Product Data Sheet 9295414299

VWS0148XULCS
6318/2TDHP-299

ebmpapst
The engineer's choice

6318/2TDHP-299 (9295414299) ebmpapst Datasheet sales@fansco.com www.fansco.com

GREEN TECH

6318/2TDHP-299

INDEX

1 General

Fan type	Fan	
Rotating direction looking at rotor	Counterclockwise	
Airflow direction	Air outlet over struts	
Bearing system	Ball bearing	
Mounting position - shaft	Any	

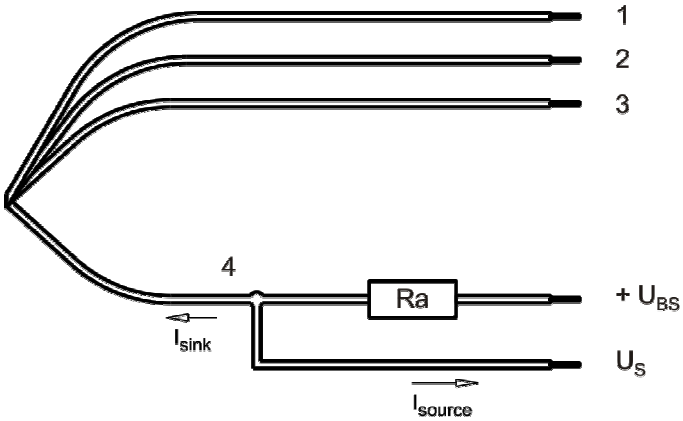
2 Mechanics

2.1 General

Depth	51,0 mm	
Diameter	172,0 mm	
Mass	0,825 kg	
Housing material	Metal	
Impeller material	Plastic	
Max. torque when mounted across both mounting flanges Screw size	Wire outlet corner: 600 Ncm Remaining corners: 600 Ncm ISO 4762 - M4 degreased, without an additional brace and without washer	

2.2 Connections

Electrical connection	Wires	
Lead wire length Tolerance	L = 365 mm +- 10,0 mm	
Tube length Tolerance	S = 10 mm +- 2 mm	



Wire	Color	Operation	Wire size	Insulation diameter
1	red	+ UB	AWG 22	1,7 mm
2	blue	- GND	AWG 22	1,7 mm
3	violet	PWM	AWG 22	1,7 mm
4	white	Tacho	AWG 22	1,7 mm

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

3 Operating Data

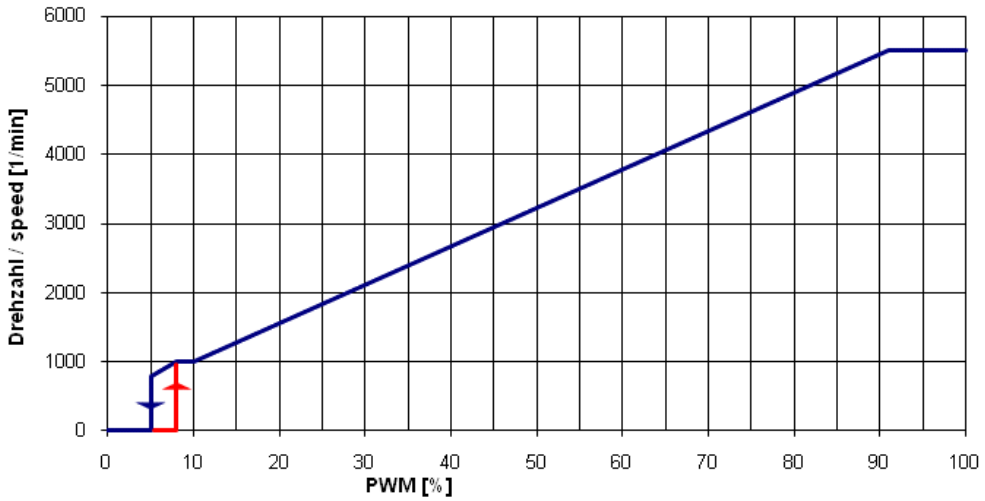
3.1 Electrical Interface - Input

Control input	PWM

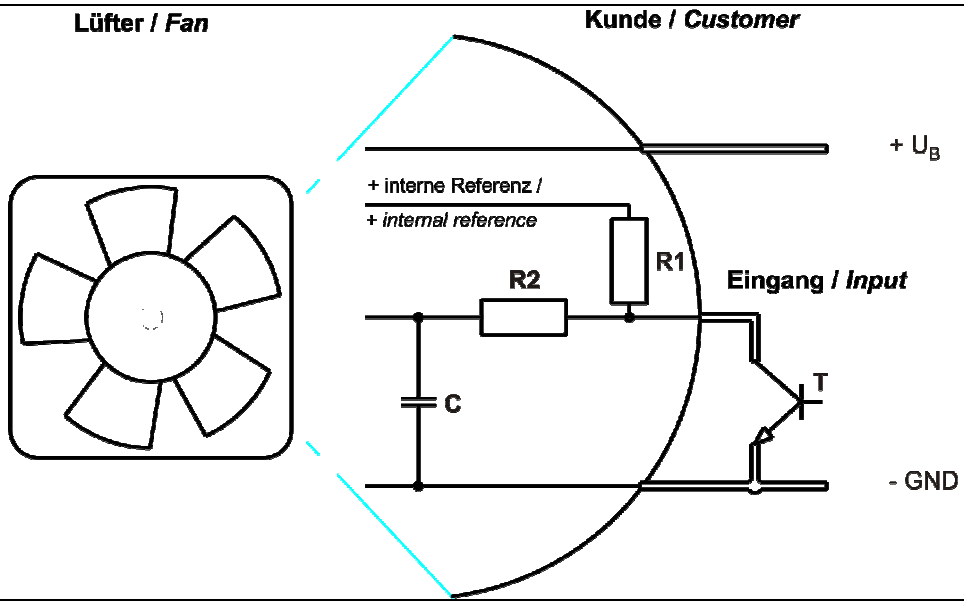
Features

Inpute type	Open collector	
PWM - Frequency		1 kHz - 20 kHz typical: 2 kHz

Characteristics



Schematics



Speed control: By PWM: 0...100 %. The shown pull-up resistor has 4.7 kOhm.

Transistor requirements: VCE max. >= 12V; Isink max > 5mA; VCEsat < 0,15V

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.

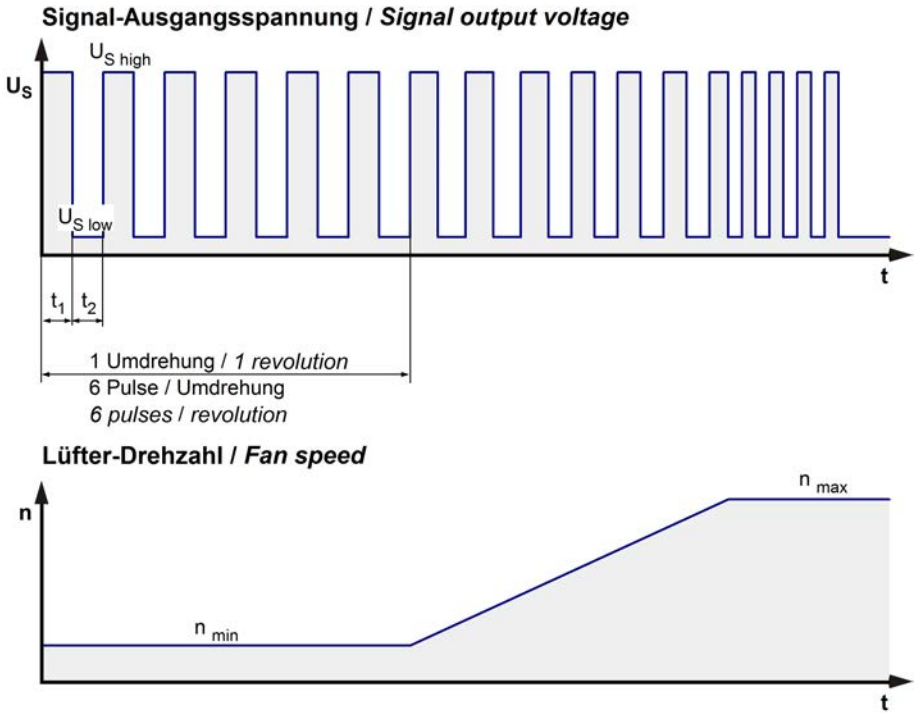
Δp = 0: corresp. to free air flow (see chapter aerodynamics)
I: corresp. to arithm. mean current value

Name	Condition		
PWM 0001	PWM: 95 %; f: 2 kHz		

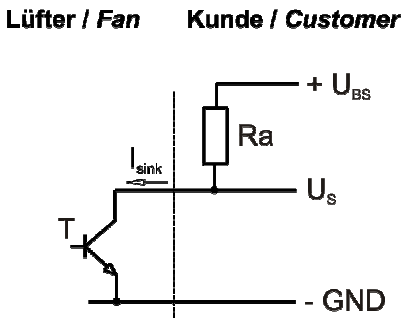
Features	Condition	Symbol	Values		
Voltage range		U	36 V		60 V
Nominal voltage		U_N		48 V	
Power consumption Tolerance	Δp = 0 PWM 0010	P	40 W +- 10 %	42 W +- 10 %	45 W +- 10 %
Current consumption Tolerance	Δp = 0 PWM 0010	I	1.100 mA +- 10 %	900 mA +- 10 %	740 mA +- 10 %
Speed Tolerance	Δp = 0 PWM 0010	n	5.380 1/min +- 7,5 %	5.500 1/min +- 5 %	5.500 1/min +- 5 %

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}		20 mA
Tacho frequency		(6 x n) / 60	
Tacho isolated from motor		No	
Slew rate			=> 0,5 V/us

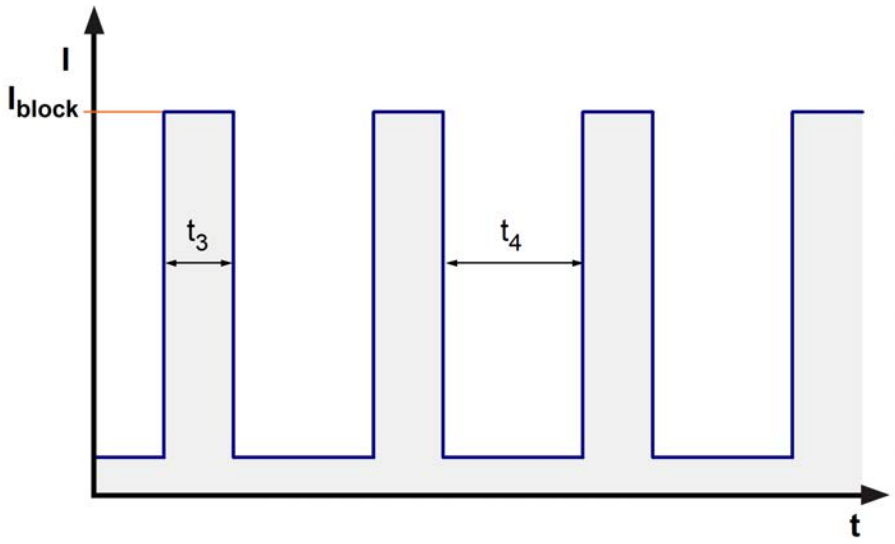
n = revolutions per minute (1/min)

Note to the tacho frequency: 6 pulses per revolution.

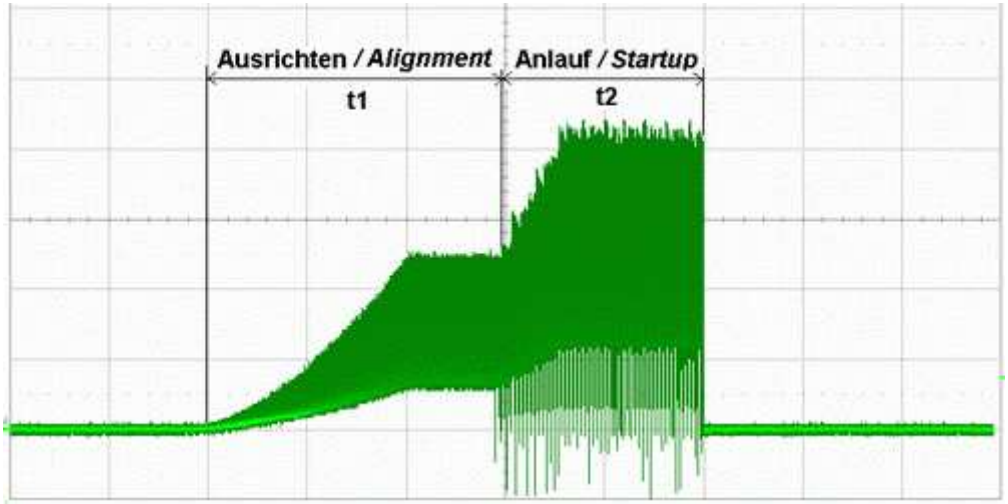
When the fan starts up or the rotor is locked the tacho is off. After a successful start-up the tacho output signal turns on.

3.4 Electrical Features

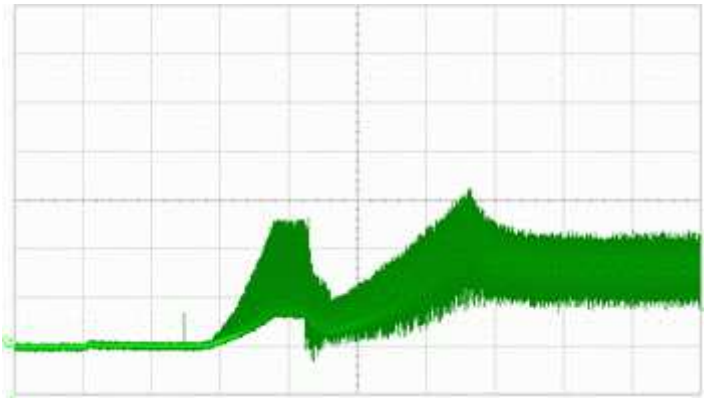
Electronic function	Speed-Controlled	
Reversed polarity protection Max. residual current at U_N	Rectifying diode I_F <= 20 mA	
Locked rotor protection	Auto restart	
Locked rotor current at U_N	I_{block}	
Clock signal at locked rotor	t_3 / t_4 typical: 5 s / 10 s	



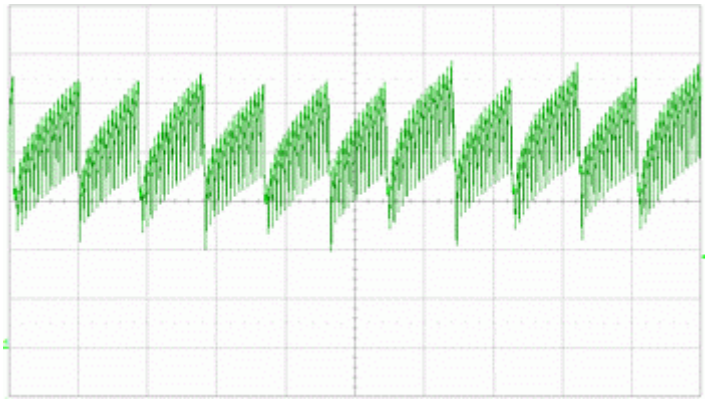
Locked rotor current @ **48 V** (I = 500mA/div ; t = 2s/div)



Startup duration t3:
The duration of the startup consist of two parts. Alignment of the rotor t1 = 3s and the startup itself t2 = 2s.



Start-up current @ **48 V** (I = 500mA/div ; t = 2s/div)



Running current @ **48 V** (I = 200mA/div ; t = 1ms/div)

Internal Fuse:
Littelfuse NANO2(R) FUSE; Very fast acting 451 Series; 2,5 A (Art.-Nr.: 045102.5MRL)

Inrush current limiter
This fan is equipped with an inrush current limiter to reduce the charging current of the internal capacitor. This circuit delays the start-up of the fan by 3 s after connecting it to the supply voltage. Only a short peak current can be measured at the inrush by charging the small internal filter capacitors with approximately 200 nF.

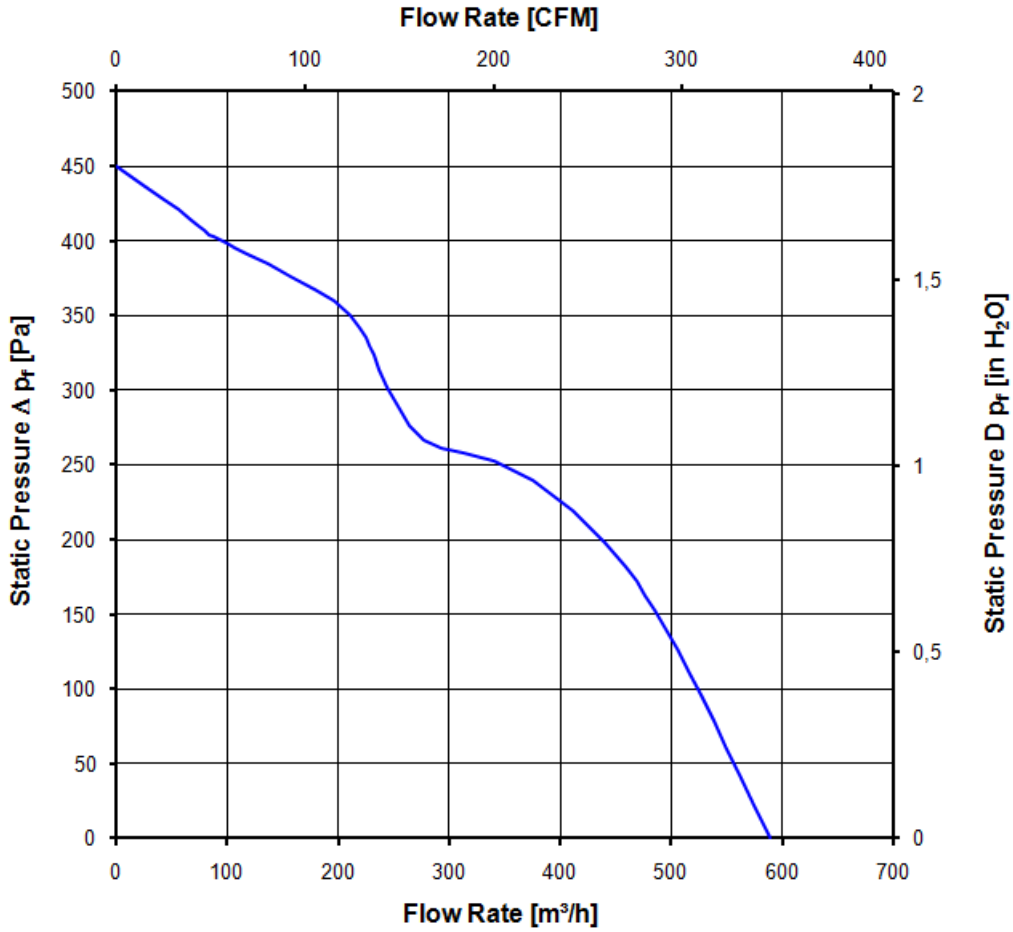
3.5 Aerodynamics

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:

5.500 1/min at free air flow	PWM 95 %; f: 2 kHz		

Max. free-air flow (Δp = 0 / V̇ = max.)	590 m3/h	
Max. static pressure (Δp = max. / V̇ =0)	450 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:

5.500 1/min at free air flow	PWM 95 %; f: 2 kHz		

Optimal operating point	515 m3/h @ 112 Pa	
Sound power level at the optimal operating point	7,2 bel(A)	
Sound pressure level at free air flow, measured in rubber bands	63,0 dB(A)	

4 Environment

4.1 General

Min. permitted ambient temperature TU min.	-20 °C	
Max. permitted ambient temperature TU max.	75 °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 / 1,5 mm	
Protection class	III	

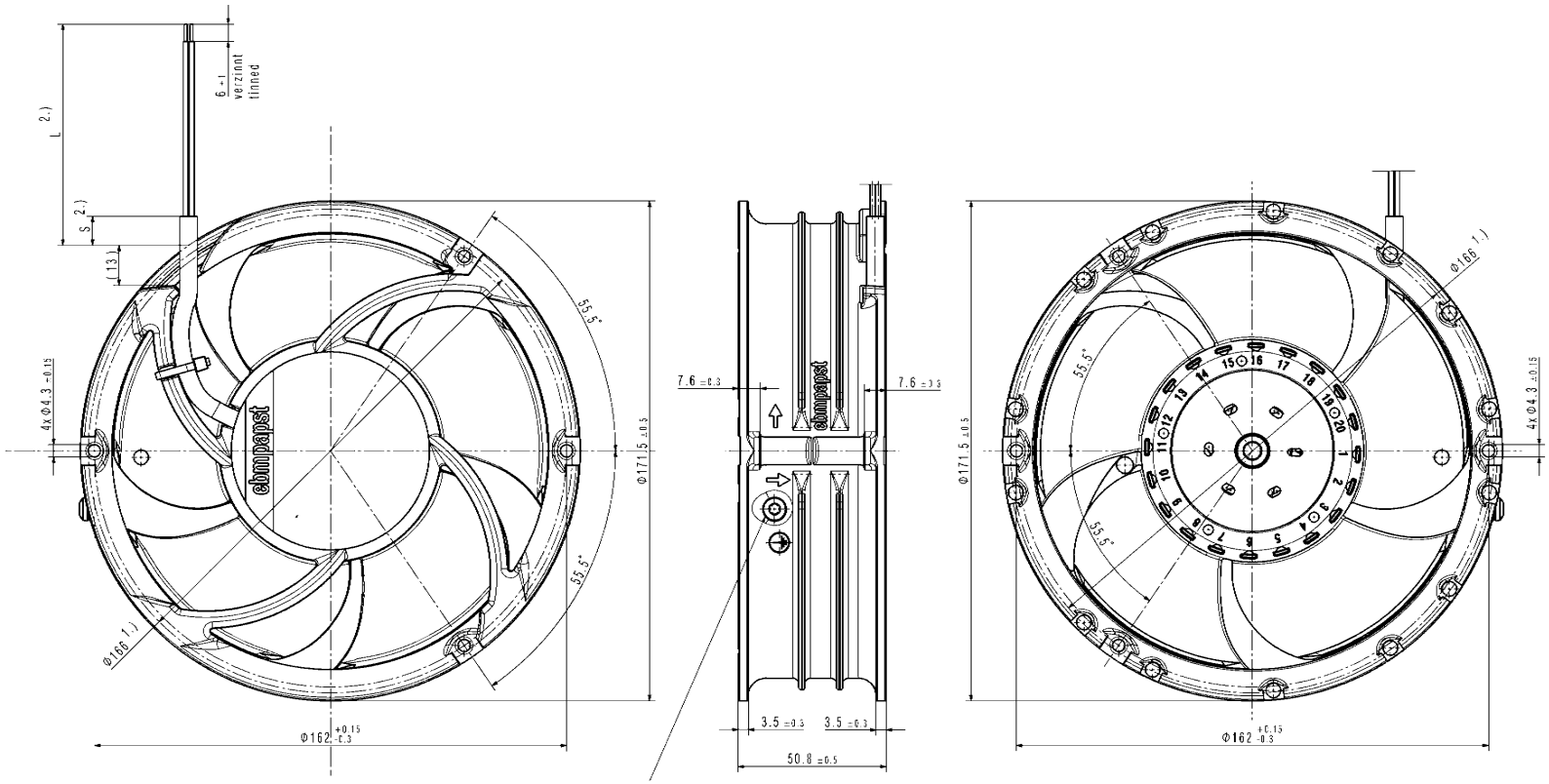
5.2 Approval Tests

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 60950 (VDE 0805) - Information technology equipment
CSA	Canadian Standards Association	Yes / C22.2 No. 113 Fans and Ventilators
CCC	China Compulsory Certification	Yes / GB 12350 Safety Requirements for small Power Motors

6 Reliability

6.1 General

Life expectancy L10 at TU = 40 ℃	75.000 h	
Life expectancy L10 at TU max.	30.000 h	
Life expectancy L10 acc. to IPC 9591 at TU = 40 ℃	127. 500 h	



Schraube Duo-Taptite nach DIN 7500; CM4x8; Torx 3.)
screw; Duo-Taptite according to DIN 7500; CM4x8; Torx

1.) Maße aus Montageausschnitt
2.) Anzahl und Länge der Litzen/Schlauch siehe Produktspezifikation.
3.) Nur, wenn in Stückliste enthalten.

- Axialspiel der Kugellager mit Feder spielfrei verspannt.

1.) measures of mounting cut out
2.) number and length of wires/tube see product specification
3.) only if included in bill of material

- ball bearings without clearance by a pre-loaded spring