Product Data Sheet

9693510219
VWC0092JUGBZ
3218 JNPU-219

ebmpapst
The engineer's choice



GREEN TECH

3218 JNPU-219

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1 General

Fan type	Fan	
Rotating direction looking at rotor	Clockwise	
Airflow direction	Air outlet over struts	
Bearing system	Ball bearing	
Mounting position - shaft	Any	

2 Mechanics

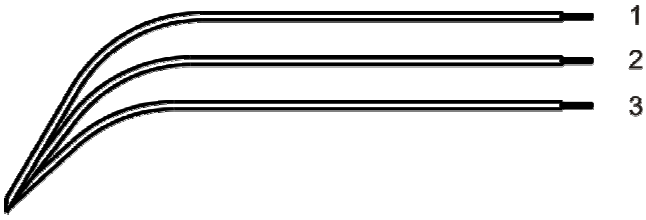
2.1 General

Width	92,0 mm	
Height	92,0 mm	
Depth	38,0 mm	
Mass	0,255 kg	
Housing material	Plastic	
Impeller material	Plastic	
Max. torque when mounted across both mounting flanges Screw size	Wire outlet corner: 140 Ncm Remaining corners: 190 Ncm ISO 4762 - M4 degreased, without an additional brace and without washer	

2.2 Connections

Electrical connection	Wires - Plug	
Lead wire length Tolerance	L = 252 mm +- 5,0 mm	
Tube length Tolerance	S = 185 mm +- 5,0 mm	
Plug	See drawing	
Contact	See drawing	





Wire	Color	Operation	Plug connection	Wire size	Insulation diameter
1	red	+ UB	Pin 1	AWG 20	1,85 mm
2	blue	- GND	Pin 3	AWG 20	1,85 mm
3	violet	PWM	Pin 2	AWG 20	1,85 mm

3 Operating Data

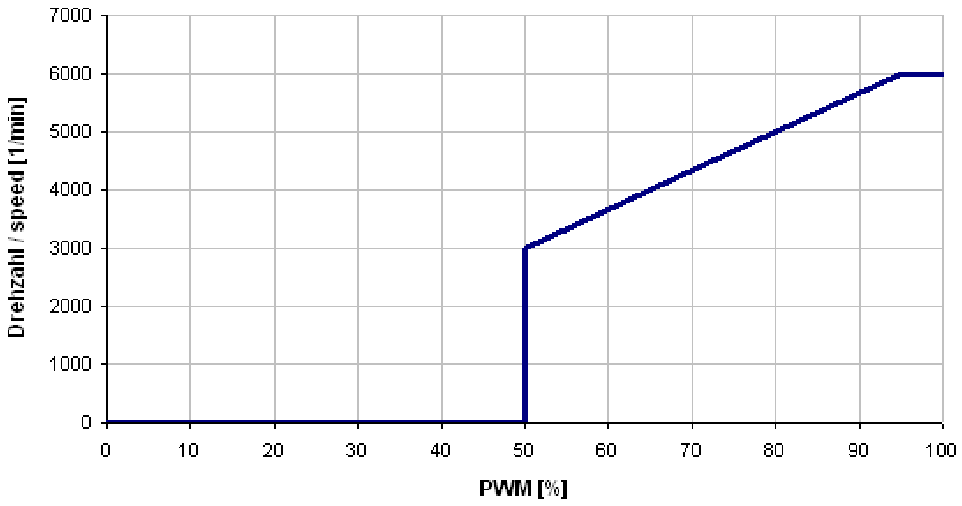
3.1 Electrical Interface - Input

Control input	PWM

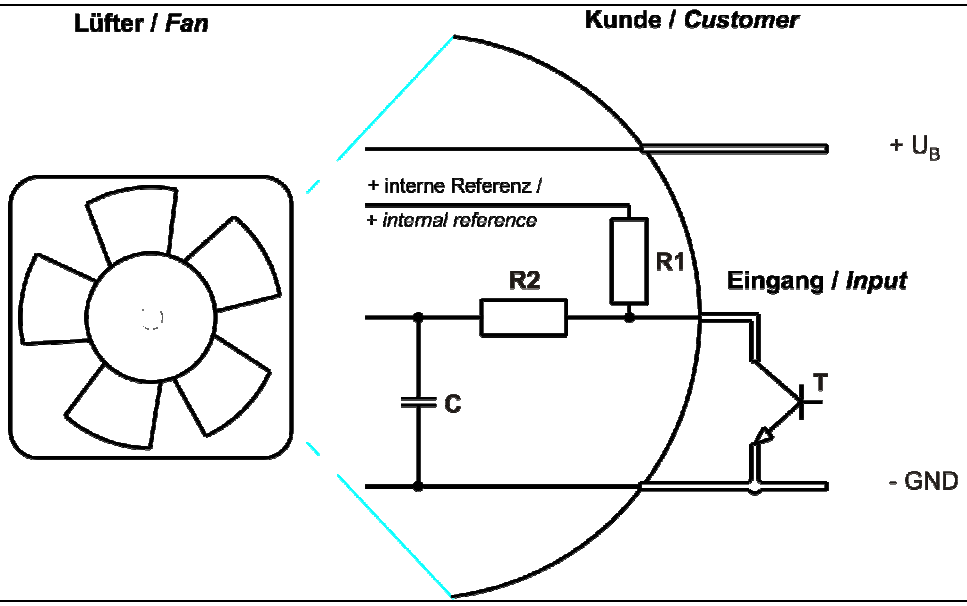
Features

Inpute type	Open collector	
PWM - Frequency		1 kHz - 30 kHz

Characteristics



Schematics



3.2 Electrical Operating Data

Measurement conditions: Normal air density = 1,2 kg/m3; Temperature 23℃ +/ - 3℃; 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.

Δp = 0: corresp. to free air flow (see chapter aerodynamics)
I: corresp. to arithm. mean current value

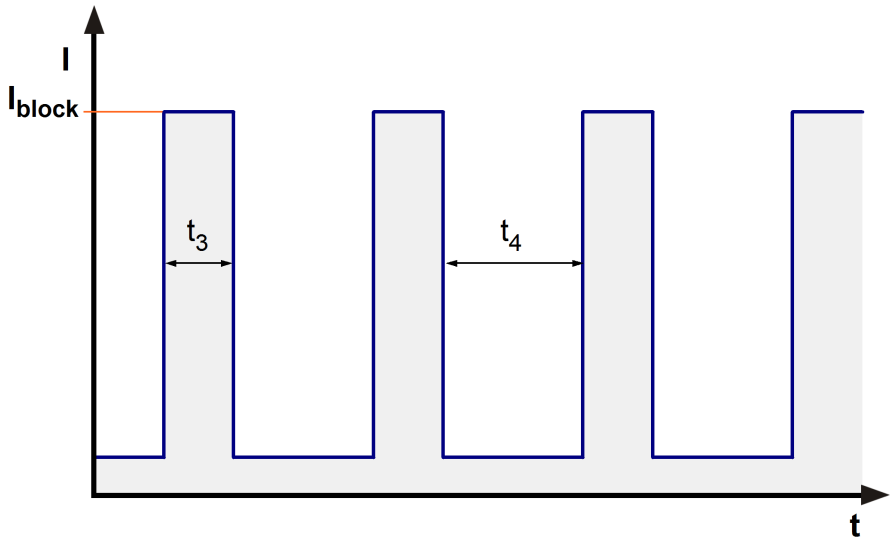
Name	Condition		
PWM 0001	PWM: >= 95 %;	f: 1 kHz	f: 30 kHz

Startup peakpulse current: Ipmax = 900mA
Startup peakpulse duration: tpmax = 6 x 1,6ms (See osz-picture under "Dokumentdaten"!)

Features	Condition	Symbol	Values		
Voltage range		U	33,0 V		60,0 V
Nominal voltage		U_N		48,0 V	
Power consumption Tolerance	Δp = 0 PWM 0010	P	2,8 W +- 17,5 %	6,25 W +- 25,0 %	6,0 W +- 25,0 %
Current consumption Tolerance	Δp = 0 PWM 0010	I	85 mA +- 17,5 %	130 mA +- 25,0 %	100 mA +- 25,0 %
Speed Tolerance	Δp = 0 PWM 0010	n	4.430 1/min **)	6.000 1/min **)	6.000 1/min **)
Starting current consumption				900 mA	

3.3 Electrical Features

Electronic function	Speed-Controlled	
Reversed polarity protection Max. residual current at U_N	Rectifying diode I_F <= 100 uA	
Locked rotor protection	Auto restart	
Locked rotor current at U_N	I_{block} approx. 900 mA	
Clock signal at locked rotor	t_3 / t_4 typical: 0,33 s / 5,3 s	



The fan has a special blocking cycle. The behavior of this cycle differs marginally between a blocked rotor when the fan gets started and a blocked rotor during the running operation of the fan. The following figures describe this characteristic.

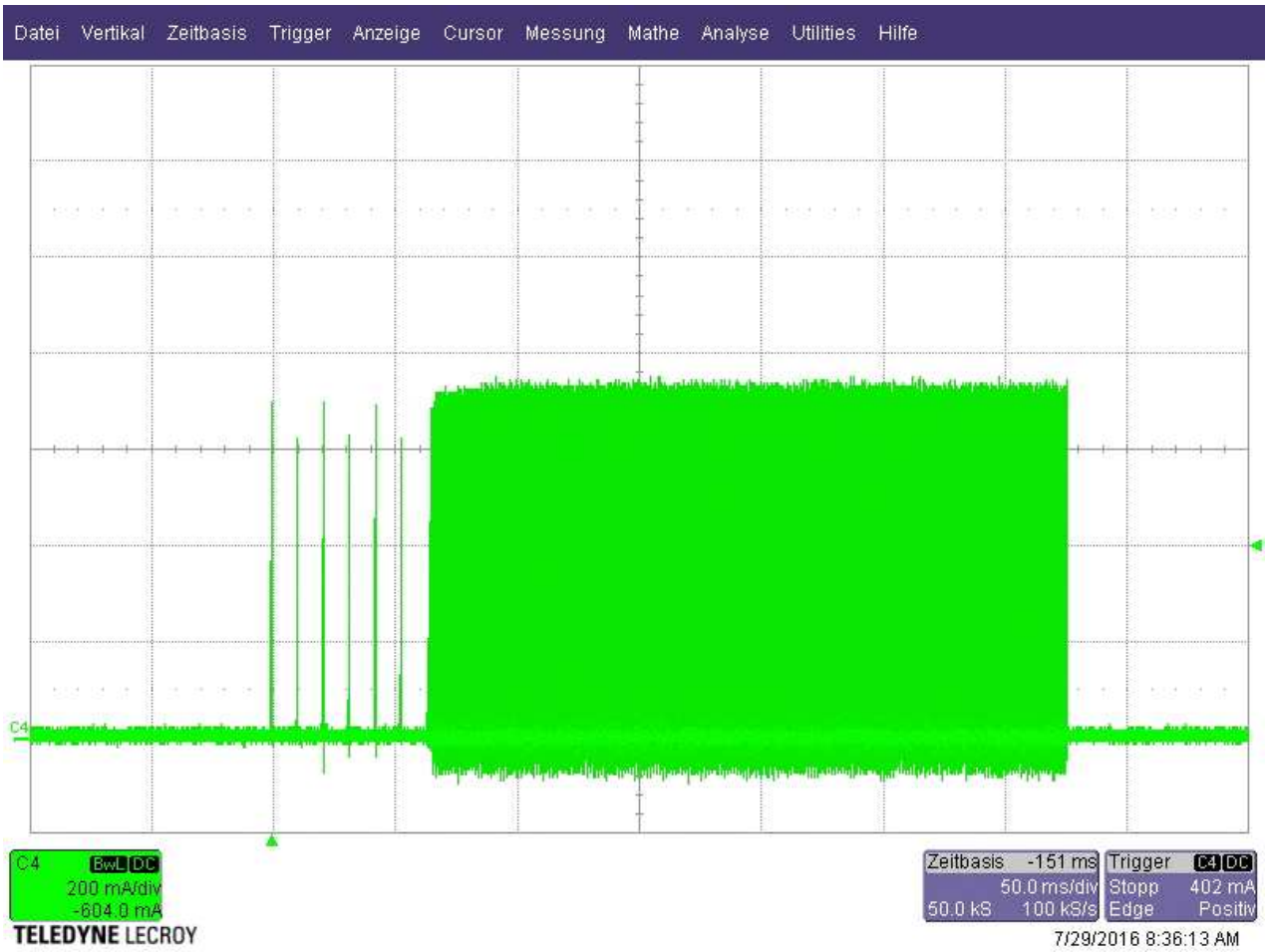
1. Blocked rotor at the start of the fan


Datei Vertikal Zeitbasis Trigger Anzeige Cursor Messung Mathe Analyse Utilities Hilfe
C4
C4 BwL DC
200 mA/div
-604.0 mA
TELEDYNE LECROY
Zeitbasis -6.00 s
Roll 2.00 s/div
50.0 kS 2.5 kS/s
Trigger C4 DC
Stopp 208 mA
Edge Positiv
7/29/2016 8:28:48 AM



2. Blocked rotor after the normal operation of the fan


Datei Vertikal Zeitbasis Trigger Anzeige Cursor Messung Mathe Analyse Utilities Hilfe
C4
C4 BwL DC
200 mA/div
-604.0 mA
TELEDYNE LECROY
Zeitbasis -3.02 s
Roll 1.00 s/div
50.0 kS 5.0 kS/s
Trigger C4 DC
Stopp 1.006 A
Edge Positiv
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Datei Vertikal Zeitbasis Trigger Anzeige Cursor Messung Mathe Analyse Utilities Hilfe
C4
C4 BwL DC
200 mA/div
-604.0 mA
TELEDYNE LECROY
Zeitbasis -151 ms
50.0 ms/div
50.0 kS 100 kS/s
Trigger C4 DC
Stopp 402 mA
Edge Positiv
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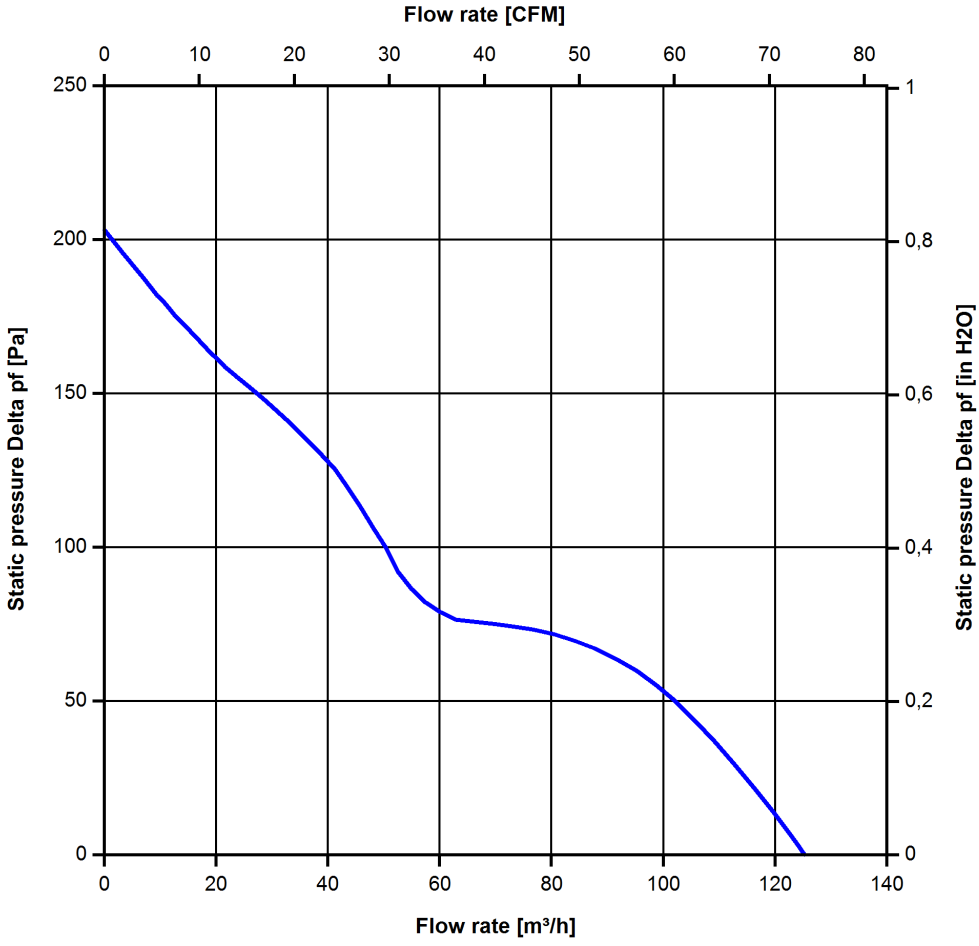
3.4 Aerodynamics

Measurement conditions:	Measured with a double chamber intake rig acc. to DIN EN ISO 5801. Normal air density = 1,2 kg/m3; Temperature 23℃ +/ - 3℃; 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:

6.000 1/min at free air flow	PWM >= 95 %;	f: 1 kHz	f: 30 kHz

Max. free-air flow (Δp = 0 / V̇ = max.)	125 m3/h	
Max. static pressure (Δp = max. / V̇ =0)	203 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 Lp(A) < 5 dB(A) For further measurement conditions see chapter aerodynamics.

a.) Operation condition:

6.000 1/min at free air flow	PWM >= 95 %;	f: 1 kHz	f: 30 kHz

Optimal operating point	95 m3/h @ 61 Pa	
Sound power level at the optimal operating point	6,2 bel(A)	
Sound pressure level at free air flow, measured in rubber bands	51 dB(A)	

4 Environment

4.1 General

Min. permitted ambient temperature TU min.	-20 ℃	
Max. permitted ambient temperature TU max.	80 ℃	
Min. permitted storage temperature TL min.	-40 ℃	
Max. permitted storage temperature TL max.	80 ℃	

4.2 Climatic Requirements

Humidity requirements	humid temperature, cyclic; according to DIN EN 60068-2-38, 10 cycle and condensation water check; according to DIN EN ISO 6270-2, 14 days	
Water exposure	Splash water check IPX4; according to DIN EN 60529 VDE 0470, not certified	
Dust requirements	Dust check IP5X; according to DIN EN 60529 VDE 0470, not certified	
Salt fog requirements	None	

Permitted application area:
The product is for the use in partial sheltered rooms or open, roofed areas. Direct exposure to water is allowed provided that this does not prevent the normal operation. Saline ambient conditions must be avoided.

Pollution degree 3 (according DIN EN 60664-1)
It occurs conductive pollution or dry non-conductive pollution which becomes conductive due to condensation.

Please require severity levels and specification parameters from the responsible development departments.

4.3 EMC

Kind	**Radiated Emission; 30 MHz - 1000 MHz**
According	DIN EN 55032:2016-02
Ceck accuracy / Limit	Class B
Result	Below limit Class B

Kind	**Electrostatic Discharge Immunity Test**
According	DIN EN 61000-4-2:2001-12
Ceck accuracy / Limit	Contact Discharge +/- 4 kV; Air Discharge +/- 8 kV
Result	B: The monitored function may deviate from designed performance to a specified level during exposure to a disturbance or revert to a fail safe mode or operation, but shall return to normal operation after the disturbance is removed.

Kind	**Electromagnetic Field Immunity Test**
According	DIN EN 61000-4-3:2006-12
Ceck accuracy / Limit	10 V/m; 80 - 1000 MHz; AM; m = 0,8; f = 1 kHz; 1%; t = 3 s
Result	A: The monitored function operates as designed during and after exposure to a disturbance.

Kind	**Immunity to Conducted Disturbances, Induced by RF-Fields**
According	DIN EN 61000-4-6:2001-12
Ceck accuracy / Limit	10 Vrms; 150 kHz - 80 MHz; m = 0,8; f = 1 kHz; 1%; t = 3 s
Result	A: The monitored function operates as designed during and after exposure to a disturbance.

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℃. 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. 850 VDC / 1 Sec.	
Isolation resistance Measuring conditions: After 48h of storage at 95% R.H. and 25℃ 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 / UL507, Electric Fans E38324
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

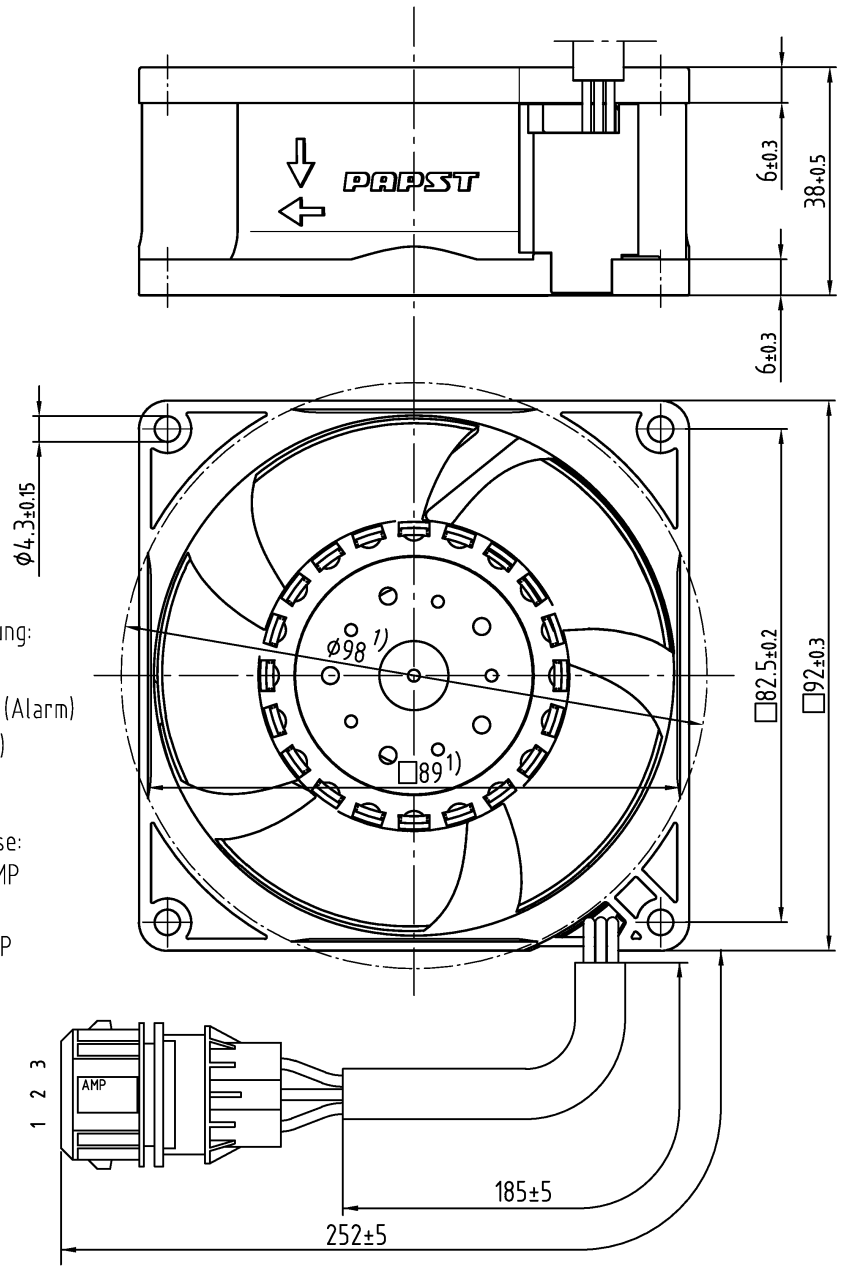
6 Reliability

6.1 General

Life expectancy L10 at TU = 40 ℃	70.000 h	
Life expectancy L10 at TU max.	22.500 h	
Life expectancy L10 acc. to IPC 9591 at TU = 40 ℃	117. 500 h	

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Refer to protection notice DIN ISO 16016!



Steckerbelegung:
PIN 1 = rot (+)
PIN 2 = violett (Alarm)
PIN 3 = blau (-)

Steckergehäuse:
1-962 581-1 AMP
Kontakte:
1-962915-1 AMP
Dichtung:
828904-1 AMP

Axialspiel bei
- Kugellagerung (K): 0 (mit Federausgleich)
- Gleitlagerung (G): 0.1 - 1.6

1) Maße für Montagewand

			ebmpapst	Werkstoff/Material:	Volumen/Volume (mm³):
SAP-Status/State	Aend.-Nr./Change-No.	AutoCAD-System-Version	CAD-Umgebung/ CAD-Enviroment		Gewicht/Mass (g):
		Datum/Date	Name/Name		
		Bearb./ Drawn		Artikel/Title	
Tolerierung/Tolerances:		Gepr./ Checked			
Allgemeintoleranzen/Gen. tolerances:		Freig./ Releas.			
		ebmpapst		Zchg.-Nr./ Drawing.-No.:	Ers.f.Zchg./ Replaces:
		ebm-papst St. Georgen GmbH & Co. KG		Dokumenttyp/Type of Document / Teildokument (Blatt/Page) / Index/Index / Format/Size: / Massstab/scale	

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