Product Data Sheet 4114N/17HPU-268

ebmpapst

The engineer's choice



GREEN TECH

4114N/17HPU-268

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 Aerodynamics 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	Axial fan	
Rotating direction looking at rotor	Clockwise	
Airflow direction	Air intake over struts	
Bearing system	Stainless steel bearing	
Mounting position - shaft	Any	

2 Mechanics

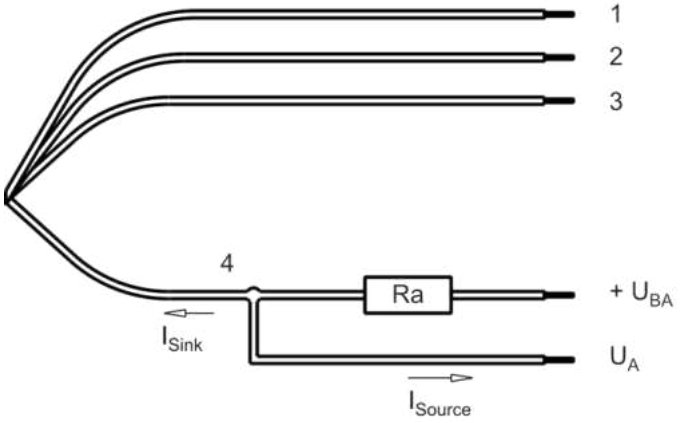
2.1 General

Width	119,0 mm	
Height	119,0 mm	
Depth	38,0 mm	
Mass	0,420 kg	
Housing material	Metal	
Impeller material	Plastic	

2.2 Connections

Electrical connection	Wires	
Lead wire length Tolerance	310 mm +/- 10 mm	
Wire size (AWG)	24	
Insulation diameter	1,55 mm	





Wire	Color	Operation
1	red	+ UB
2	blue	- GND
3	violet	PWM
4	white	Alarm

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

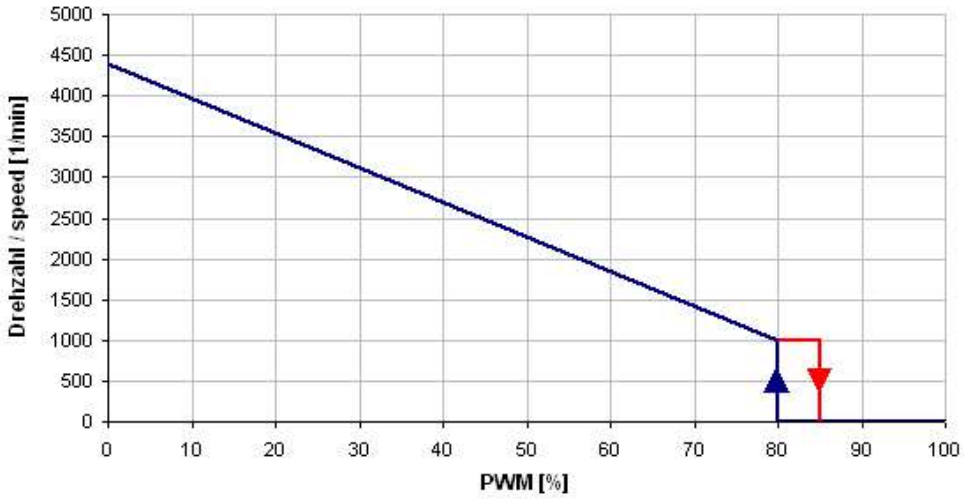
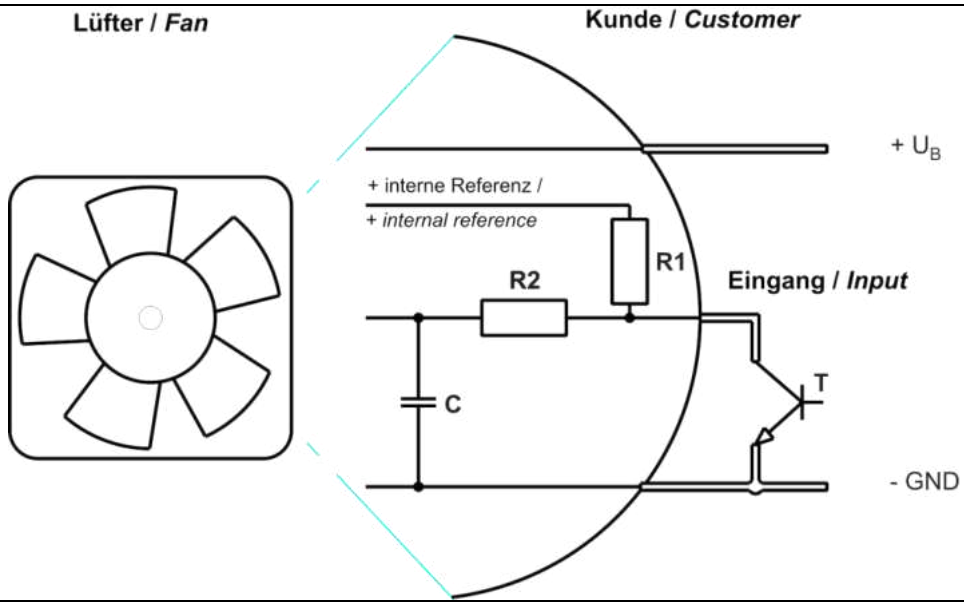
3 Operating Data

3.1 Operating Data - Electrical Interface - Input

Control input	PWM

Features

Inpute type	Open collector	
PWM - Frequency		2 kHz - 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.

Δp = 0: corresp. to free air flow (see section 3.5)
I: corresp. to arithm. mean current value

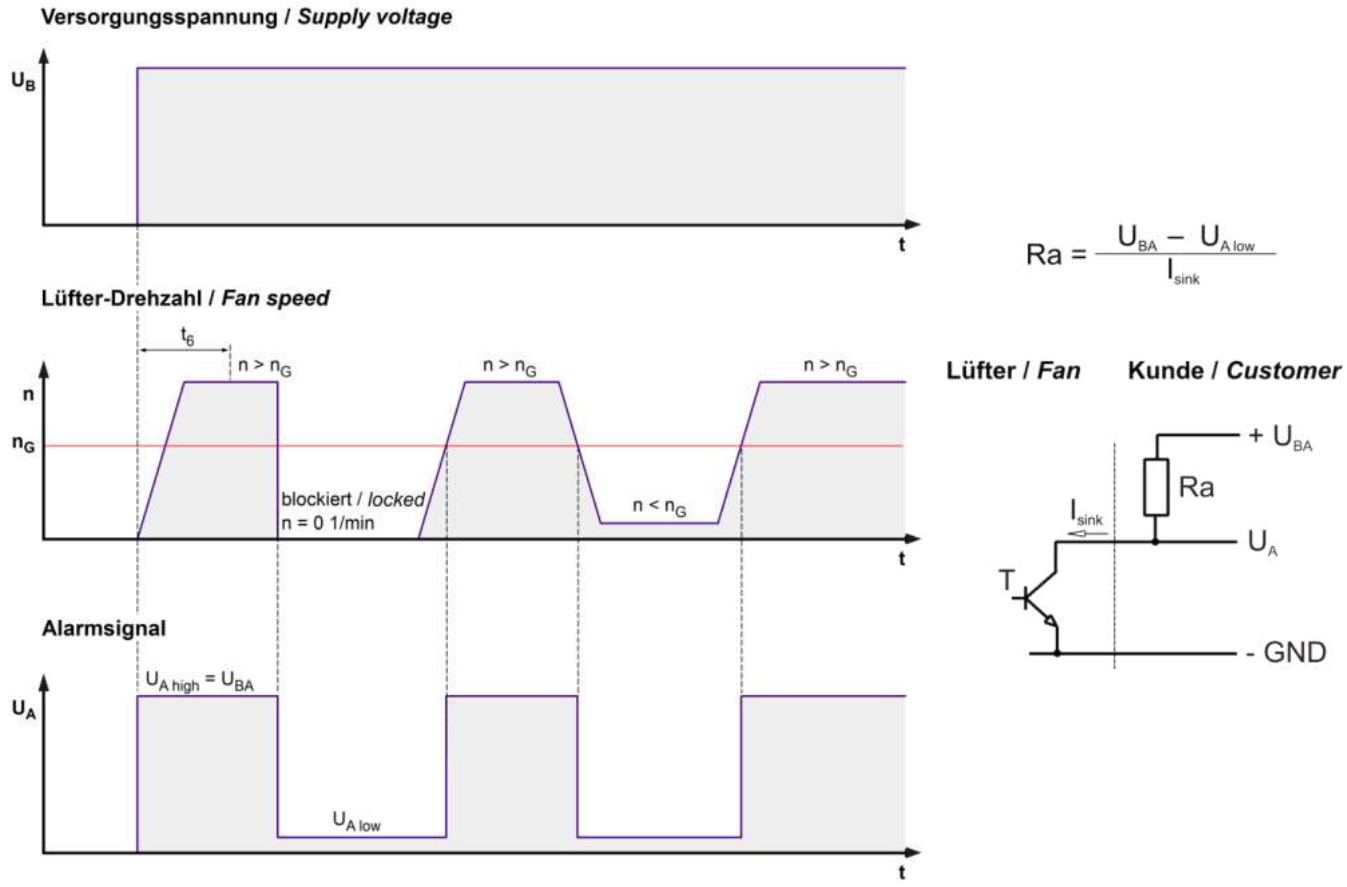
Name	Condition		
PWM 0001	PWM: 0 %;	f: 2 kHz	f: 5 kHz

Features	Condition	Symbol	Values		
Voltage range		U	27 V		33 V
Nominal voltage		U_N		32 V	
Power consumption Tolerance	Δp = 0 PWM 0010	P	12,2 W +- 25 %	11,7 W +- 25 %	12 W +- 25 %
Current consumption Tolerance	Δp = 0 PWM 0010	I	452 mA +- 25 %	365 mA +- 25 %	364 mA +- 25 %
Speed Tolerance	Δp = 0 PWM 0010	n	4.400 1/min +- 10 %	4.400 1/min +- 4 %	4.400 1/min +- 4 %
Starting current consumption				2.350 mA	

) ***Vario Pro:* Unless otherwise specified in the table a general fan speed tolerance applies, relating to the maximum value of the required characteristic curve. Tolerance:+- 4,0 %

3.3 Operating Data - Electrical Interface - Output

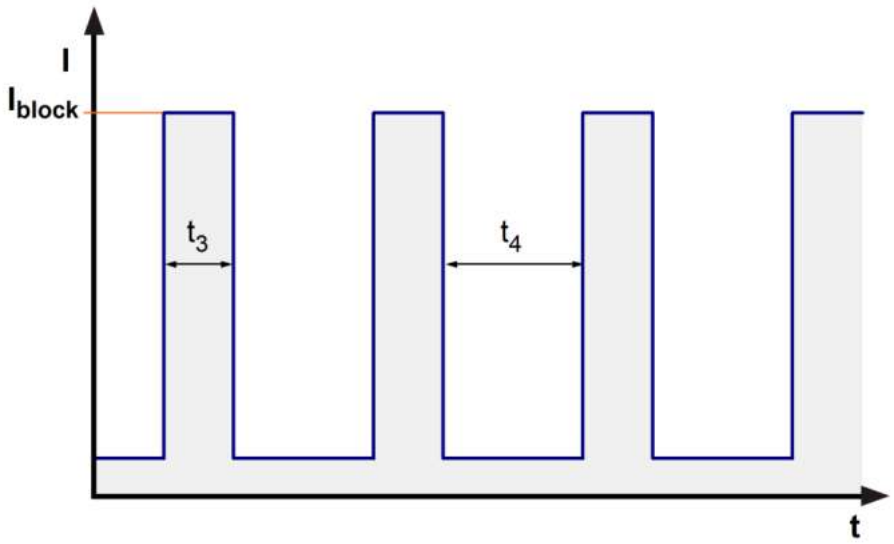
Alarm type	/17 (high = ok, open collector)



Features		Note	Values
Alarm operating voltage	U_{BA}		<= 60 V
Alarm signal Low	$U_{A\ low}$	I sink: 2 mA	<= 0,4 V
Alarm signal High	$U_{A\ high}$	I source: 0 mA	60 V
Maximum sink current	I_{sink}		<= 20 mA
External resistor		External resistor Ra from UBA to UA required. All voltage measured to GND.	
Alarm start-up delay time	t_6		<= 15 s
Alarm trip speed limit Tolerance	n_G		850 1/min +- 100 1/min
Alarm at sense failure		No	
Alarm latch		No	
Alarm isolated from motor		No	

3.4 Electrical Features

Electronic function	Speed-Controlled	
Reversed polarity protection Max. residual current at U_N	Rectifying diode I_F <= 500 µA	
Locked rotor protection	Auto restart	
Locked rotor current at U_N	I_{block} approx. 1.750 mA	
Clock signal at locked rotor	t_3 / t_4 typical: 0,4 s / 10,0 s	



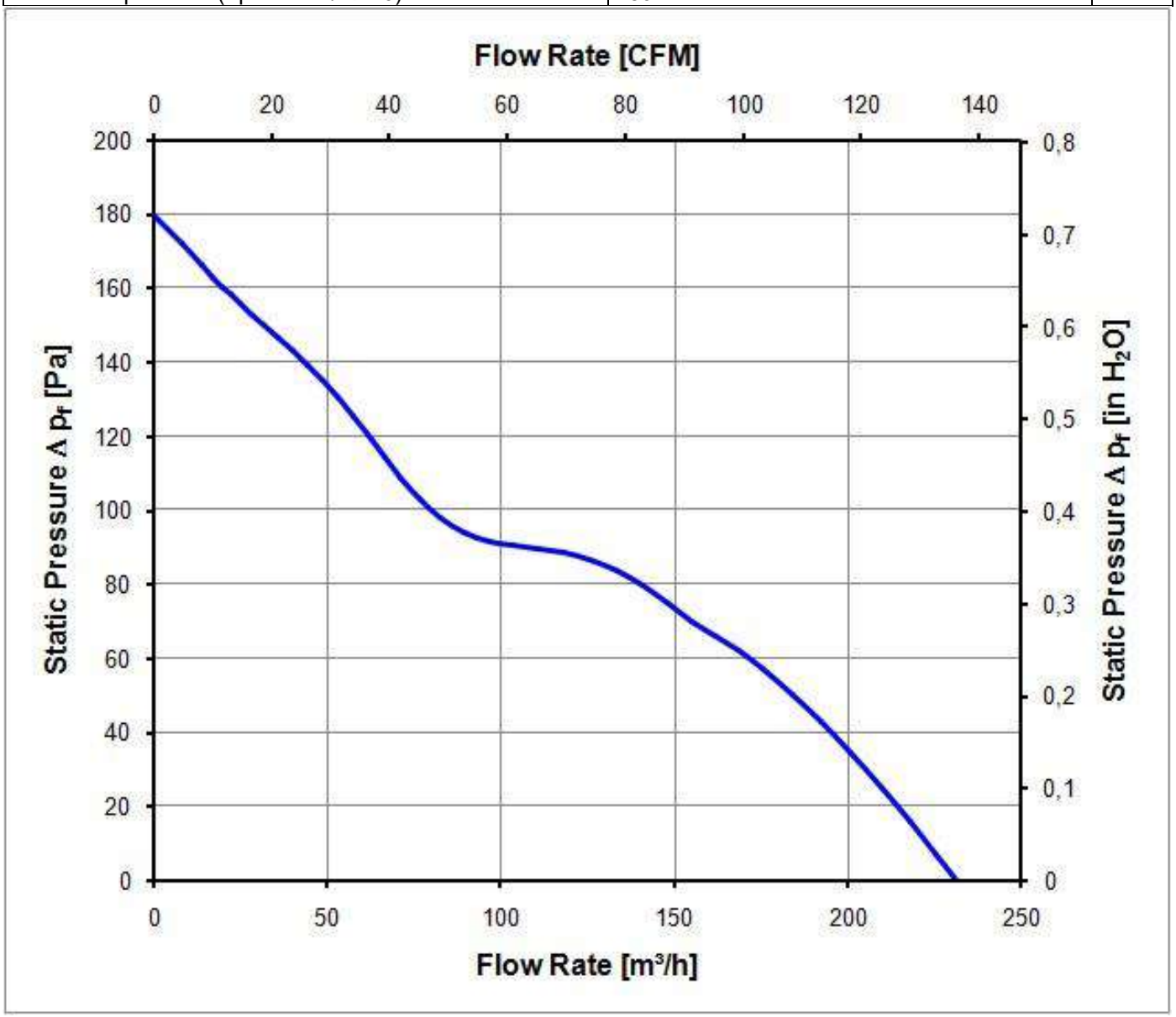
3.5 Aerodynamics

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

4.400 1/min at free air flow	PWM 0 %;	f: 2 kHz	f: 5 kHz

Max. free-air flow (Δp = 0 / V̇ = max.)	227,0 m3/h	
Max. static pressure (Δp = max. / V̇ =0)	180 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 Lp(A) < 5 dB(A) For further measurement conditions see section 3.5

a.) Operation condition:

4.400 1/min at free air flow	PWM 0 %	PWM min.: ; f: 2 kHz	PWM max.:; f: 5 kHz

Optimal operating point	130,0 m3/h @ 79 Pa	
Sound power level at the optimal operating point	6,2 bel(A)	
Sound pressure level at free air flow, measured in rubber bands	56,0 dB(A)	

4 Environment

4.1 General

Min. permitted ambient temperature TU min.	-20 °C	
Max. permitted ambient temperature TU max.	55 °C	
Min. permitted storage temperature TL min.	-40 °C	
Max. permitted storage temperature TL max.	80 °C	

4.2 Climatic Requirements

IP-protection type (certified)	IP 68 (for fan only, not for connector if applicable) **)	
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	
Salt fog requirements	salt fog, cyclic, in operation; according to DIN EN 60068-2-52, 3 cycle	

Permitted application area:
The product is for the use in open and unsheltered areas. Direct exposure to water as well as saline ambient conditions are allowed provided that this does not prevent the normal operation.

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

**) The specification of the IP protection refers to the conditions mentioned in certification of the fan. The above mentioned short description of the protection scope is not final. For detailed information of the respective protection scope and definitions, see certification as well as DIN EN 60529 (protection by housings) and ISO 20653 (for vehicles) with the letter K.

Short description of the IP-protection type:
Solid particle Protection: Dust tight.
Protection against deliberate contact: Protected against contact to hazardous parts with a wire.
Protection against water: The fan test according to IP68 (Based on IEC 60529), is conducted in non-operating mode. The fan is tested by a complete immersion in water for a period of 2h at a water-level of 1,2m. Electrical connections are not immersed since they are customer specific.

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	
clearance / creepage distance	1,0 mm / 1,2 mm	
Protection class	III	

5.2 Approval Tests

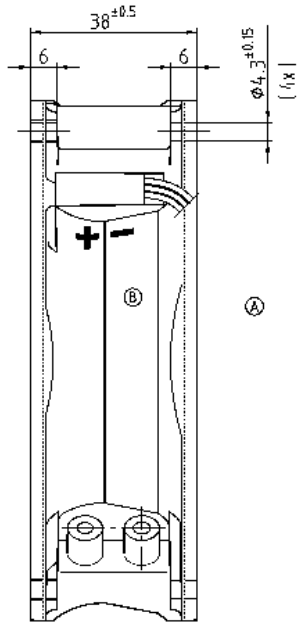
CE	EC Declaration of Conformity	Yes
EAC	Eurasian Conformity	Yes
UL	Underwriters Laboratories	Yes / UL507, Electric Fans
VDE	Association for Electrical, Electronic and Information Technologies	No
CSA	Canadian Standards Association	No
CCC	China Compulsory Certification	Not applicable

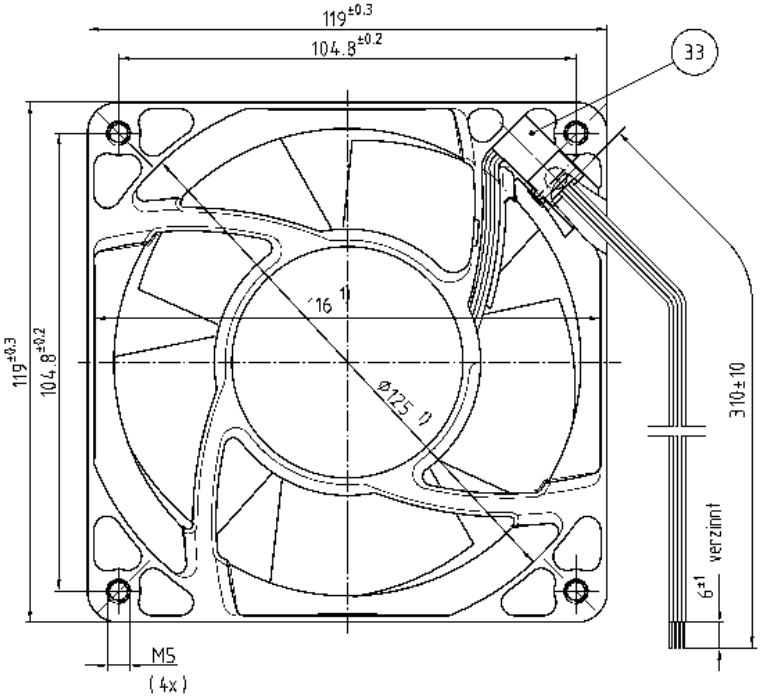
6 Reliability

6.1 General

Life expectancy L10 at TU = 40 °C	70.000 h	
Life expectancy L10 at TU max.	50.000 h	
Life expectancy L10 acc. to IPC 9591 at TU = 40 °C	117.500 h	

Schutzvermerk nach DIN 34, beachten!
Weitergabe sowie Vervielfältigung dieser Unterlage, Verwertung und Mitteilung ihres Inhalts nicht gestattet, soweit nicht ausdrücklich zugestanden. Zuwiderhandlungen verpflichten zu Schadenersatz. Alle Rechte für den Fall der Patenterteilung oder GM-Eintragung vorbehalten.
Copying of this document, and giving it to others and the use or communication of the contents thereof, are forbidden without express authority. Offenders are liable to the payment of damages. All rights are reserved in the event of the grant of a patent or the registration of a utility model or design.





- [1]= Maße für Montagewand

- Axialspiel bei Kugellagerung (KI : 0 |durch Federausgleich)

Tolerierung/Tolerances: Allgemeintoleranzen/ General tolerances	DIN 7167 DIN ISO 2768-1 u.2-mK		
	Datum/Date	Name/Name	Artikel/Title
Bearb./Drawn			
	Prüf/Index	Aend.-Nr./Change-Nr.	Zchg. Nr./ Dwg.-No.
geprüft zur Verwendung freigegeben/Checked for release von/by		am/on	ebm-papst St. Georgen GmbH & Co. KG
			Ersatz/Zchg./ Replaces:
			Blatt/Page
			A3

12/03