1 General

Fan type	Blower	
Rotating direction looking at rotor	Counterclockwise	
Airflow direction	Air in axially, Air out radially	
Bearing system	Ball bearing	
Mounting position - shaft	Any	

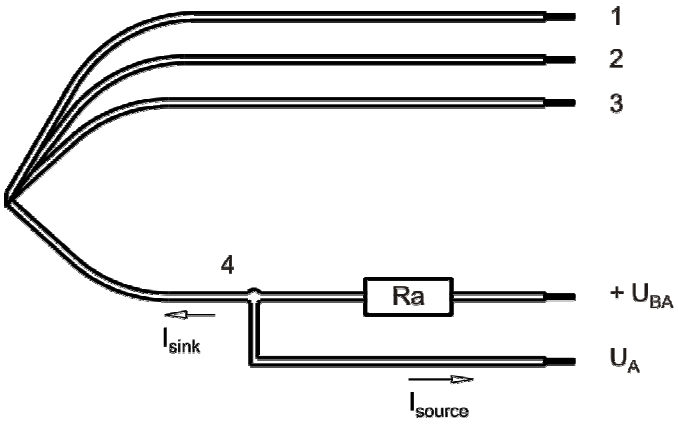
2 Mechanics

2.1 General

Width	97,0 mm	
Height	94,0 mm	
Depth	33,0 mm	
Mass	0,165 kg	
Housing material	Plastic	
Impeller material	Plastic	
Max. torque when mounted across both mounting flanges Screw size	Wire outlet corner: 60 Ncm Remaining corners: 100 Ncm ISO 4762 - M4 degreased, without an additional brace and without washer	

2.2 Connections

Electrical connection	Wires	
Lead wire length Tolerance	L = 310 mm +- 10,0 mm	



Wire	Color	Operation	Wire size	Insulation diameter
1	red	+ UB	AWG 26	1,35 mm
2	blue	- GND	AWG 26	1,35 mm
3	violet	PWM	AWG 26	1,35 mm
4	white	Alarm	AWG 26	1,35 mm

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

3 Operating Data

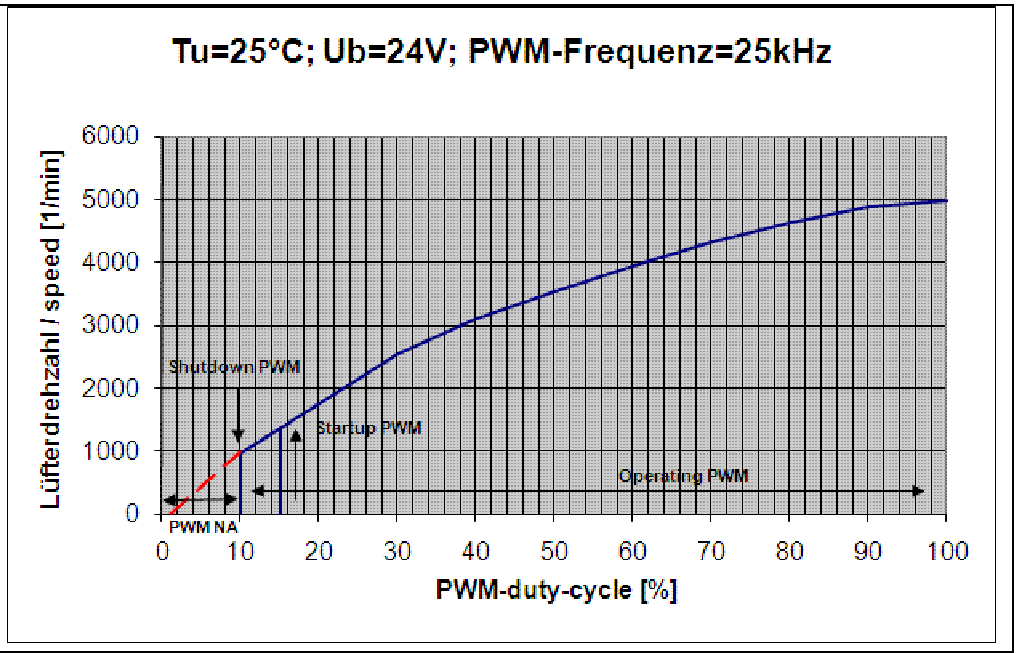
3.1 Electrical Interface - Input

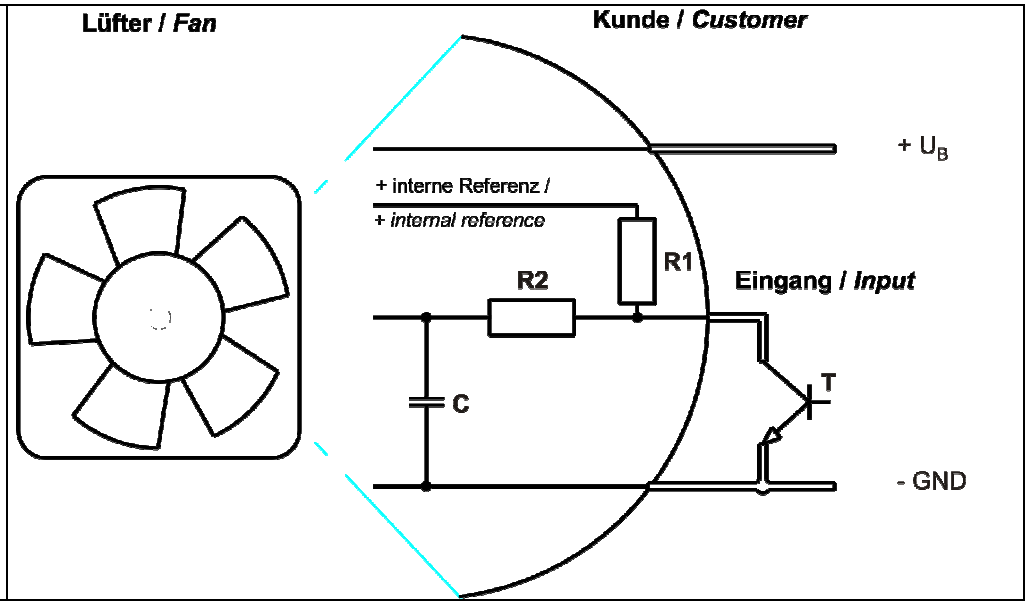
Control input	PWM

Features

Inpute type	Open collector	
PWM - Frequency		21 kHz - 28 kHz typical: 25 kHz
4 wire startup condition	PWM duty cycle	>= 15 %
4 wire operation condition after startup	PWM duty cycle	10 % - 100 %
PWM not applicable	PWM n.a.	0 % - 10 %
Shutdown condition	PWM duty cycle	= 0 %
Typical time until warm restart	After shutdown by PWM	8,2 s

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.

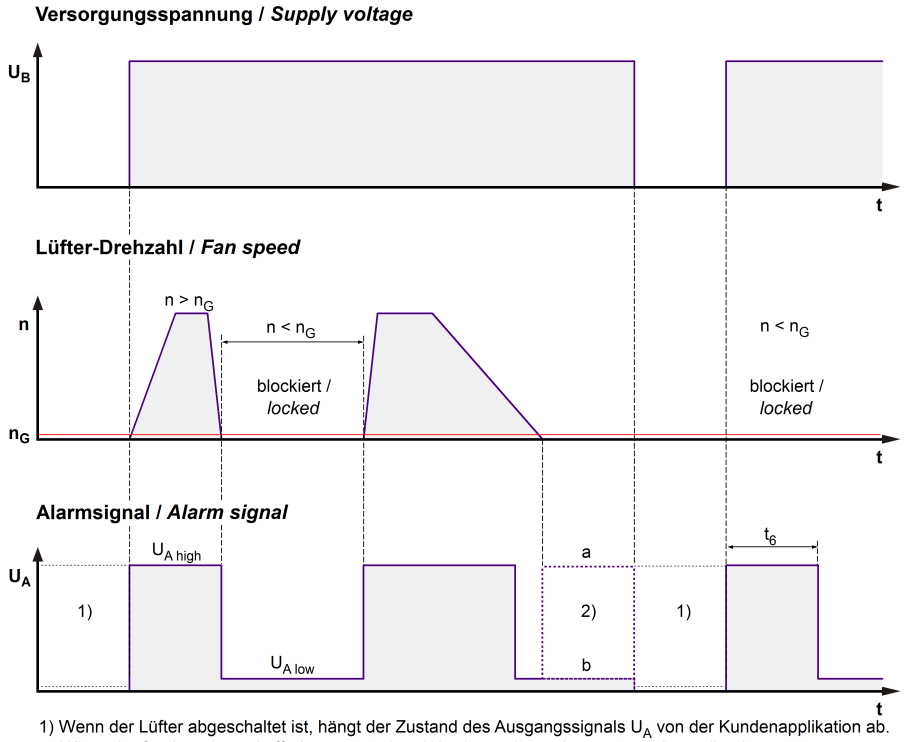
Δp = 0: corresp. to free air flow (see chapter aerodynamics)
I: corresp. to arithm. mean current value

Name	**Condition**		
PWM 0001	PWM: 100 %; f: 25 kHz		

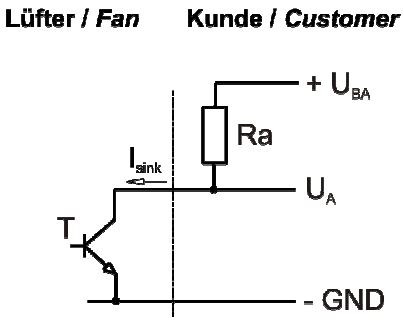
Features	**Condition**	**Symbol**	**Values**		
Voltage range		U	18 V		26,4 V
Nominal voltage		U_N		24,0 V	
Power consumption Tolerance	Δp = 0 PWM 0010	P	10,9 W +- 17,5 %	20,0 W +- 12,5 %	24,4 W +- 15,0 %
Current consumption Tolerance	Δp = 0 PWM 0010	I	605 mA +- 17,5 %	840 mA +- 12,5 %	925 mA +- 15,0 %
Speed Tolerance	Δp = 0 PWM 0010	n	4.180 1/min +- 12,5 %	4.900 1/min +- 7,5 %	5.330 1/min +- 10,0 %
Starting current consumption				3.000 mA	

3.3 Electrical Interface - Output

Alarm type	/37 (high = ok, open collector inverse)



$$Ra = \frac{U_{BA} - U_{A\,low}}{I_{sink}}$$

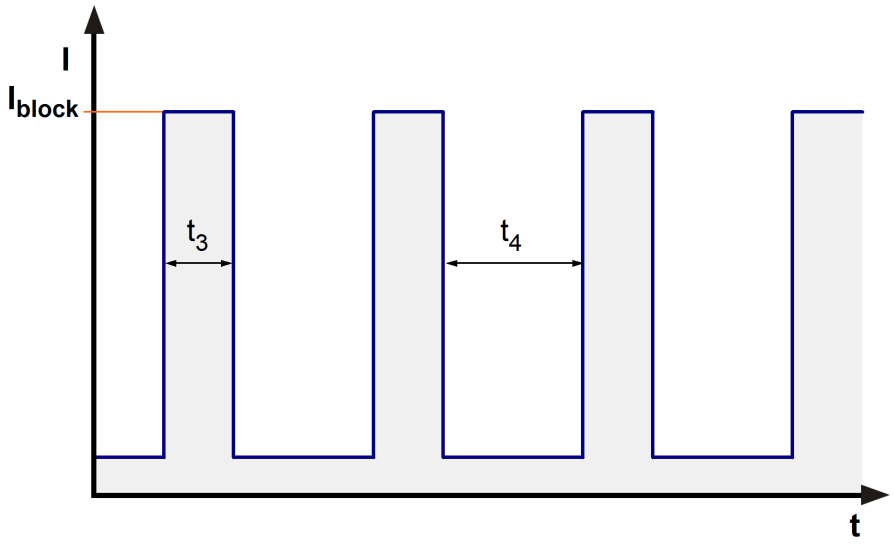


1) Wenn der Lüfter abgeschaltet ist, hängt der Zustand des Ausgangssignals U_A von der Kundenapplikation ab.
When the fan is powered off, the output signal U_A depends on the customer's application.
2) Für den gültigen Zustand (a oder b) siehe Alarmunterdrückung in der Tabelle.
For the valid condition (a or b) see alarm suppression in the table.

Features		Note	Values
Alarm operating voltage	U_{BA}		<= 28 V
Alarm signal Low	$U_{A\,low}$	I sink: 2 mA	<= 0,4 V
Alarm signal High	$U_{A\,high}$	I source: 0 mA	28 V
Maximum sink current	I_{sink}		10 mA
External resistor		External resistor Ra from UBA to UA required. All voltage measured to GND.	
Alarm start-up delay time	t_6		< 1 s
Alarm trip speed limit	n_G		0 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 < 100 uA	
Locked rotor protection	Auto restart	
Locked rotor current at U_N	I_{block} approx. 3.000 mA	
Clock signal at locked rotor	t_3 / t_4 typical: 0,14 s / 8,2 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℃ +/ - 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:

4.900 1/min at free air flow	PWM 100 %; f: 25 kHz		

Max. free-air flow (Δp = 0 / V̇ = max.)	61,0 m3/h	
Max. static pressure (Δp = max. / V̇ =0)	390 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 chapter aerodynamics.

a.) Operation condition:

4.900 1/min at free air flow	PWM 100 %; f: 25 kHz		

Optimal operating point	27,0 m3/h @ 242 Pa	
Sound power level at the optimal operating point	6,8 bel(A)	
Sound pressure level at free air flow, measured in rubber bands		

4 Environment

4.1 General

Min. permitted ambient temperature TU min.	-20 °C	
Max. permitted ambient temperature TU max.	60 °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	
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℃. 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 / 1,2 mm	
Protection class	III	

5.2 Approval Tests

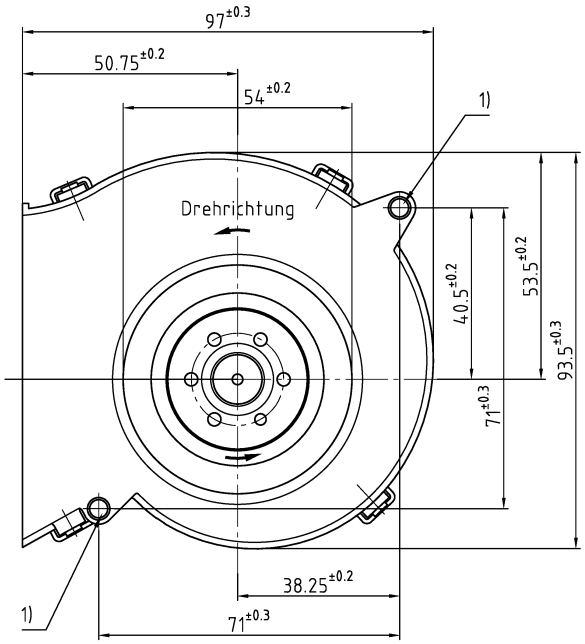
CE	EC Declaration of Conformity	Yes
EAC	Eurasian Conformity	Yes
UL	Underwriters Laboratories	Yes / UL507, Electric Fans
VDE	Association for Electrical, Electronic and Information Technologies	No
CSA	Canadian Standards Association	Yes
CCC	China Compulsory Certification	Not applicable

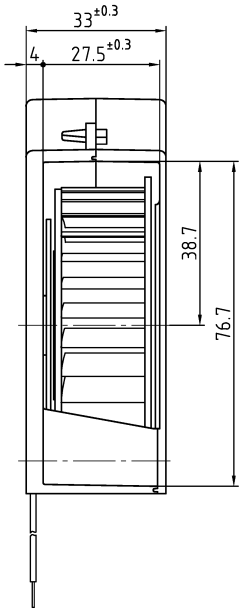
6 Reliability

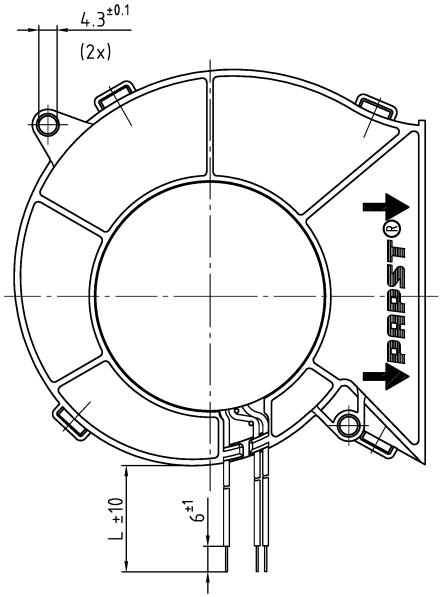
6.1 General

Life expectancy L10 at TU = 40 ℃	55.000 h	
Life expectancy L10 at TU max.	35.000 h	
Life expectancy L10 acc. to IPC 9591 at TU = 40 ℃	92.5 00 h	

Schutzvermerk nach DIN ISO 16016 beachten







Anzahl und Länge der Litzen
siehe entspr. SPE-Datei

1) max. Anschraubmoment = 1.3 Nm

Tolerierung: ~~DIN 7167~~ Allgemeintoleranzen:				
	Datum	Name		Artikel / Maßstab
Bearbeitet			PAPST PAPST-MOTOREN GmbH & Co KG D-78112 St.Georgen Germany	
	Index	Aend.-Nr.		Zchg.-Nr. / Blatt
Geprueft u. zur Verwendung freigegeben von am				Ers.f.Zchg.: / A3