

KARTA KATALOGOWA

4312 NHH

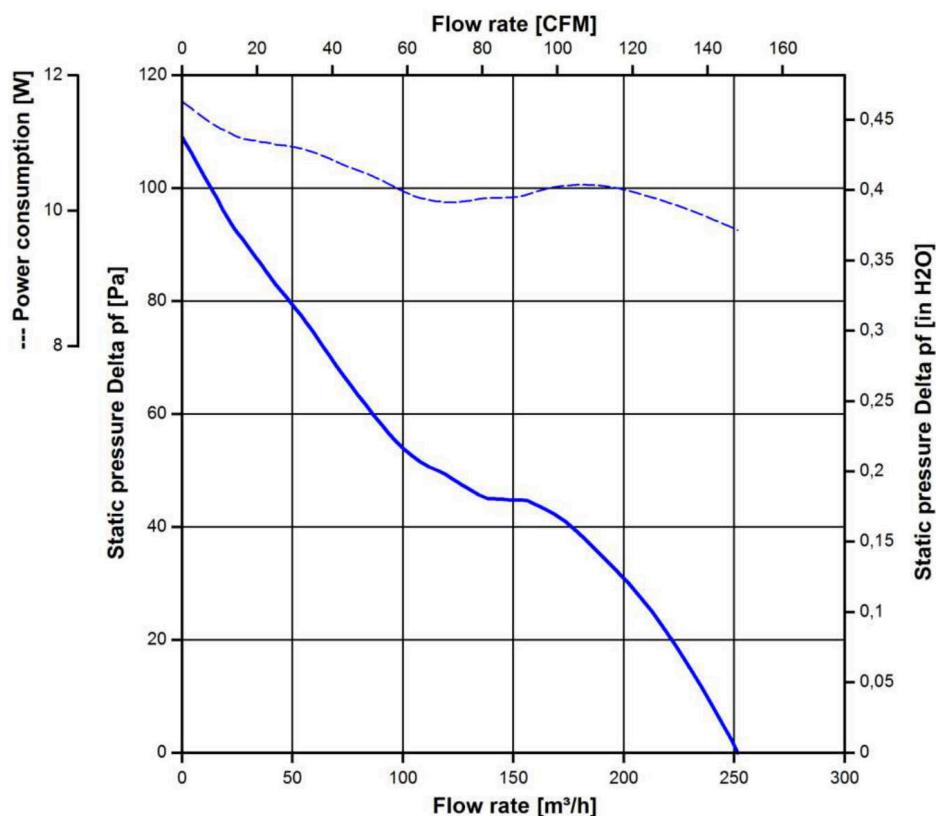
Wentylator osiowy kompaktowy DC

Producent: ebm-papst



Dane znamionowe		Budowa	
Napięcie znamionowe	12 V DC (6...13,2 V DC)	Wymiary	119 × 119 × 32 mm
Prędkość obrotowa	3600 obr/min	Materiał wirnika	tworzywo sztuczne
Pobór mocy	10,7 W	Obudowa	tworzywo sztuczne
Pobór prądu	890 mA	Kierunek przepływu	wydmuch przez żebra
Wydajność	250 m³/h	Łożyskowanie	kulkowe
Maks. ciśnienie statyczne	107 Pa	Podłączenie	przewody
Poziom ciśnienia akustycznego	51 dB(A)	Trwałość L10 (40 °C)	52500 h
Poziom mocy akustycznej	6,2 B		
Temperatura otoczenia	-20...+65 °C		

Charakterystyka przepływowa



Dane na okładce odczytane z karty produktu ebm-papst (oryginał na kolejnych stronach).
 Producent zastrzega możliwość zmian.

Dobór, wycena i dostawa – zapytaj LUFTBERG

tel. +48 600 100 371 · tel. +48 604 959 199
 biuro@luftberg.pl · www.luftberg.pl

Product Data Sheet 4312 NHH**ebmpapst**

The engineer's choice



Product Data Sheet 4312 NHH

4312 NHH

INDEX

1	General	3
2	Mechanics	3
2.1	General.....	3
2.2	Connections.....	3
3	Operating Data	4
3.1	Electrical Operating Data	4
3.2	Electrical Features	4
3.3	Aerodynamics	6
3.4	Sound Data.....	8
4	Environment.....	8
4.1	General.....	8
4.2	Climatic Requirements	8
4.3	Mechanical Requirements.....	8
5	Safety.....	10
5.1	Electrical Safety	10
5.2	Approval Tests	10
6	Reliability.....	10
6.1	General.....	10

Product Data Sheet 4312 NHH
1 General

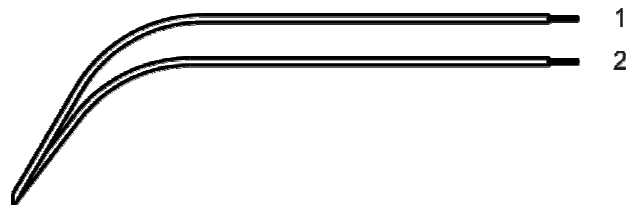
Fan type	Fan	
Rotating direction looking at rotor	Clockwise	
Airflow direction	Air outlet over struts	
Bearing system	Ball bearing	
Mounting position - shaft	Any	

2 Mechanics
2.1 General

Width	119,0 mm	
Height	119,0 mm	
Depth	32 mm	
Mass	0,23 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	
Rotor protrusion max.	0,4 mm	

2.2 Connections

Electrical connection	Wires	
Lead wire length	L = 310 mm	
Tolerance	+/- 10,0 mm	
Wire size (AWG)	24	
Insulation diameter	1,5 mm	



Wire	Color	Operation
1	red	+ UB
2	blue	- GND

Product Data Sheet 4312 NHH

3 Operating Data

3.1 Electrical Operating Data

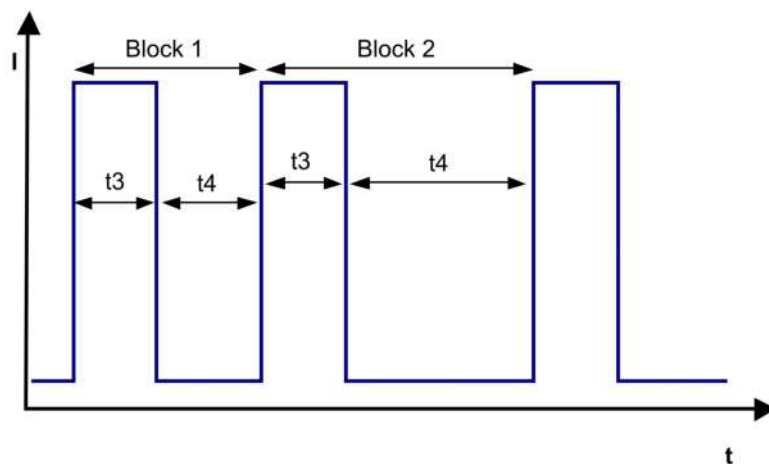
Measurement conditions: Normal air density = 1,2 kg/m³; Temperature 23°C +/- 3°C; Motor axis horizontal; warm-up time before measuring 5 minutes (unless otherwise specified). In the intake and outlet area should not be any solid obstruction within 0,5 m.

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

Features	Condition	Symbol	Values		
Voltage range		U	6,0 V		13,2 V
Nominal voltage		U_N		12,0 V	
Power consumption	$\Delta p = 0$	P	2,2 W	10,7 W	13,2 W
Tolerance	0010		+/- 17,5 %	+/- 12,5 %	+/- 15 %
Current consumption	$\Delta p = 0$	I	370 mA	890 mA	1.000 mA
Tolerance	0010		+/- 17,5 %	+/- 12,5 %	+/- 15 %
Speed	$\Delta p = 0$	n	2.100 1/min	3.600 1/min	3.780 1/min
Tolerance	0010		+/- 12,5 %	+/- 7,5 %	+/- 10 %
Starting current consumption				4.200 mA	

3.2 Electrical Features

Electronic function	None	
Reversed polarity protection	Rectifying diode	
Max. residual current at U_N	$I_F < 5$ mA	
Locked rotor protection	Auto restart	
Locked rotor current at U_N	I_{block} approx. 4.200 mA	
Clock signal at locked rotor	t_3 / t_4 typical: 0,6 s / 10 s	



Product Data Sheet 4312 NHH

Block1: special locked rotor protection: 5 cycles $t_3 / t_4 = 0,6 \text{ s} / 1 \text{ s}$ Block2: locked rotor protection $t_3 / t_4 = 0,6 \text{ s} / 10 \text{ s}$

Product Data Sheet 4312 NHH

3.3 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;

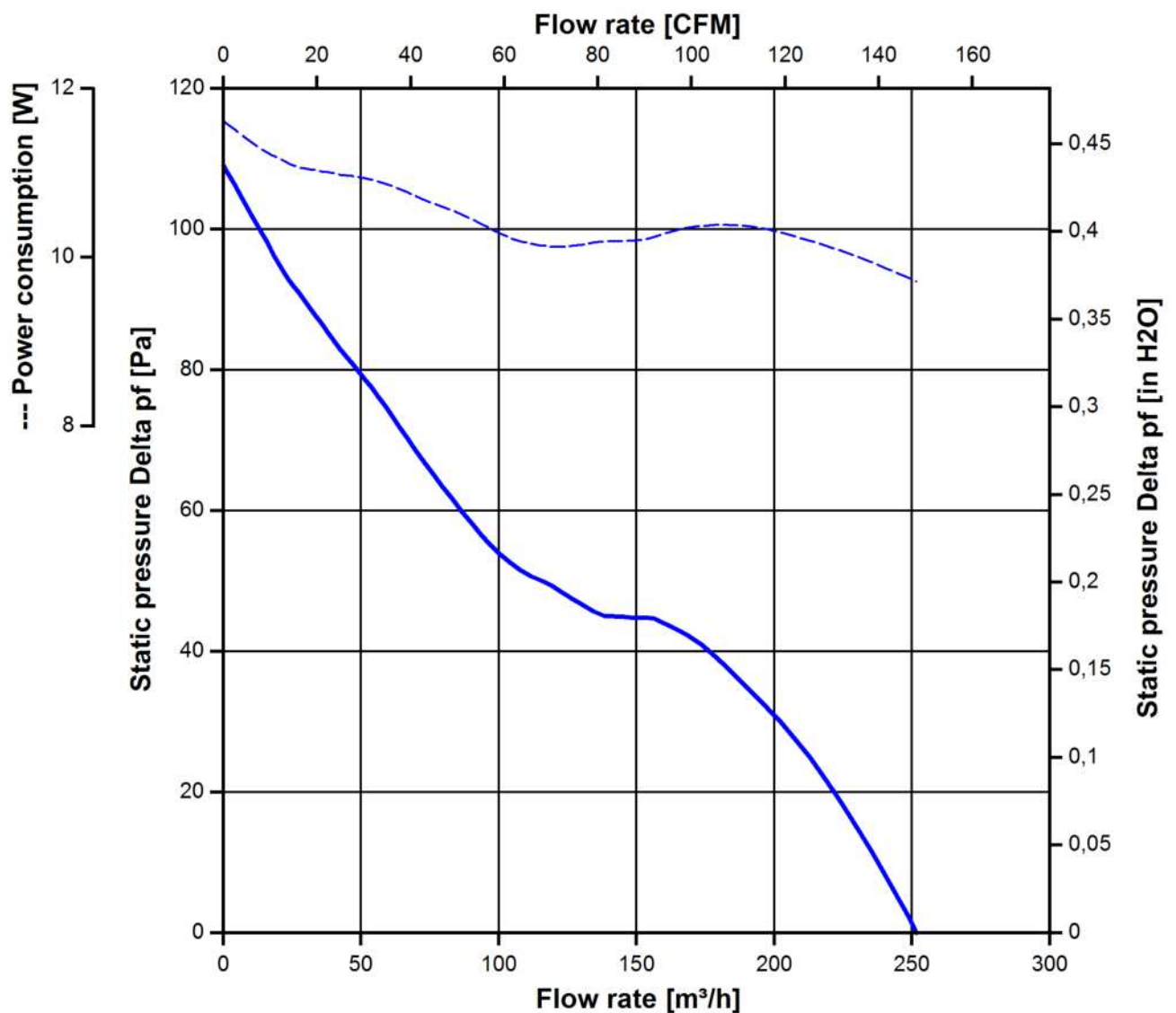
In the intake and outlet area should not be any solid obstruction within 0,5 m. Motor shaft horizontal.

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. 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:

3.600 1/min at free air flow

Max. free-air flow ($\Delta p = 0$ / $\dot{V} = \max.$)	250 m ³ /h	
Max. static pressure ($\Delta p = \max.$ / $\dot{V} = 0$)	107 Pa	



Product Data Sheet 4312 NHH

Product Data Sheet 4312 NHH
3.4 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:

3.600 1/min at free air flow

Optimal operating point	188 m ³ /h @ 36 Pa	
Sound power level at the optimal operating point	6,2 bel(A)	
Sound pressure level at free air flow, measured in rubber bands	51 dB(A)	

4 Environment
4.1 General

Min. permitted ambient temperature TU min.	-20 °C	
Max. permitted ambient temperature TU max.	65 °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, 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.

4.3 Mechanical Requirements

severity level	Vibration (sinusoidal)	
0,5 G	Vibration (sinusoidal) in use IEC 60068-2-6 Displacement / frequency range Acceleration / frequency range Sweep rate Sweep cycles Duration	Vibration (sinusoidal) 0,035 mm / 10-60, 60-10 Hz 0,5 G / 60-500-60 Hz 1 Oct./min 10 2 hrs.

Product Data Sheet 4312 NHH

	Axes of vibration	3
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severity level	stationary use		
1	storage / transportation	Random vibration not in use IEC 60068-2-64 Frequency range / ASD G_{RMS} Axes of vibration Test duration	Random vibration 5 - 20 Hz : $1,0 \text{ m}^2 / \text{s}^3$ 20 - 500 Hz : - 3 dB / Oct 0,91 G 3 3 x 5 h
	storage / transportation	Bump not in use IEC 60068-2-29 Shock spectrum Acceleration Duration Number of bumps (+X, -X, -Y, +Y, -Z, +Z) Total bumps	Bump half sine 18 G 6 ms 100 in each direction 600
	stationary use	Random vibration in use IEC 60068-2-64 Frequency range / ASD G_{RMS} Axes of vibration Test duration	Random vibration 5 - 20 Hz : $2,0 \text{ m}^2 / \text{s}^3$ 20- 150 Hz : - 3 dB / Oct 0,83 G 3 3 x 5 h
	stationary use	Bump in use IEC 60068-2-29 Shock spectrum Acceleration Duration Number of bumps (+X, -X, -Y, +Y, -Z, +Z) Total bumps	Bump half sine 5 G 11 ms 100 in each direction 600

Product Data Sheet 4312 NHH

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. B.) Routine test Measuring conditions: At indoor climate. No arcing or breakdown is allowed! All connections together to ground.	500 VAC / 1 Min. 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	

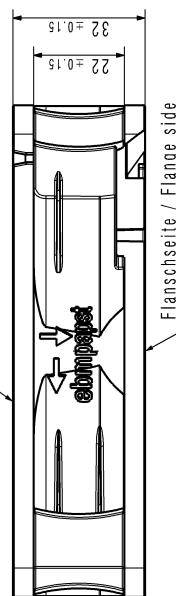
5.2 Approval Tests

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	52.500 h	
Life expectancy L10 at TU max.	30.000 h	
Life expectancy L10 acc. to IPC 9591 at TU = 40 °C	87.500 h	



1) Maße für Montagewand / Dimensions for assembly wall
 - Kein Axialspiel der Kugellager durch Federausgleich /
 No axial clearance of ball bearings due to pre-load spring
 - Anzahl und Länge der Litzen siehe Produktspezifikation Blatt 1
 Number and length of the wires see design specification sheet 1

RWS Status/Status 	Aust.-Nr. / Drawing change No.	CAD-System-Version/ CAD-System-Version	CAD-Programm/ CAD-Programm	Werkstoff / Material: Material (see 3): Serial: Batch:
	Artikel / Title:			
2D-Drawing / 2D-Drawing 3D-Representation / 3D-Representation Part Name				
Tolerancing / Tolerancing Tolerancing / Tolerancing				
Alignment/Alignment (see Tolerancing): Alignment/Alignment (see Tolerancing):				
2Dp.-Nr. / Drawing No.: 2Dp.-Nr. / Drawing No.:			Sheet / Seite: Sheet / Seite:	
Drawing type / Document type: Drawing type / Document type:			Format / Size: Format / Size:	
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