Product Data Sheet REF100-11/12-012

ebmpapst

The engineer's choice



GREEN TECH

REF100-11/12-012

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6.1 General 8

1 General

Fan type	Blower without chassis with intake nozzle	
Rotating direction looking at rotor	Clockwise	
Airflow direction	Air in axially, Air out radially	
Bearing system	Ball bearing	
Mounting position - shaft	Any	

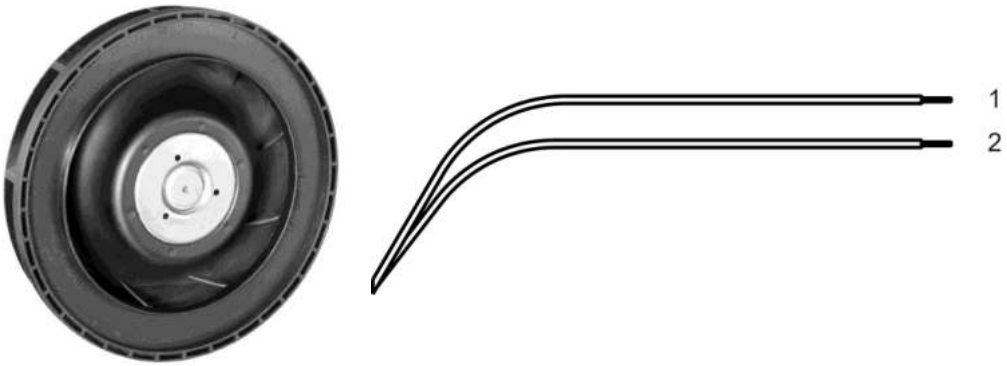
2 Mechanics

2.1 General

Depth	25,0 mm	
Diameter	104,0 mm	
Mass	0,165 kg	
Housing material		
Impeller material	Plastic	

2.2 Connections

Electrical connection	Wires	
Lead wire length Tolerance	L = 325 mm +- 10,0 mm	
Wire size (AWG)	22	
Insulation diameter	1,62 mm	



Wire	Color	Operation
1	red	+ UB
2	blue	- GND

3 Operating Data

3.1 Electrical Operating Data

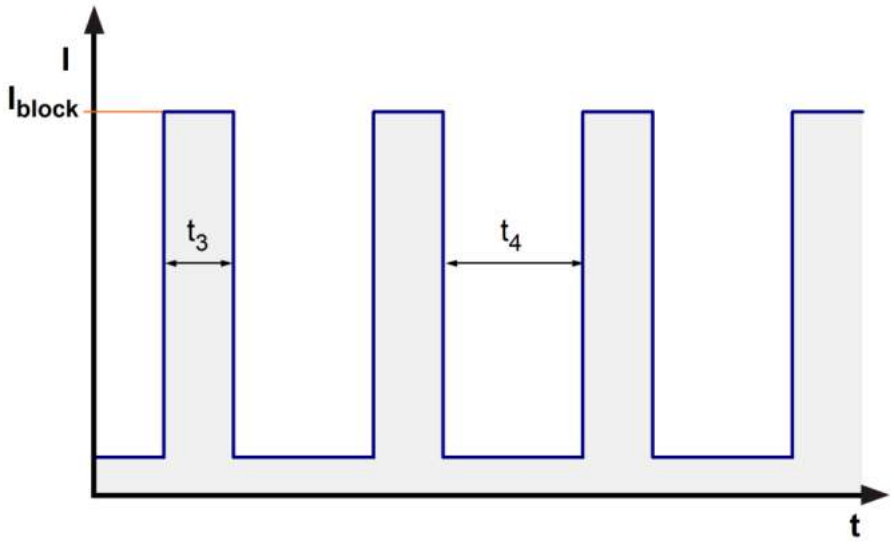
Measurement conditions:	Normal air density = 1,2 kg/m3; Temperature 23°C +/- 3°C; Motor axis horizontal; warm-up time before measuring 5 minutes (unless otherwise specified). In the intake and outlet area should not be any solid obstruction within 0,5 m.

Measurement setup:	Measured between two steel plates
Steel plate:	127 mm x 127 mm
Intake nozzle:	D: 70 mm; R: 3,5 mm
Distance between bottom and top plate:	25 mm
Overlapping impeller / nozzle:	2 mm

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

3.2 Electrical Features

Electronic function	None	
Reversed polarity protection Max. residual current at U_N	Rectifying diode I_F <= 10 mA	
Locked rotor protection	Auto restart	
Locked rotor current at U_N	I_{block} approx. 1.800 mA	
Clock signal at locked rotor	t_3 / t_4	



3.3 Aerodynamics

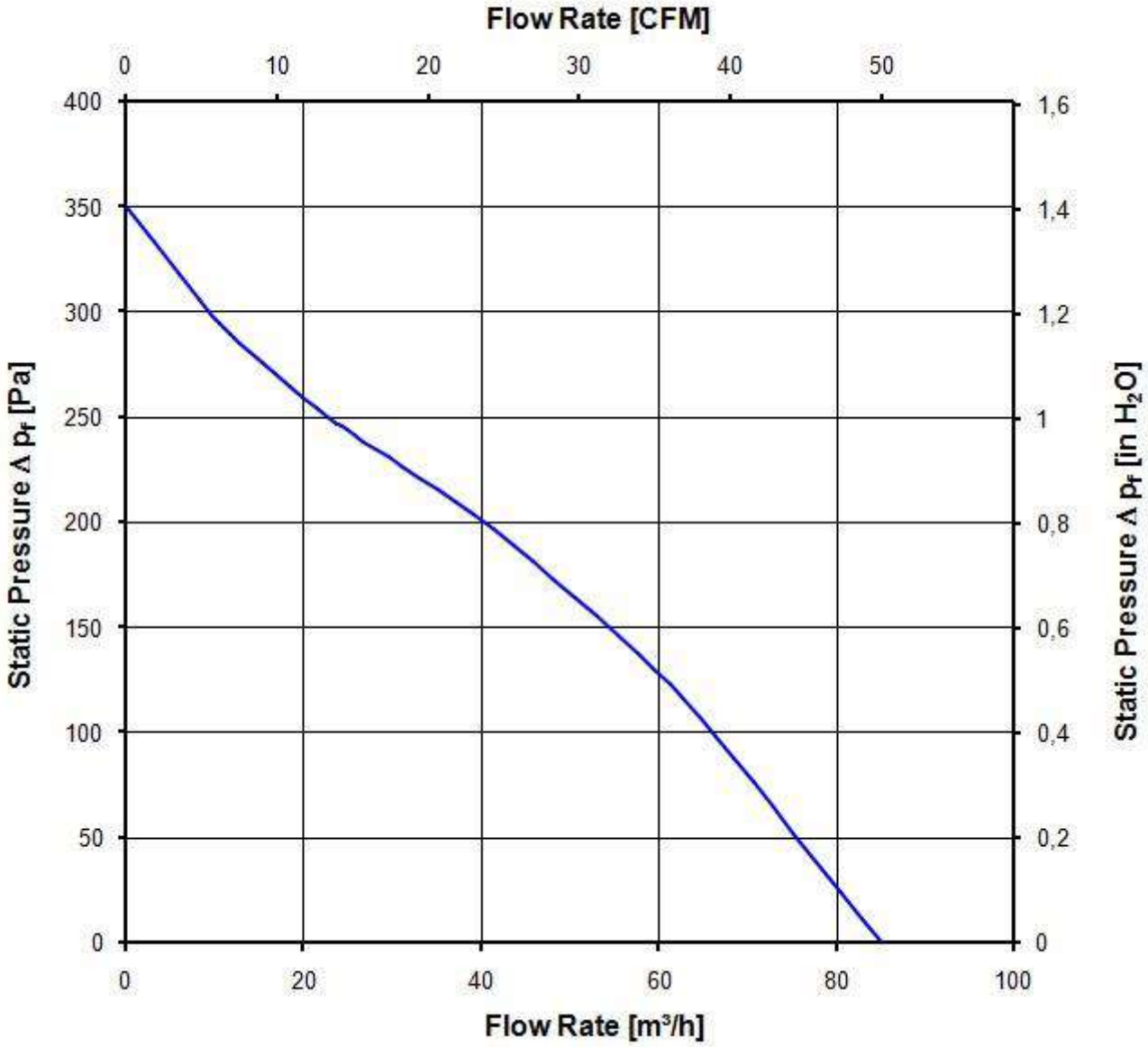
Measurement conditions:	Measured with a double chamber intake rig acc. to DIN EN ISO 5801. Normal air density = 1,2 kg/m3; Temperature 23°C +/- 3°C; In the intake and outlet area should not be any solid obstruction within 0,5 m. The information is only valid under the specified test conditions and may 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.

Measurement setup:	Measured between two steel plates
Steel plate:	127 mm x 127 mm
Intake nozzle:	D: 70 mm; R: 3,5 mm
Distance between bottom and top plate:	25 mm
Overlapping impeller / nozzle:	2 mm

a.) Operation condition:

5.400 1/min at free air flow

Max. free-air flow (Δp = 0 / $\dot{V}$ = max.)	86,0 m3/h	
Max. static pressure (Δp = max. / $\dot{V}$ =0)	350 Pa	
at free air flow		
at free air flow		


Flow Rate [CFM]
0
10
20
30
40
50
400
350
300
250
200
150
100
50
0
1,6
1,4
1,2
1
0,8
0,6
0,4
0,2
0
Static Pressure Δ pf [Pa]
Static Pressure Δ pf [in H2O]
0
20
40
60
80
100
Flow Rate [m³/h]

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 Lp(A) < 5 dB(A) For further measurement conditions see section 3.5

a.) Operation condition:

5.400 1/min at free air flow

Optimal operating point	44,0 m3/h @ 164 Pa	
Sound power level at the optimal operating point	6,3 bel(A)	
Sound pressure level at free air flow, measured in rubber bands		

4 Environment

4.1 General

Min. permitted ambient temperature TU min.	-20 °C	
Max. permitted ambient temperature TU max.	75 °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.

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

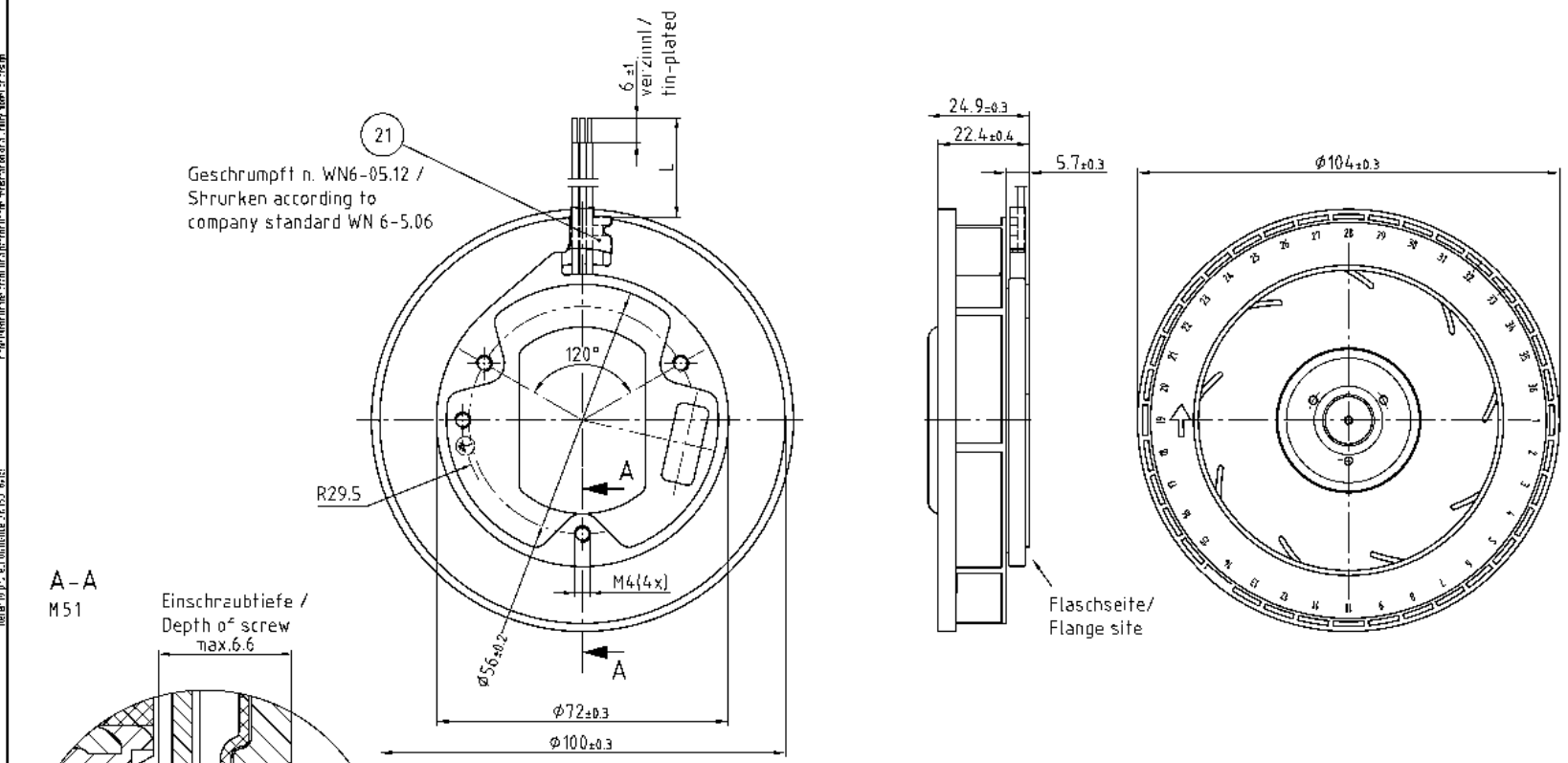
CE	EC Declaration of Conformity	Yes
EAC	Eurasian Conformity	Yes
UL	Underwriters Laboratories	Yes / UL507, Electric Fans
VDE	Association for Electrical, Electronic and Information Technologies	Yes / Approval acc. to EN 60950 (VDE 0805) - Information technology equipment
CSA	Canadian Standards Association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

The approval tests are observed to:
U approval max.:15,0 V @ TU approval max.: 75,0 °C

6 Reliability

6.1 General

Life expectancy L10 at TU = 40 °C	80.000 h	
Life expectancy L10 at TU max.	30.000 h	
Life expectancy L10 acc. to IPC 9591 at TU = 40 °C	135.000 h	



1) = Anzah. und Länge der Litze s. Produktspezifikation Bl. 3 /
Lenght and number of wire see productspecification page 3

			ebmpapst	Werkstoff/Material:	Volumen/Volume [mm³]
SAP-Status/Scale	Kund.-Änderungs-Nr.	Art/CAD-System-Version	CAD Umgebung/ CAD Environment		Gewicht/Mass [g]
		Datum/Date	Name/Name		
Toleranzen/Tolerances:		Bearb./ Drawn		Artikel/Title:	
Allgemeintoleranz/Gen. tolerances		Gepr./ Checked			
		Freig./ Released			
ebmpapst				Zeichn.-Nr./Drawing-No.:	Ers. f. Zchg./Replaces
ebm-papst St. Georgen GmbH & Co. KG				Dokumentenart/Type of Document	Kundennorm/Customer Norm/Spec.

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