



The engineer's choice

ebmpapst

622/2HHP-021**INDEX**

1	General	3
2	Mechanics	3
2.1	General	3
2.2	Connections	3
3	Operating Data	4
3.1	Operating Data - Electrical Interface - Input	4
3.2	Electrical Operating Data	5
3.3	Operating Data - Electrical Interface -Output	6
3.4	Electrical Features	7
3.5	Aerodynamic	8
3.6	Sound Data	9
4	Environment	9
4.1	General	9
4.2	Climatic requirements*)	9
5	Safety	10
5.1	Electrical Safety	10
5.2	Approval Tests	10
6	Reliability	10
6.1	General	10

1 General

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

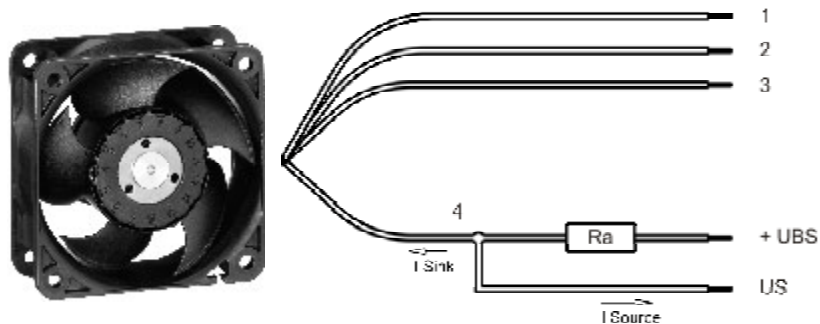
2 Mechanics

2.1 General

Width	60,0 mm	
Height	60,0 mm	
Depth	25,0 mm	
Weight	0,070 kg	
Housing material	Plastic	
Impeller material	Plastic	
Max. torque when mounted across both mounting flanges	wire outlet corner: 10 Ncm remaining corners: 20 Ncm	
Screw size	ISO 4762 - M3 degreased, without an additional brace and without washer	

2.2 Connections

Electrical connection	Wires - Plug	
Length of lead wire	217 mm	
Tolerance	+/- 6,0 mm	
Wire gauge (AWG)	24	
Insulation diameter	1,50 mm	
Contact	see drawing	



	Colour	Operation
Wire 1	red	+ UB
Wire 2	blue	- GND
Wire 3	violet	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

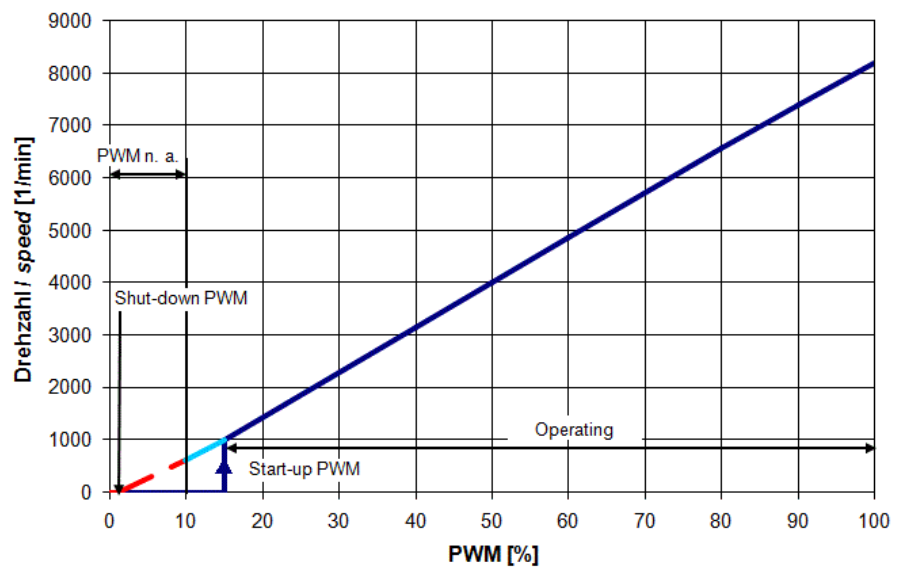
3.1 Operating Data - Electrical Interface - Input

Control input	PWM
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Features

Input type	Open collector / TTL	
PWM - Frequency		21 kHz - 28 kHz Typical: 25 kHz
Max. voltage for logic "Low"		0,8 V
Max. voltage for logic "High"	Open circuit voltage	5,25 V
Maximum source current	short circuit current	≤ 5 mA
4 wire startup condition	PWM duty cycle	> 15 %
4 wire operation condition after startup	PWM duty cycle	10 % - 100 %
Shutdown condition	PWM duty cycle	< 1 %
Typical time until warm restart	After shutdown by PWM	$\sim 2,8$ s

Characteristics



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: 100 %; f: 25 kHz

Features	Condition	Symbol	Values		
Voltage range	$\Delta p = 0$	U	10,8 V		13,2 V
Nominal voltage	$\Delta p = 0$	U_N		12,0 V	
Power consumption	$\Delta p = 0$	P	3,0 W	3,7 W	4,5 W
Tolerance	PWM 0001		+/- 17,5 %	+/- 12,5 %	+/- 12,5 %
Current consumption	$\Delta p = 0$	I	280 mA	310 mA	340 mA
Tolerance	PWM 0001		+/- 17,5 %	+/- 12,5 %	+/- 12,5 %
Speed	$\Delta p = 0$	n	7.650 1/min	8.200 1/min	8.950 1/min
Tolerance	PWM 0001		+/- 12,5 %	+/- 7,5 %	+/- 10,0 %
Starting current consumption				1.300 mA	

Name	Condition
PWM 0002	PWM: 50 %; f: 25 kHz

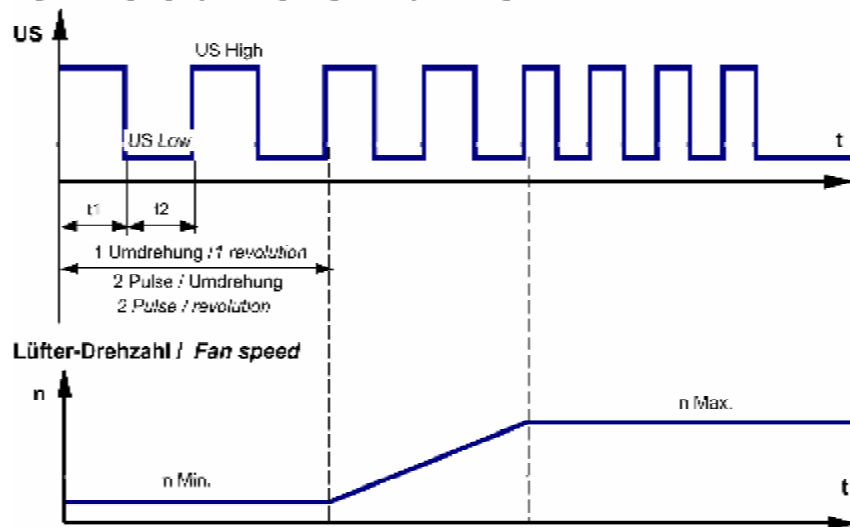
Features	Condition	Symbol	Values		
Voltage range	$\Delta p = 0$	U	10,8 V		13,2 V
Nominal voltage	$\Delta p = 0$	U_N		12,0 V	
Power consumption	$\Delta p = 0$	P	0,8 W	1,0 W	1,2 W
Tolerance	PWM 0002		+/- 17,5 %	+/- 12,5 %	+/- 12,5 %
Current consumption	$\Delta p = 0$	I	80 mA	80 mA	90 mA
Tolerance	PWM 0002		+/- 17,5 %	+/- 12,5 %	+/- 12,5 %
Speed	$\Delta p = 0$	n	3.650 1/min	4.150 1/min	4.570 1/min
Tolerance	PWM 0002		+/- 12,5 %	+/- 7,5 %	+/- 12,5 %

3.3 Operating Data - Electrical Interface -Output

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

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

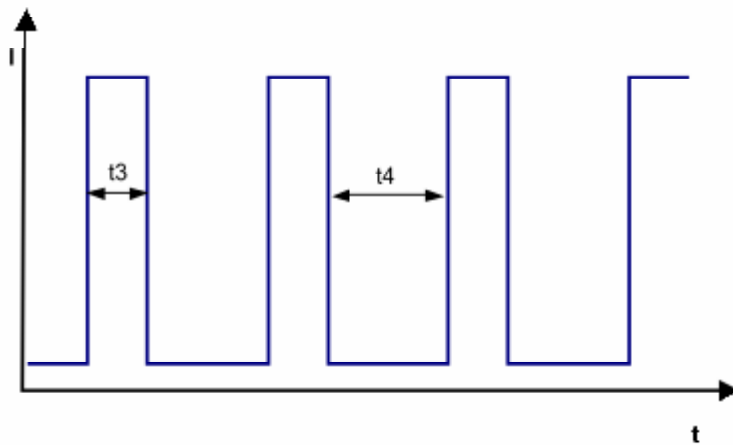


Features	Note	Values
Tacho operating voltage (UBS)		$\leq 30 \text{ V}$
Tacho signal Low	$I_{\text{sink}}: 2 \text{ mA}$	$\leq 0,5 \text{ V}$
Tacho signal High	$I_{\text{source}}: 0 \text{ mA}$	30 V
Maximum sink current		4 mA
Maximum source current		0 mA
External resistor	External resistor R_a from UBS 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	None	
Reversed polarity protection	Rectifying diode	
Max. residual current at U_n	$I_F \leq 10 \text{ mA}$	
Locked rotor protection	Auto restart	
Locked rotor current at U_n	approx. 1.300 mA	
Clock signal t_3/t_4 at locked rotor	Typical: 0,5 s / 2,8 s	



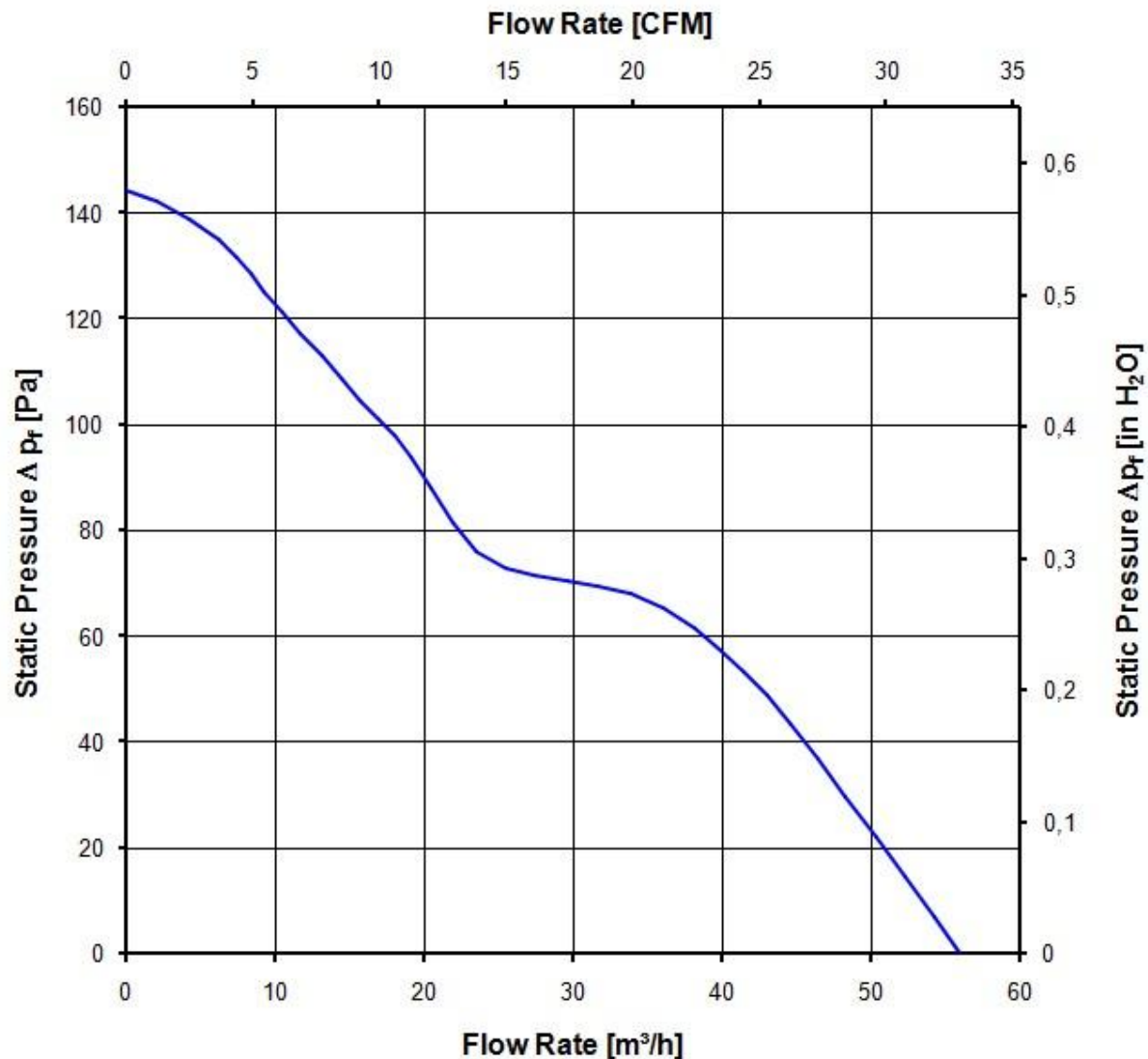
This fan is at over voltage and max. ambient temperature not continuous lock safe!

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:

at free air flow	
Max. free-air flow ($\Delta p = 0 / \dot{V} = \text{max.}$)	56,0 m ³ /h
Max. static pressure ($\Delta p = \text{max.} / \dot{V} = 0$)	145 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 $L_p(A) < 5 \text{ dB(A)}$
 For further measurement conditions see section 3.5

a.) Operation condition:

at free air flow	
Optimal operating point	40,0 m ³ /h @ 51 Pa
Sound power level at the optimal operating point	5,6 bel(A)
Sound pressure level at free air flow, measured in rubber bands	43,0 dB(A)

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
Radiation exposure	None
Dust requirements	None
Salt fog requirements	None
Harmful gas 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	
Air and leakage distances	1,0 mm / 1,2 mm	
Protection class	III	

5.2 Approval Tests

CE	Yes
UL	Yes
VDE	Yes
CSA	Yes
CCC	No

The approval tests are observed to:

U approval max.: 13,2 V @ TU approval max.: 70,0 °C

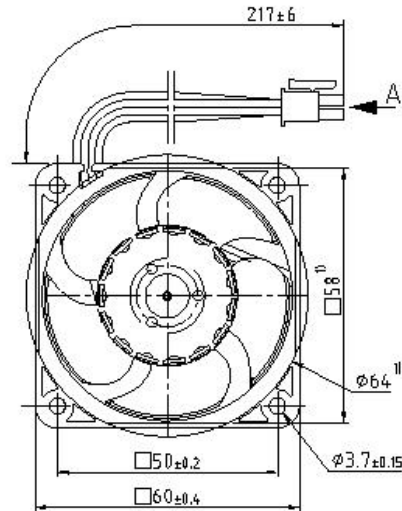
6 Reliability

6.1 General

Life expectancy L10 at TU = 40 °C	65.000 h	
Life expectancy L10 at TU max.	32.500 h	
Life expectancy L10 Delta (40 °C)	130.000 h	

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 in the end of the year or 2 years or the expiration of a fully made or design.

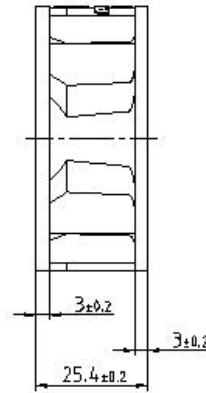
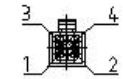
Späterer Nach DIN ISO 1000 beschränkt



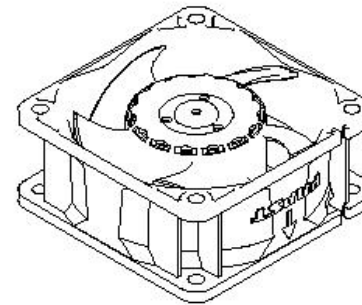
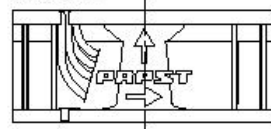
Steckerbelegung

Pin1 = rot (+)
 Pin2 = weiss (Tacho)
 Pin3 = blau (GND)
 Pin4 = violett (PWM)

Ansicht A



Flanschseite



1) Maße für Montagewand

Axialspiel bei

- Kugellagerung (K) : 0 (mit Federausgleich)
- Gleitlagerung (G) :

Tolerierung: DIN 7167
 Allgemeintoleranzen: DIN ISO 2768-mK-E

Datum		Name	Artikel	Maßstab
Bearbeitet	Index	Aend.-Nr.		
Geprüft u. zur Verwendung freigegeben von			Zchg.-Nr.	Blatt
abm-papst St. Georgen GmbH & Co. KG			Erst-Zchg.	A4