Product Data Sheet 9794300505

VCS0140XUJCZ

RG140-22/12N/2TDAU

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RG140-22/12N/2TDAU

INDEX

1 General

Fan type	Blower	
Rotating direction looking at rotor	Clockwise	
Airflow direction	Axial: intake; centrifugal: exhaust	
Bearing system	Ball bearing	
Mounting position - shaft	Any	

Please note:
"Sensorless commutation electronic, starting at the first start may not be 100% guaranteed, automatic restart occurs."

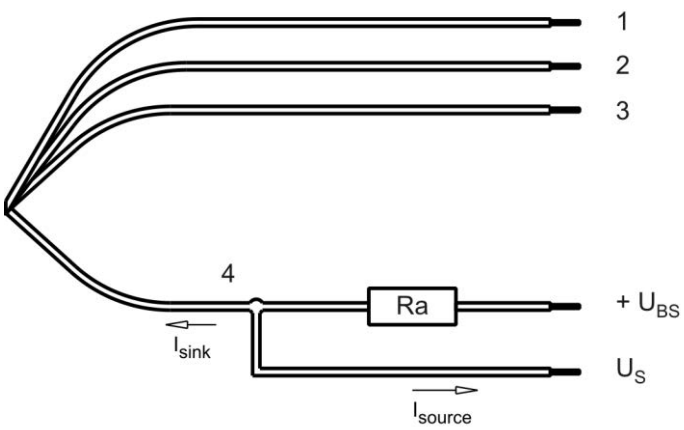
2 Mechanics

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 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 Tolerance	L = 410 mm +- 10 mm	
Tube length Tolerance	S = 20 mm +- 10 mm	
Wire size (AWG)	22	
Insulation diameter	1,7 mm	



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

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

Wire 1 - 4: AWG22

3 Operating Data

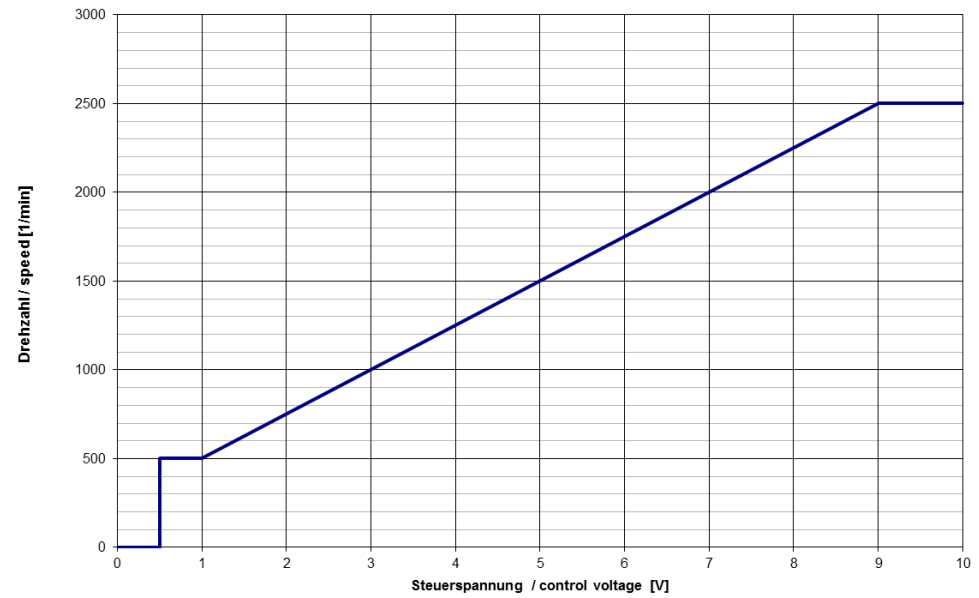
3.1 Electrical Interface - Input

Control input	Analog

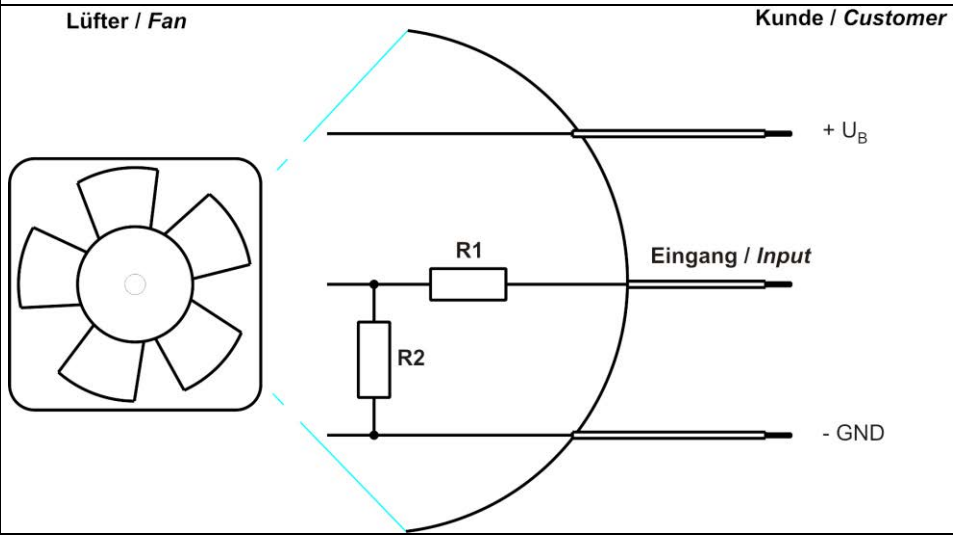
Features

Input voltage range		0 V - 10 V

Characteristics



Schematics



Information to the curve:
0V - 0,5V : 0 1/min
0,5V - 1V : 500 1/min(corresponding to min. speed)
1V - 9V : linear increasing curve
9V - 10V : 2.500 1/min (corresponding to max. speed)

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 chapter aerodynamics)
I: corresp. to arithm. mean current value

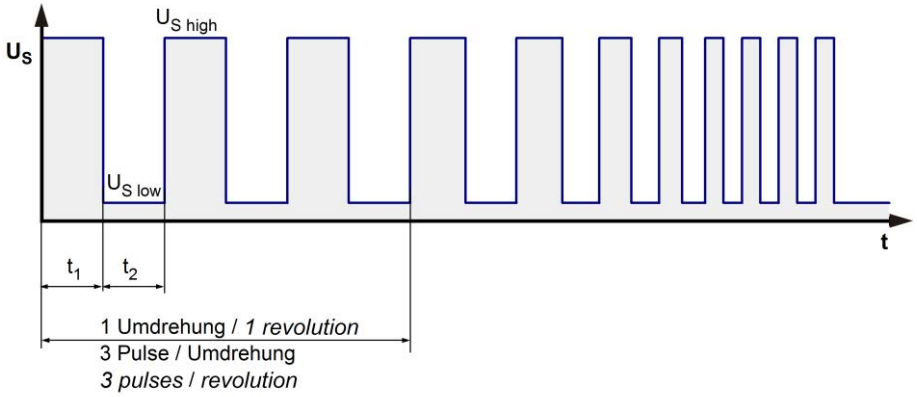
Name	Condition		
U Contr. 0001	U Contr.: 10,0 V		

Features	Condition	Symbol	Values		
Voltage range		U	10,8 V		13,2 V
Nominal voltage		U_N		12,0 V	
Power consumption Tolerance	Δp = 0 U Contr. 0010	P	10,1 W +- 10 %	10,2 W +- 10 %	10,2 W +- 10 %
Current consumption Tolerance	Δp = 0 U Contr. 0010	I	940 mA +- 10 %	850 mA +- 10 %	770 mA +- 10 %
Speed Tolerance	Δp = 0 U Contr. 0010	n	2.500 1/min +- 10 %	2.500 1/min +- 7,5 %	2.500 1/min +- 7,5 %

3.3 Electrical Interface - Output

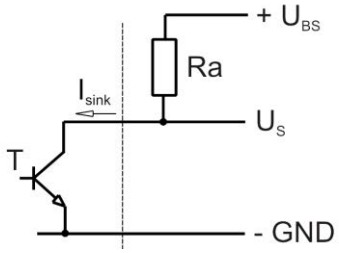
Tacho type	/2 (open collector)

Signal-Ausgangsspannung / *Signal output voltage*

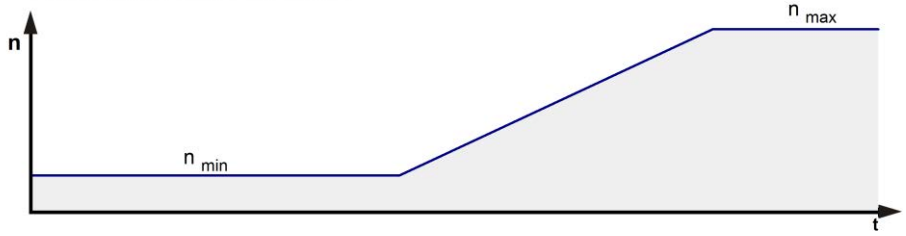


$$Ra = \frac{U_{BS} - U_{S\,low}}{I_{sink}}$$

Lüfter / *Fan* **Kunde / *Customer***



Lüfter-Drehzahl / *Fan speed*

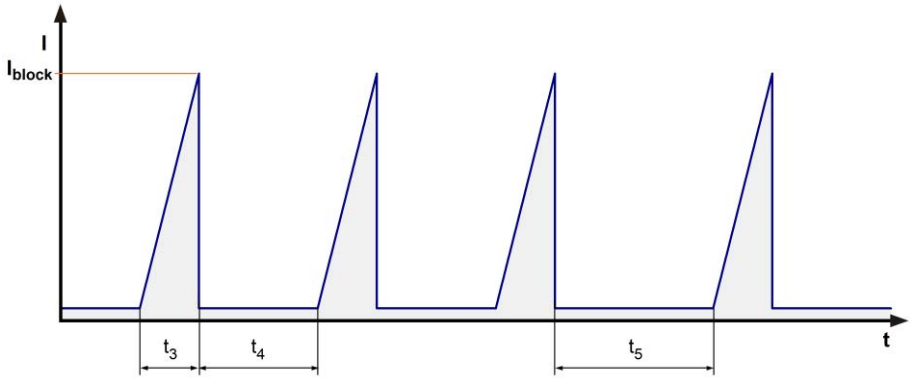


Features		**Note**	**Values**
Tacho operating voltage	U_{BS}		<= 30,0 V
Tacho signal Low	$U_{S\,low}$	I sink: 2 mA	<= 0,4 V
Tacho signal High	$U_{S\,high}$	I source: 0 mA	<=30,0 V
Maximum sink current	I_{sink}		<= 20 mA
Maximum source current			0 mA
External resistor		External resistor Ra from UBS to US required. All voltages measured to GND.	
Tacho frequency		(3 x n) / 60	125 Hz
Tacho isolated from motor		No	
Slew rate			>= 0,5 V/us

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 <= 500 uA	
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	



Internal Fuse:

Littelfuse Nano¸ Fuse
451/453 Series
2.0A / 125V /FF/ SMD

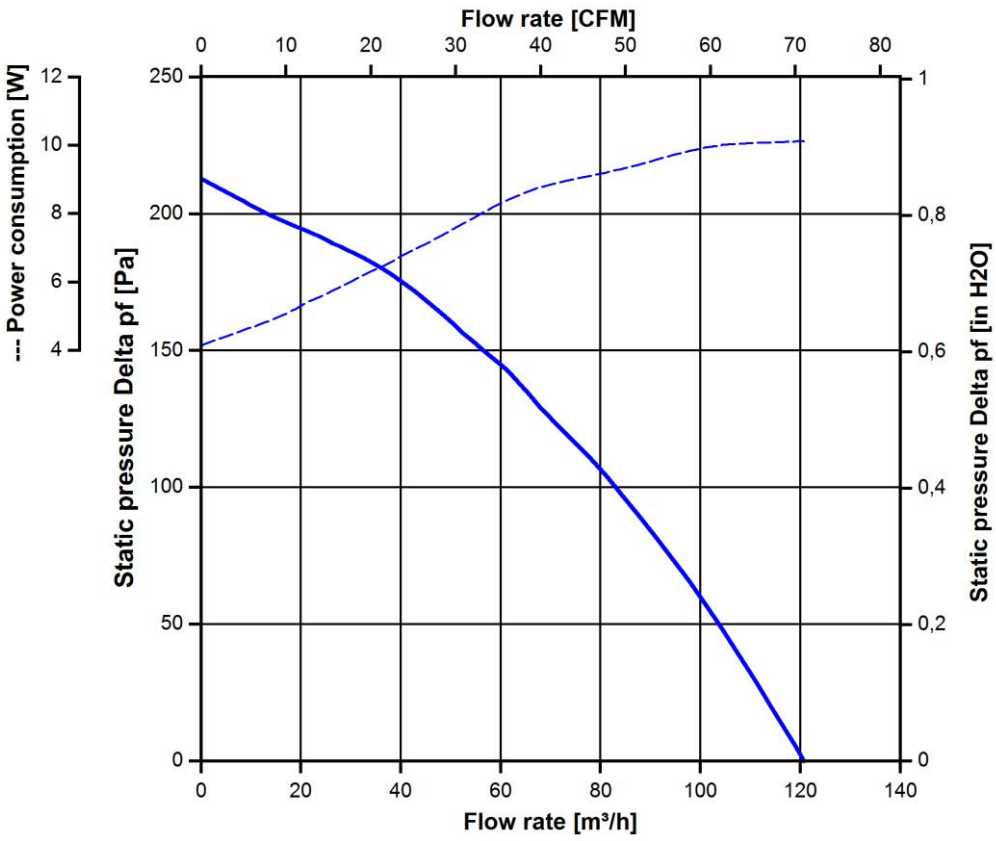
3.5 Aerodynamics

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. Power consumption of the fan motor when operating at normal voltage is shown. Depending on the operating conditions of the application, the power input may be higher.

a.) Operation condition:

2.500 1/min at free air flow	U Contr. 10,0 V		

Max. free-air flow (Δp = 0 / V̇ = max.)	120 m3/h	
Max. static pressure (Δp = max. / V̇ =0)	210 Pa	



3.6 Sound Data

Measurement conditions:	Sound pressure level: 1 meter distance between microphone and the air intake. Sound power level: According to DIN 45635 Part 38 (ISO 10302) Measured in a semianechoic chamber with a background noise level of Lp(A) < 5 dB(A) For further measurement conditions see chapter aerodynamics.

a.) Operation condition:

2.500 1/min at free air flow	U Contr. 10,0 V		

Optimal operating point	24 m3/h @ 188 Pa	
Sound power level at the optimal operating point	5,8 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.	70 °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	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.

**) 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.

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

4.3 EMC

Kind	**Conducted Emission; Voltage; 150 kHz-30 MHz**
According	DIN EN 55032:2016-02
Ceck accuracy / Limit	Class B
Result	Below limit Class B

Kind	**Conducted Emission; Voltage; 150 kHz-30 MHz**
According	DIN EN 55032:2016-02
Ceck accuracy / Limit	Class B
Result	Below limit Class B

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

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	**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	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	**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 62368 and DIN EN 60335 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. 850 VDC / 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 / 1,5 mm	
Protection class	III	

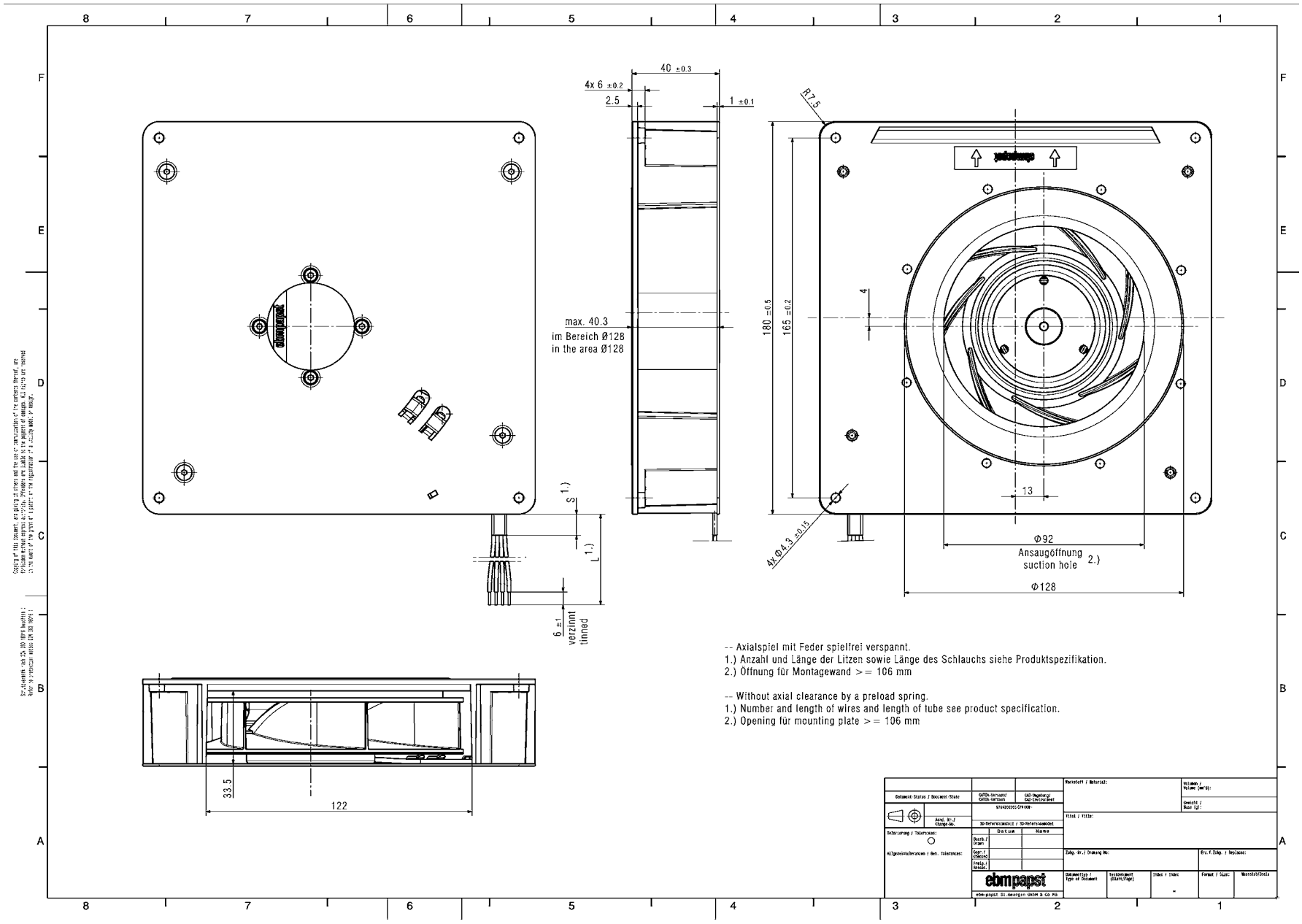
5.2 Approval Tests

CE	EC Declaration of Conformity	Yes
UKCA	UK Conformity Assessed	Yes
EAC	Eurasian Conformity	Yes
America	UL - Underwriters Laboratories	Yes / UL507, Electric Fans E38324
Europe	VDE - Association for Electrical or UL - Underwriters Laboratories or comparable	Yes / Approval acc. to EN 62368 - Audio/video, information and communication technology equipment
Canada	UL - Underwriters Laboratories or CSA - Canadian Standards Association	Yes / C22.2 No. 113 Fans and Ventilators
China	CCC - China Compulsory Certification or CQC - China Quality Certification	Not applicable

6 Reliability

6.1 General

Life expectancy L10 at TU = 40 °C	62.500 h	
Life expectancy L10 at TU max.	32.500 h	
Life expectancy L10 acc. to IPC 9591 at TU = 40 °C	105.000 h	



-- Axialspiel mit Feder spielfrei verspannt.
1.) Anzahl und Länge der Litzen sowie Länge des Schlauchs siehe Produktspezifikation.
2.) Öffnung für Montagewand >= 106 mm

-- Without axial clearance by a preload spring.
1.) Number and length of wires and length of tube see product specification.
2.) Opening für mounting plate >= 106 mm

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