,1 W
Tolerance	0001		+/- 25,0 %	+/- 25,0 %	+/- 25,0 %
Current consumption	$\Delta p = 0$	I	350 mA	480 mA	435 mA
Tolerance	0001		+/- 25,0 %	+/- 25,0 %	+/- 25,0 %
Speed	$\Delta p = 0$	n	3.300 1/min	4.400 1/min	4.400 1/min
Tolerance	0001		+/- 10,0 %	+/- 3,0 %	+/- 3,0 %
Starting current consumption				2.400 mA	

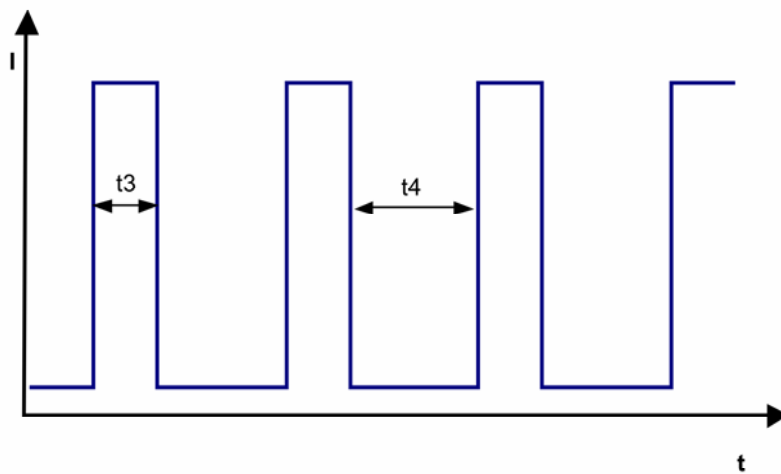
### 3.3 Operating Data - Electrical Interface -Output

Tacho type	None
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Alarm type	None
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### 3.4 Electrical Features

Electronic function	Speed-Controlled	
Reversed polarity protection	Rectifying diode	
Max. residual current at $U_n$	$I_F \leq 500 \mu A$	
Locked rotor protection	Auto restart	
Locked rotor current at $U_n$	approx. 2.400 mA	
Clock signal $t_3/t_4$ at locked rotor	Typical: 0,4 s / 10 s	



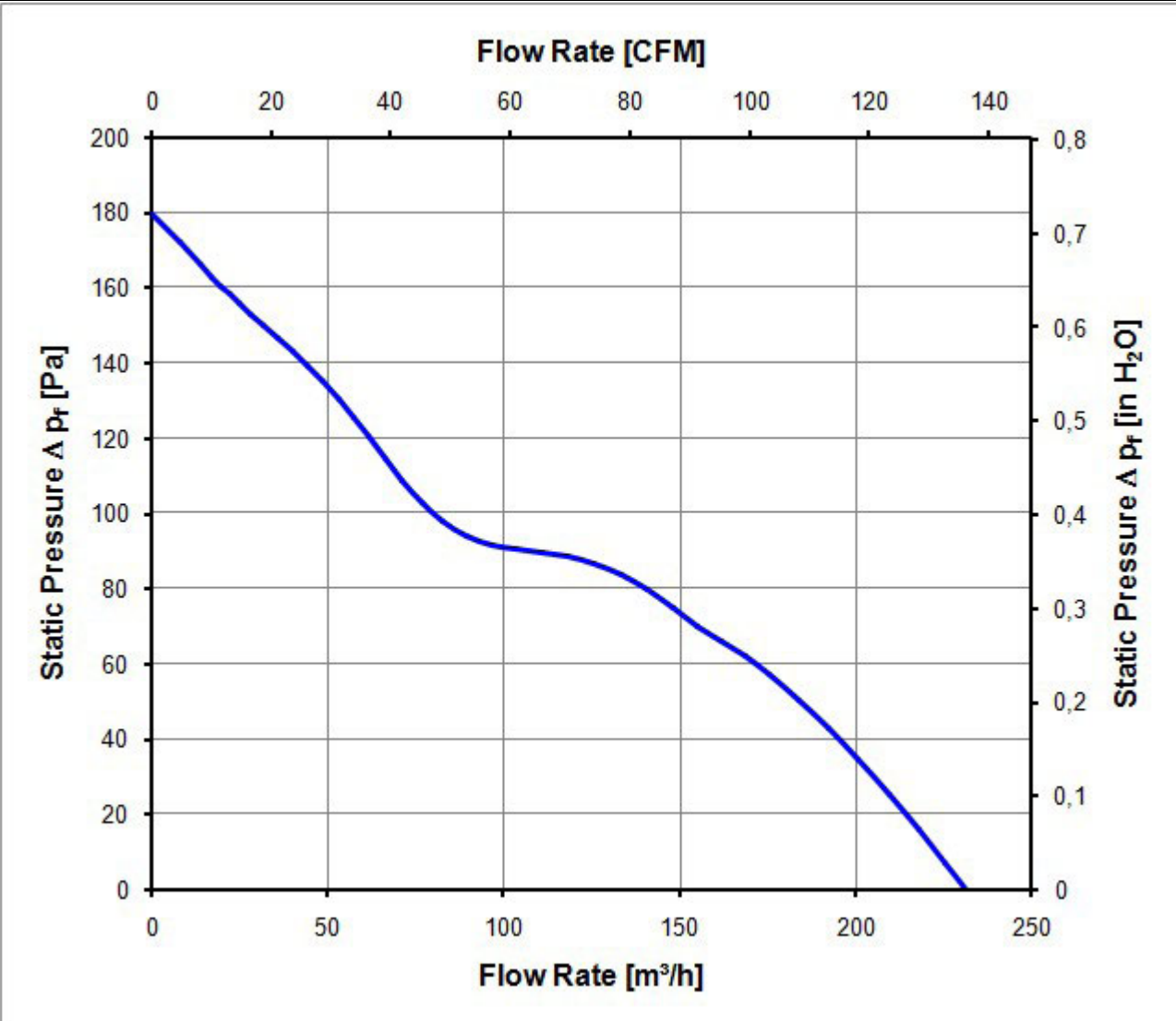
### 3.5 Aerodynamic

Measurement conditions: Measured with a double chamber intake rig acc. to DIN EN ISO 5801.  
 Normal air density = 1,2 kg/m<sup>3</sup>; Temperature 23°C +/- 3°C;  
 In the intake and outlet area should not be any solid obstruction within 0,5 m.

a.) Operation condition:

4.400 1/min at free air flow

Max. free-air flow ( $\Delta p = 0 / \dot{V} = \text{max.}$ )	227,0 m <sup>3</sup> /h	
Max. static pressure ( $\Delta p = \text{max.} / \dot{V} = 0$ )	180 Pa	



### 3.6 Sound Data

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

a.) Operation condition:

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

Optimal operating point	130,0 m <sup>3</sup> /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	
Radiation exposure	Solar radiation; according to DIN EN 60068-2-5	
Salt fog requirements	None	
Harmful gas requirements	None	

\*) Permitted 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.

## 5 Safety

### 5.1 Electrical Safety

Dielectric strength DIN EN 60950 (VDE 0805) and DIN EN 60335 (VDE 0700) A.) Type test Measuring conditions: After 48h of storage at 95% R.H. and 25°C. No arcing or breakdown is allowed! All connections together to ground.	500 VAC / 1 Min.	
B.) Routine test Measuring conditions: At indoor climate. No arcing or breakdown is allowed! All connections together to ground.	500 VAC / 1 Sec.	
Isolation resistance 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	Yes
UL	Yes / UL507, Electric Fans
VDE	Yes / Approval acc. to EN 60950 (VDE 0805) - Information technology equipment
CSA	Yes / C22.2 No. 113 Fans and Ventilators
CCC	No

The approval tests are observed to:

Maximal permitted operating voltage (see section 3.1) and max. permitted ambient temperature TU max.

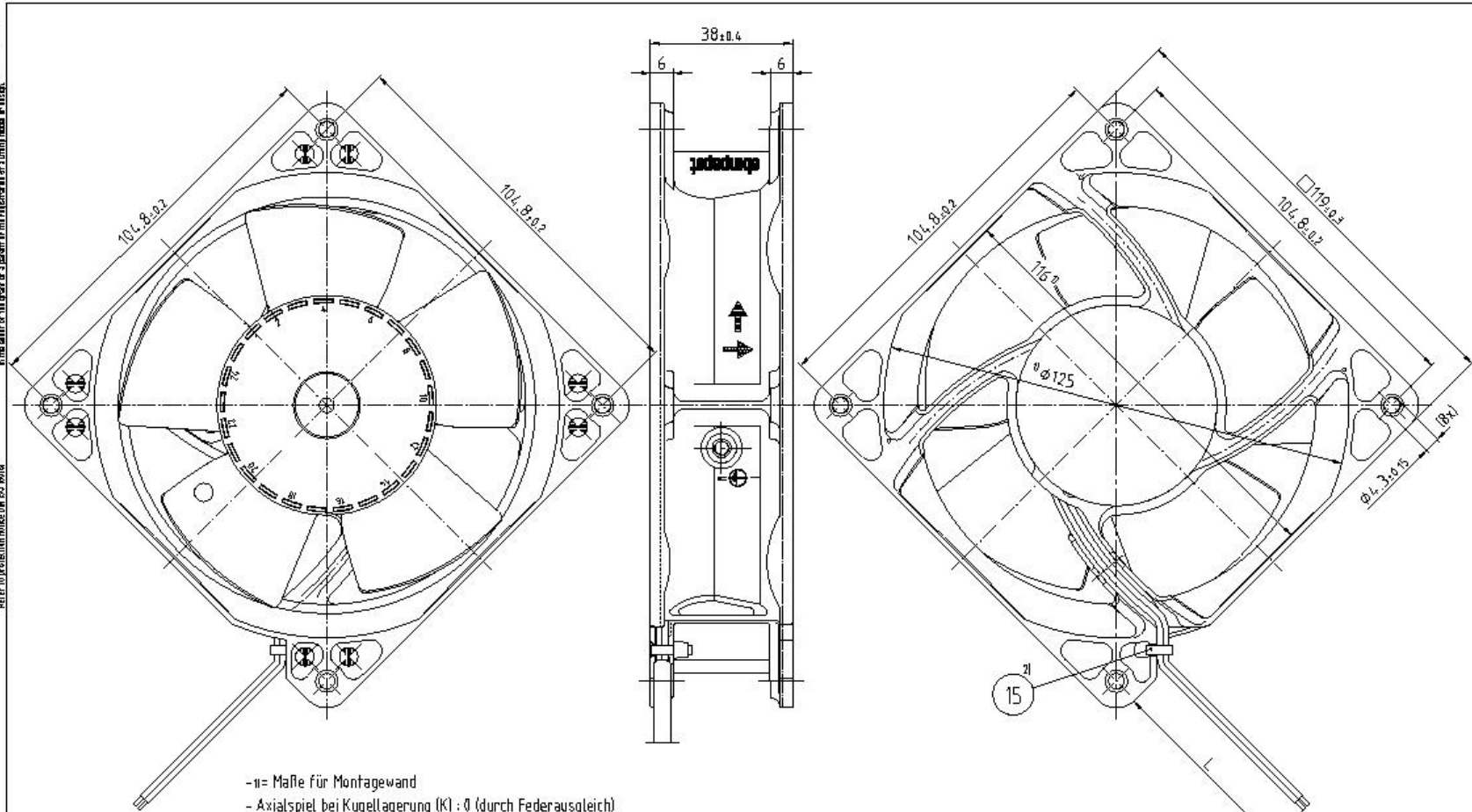
## 6 Reliability

### 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 Delta (40 °C)	142.500 h	

Legends of the drawings and parts (by others and those for consumption of the manufacturer) should be referred to the drawing of a part or the manufacturer's official manual or list.

Schätzungen nach DIN ISO 1600 (best of) Refer to specification with: DIN ISO 1600



- n= Maße für Montagewand
- Axialspiel bei Kugellagerung (K) :  $\varnothing$  (durch Federausgleich)
- Axialspiel bei Gleitlagerung (G) :  $\varnothing$ ,1 bis 0,6
- z1 = Mit Handhabungswerkzeug montiert, Kopf darf nach Montage nicht über Außenkontur des Lüftergehäuses stehen

- n= Measures for prefab wall
- Axial play with ball bearing (K) :  $\varnothing$  (by spring compensation)
- Axial play with sleeve bearing (G) : 0.1 to 0.6
- z1 = With handling tool installed, Head may not stand over outer contour of the fan housing after assembly

Leitungslänge siehe Produktspezifikation  
For conduit length see product specification

SW-Steuer/Side		Fan-Mod./Change-Mod.		eblmpapst		Werkstoff/Material:		Volumen/Volume (mm <sup>3</sup> )	
CAD-Umgebung/ CAD-Environment		Anzahl/Serial-Form		Eben/Edg		Name/Name		Gewicht/Mass (g):	
T-Werkung/Operation:		Bearb./ Diam./ Diam./ Diam./		Artikel/Title		axial compact fan		Ersatzteil/Replaces	
Allgemeinforderungen/Gen. Instructions DIN ISO 2768-1 u. 2-mK		eblmpapst		Zug-Mod./Drawing-Mod.		Ersatzteil/Replaces		Hauptgröße	
eblmpapst St. Georgen GmbH & Co. KG		Bauteiltyp/Type of Detail		Teilnummer/Part-Num.		Inhalt/Cont.		Formel/Size	