

## 1 General

Fan type	Blower	
Rotating direction looking at rotor	Counterclockwise	
Airflow direction	Air in axially, Air out radially	
Bearing system	Ball bearing	
Mounting position - shaft	Any	

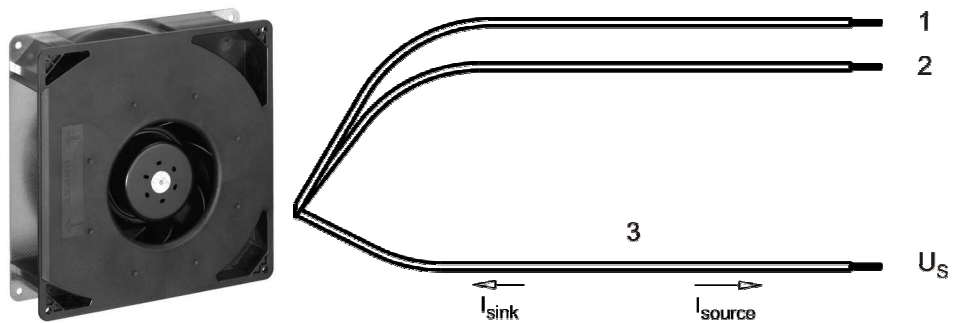
## 2 Mechanics

### 2.1 General

Width	220,0 mm	
Height	220,0 mm	
Depth	56,0 mm	
Mass	1,300 kg	
Housing material	Mixed	
Impeller material	Plastic	
Max. torque when mounted across both mounting flanges; Metal flange on mounting plate Screw size	Wire outlet corner: 70 Ncm Remaining corners: 70 Ncm ISO 4762 - M4 degreased, without an additional brace and without washer	

### 2.2 Connections

Electrical connection	Wires	
Lead wire length	L = 325 mm	
Tolerance	+/- 10 mm	
Tube length	S = 20 mm	
Tolerance	+/- 10 mm	



Wire	Color	Operation	Wire size	Insulation diameter
1	red	+ UB	AWG 22	1,70 mm
2	black	- GND	AWG 22	1,70 mm
3	yellow	Tacho	AWG 22	1,70 mm

### 3 Operating Data

#### 3.1 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 chapter aerodynamics)  
I: corresp. to arithm. mean current value

Note:

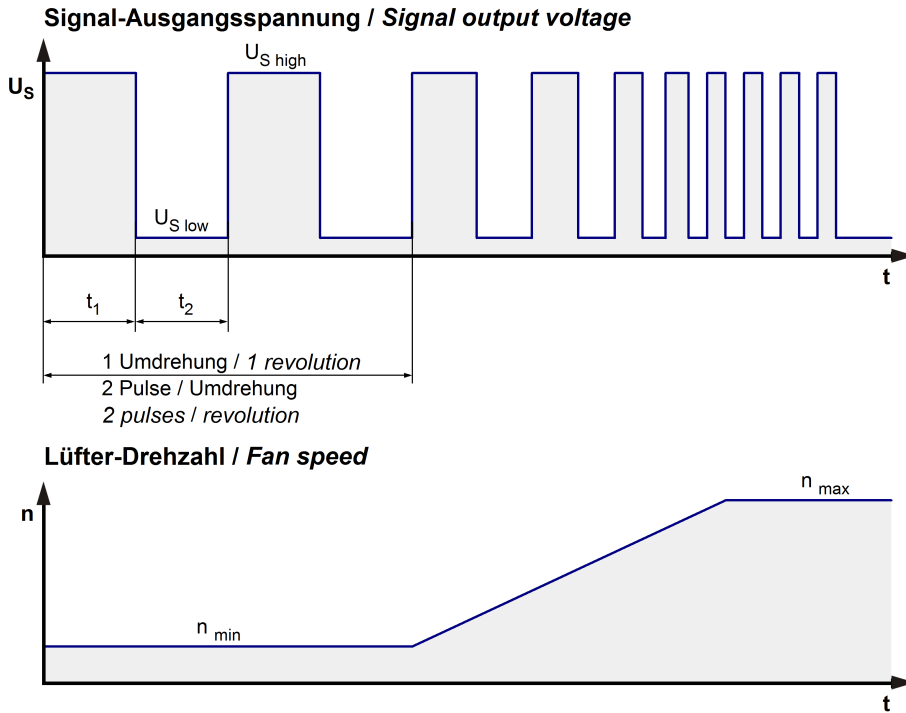
No inrush current at Unom means:

The internal electrolytic capacitor 39uF/100V has no resistor or inrush current limitation, essentially the power supply and the type and length of the connecting cable is limiting the Inrush current.

Features	Condition	Symbol	Values		
Voltage range		U	28 V		60,0 V
Nominal voltage		U <sub>N</sub>		48,0 V	
Power consumption	$\Delta p = 0$	P	6 W	19 W	27 W
Tolerance	0010		+/- 20 %	+/- 20,0 %	+/- 17,5 %
Current consumption	$\Delta p = 0$	I	215 mA	395 mA	510 mA
Tolerance	0010		+/- 20,0 %	+/- 20,0 %	+/- 17,5 %
Speed	$\Delta p = 0$	n	1.800 1/min	2.850 1/min	3.350 1/min
Tolerance	0010		+/- 12,5 %	+/- 7,5 %	+/- 10,0 %
Starting current consumption				1.500 mA	

### 3.2 Electrical Interface - Output

Tacho type	/12 (TTL)
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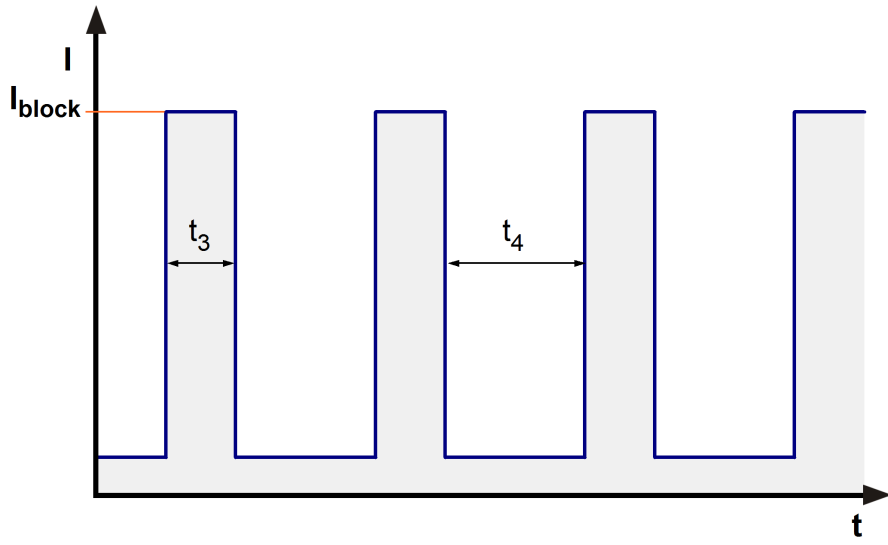


Features	Note	Values
Tacho signal TTL High		Min.: 2,5 V    Max.: 5,5 V
Tacho signal Low	$U_{S\ low}$	$\leq 0,4\ V$
Tacho signal High	$U_{S\ high}$	
Maximum sink current	$I_{sink}$	$\leq 20\ mA$
External resistor	All voltages measured to GND.	
Tacho frequency	$(2 \times n) / 60$	
Tacho isolated from motor	No	
Slew rate		$\Rightarrow 0,5\ V/\mu s$

n = revolutions per minute (1/min)

### 3.3 Electrical Features

Electronic function	None	
Reversed polarity protection	Rectifying diode	
Max. residual current at $U_N$	$I_F \leq 10\ mA$	
Locked rotor protection	Auto restart	
Locked rotor current at $U_N$	$I_{block}$ approx. 1.500 mA	
Clock signal at locked rotor	$t_3 / t_4$ typical: 2,6 s / 6,3 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/m<sup>3</sup>; Temperature 23°C +/- 3°C;

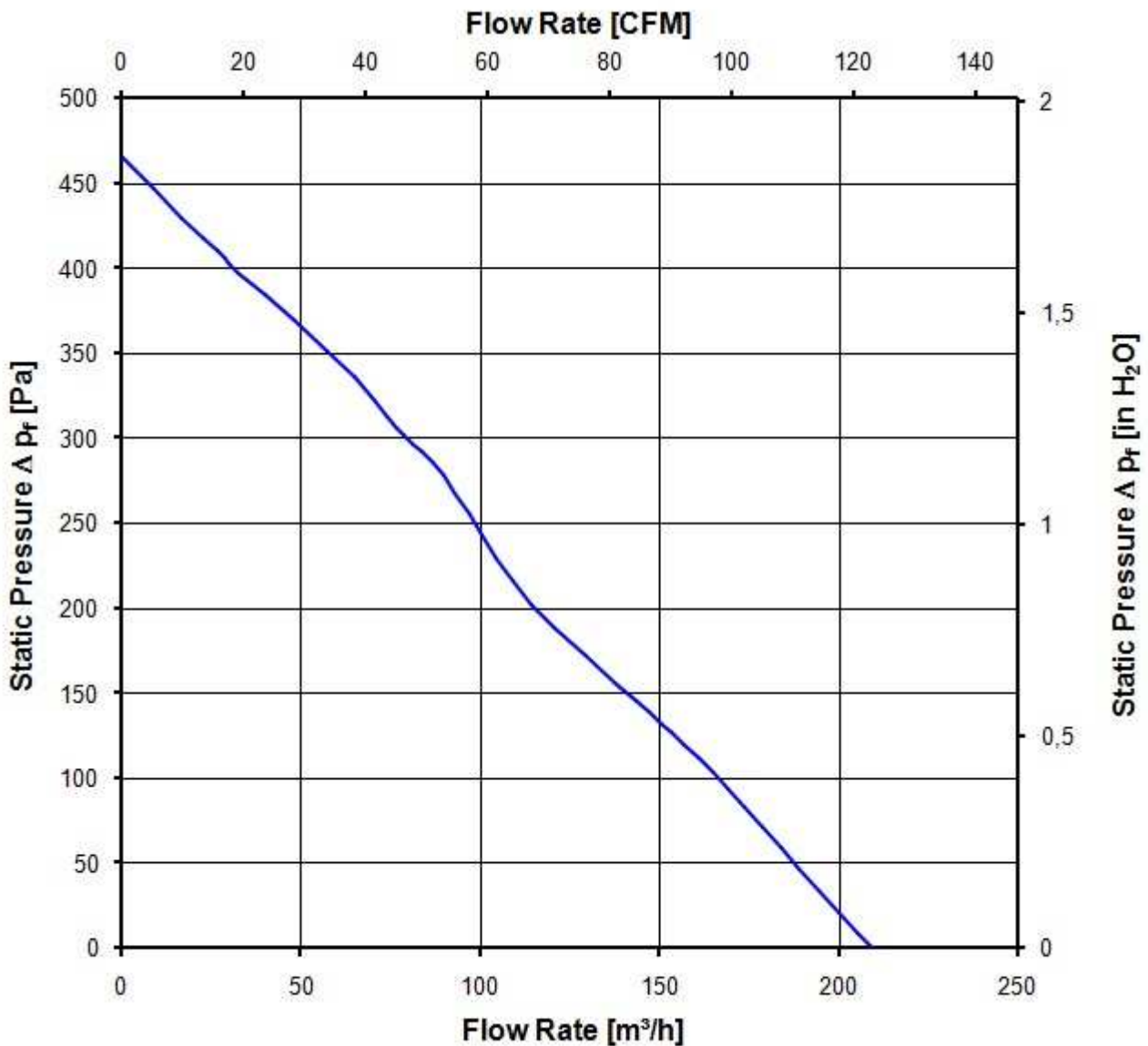
In the intake and outlet area should not be any solid obstruction within 0,5 m. Motor shaft horizontal.

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:

2.850 1/min at free air flow

Max. free-air flow ( $\Delta p = 0 / \dot{V} = \text{max.}$ )	209,0 m <sup>3</sup> /h	
Max. static pressure ( $\Delta p = \text{max.} / \dot{V} = 0$ )	460 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:

2.850 1/min at free air flow
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Optimal operating point	120,0 m <sup>3</sup> /h @ 166 Pa	
Sound power level at the optimal operating point	6,7 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.	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, 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.	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 / 1,5 mm	
Protection class	III	

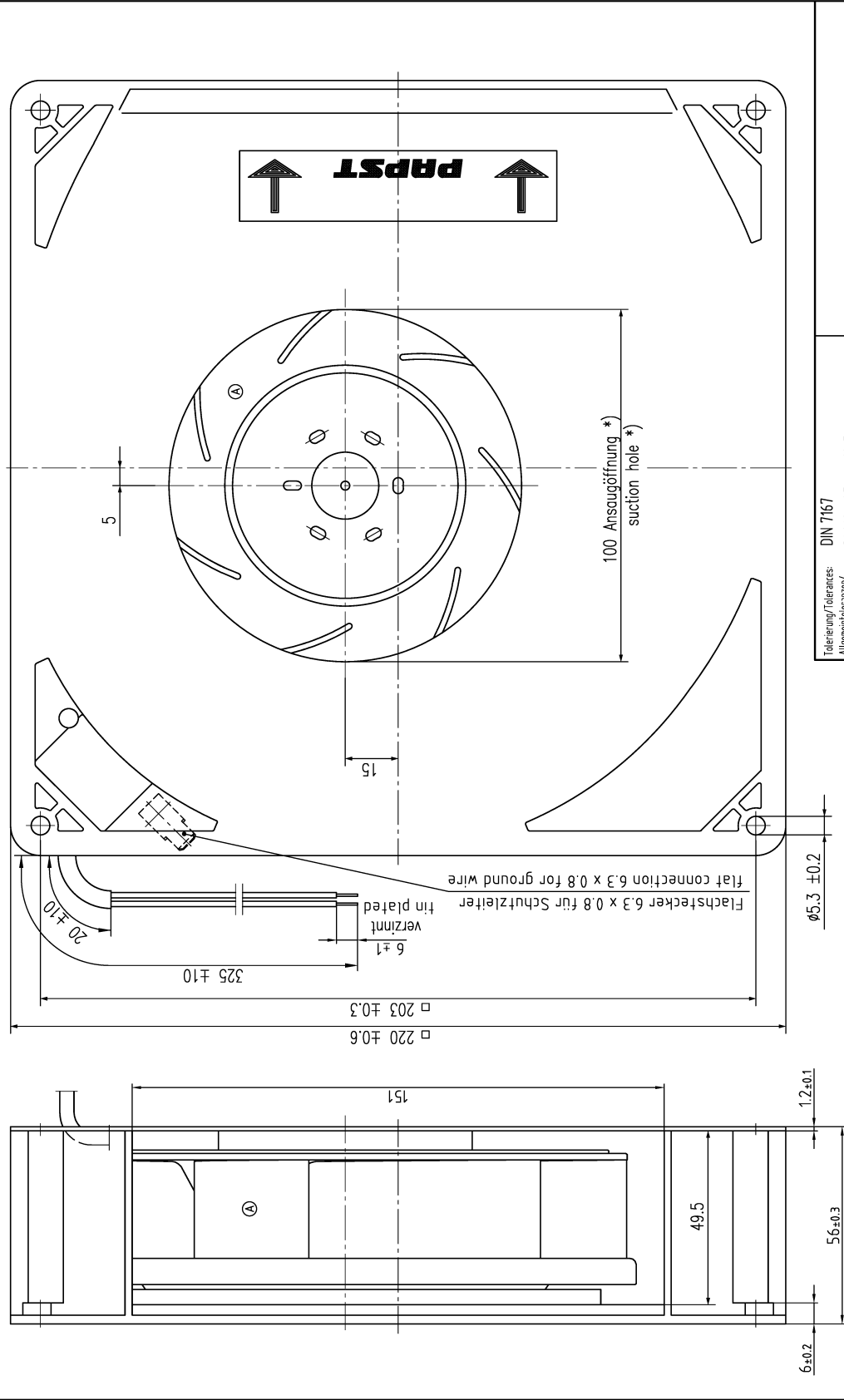
**5.2 Approval Tests**

CE	EC Declaration of Conformity	Yes
EAC	Eurasian Conformity	Yes
UL	Underwriters Laboratories	Yes / UL audited by CSA according to 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	Yes / GB 12350 Safety Requirements for small Power Motors

**6 Reliability**

**6.1 General**

Life expectancy L10 at TU = 40 °C	70.000 h	
Life expectancy L10 at TU max.	35.000 h	
Life expectancy L10 acc. to IPC 9591 at TU = 40 °C	117.500 h	

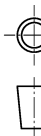


Axialspiel: mit Feder spielfrei verspannt.  
without axial clearance by a pre-loaded spring

\*) Öffnung f. Montagewand  $\approx 115$   
\*) Opening for mounting plate  $\approx 115$

Anzahl und Länge der Litzen  
sowie Länge Schlauch siehe BV Bl. 1

Length and number of wires and length of  
tube see design specification page 1

Tolerierung/Tolerances: Allgemeintoleranzen/ gen. tolerances		DIN 7167 DIN ISO 2768-mk-E		Messstab/scale	
Bearb./Drawn	Datum/Date	Name/Name	Art./Title		Blatt/Page
					Zichr.-Nr./ Dwg.-No.:
			<b>ebmpapst</b> ebm-papst St. Georgen GmbH & Co. KG		Ers. Zichg./ Replaces:
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