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**ebmpapst**

4312/17MT

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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	

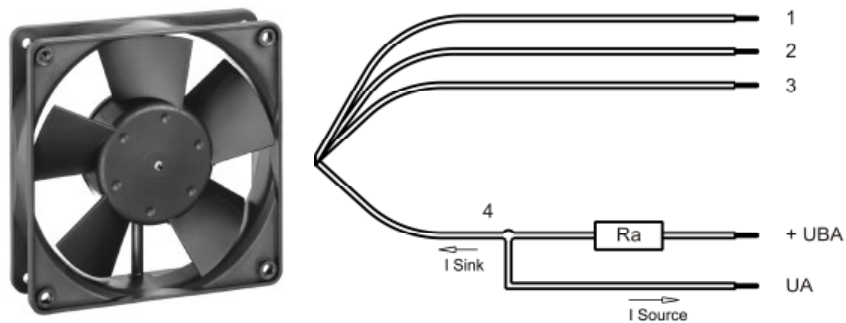
## 2 Mechanics

### 2.1 General

Width	119,0 mm	
Height	119,0 mm	
Depth	32,0 mm	
Weight	0,200 kg	
Housing material	Plastic	
Impeller material	Plastic	
Max. torque when mounted across both mounting flanges	wire outlet corner: 20 Ncm remaining corners: 20 Ncm	
Screw size	ISO 4762 - M4 degreased, without an additional brace and without washer	

### 2.2 Connections

Electrical connection	Wires	
Length of lead wire	L = 310 mm	
Tolerance	+/- 10,0 mm	
Wire gauge (AWG)	24	
Insulation diameter	1,55 mm	
Contact	see drawing	



	Colour	Operation
Wire 1	red	+ UB
Wire 2	blue	- GND
Wire 3	violet	NTC
Wire 4	white	Alarm

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	cExternal Temperature Sensor
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Features

<p><b>Characteristics</b></p>	<table border="1"> <caption>Graph Data: Drehzahl / speed [1/min] vs Umgebungstemperatur / Ambient temperature [°C]</caption> <thead> <tr> <th>Umgebungstemperatur / Ambient temperature [°C]</th> <th>Drehzahl / speed [1/min]</th> </tr> </thead> <tbody> <tr><td>-20</td><td>1100</td></tr> <tr><td>-10</td><td>1100</td></tr> <tr><td>0</td><td>1100</td></tr> <tr><td>10</td><td>1100</td></tr> <tr><td>20</td><td>1100</td></tr> <tr><td>25</td><td>1100</td></tr> <tr><td>30</td><td>1300</td></tr> <tr><td>40</td><td>1800</td></tr> <tr><td>50</td><td>2300</td></tr> <tr><td>60</td><td>2300</td></tr> </tbody> </table>	Umgebungstemperatur / Ambient temperature [°C]	Drehzahl / speed [1/min]	-20	1100	-10	1100	0	1100	10	1100	20	1100	25	1100	30	1300	40	1800	50	2300	60	2300
Umgebungstemperatur / Ambient temperature [°C]	Drehzahl / speed [1/min]																						
-20	1100																						
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30	1300																						
40	1800																						
50	2300																						
60	2300																						
<p><b>Schematics</b></p>	<p>The schematic shows the fan's electrical interface. On the left is a fan symbol labeled 'Lüfter / Fan'. On the right, a circuit diagram is shown, divided into 'Kunde / Customer' and 'Eingang / Input' sections. The circuit includes a + UB supply line, an internal reference (+ Interne Ref. / + Internal ref.) connected to the fan's control terminal, an input terminal (Eingang / Input) with a pull-up resistor, an NTC sensor connected to the fan's control terminal, and a - GND ground connection.</p>																						

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

Name	Condition		
TU 0001	TU: $\geq 50$ °C		
NTC 0001	NTC $\leq 34$ kOhm		

Features	Condition	Symbol	Values		
Voltage range	$\Delta p = 0$	U	8,0 V		15,0 V
Nominal voltage	$\Delta p = 0$	$U_N$		12,0 V	
Power consumption	$\Delta p = 0$	P	1,3 W +/- 25,0 %	3,3 W +/- 25,0 %	5,6 W +/- 25,0 %
Tolerance	TU / NTC 0001				
Current consumption	$\Delta p = 0$	I	160 mA +/- 25,0 %	275 mA +/- 25,0 %	370 mA +/- 25,0 %
Tolerance	TU / NTC 0001				
Speed	$\Delta p = 0$	n	1.500 1/min +/- 15,0 %	2.300 1/min +/- 15,0 %	2.800 1/min +/- 15,0 %
Tolerance	TU / NTC 0001				
Starting current consumption				1.200 mA	

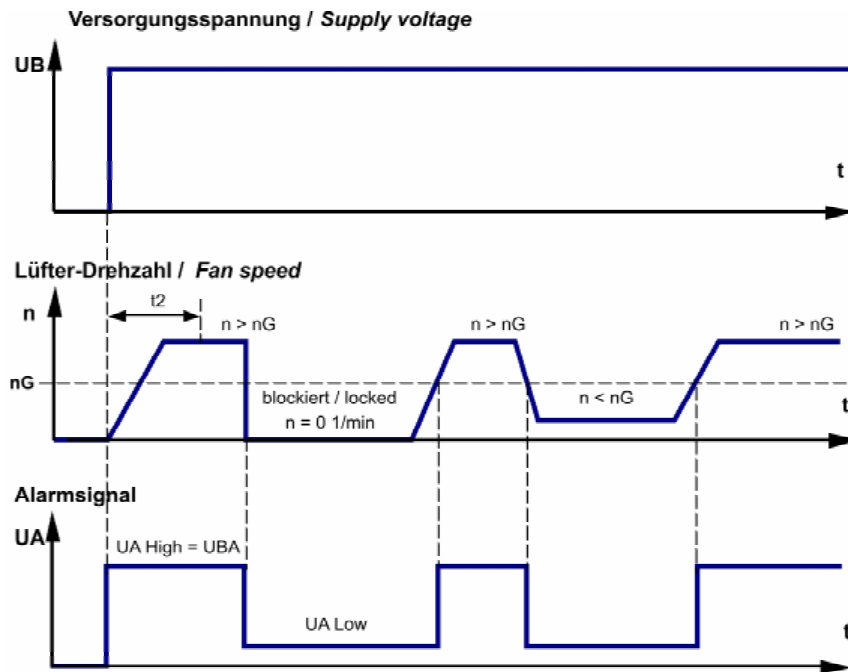
Name	Condition		
TU 0002	TU: $\leq 25$ °C		
NTC 0002	NTC $\geq 100$ kOhm		

Features	Condition	Symbol	Values		
Voltage range	$\Delta p = 0$	U	8,0 V		15,0 V
Nominal voltage	$\Delta p = 0$	$U_N$		12,0 V	
Power consumption	$\Delta p = 0$	P	0,65 W +/- 25,0 %	1,1 W +/- 25,0 %	1,4 W +/- 25,0 %
Tolerance	TU / NTC 0002				
Current consumption	$\Delta p = 0$	I	80 mA +/- 25,0 %	90 mA +/- 25,0 %	95 mA +/- 25,0 %
Tolerance	TU / NTC 0002				
Speed	$\Delta p = 0$	n	1.100 1/min +/- 15,0 %	1.100 1/min +/- 15,0 %	1.100 1/min +/- 15,0 %
Tolerance	TU / NTC 0002				

3.3 Operating Data - Electrical Interface -Output

Tacho type	None
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Alarm type	/17 (high = ok, Open collector)
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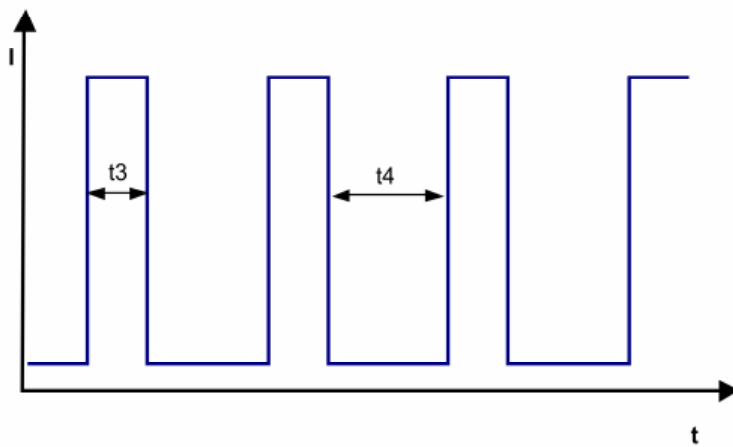


$$R_a = \frac{U_{BA} - U_{A \text{ Low}}}{I_{\text{Sink}}}$$

Features	Note	Values
Alarm operating voltage (UBA)		<= 60 V
Alarm signal Low *)	I sink: 2 mA	<= 0,4 V
Alarm signal High *)	I source: 0 mA	60 V
Maximum sink current		20 mA
External resistor	External resistor Ra from UBA to UA required. All voltage measured to GND.	
Alarm start-up delay time (t2)		<= 15 s
Alarm trip speed limit (nG)		850 1/min +- 100 1/min
Tolerance		
Alarm at sense failure	No	
Alarm latch	No	
Alarm isolated from motor	No	

### 3.4 Electrical Features

Electronic function	Speed-Controlled	
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. 1.200 mA	
Clock signal $t_3/t_4$ at locked rotor	Typical: 1,0 s / 10 s	



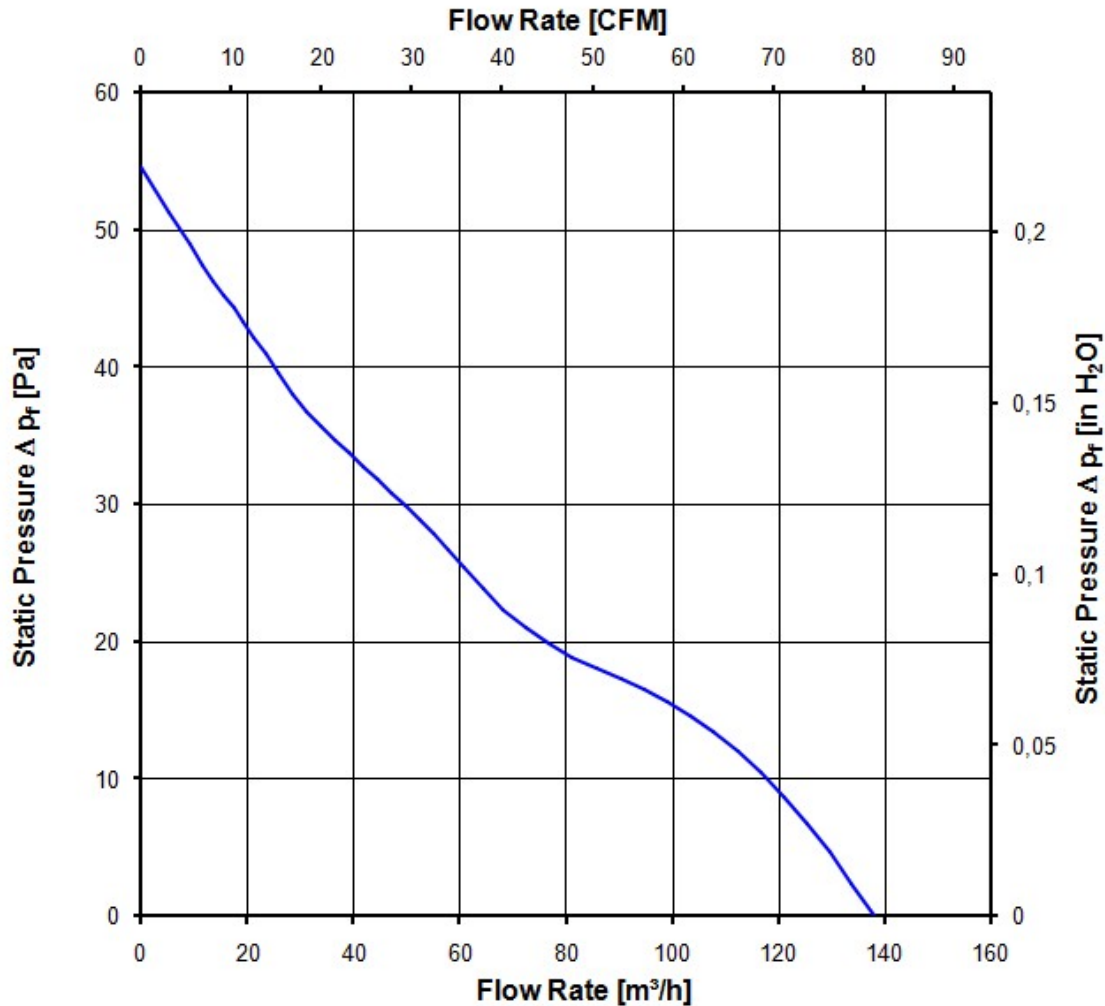
**3.5 Aerodynamic**

Measurement conditions: Measured with a double chamber intake rig acc. to DIN EN ISO 5801.  
 Normal air density = 1,2 kg/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.  
 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:

2.300 1/min at free air flow	TU >= 50 °C NTC <= 34 kOhm		
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Max. free-air flow ( $\Delta p = 0 / \dot{V} = \text{max.}$ )	138,0 m <sup>3</sup> /h	
Max. static pressure ( $\Delta p = \text{max.} / \dot{V} = 0$ )	54 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:

2.300 1/min at free air flow	TU $\geq 50 \text{ }^\circ\text{C}$ NTC $\leq 34 \text{ k}\Omega$		
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Optimal operating point	118,0 m <sup>3</sup> /h @ 9 Pa		
Sound power level at the optimal operating point	5,3 bel(A)		
Sound pressure level at free air flow, measured in rubber bands	39,0 dB(A)		

## 4 Environment

### 4.1 General

Min. permitted ambient temperature TU min.	-20 $^\circ\text{C}$		
Max. permitted ambient temperature TU max.	65 $^\circ\text{C}$		
Min. permitted storage temperature TL min.	-40 $^\circ\text{C}$		
Max. permitted storage temperature TL max.	80 $^\circ\text{C}$		

### 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.	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	Yes
UL	Yes / UL507, Electric Fans
VDE	Yes / Approval acc. to EN 60950 (VDE 0805) - Information technology equipment
CSA	Yes / C22.2 No. 113 Fans and Ventilators
CCC	No

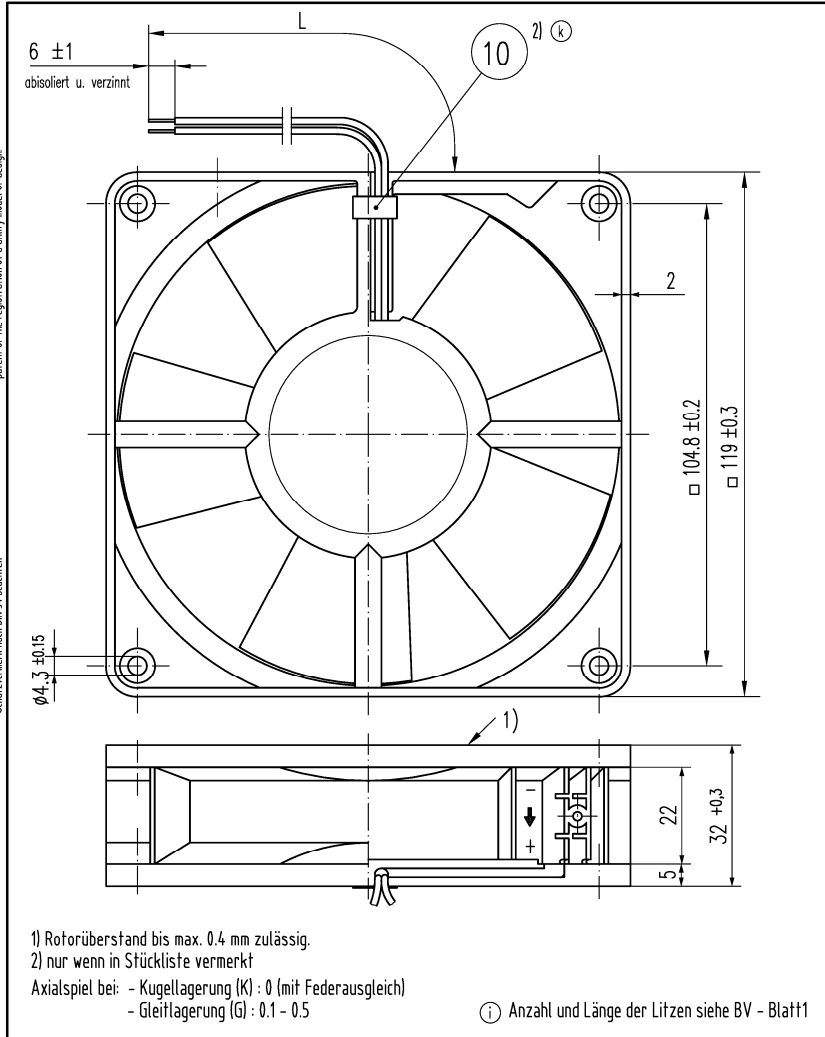
## 6 Reliability

### 6.1 General

Life expectancy L10 at TU = 40 °C	70.000 h	
Life expectancy L10 at TU max.	40.000 h	
Life expectancy L10 Delta (40 °C)	142.500 h	

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