Product Data Sheet **9594314306**
VBS0125XUJCZ
RER125-19/12N/2TDP-306

ebmpapst
The engineer's choice



GREEN TECH

RER125-19/12N/2TDP-306

INDEX

1 General 3
2 Mechanics 3
2.1 General 3
2.2 Connections 3
3 Operating Data 4
3.1 Electrical Interface - Input 4
3.2 Electrical Operating Data 5
3.3 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
4.3 EMC 9
5 Safety 11
5.1 Electrical Safety 11
5.2 Approval Tests 11
6 Reliability 11
6.1 General 11

1 General

Fan type	Blower without chassis with intake nozzle	
Rotating direction looking at rotor	Clockwise	
Airflow direction	Air in axially, Air out radially	
Bearing system	Ball bearing	
Mounting position - shaft	Any	

2 Mechanics

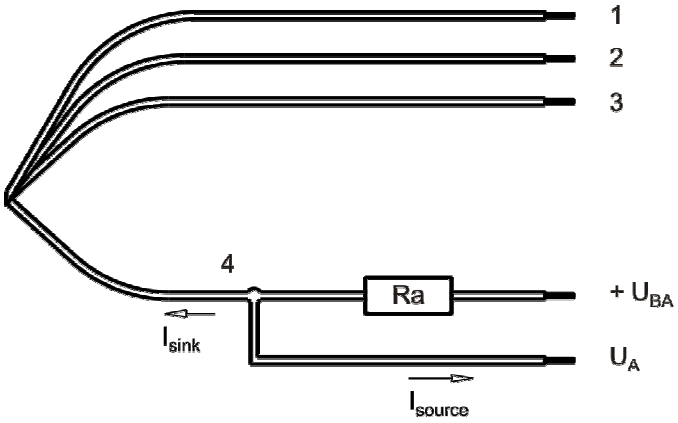
2.1 General

Depth	34,7 mm	
Diameter	138,0 mm	
Mass	0,36 kg	
Housing material		
Impeller material	Mixed	
Max. torque when mounted across both mounting flanges; Metal flange on mounting plate Screw size	Wire outlet corner: 100 Ncm Remaining corners: 100 Ncm ISO 4762 - M4 degreased, without an additional brace and without washer	

2.2 Connections

Electrical connection	Wires - Plug	
Lead wire length Tolerance	L = 190 mm +- 10,0 mm	
Tube length Tolerance	S = 3 mm - 3,0 mm	
Plug	See drawing	
Contact	See drawing	





Wire	Color	Operation	Wire size	Insulation diameter
1	red	+ UB	AWG 24	1,5 mm
2	blue	- GND	AWG 24	1,5 mm
3	violet	PWM	AWG 24	1,5 mm
4	white	Tacho	AWG 24	1,5 mm

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

3 Operating Data

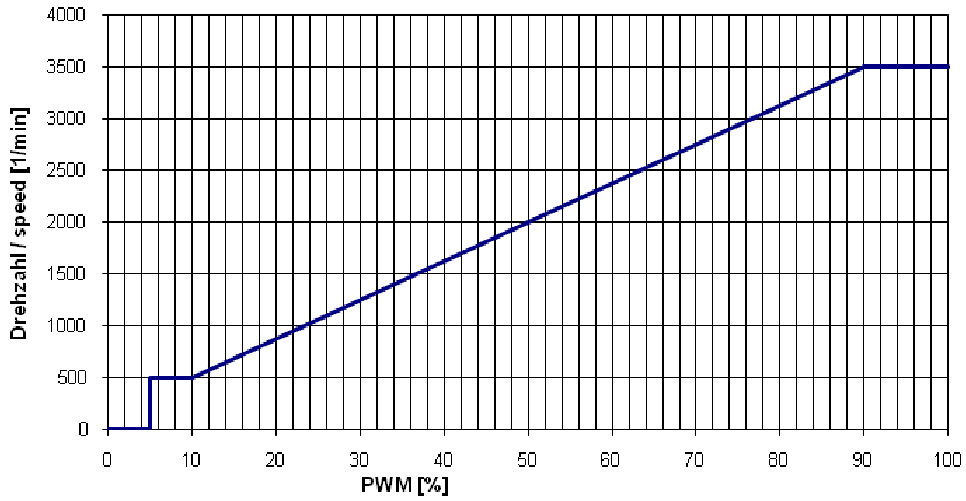
3.1 Electrical Interface - Input

Control input	PWM

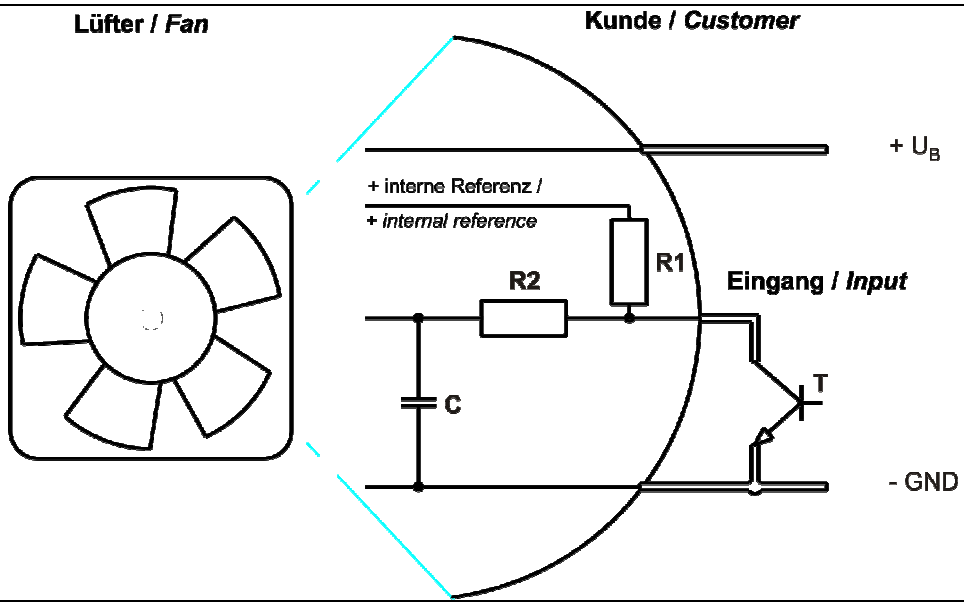
Features

Inpute type	Open collector / TTL	
PWM - Frequency		1 kHz - 10 kHz typical: 2 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.

Measurement setup:	Measured between two steel plates
Steel plate:	300 mm x 300 mm
Intake nozzle:	D: 86 mm; R: 5 mm
Distance between bottom and top plate:	34,2 mm
Overlapping impeller / nozzle:	2 mm

$\Delta p = 0$: corresp. to free air flow (see chapter aerodynamics)
I: corresp. to arithm. mean current value

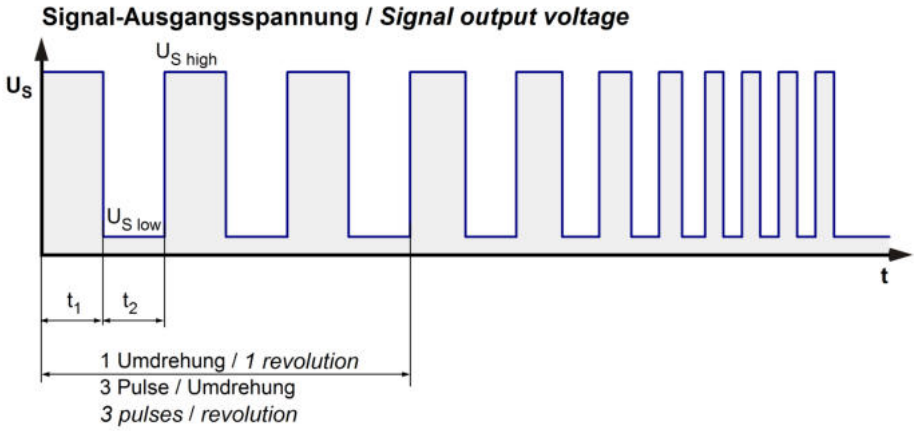
Name	**Condition**		
PWM 0001	PWM: 100 %; f: 2 kHz		

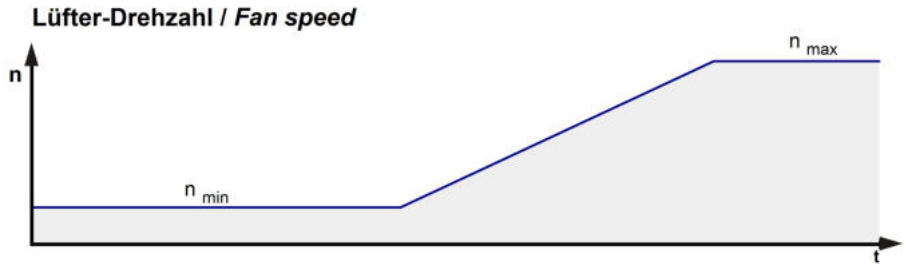
Features	**Condition**	**Symbol**	**Values**		
Voltage range		U	10,8 V		13,2 V
Nominal voltage		U_N		12 V	
Power consumption Tolerance	$\Delta p = 0$ PWM 0010	P	5,5 W +- 10 %	6,6 W +- 10 %	6,7 W +- 10 %
Current consumption Tolerance	$\Delta p = 0$ PWM0010	I	510 mA +- 10 %	550 mA +- 10 %	510 mA +- 10 %
Speed Tolerance	$\Delta p = 0$ PWM 0010	n	3.280 1/min +- 12,5 %	3.500 1/min +- 6 %	3.500 1/min +- 6 %

) *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: +- 6 %

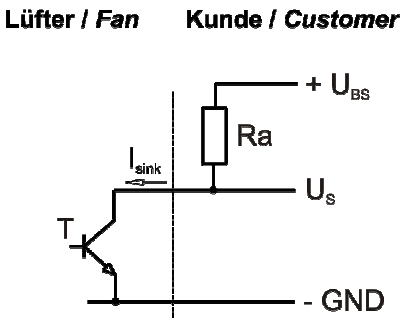
3.3 Electrical Interface - Output

Tacho type	/2 (open collector)





$$Ra = \frac{U_{BS} - U_{S\,low}}{I_{sink}}$$

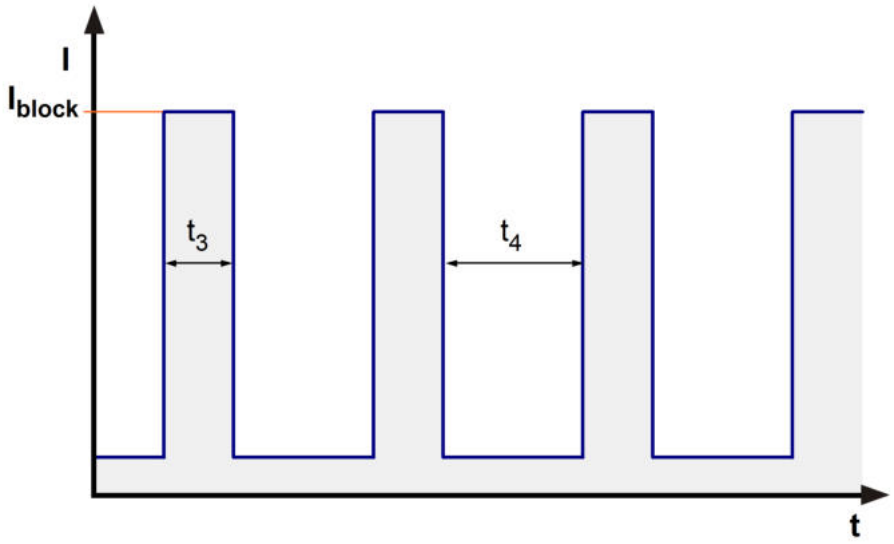


Features		Note	Values
Tacho operating voltage	U_{BS}		<= 60 V
Tacho signal Low	$U_{S\,low}$	I sink: 2 mA	<= 0,4 V
Tacho signal High	$U_{S\,high}$	I source: 0 mA	<=60 V
Maximum sink current	I_{sink}		<= 4 mA
External resistor		External resistor Ra from UBS to US required. All voltages measured to GND.	
Tacho frequency		(3 x n) / 60	
Tacho isolated from motor		No	

n = revolutions per minute (1/min)

3.4 Electrical Features

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



3.5 Aerodynamics

Measurement conditions:

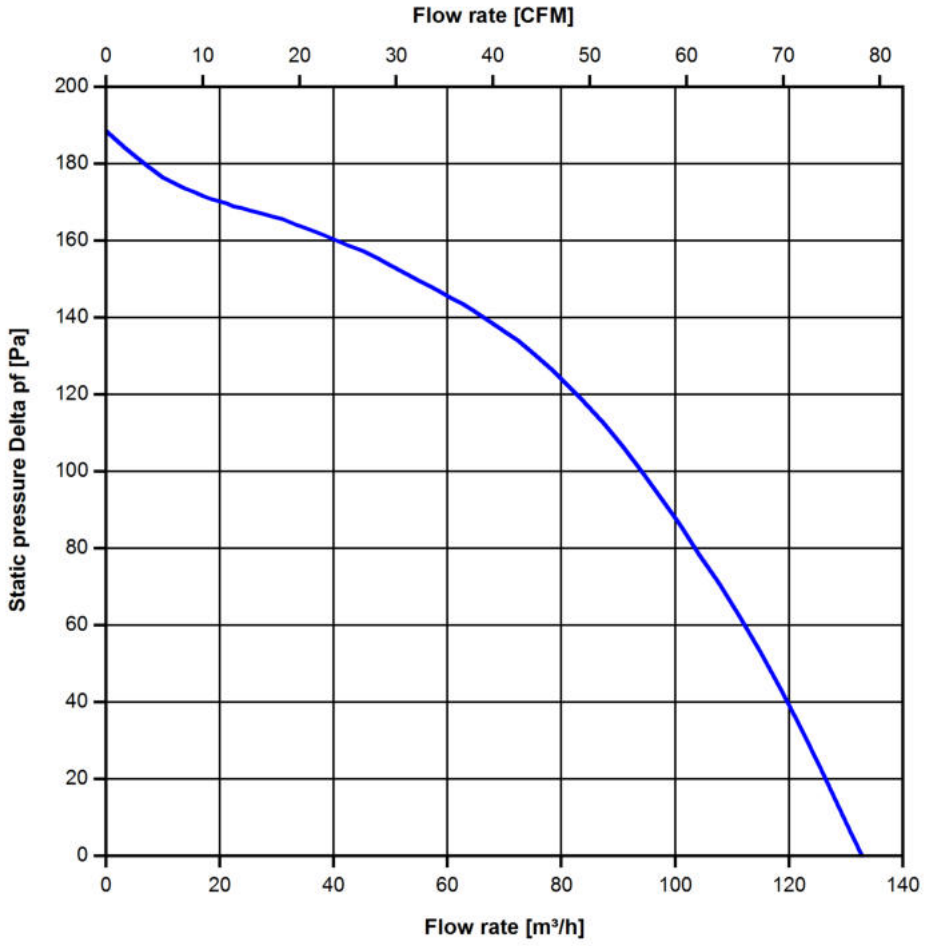
Measured with a double chamber intake rig acc. to DIN EN ISO 5801.
Normal air density = 1,2 kg/m3; Temperature 23℃ +/ - 3℃;
In the intake and outlet area should not be any solid obstruction within 0,5 m. Motor shaft horizontal.
The information is only valid under the specified test conditions and may 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.

Measurement setup:	Measured between two steel plates
Steel plate:	300 mm x 300 mm
Intake nozzle:	D: 86 mm; R: 5 mm
Distance between bottom and top plate:	34,2 mm
Overlapping impeller / nozzle:	2 mm

a.) Operation condition:

3.500 1/min at free air flow	PWM 100 %; f: 2 kHz		

Max. free-air flow (Δp = 0 / $\dot{V}$ = max.)	133 m3/h	
Max. static pressure (Δp = max. / $\dot{V}$ =0)	188 Pa	



3.6 Sound Data

Measurement conditions: Sound pressure level: 1 meter distance between microphone and the air intake.

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:

3.500 1/min at free air flow	PWM 100 %; f: 2 kHz		

4 Environment

4.1 General

Min. permitted ambient temperature TU min.	-20 ℃	
Max. permitted ambient temperature TU max.	65 ℃	
Min. permitted storage temperature TL min.	-35 ℃	
Max. permitted storage temperature TL max.	85 ℃	

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.

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	A: The monitored function operates as designed during and after exposure to a disturbance.

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	**Electrical Fast Transient / Burst Immunity Test**
According	DIN EN 61000-4-4:2005-07
Ceck accuracy / Limit	+/- 2 kV on Power Lines; Coupling: POS, NEG, {PE}, ALL, 5 kHz and 100 kHz; 1 min
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; 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.

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 E38324
VDE	Association for Electrical, Electronic and Information Technologies	Yes / Approval acc. to EN 60335 (VDE 0700) - Safety for household and similar electrical appliances
CSA	Canadian Standards Association	Yes
CCC	China Compulsory Certification	Not applicable

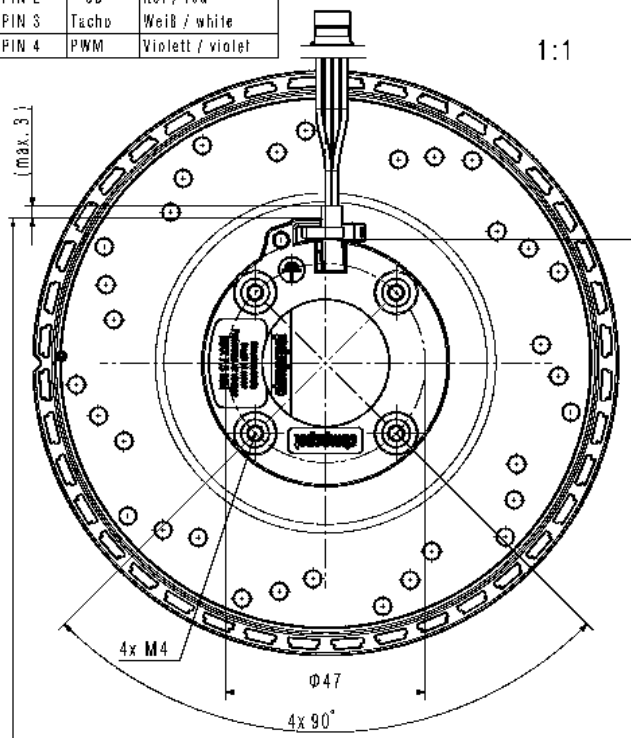
6 Reliability

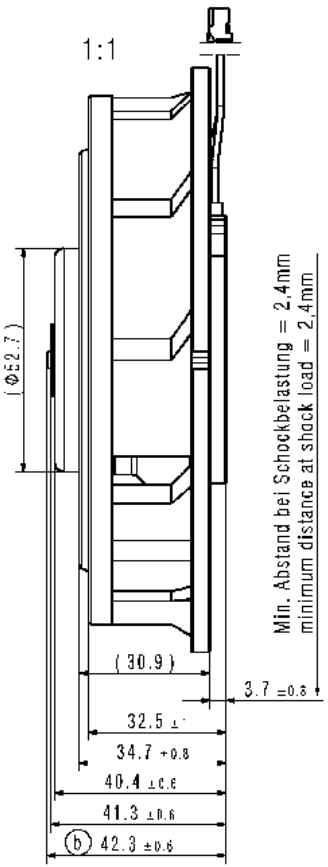
6.1 General

Life expectancy L10 at TU = 40 ℃	75.000 h	
Life expectancy L10 at TU max.	42.500 h	

Steckerbelegung / PIN configuration		
PIN 1	GND	Blau / blue
PIN 2	–UB	Rot / red
PIN 3	Tacho	Weiß / white
PIN 4	PWM	Violett / violet

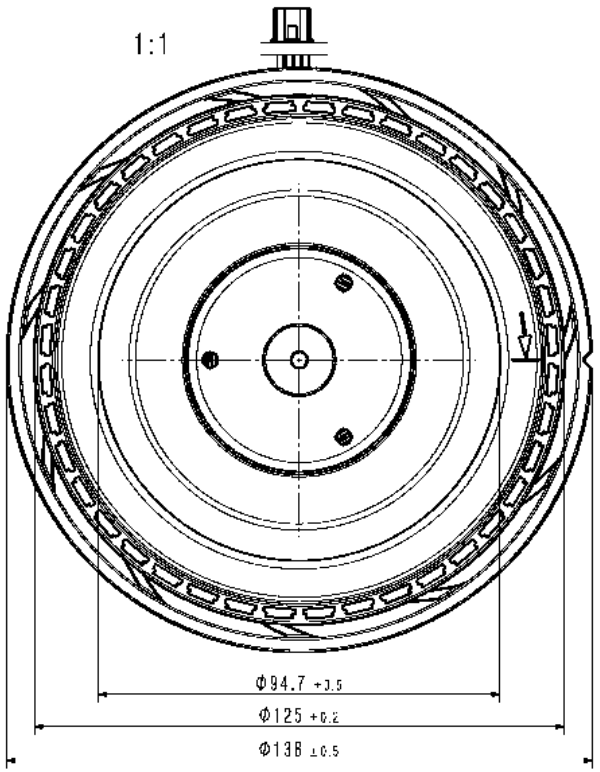
Steckergehäuse / plug housing:	Kontakt / contact:
JST: PAP-04V-S	JST: SPHD-001T-P.05



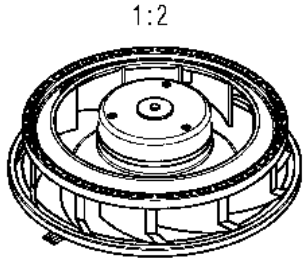


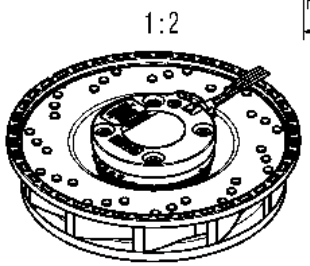
Min. Abstand bei Schockbelastung = 2,4mm
minimum distance at shock load = 2,4mm

Drehrichtung / rotation direction



Schlauch mit Außenkontur bündig bis max. 3mm überstehend
tube flush with outer contour to maximum 3mm projecting





- Axialspiel der Kugellager mit Feder spielfrei verspannt
- ball bearing without clearance by a pre-load spring

Dokument-Status / Document-Status

Oberfläche / Materials:

Volumen / Volume [dm³]:

Gewicht / Mass [g]:

Artikel / Title:

Toleranzen / Tolerances:

Allgemeintoleranzen / Gen. Tolerances:

Zeichn.-Nr. / Drawing No.:

Ers. f. Zchg. / Replaces:

Index / Index: B

Format / Size:

Maßstab/Scale:

ebmpapst

ebm-papst St. Georgen GmbH & Co. KG