

Product Data Sheet 3412 NGMV

ebmpapst

The engineer's choice



3412 NGMV**INDEX**

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1 General

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

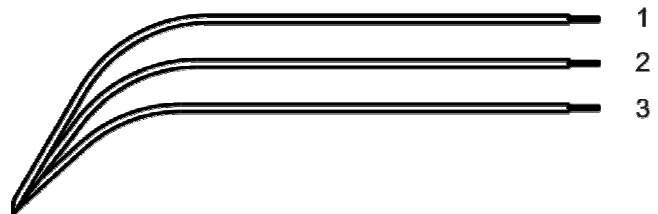
2 Mechanics

2.1 General

Width	92,0 mm	
Height	92,0 mm	
Depth	25,4 mm	
Mass	0,106 kg	
Housing material	Plastic	
Impeller material	Plastic	
Max. torque when mounted across both mounting flanges	Wire outlet corner: 40 Ncm Remaining corners: 60 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	+ - 10,0 mm	



Wire	Color	Operation	Wire size	Insulation diameter
1	red	+ UB	AWG 24	1,55 mm
2	blue	- GND	AWG 24	1,55 mm
3	violet	NTC	AWG 24	1,55 mm

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 / Ambient temperature [°C]</th> <th>Drehzahl / speed [1/min]</th> </tr> </thead> <tbody> <tr><td>-20</td><td>1400</td></tr> <tr><td>-15</td><td>1400</td></tr> <tr><td>-10</td><td>1400</td></tr> <tr><td>-5</td><td>1400</td></tr> <tr><td>0</td><td>1400</td></tr> <tr><td>5</td><td>1400</td></tr> <tr><td>10</td><td>1400</td></tr> <tr><td>15</td><td>1400</td></tr> <tr><td>20</td><td>1400</td></tr> <tr><td>25</td><td>1400</td></tr> <tr><td>30</td><td>1400</td></tr> <tr><td>35</td><td>1600</td></tr> <tr><td>40</td><td>1800</td></tr> <tr><td>45</td><td>2000</td></tr> <tr><td>50</td><td>2300</td></tr> <tr><td>55</td><td>2300</td></tr> <tr><td>60</td><td>2300</td></tr> <tr><td>65</td><td>2300</td></tr> </tbody> </table>	Umgebungstemperatur / Ambient temperature [°C]	Drehzahl / speed [1/min]	-20	1400	-15	1400	-10	1400	-5	1400	0	1400	5	1400	10	1400	15	1400	20	1400	25	1400	30	1400	35	1600	40	1800	45	2000	50	2300	55	2300	60	2300	65	2300
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<p>Schematics</p>	<p>The schematic diagram illustrates the electrical connection between the fan and the customer. On the fan side, there are three main terminals: + UB (positive supply), + Interne Ref. / + Internal ref. (internal reference), and - GND (ground). On the customer side, there are three main terminals: + UB, - GND, and an Input terminal. The Input terminal is connected to an NTC (Negative Temperature Coefficient) sensor. The internal reference terminal on the fan is connected to the Input terminal on the customer side through a resistor. The NTC sensor is connected between the Input terminal and - GND. The fan is represented by a drawing of a fan with five blades.</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: ≥ 50 °C
NTC 0001	NTC < 34 kOhm

Attention!

Fan and NTC must be exposed to the same ambient temperature. It's to exclude that the fan operate at higher ambient temperature and the NTC is placed in a colder environment!

Features	Condition	Symbol	Values		
Voltage range		U	8 V		14,0 V
Nominal voltage		U_N		12,0 V	
Power consumption	$\Delta p = 0$	P	0,9 W +/- 20 %	2,0 W +/- 20,0 %	2,8 W +/- 20,0 %
Tolerance	TU / NTC 0010				
Current consumption	$\Delta p = 0$	I	110 mA +/- 20,0 %	167 mA +/- 20,0 %	200 mA +/- 20,0 %
Tolerance	TU / NTC 0010				
Speed	$\Delta p = 0$	n	1.500 1/min +/- 10,0 %	2.300 1/min +/- 10,0 %	2.700 1/min +/- 10,0 %
Tolerance	TU / NTC 0010				
Starting current consumption				460 mA	

3.3 Electrical Features

Electronic function	Speed-Controlled
Reversed polarity protection	Rectifying diode
Max. residual current at U_N	$I_F \leq 50$ uA
Locked rotor protection	Auto restart
Locked rotor current at U_N	I_{block} approx. 460 mA
Clock signal at locked rotor	t_3 / t_4 typical: 0,23 s / 1,1 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;

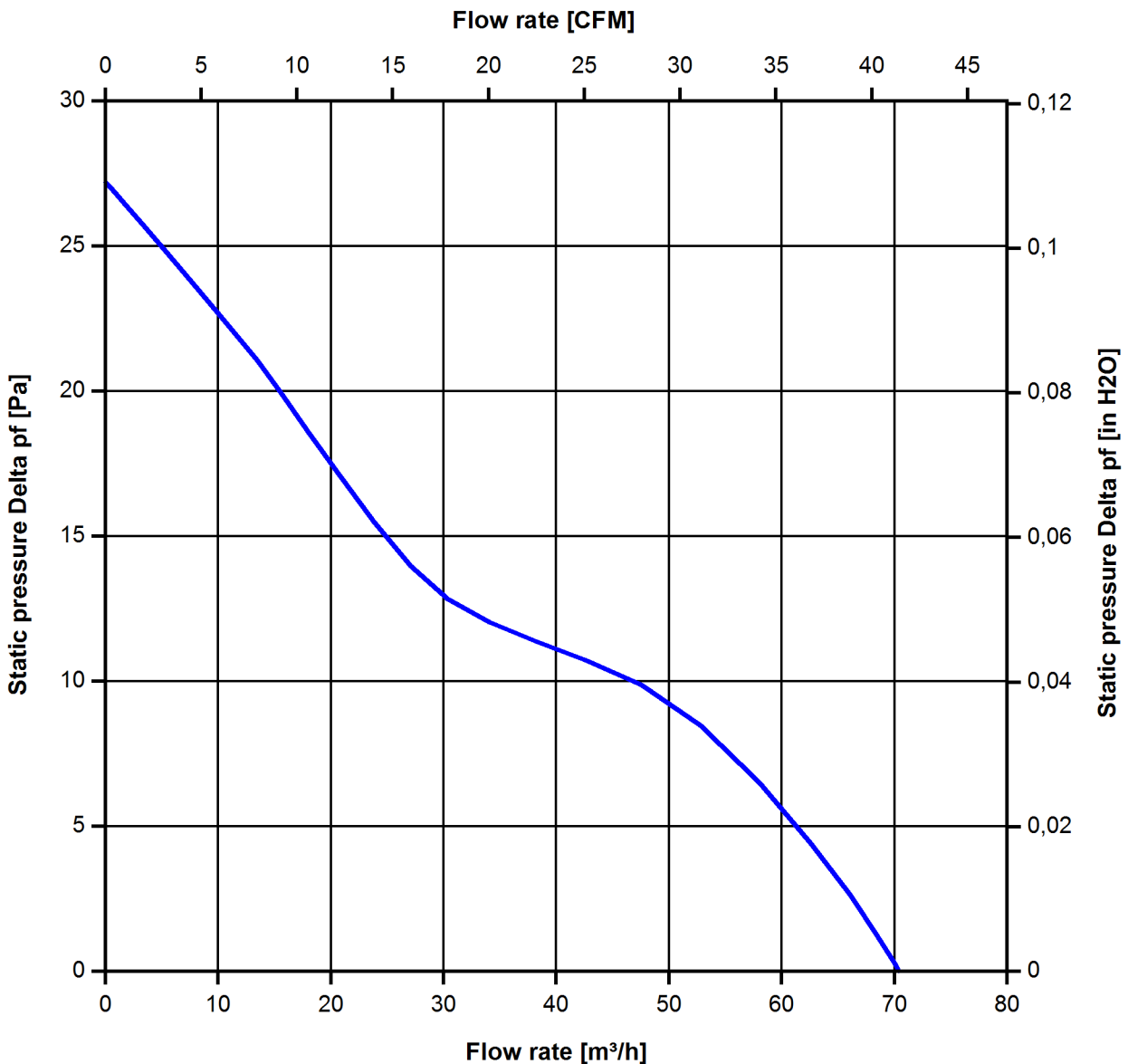
In the intake and outlet area should not be any solid obstruction within 0,5 m. Motor shaft horizontal.

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:

2.300 1/min at free air flow	TU >= 50 °C NTC < 34 kOhm		
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Max. free-air flow ($\Delta p = 0 / \dot{V} = \text{max.}$)	70,0 m ³ /h	
Max. static pressure ($\Delta p = \text{max.} / \dot{V} = 0$)	27 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:

2.300 1/min at free air flow	TU $\geq 50 \text{ }^\circ\text{C}$ NTC $< 34 \text{ k}\Omega$		
Optimal operating point	51,0 m ³ /h @ 8 Pa		
Sound power level at the optimal operating point	4,2 bel(A)		
Sound pressure level at free air flow, measured in rubber bands	26,0 dB(A)		

4 Environment

4.1 General

Min. permitted ambient temperature TU min.	-20 $^\circ\text{C}$	
Max. permitted ambient temperature TU max.	65 $^\circ\text{C}$	
Min. permitted storage temperature TL min.	-40 $^\circ\text{C}$	
Max. permitted storage temperature TL max.	80 $^\circ\text{C}$	

4.2 Climatic Requirements

Humidity requirements	humid heat, constant; according to DIN EN 60068-2-78, 14 days	
Water exposure	None	
Dust requirements	None	
Salt fog requirements	None	

Permitted application area:

The product is intended for use in sheltered rooms with controlled temperature and controlled humidity. Directly exposure to water must be avoided.

Pollution degree 1 (according DIN EN 60664-1)

There is either no pollution or it occurs only dry, non-conductive pollution. The pollution has no negative impact.

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.	Not applicable	
B.) Routine test Measuring conditions: At indoor climate. No arcing or breakdown is allowed! All connections together to ground.	Not applicable	
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

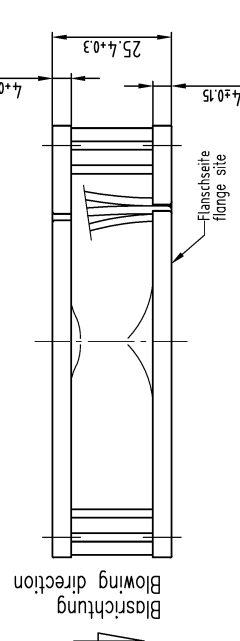
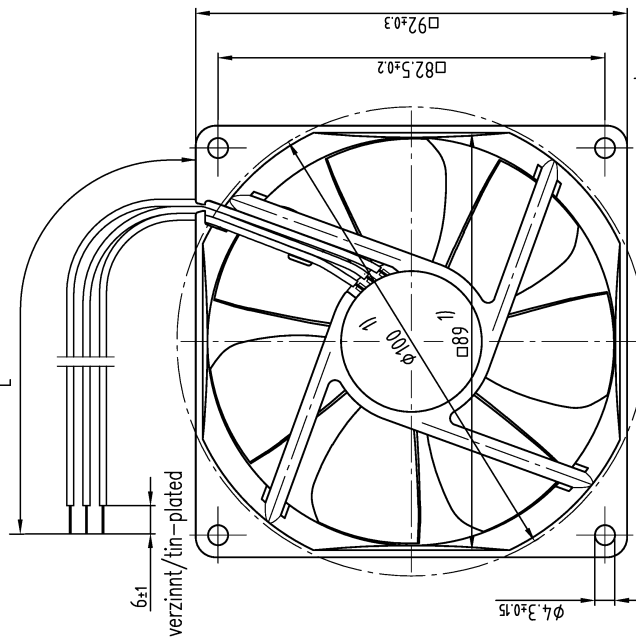
6.1 General

Life expectancy L10 at TU = 40 °C	75.000 h	
Life expectancy L10 at TU max.	42.500 h	
Life expectancy L10 acc. to IPC 9591 at TU = 40 °C	127. 500 h	

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Schutzvermerk nach DIN ISO 16016 beachten/
Refer to protection notice DIN ISO 16016!

Anzahl und Länge der Litze s. Spezifikation
length and number of wires see design specification



1) Maße für Montagewand
Axialspiel bei
- Kugellagerung (K): 0 (mit Federausgleich)
- Gleitlagerung (G): 0.1 - 1.6

1) dimensions for assembly wall
axial clearance by
- ball bearing (K): 0 (with spring compensation)
- sleeve bearing (G): 0.1 - 1.6

SWP-Stab/Side	Änd.-Nr./Change-No.	ebmpapst		Werkstoff/Material		Volumen/Volume (mm ³):
		Audit/ System-Version	AP- Umrüstung/ CAD- Eröffnung			
Tolerierung/Tolerances: Allgemeintoleranzen/Gen. tolerances:		Datum/Date	Name/Name	Artikel/Title		
		Beim/ Drawn				
		Gepr./ Checked		Zug.-Nr./ Drawing-No.:		
		Empf./ Recds.		Feldnummer/Type of Document		
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