

Product Data Sheet RG140-22/14N/2TDP

ebmpapst

The engineer's choice



RG140-22/14N/2TDPU

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1 General

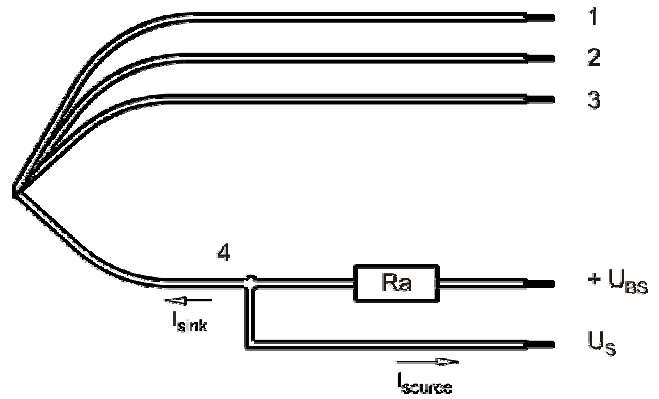
Fan type	Blower	
Rotating direction looking at rotor	Clockwise	
Airflow direction	Air in axially, Air out radially	
Bearing system	Ball bearing	
Mounting position - shaft	Any	

2 Mechanics**2.1 General**

Width	180,0 mm	
Height	180,0 mm	
Depth	40,0 mm	
Mass	0,750 kg	
Housing material	Mixed	
Impeller material	Plastic	
Max. torque when mounted across both mounting flanges; Metal flange on mounting plate Screw size	Wire outlet corner: 70 Ncm Remaining corners: 70 Ncm ISO 4762 - M4 degreased, without an additional brace and without washer	

2.2 Connections

Electrical connection	Wires	
Lead wire length	L = 310 mm	
Tolerance	+ - 10 mm	
Tube length	S = 20 mm	
Tolerance	+ - 10 mm	
Wire size (AWG)	22	
Insulation diameter	1,7 mm	



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

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

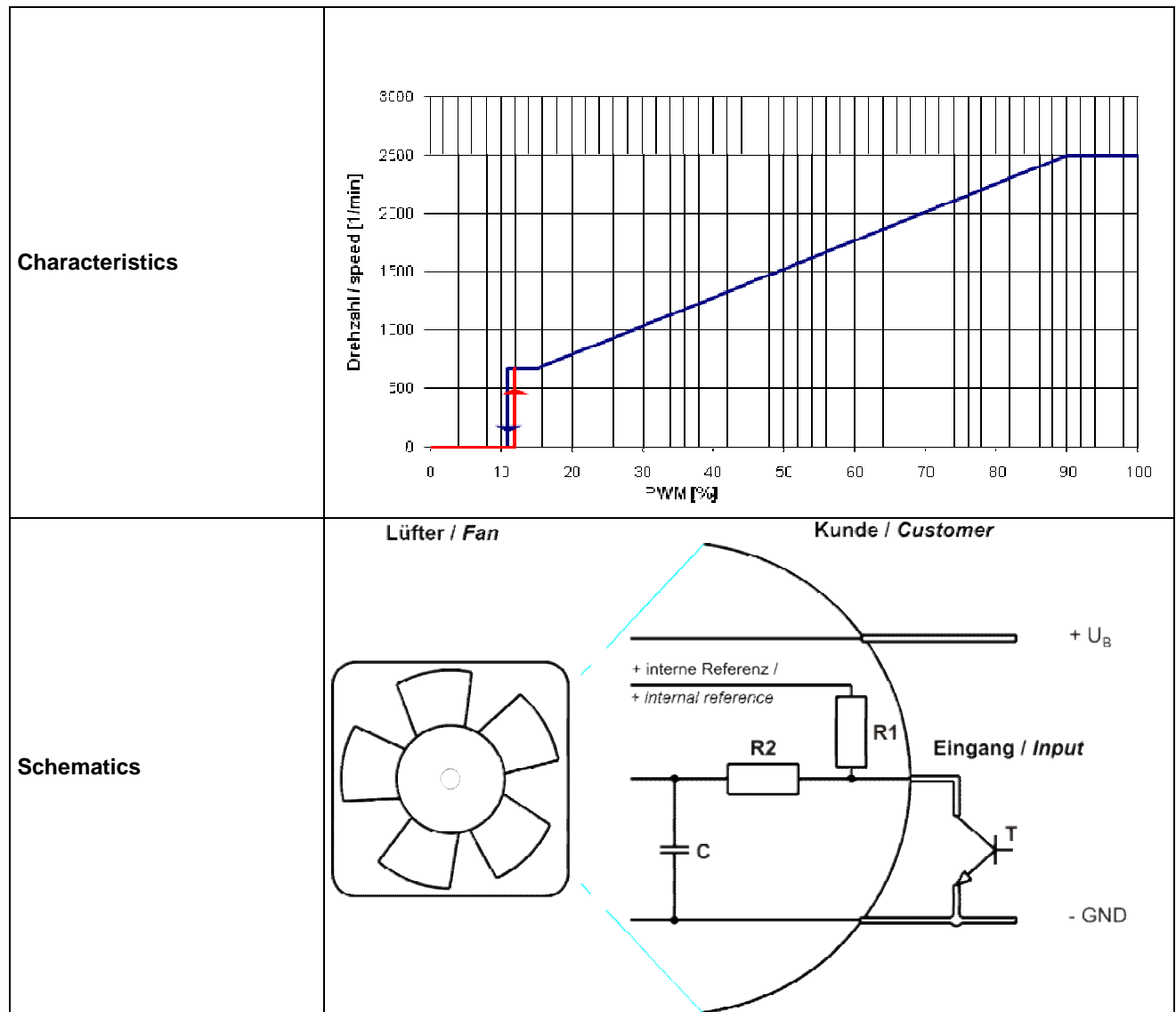
3 Operating Data

3.1 Electrical Interface - Input

Control input	PWM
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Features

Input type	Open collector	
PWM - Frequency		1 kHz - 10 kHz typical: 5 kHz



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.

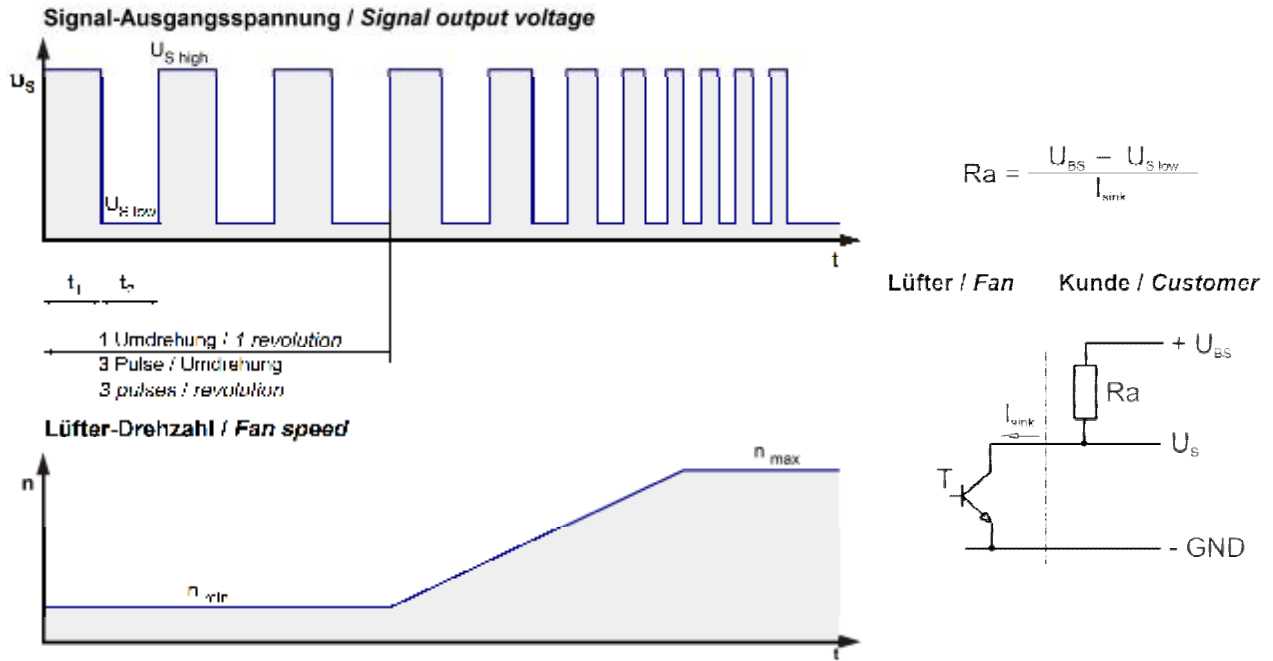
$\Delta p = 0$: corresp. to free air flow (see chapter aerodynamics)
 I: corresp. to arithm. mean current value

Name	Condition
PWM 0001	PWM: 100 %; f: 5 kHz

Features	Condition	Symbol	Values		
Voltage range		U	20,4 V		27,6 V
Nominal voltage		U_N		24,0 V	
Power consumption	$\Delta p = 0$	P	9,1 W	9,3 W	9,5 W
Tolerance	PWM 0010		+/- 10 %	+/- 10,0 %	+/- 10,0 %
Current consumption	$\Delta p = 0$	I	445 mA	390 mA	345 mA
Tolerance	PWM 0010		+/- 10,0 %	+/- 10,0 %	+/- 10,0 %
Speed	$\Delta p = 0$	n	2.500 1/min	2.500 1/min	2.500 1/min
Tolerance	PWM 0010		+/- 6,0 %	+/- 6,0 %	+/- 6,0 %
Starting current consumption				450 mA	

3.3 Electrical Interface - Output

Tacho type	/2 (open collector)
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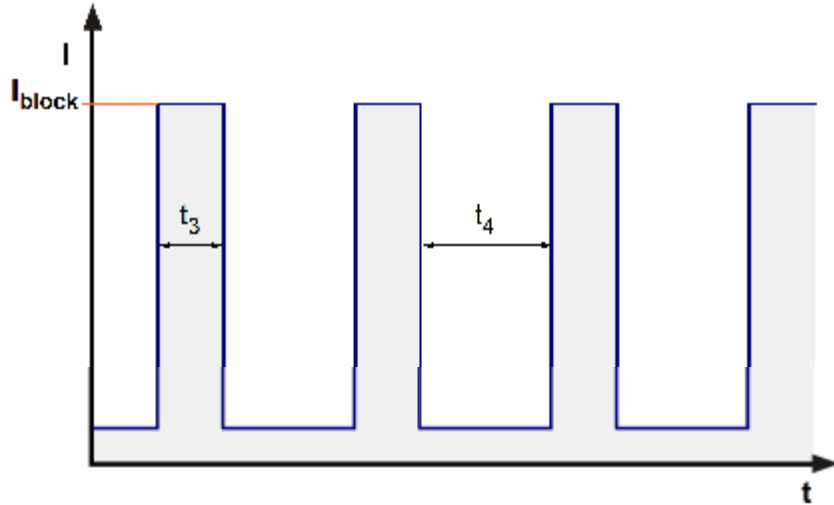


Features	Note	Values
Tacho operating voltage	U_{BS}	$\leq 60\ V$
Tacho signal Low	$U_{S\ low}$	$I_{sink}: 2\ mA$ $\leq \leq 0,4\ V$
Tacho signal High	$U_{S\ high}$	$I_{source}: 0\ mA$ $\leq 60\ V$
Maximum sink current	I_{sink}	$\leq 4\ mA$
Maximum source current		$0\ mA$
External resistor	External resistor R_a from U_{BS} to U_S required. All voltages measured to GND .	
Tacho frequency	$(3 \times n) / 60$	
Tacho isolated from motor	No	
Slew rate		$\Rightarrow 0,5\ V/\mu s$

n = revolutions per minute (1/min)

3.4 Electrical Features

Electronic function	Speed-Controlled	
Reversed polarity protection	Rectifying diode	
Max. residual current at U_N	$I_F \leq 500 \mu A$	
Locked rotor protection	Auto restart	
Locked rotor current at U_N	I_{block}	
Clock signal at locked rotor	t_3 / t_4 typical: 3 s / 10 s	



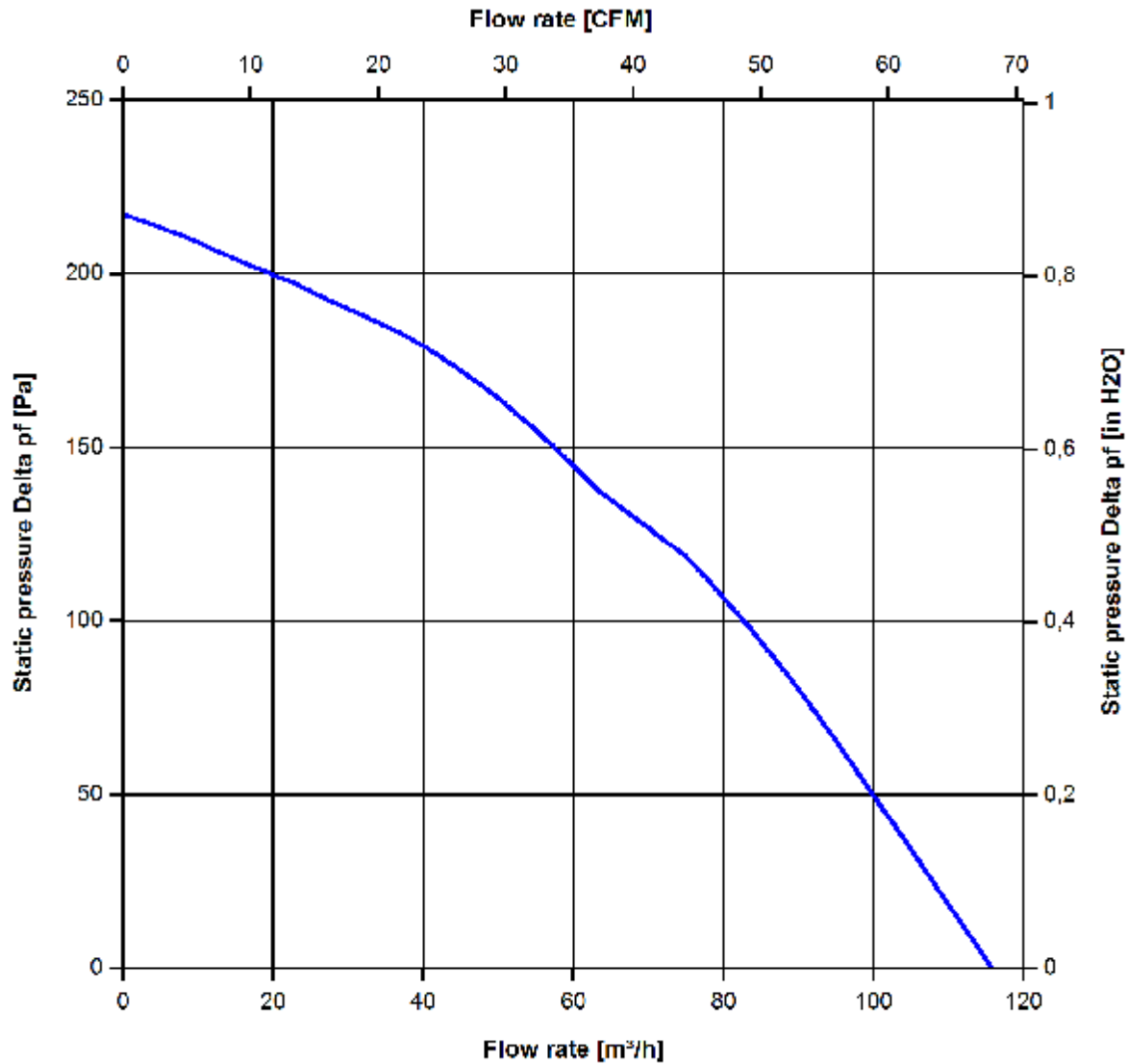
3.5 Aerodynamics

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

2.500 1/min at free air flow	PWM 100 %; f: 5 kHz		
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Max. free-air flow ($\Delta p = 0 / \dot{V} = \text{max.}$)	118 m ³ /h	
Max. static pressure ($\Delta p = \text{max.} / \dot{V} = 0$)	215 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 chapter aerodynamics.

a.) Operation condition:

2.500 1/min at free air flow	PWM 100 %; f: 5 kHz		
Optimal operating point	43,0 m ³ /h @ 157 Pa		
Sound power level at the optimal operating point	6,0 bel(A)		
Sound pressure level at free air flow, measured in rubber bands			

The sound pressure level refers to the simultaneous operation of both fans in the unit.

4 Environment

4.1 General

Min. permitted ambient temperature TU min.	-20 °C	
Max. permitted ambient temperature TU max.	70 °C	
Min. permitted storage temperature TL min.	-40 °C	
Max. permitted storage temperature TL max.	80 °C	

Verschmutzungsgrad DIN EN 60335 II (mech.Schutz durch Applikation vorausgesetzt z. B, Filter)

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	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.

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	EC Declaration of Conformity	Yes
EAC	Eurasian Conformity	Yes
UL	Underwriters Laboratories	Yes / UL507, Electric Fans
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

In approval

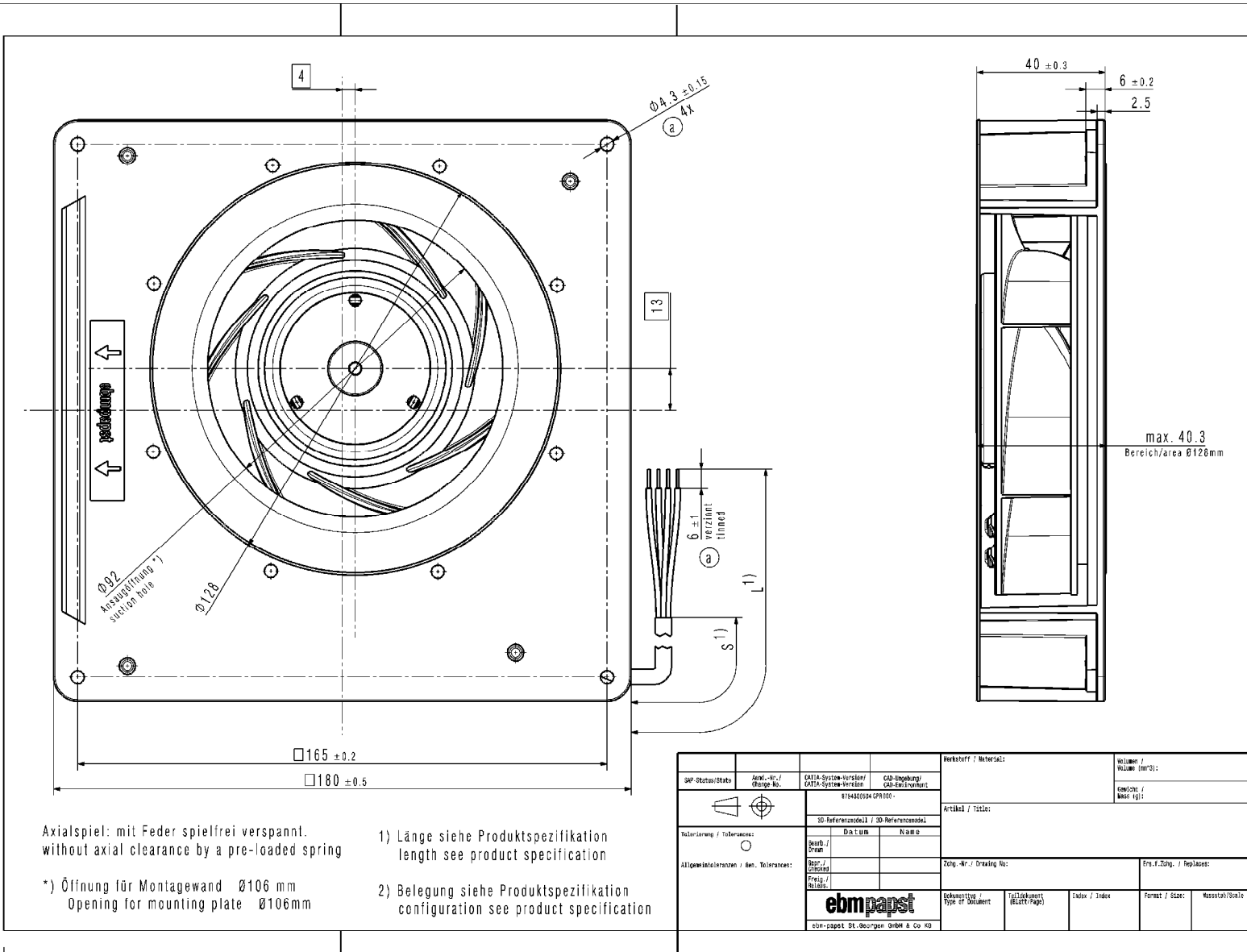
6 Reliability

6.1 General

Life expectancy L10 at TU = 20 °C	75.000 h	
Life expectancy L10 at TU = 40 °C	62.500 h	
Life expectancy L10 at TU max.	27.500 h	

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Refer to production notes DIN ISO 4001!



Axialspiel: mit Feder spielfrei verspannt.
without axial clearance by a pre-loaded spring

*) Öffnung für Montagewand Ø106 mm
Opening for mounting plate Ø106mm

- 1) Länge siehe Produktspezifikation
length see product specification
- 2) Belegung siehe Produktspezifikation
configuration see product specification

SWP-Status/Status	Rev.-Nr./ Change No.	CATIA-System-Version/ CATIA-System-Version	CAD-Umgebung/ CAD-Environment	Hersteller / Material:	Volumen / Volume (Imp³):
		674400004 CFB000		Artikel / Title:	Gewicht / Mass (kg):
Relanzierung / Tolerances:		3D-Referenzcode1 / 3D-Referenzcode2			
Allgemeintoleranzen / Gen. Tolerances:		Datum	Name	Zug.-Nr. / Drawing No.:	Erstf. Zögl. / Replaces:
		Rev. / Drawn			
		Rev. / Checked			
		Freig. / Released			
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