



The engineer's choice

ebmpapst

614 J/2HHPR-010

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1 General

Fan type	Fan	
Rotational direction looking at rotor	clockwise	
Airflow direction	Air outlet over struts	
Bearing system	Ball bearing	
Mounting position	any	

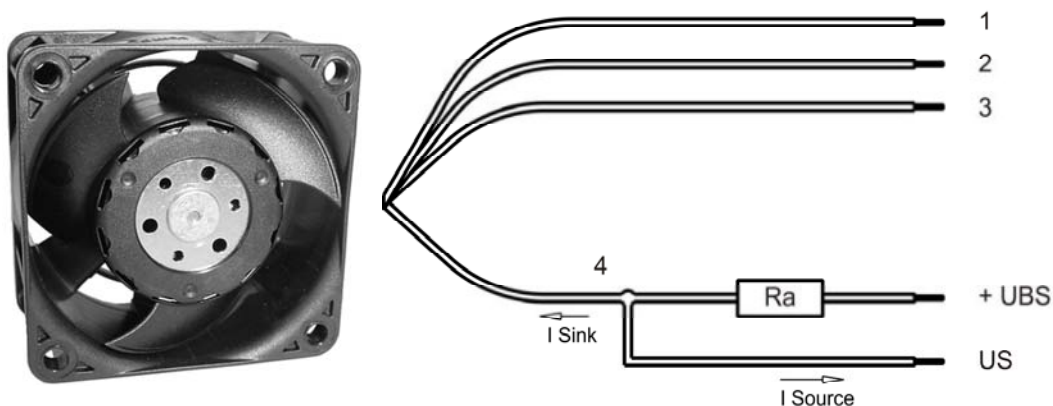
2 Mechanics

2.1 General

Width	60,0 mm	
Height	60,0 mm	
Depth	32,0 mm	
Weight	0,100 kg	
Housing material	Plastic	
Impeller material	Plastic	

2.2 Connections

Electrical connection	Wires	
Length of lead wire	400 mm	
Tolerance	+/- 10,0 mm	
Wire gauge (AWG)	24	
Insulation diameter	1,45 mm	



	Colour	Operation
Wire 1	red	+ UB
Wire 2	blue	- GND
Wire 3	black	PWM
Wire 4	white	Tacho

The auxiliaries shown on the schematic diagram (which are required for the intended use) are not part of our delivery.

3 Operating Data

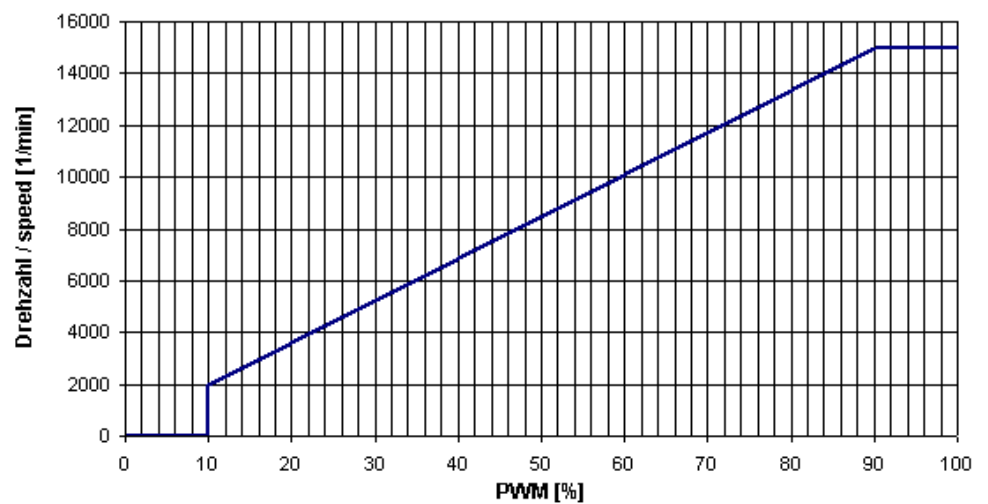
3.1 Operating Data - Electrical Interface - Input

Control input	PWM
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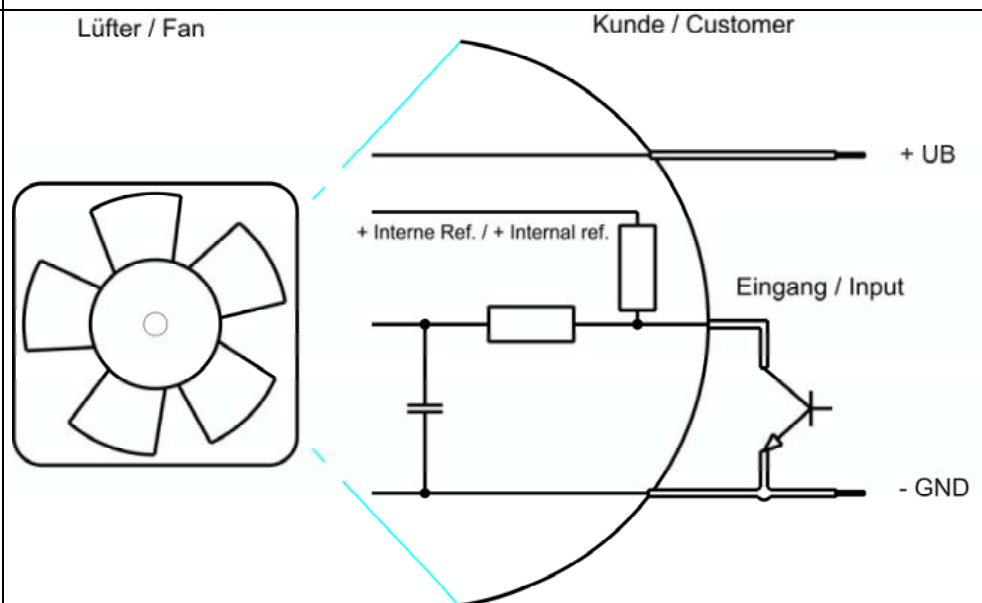
Features

Input type	Open collector	
PWM - Frequency		1 kHz - 30 kHz Typical: 5 kHz

Characteristics



Schematics



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 section 3.5)
 I: corresp. to arithm. mean current value

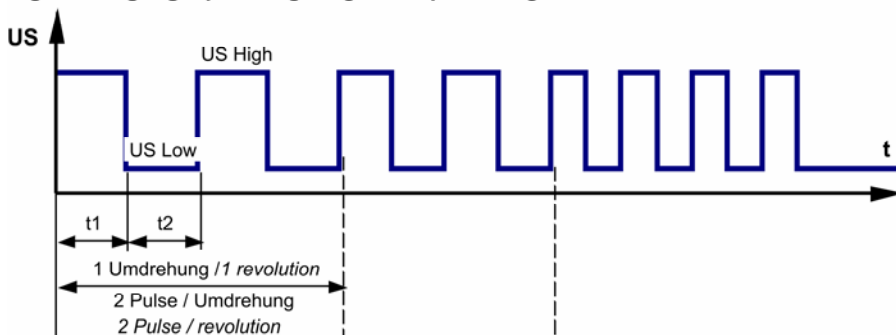
Name	Condition		
PWM 0001	PWM: 95 %;	f: 1 kHz	f: 30 kHz

Features	Condition	Symbol	Values		
Voltage range	$\Delta p = 0$	U	18,0 V		30,0 V
Nominal voltage	$\Delta p = 0$	U_N		24,0 V	
Power consumption	$\Delta p = 0$	P	7,5 W	14,2 W	14,7 W
Tolerance	PWM 0001		+/- 17,5 %	+/- 25,0 %	+/- 25,0 %
Current consumption	$\Delta p = 0$	I	415 mA	590 mA	490 mA
Tolerance	PWM 0001		+/- 17,5 %	+/- 25,0 %	+/- 25,0 %
Speed	$\Delta p = 0$	n	11.900 1/min	15.000 1/min	15.000 1/min
Tolerance	PWM 0001		+/- 12,5 %	+/- 6,0 %	+/- 6,0 %
Starting current consumption				2.000 mA	

3.3 Operating Data - Electrical Interface -Output

Tacho type	/2 (Open collector)
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Signal-Ausgangsspannung / Signal output voltage



$$R_a = \frac{U_{BS} - U_{S \text{ Low}}}{I_{\text{Sink}}}$$

Lüfter-Drehzahl / Fan speed



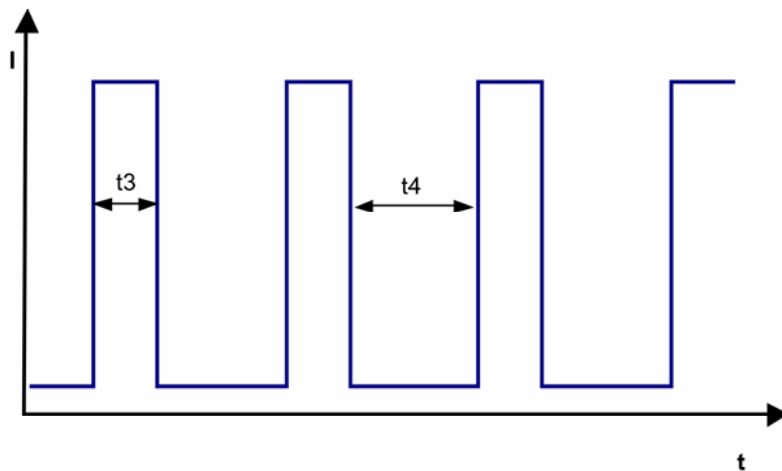
Features	Note	Values
Tacho operating voltage (UBS)		$\leq 60 \text{ V}$
Tacho signal Low	I sink: 2 mA	$\leq 0,4 \text{ V}$
Tacho signal High	I source: 0 mA	$\leq 60 \text{ V}$
Maximum sink current		$\leq 20 \text{ mA}$

External resistor	External resistor Ra from UBS to US required. All voltages measured to GND.	
Tacho frequency	$(2 \times n) / 60$	
Tacho isolated from motor	No	
Slew rate		$\Rightarrow 0,5 \text{ V/us}$

Alarm type	None
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3.4 Electrical Features

Electronic function	Speed-Controlled	
Reversed polarity protection	Rectifying diode	
Max. residual current at Un	$I_F \leq 2 \text{ mA}$	
Locked rotor protection	Auto restart	
Locked rotor current at Un	approx. 1.650 mA	
Clock signal t3/t4 at locked rotor	Typical: 0,3 s / 5,3 s	



3.5 Aerodynamic

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.

a.) Operation condition:

15.000 1/min at free air flow	PWM 95 %;	f: 1 kHz	f: 30 kHz
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Max. free-air flow ($\Delta p = 0$ / $\dot{V} = \max.$)	83,0 m ³ /h	
Max. static pressure ($\Delta p = \max.$ / $\dot{V} = 0$)	570 Pa	

3.6 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 $L_p(A) < 5$ dB(A)
 For further measurement conditions see section 3.5

a.) Operation condition:

15.000 1/min at free air flow	PWM 95 %	PWM min.: ; f: 1 kHz	PWM max.:; f: 30 kHz
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Optimal operating point	75,0 m ³ /h @ 121 Pa	
Sound power level at the optimal operating point	7,6 bel(A)	
Sound pressure level at free air flow, measured in rubber bands	62,0 dB(A)	

4 Environment

4.1 General

Min. permitted ambient temperature TU min.	-40 °C	
Max. permitted ambient temperature TU max.	78 °C	
Min. permitted storage temperature TL min.	-40 °C	
Max. permitted storage temperature TL max.	80 °C	

for start up conditions ambient temperature has to be > -20°C

4.2 Climatic requirements*)

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

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	
Air and leakage distances	1,0 mm / 1,2 mm	
Protection class	III	

5.2 Approval Tests

CE	Yes
UL	Yes / UL507, Electric Fans
VDE	Yes / Approval acc. to EN 60950 (VDE 0805) - Information technology equipment
CSA	No
CCC	No

The approval tests are observed to:

Maximal permitted operating voltage (see section 3.1) and max. permitted ambient temperature TU max.

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