

Product Data Sheet 4414 HTR

ebmpapst

The engineer's choice



4414 HTR

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1 General

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

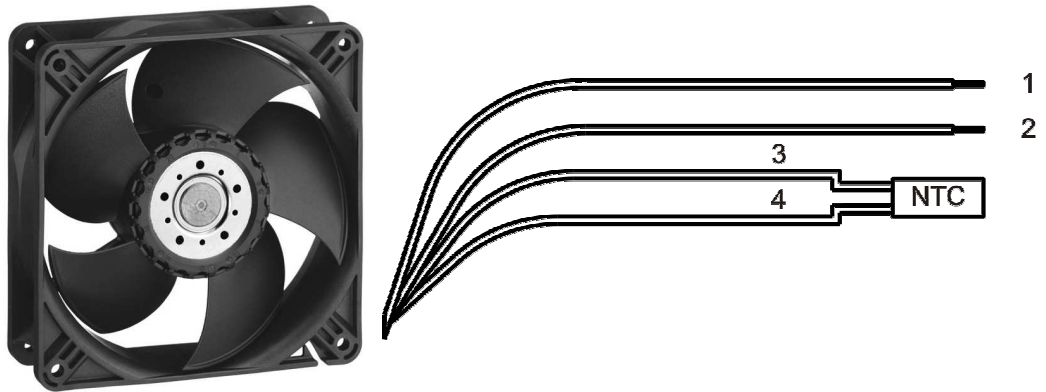
2 Mechanics

2.1 General

Width	119,0 mm	
Height	119,0 mm	
Depth	38,0 mm	
Mass	0,305 kg	
Housing material	Plastic	
Impeller material	Plastic	
Max. torque when mounted across both mounting flanges	Wire outlet corner: 80 Ncm Remaining corners: 80 Ncm	
Screw size	ISO 4762 - M4 degreased, without an additional brace and without washer	

2.2 Connections

Electrical connection	Wires	
Lead wire length	L = 310 mm	
Tolerance	+ - 10 mm	
Wire size (AWG)	24	
Insulation diameter	1,10 mm	



Wire	Color	Operation
1	red	+ UB
2	blue	- GND
3	white	NTC
4	black	- GND NTC

3 Operating Data

3.1 Electrical Interface - Input

Control input	External Temperature Sensor
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Features

<p>Characteristics</p>	<table border="1"> <caption>Graph Data: Drehzahl / speed [1/min] vs Umgebungstemperatur / Ambient temperature [°C]</caption> <thead> <tr> <th>Umgebungstemperatur [°C]</th> <th>Drehzahl / speed [1/min]</th> </tr> </thead> <tbody> <tr><td>0</td><td>1000</td></tr> <tr><td>10</td><td>1000</td></tr> <tr><td>20</td><td>1000</td></tr> <tr><td>25</td><td>1000</td></tr> <tr><td>30</td><td>2000</td></tr> <tr><td>35</td><td>4300</td></tr> <tr><td>40</td><td>4300</td></tr> <tr><td>50</td><td>4300</td></tr> <tr><td>60</td><td>4300</td></tr> <tr><td>70</td><td>4300</td></tr> </tbody> </table>	Umgebungstemperatur [°C]	Drehzahl / speed [1/min]	0	1000	10	1000	20	1000	25	1000	30	2000	35	4300	40	4300	50	4300	60	4300	70	4300
Umgebungstemperatur [°C]	Drehzahl / speed [1/min]																						
0	1000																						
10	1000																						
20	1000																						
25	1000																						
30	2000																						
35	4300																						
40	4300																						
50	4300																						
60	4300																						
70	4300																						
<p>Schematics</p>	<p>The schematic shows a fan (Lüfter / Fan) connected to a customer's power supply (Kunde / Customer). The power supply provides + UB and - GND. The fan's internal reference (+ Interne Ref. / + Internal ref.) is connected to the input (Eingang / Input) through a resistor. An NTC (Negative Temperature Coefficient) sensor is also connected to the input and ground.</p>																						

3.2 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.

$\Delta p = 0$: corresp. to free air flow (see chapter aerodynamics)

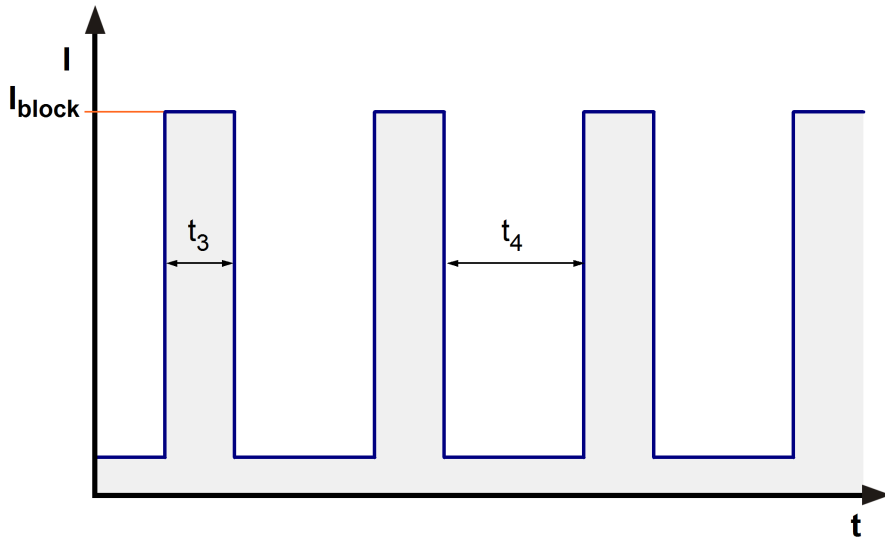
I: corresp. to arithm. mean current value

Name	Condition		
TU 0001	TU: > 35 °C		
NTC 0001	NTC 62 kOhm		

Features	Condition	Symbol	Values		
Voltage range		U	20,4 V		26,4 V
Nominal voltage		U_N		24,0 V	
Power consumption	$\Delta p = 0$	P	5,1 W	7,6 W	7,5 W
Tolerance	TU / NTC 0010		+/- 17,5 %	+/- 25,0 %	+/- 25,0 %
Current consumption	$\Delta p = 0$	I	250 mA	315 mA	285 mA
Tolerance	TU / NTC 0010		+/- 17,5 %	+/- 25,0 %	+/- 25,0 %
Speed	$\Delta p = 0$	n	3.800 1/min	4.300 1/min	4.300 1/min
Tolerance	TU / NTC 0010		+/- 12,5 %	+/- 6,0 %	+/- 6,0 %
Starting current consumption				< 2.350 mA	

3.3 Electrical Features

Electronic function	Speed-Controlled	
Reversed polarity protection	Rectifying diode	
Max. residual current at U_N	$I_F < 1$ mA	
Locked rotor protection	Auto restart	
Locked rotor current at U_N	I_{block} approx. 2.150 mA	
Clock signal at locked rotor	t_3 / t_4 typical: 0,4 s / 20 s	



3.4 Aerodynamics

Measurement conditions:

Measured with a double chamber intake rig acc. to DIN EN ISO 5801.

Normal air density = 1,2 kg/m³; Temperature 23°C +/- 3°C;

In the intake and outlet area should not be any solid obstruction within 0,5 m. Motor shaft horizontal.

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:

at free air flow		
Max. free-air flow ($\Delta p = 0 / \dot{V} = \text{max.}$)	240 m ³ /h	
Max. static pressure ($\Delta p = \text{max.} / \dot{V} = 0$)	160 Pa	

3.5 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 chapter aerodynamics.

a.) Operation condition:

at free air flow		
Optimal operating point		
Sound power level at the optimal operating point	6 bel(A)	
Sound pressure level at free air flow, measured in rubber bands	50 dB(A)	

4 Environment

4.1 General

Min. permitted ambient temperature TU min.	-20 °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

Humidity requirements	humid heat, cyclic; according to DIN EN 60068-2-30, 6 cycle	
Water exposure	None	
Dust requirements	Dust check; according to DIN EN 60068-2-68, 6g/m2d, 1 day	
Salt fog requirements	None	

Permitted application area:

The product is for the use in sheltered rooms with limited controlled temperature. Occasionally condensed water is allowed. Direct exposure to water must be avoided. Saline ambient conditions must be avoided.

Pollution degree 2 (according DIN EN 60664-1)

It occurs only non-conductive pollution. Occasionally, temporary conductivity caused by condensation occurs.

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

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.	850 VDC / 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

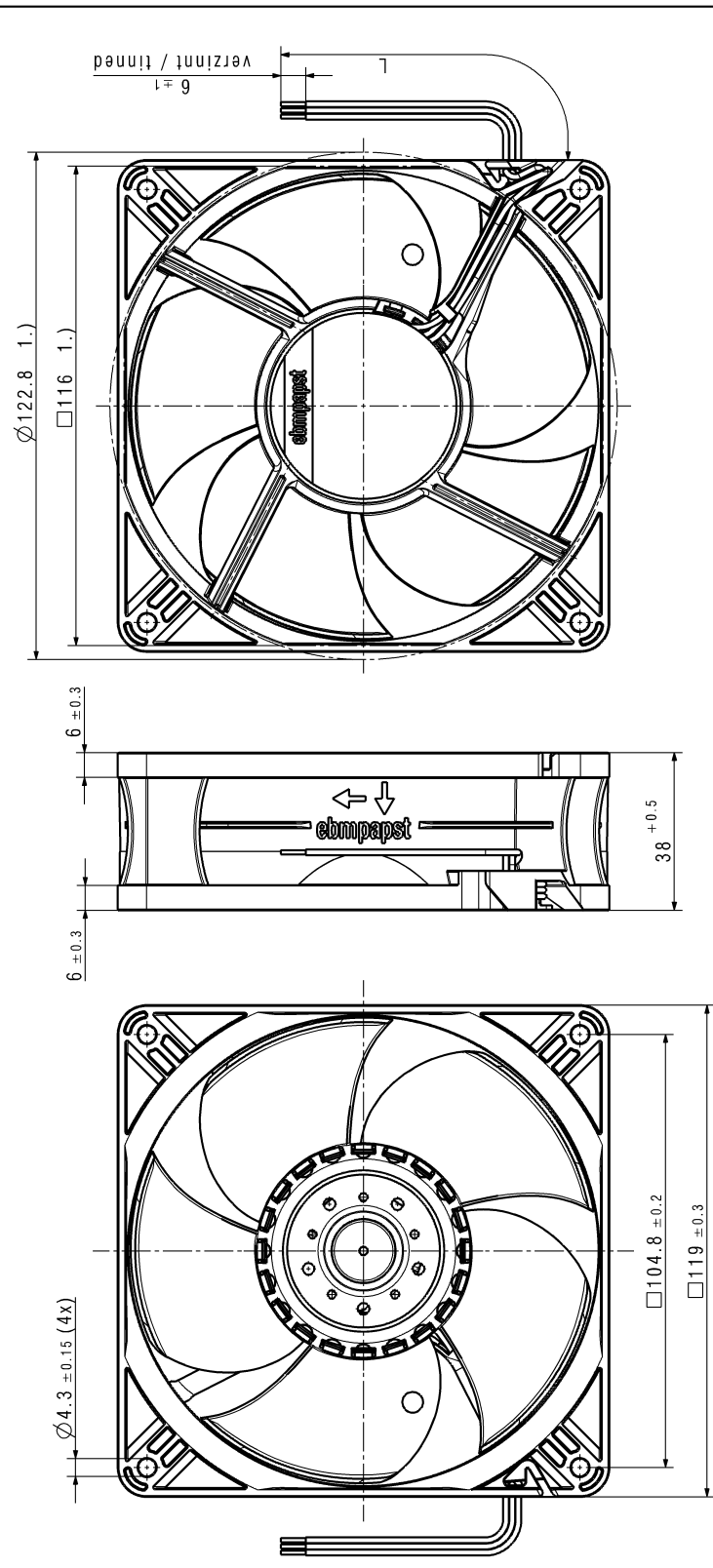
CE	EC Declaration of Conformity	Yes
EAC	Eurasian Conformity	Yes
UL	Underwriters Laboratories	Yes / UL507, Electric Fans
VDE	Association for Electrical, Electronic and Information Technologies	Yes / Approval acc. to EN 60950 (VDE 0805) - Information technology equipment
CSA	Canadian Standards Association	Yes / C22.2 No. 113 Fans and Ventilators
CCC	China Compulsory Certification	Not applicable

6 Reliability

6.1 General

Life expectancy L10 at TU = 40 °C	57.500 h	
Life expectancy L10 at TU max.	27.500 h	
Life expectancy L10 acc. to IPC 9591 at TU = 40 °C	97.5 00 h	

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 Schutzrecht nach DIN ISO 9010 1975 1975
 Refer to production order DIN ISO 9010 1975 1975



Zeichnung entspricht 3D-Modell:
 Drawing is equivalent to 3D-Model:
 9293510500_CPA_000_A

- 1.) Maße fuer Montageausschnitt
- max. Anziedrehmoment = 0.8Nm
 - Axialspiel: mit Feder spielfrei verspannt
 - Anzahl und Länge der Litzen siehe BV- Bl. 1

- 1.) measures for mounting cut-out
- max. tightening torque = 0.8Nm
 - without axial clearance by a pre-loaded spring
 - length and number of wires see design specification page 1

AP-Steckstecker	Mod. Nr. / Change No.	DATA-System-Version / DATA-System-Version	CAD-Nummer / CAD-Environment	Material / Material	Volumen / Volume (cm³)
Toleranzang. / Tolerances:	Toleranzang. / Tolerances:	Form / Shape	DALEUM	Formzahl / Title:	Formzahl / Title:
		Bohr- / Bores	Bohr- / Bores	Zug- Nr. / Drawing No.	Ers. / Zug- / Replaces:
				Einbaumaß / Mounting	Einbaumaß / Mounting
ebmpapst ebmpapst St. Georgen GmbH & Co KG				Form / Size:	Form / Size:
				Einbaumaß / Mounting	Einbaumaß / Mounting
				Einbaumaß / Mounting	Einbaumaß / Mounting