

4114 N/12HHR-297

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6.1 General 9

1 General

Fan type	Fan	
Rotational direction looking at rotor	clockwise	
Airflow direction	Air intake over struts	
Bearing system	Ball bearing	
Mounting position	any	

2 Mechanics

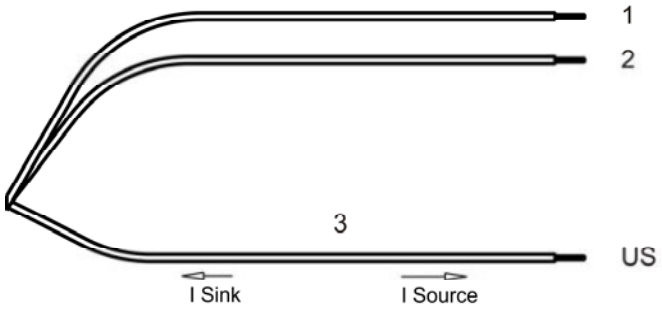
2.1 General

Width	119,0 mm	
Height	119,0 mm	
Depth	38,0 mm	
Weight	0,390 kg	
Housing material	Metal	
Impeller material	Plastic	
Max. torque when mounted across both mounting flanges Screw size	wire outlet corner: 420 Ncm remaining corners: 600 Ncm ISO 4762 - M4 degreased, without an additional brace and without washer	

2.2 Connections

Electrical connection	Wires	
Length of lead wire Tolerance	L = 310 mm +- 10,0 mm	
Wire gauge (AWG)	22	
Insulation diameter	1,70 mm	





	Colour	Operation
Wire 1	red	+ UB
Wire 2	blue	- GND
Wire 3	white	Tacho

3 Operating Data

3.1 Operating Data - Electrical Interface - Input

Control input	None

3.2 Electrical Operating Data

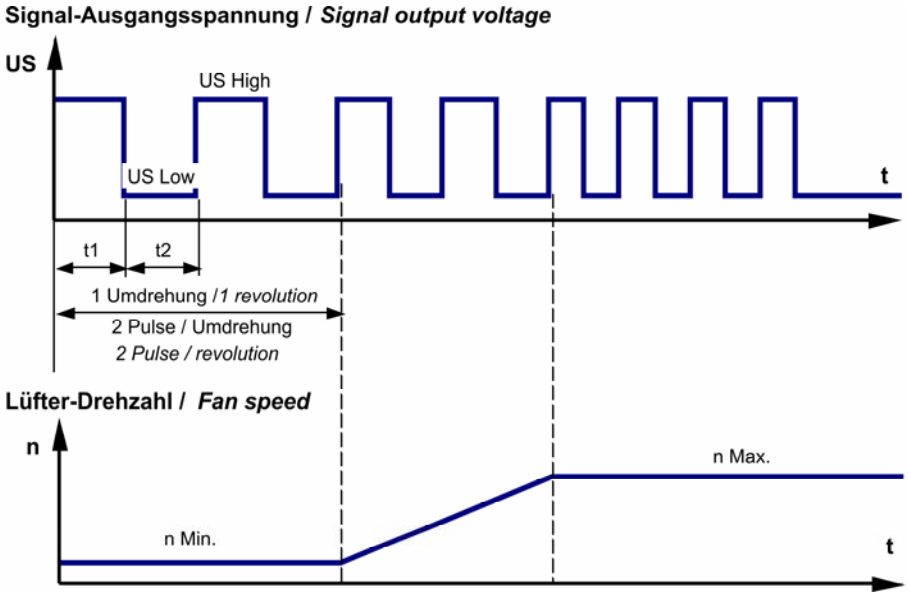
Measurement conditions:	Normal air density = 1,2 kg/m3; Temperature 23°C +/- 3°C; Motor axis horizontal;warm-up time before measuring 5 minutes (unless otherwise specified).In the intake and outlet area should not be any solid obstruction within 0,5 m.

Δp = 0: corresp. to free air flow (see section 3.5)
I: corresp. to arithm. mean current value

Features	Condition	Symbol	Values		
Voltage range	Δp = 0	U	12,0 V		30,0 V
Nominal voltage	Δp = 0	U_N		24,0 V	
Power consumption Tolerance	Δp = 0 0001	P	2,7 W +- 17,5 %	12,4 W +- 17,5 %	12,6 W +- 17,5 %
Current consumption Tolerance	Δp = 0 0001	I	225 mA +- 17,5 %	520 mA +- 17,5 %	420 mA +- 17,5 %
Speed Tolerance	Δp = 0 0001	n	2.800 1/min +- 7,5 %	5.000 1/min +- 7,5 %	5.000 1/min +- 7,5 %
Starting current consumption				3.300 mA	
Inrush current				50.000 mA	

3.3 Operating Data - Electrical Interface -Output

Tacho type	/12 (TTL)



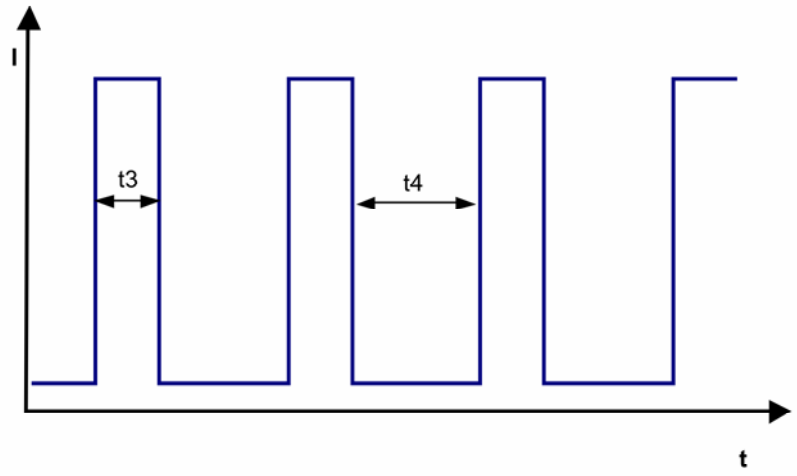
Features	Note	Values
Tacho signal TTL High		5,0 V Min.: 4,8 V Max.: 5,2 V
Tacho signal Low	I sink: 2 mA	<= 0,9 V
Tacho signal High	I source: 1 mA	
Maximum sink current		<= 10 mA

Maximum source current		3 mA
External resistor	All voltages measured to GND.	
Tacho frequency	(2 x n) / 60	166 Hz
Tacho isolated from motor	No	

Alarm type	None

Electrical Features

Electronic function	Speed-Controlled	
Reversed polarity protection Max. residual current at Un	Rectifying diode IF <= 10 mA	
Locked rotor protection	Auto restart	
Locked rotor current at Un	approx. 3.300 mA	
Clock signal t3/t4 at locked rotor	Typical: 1,2 s / 5,0 s	



3.5 Aerodynamic

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.

a.) Operation condition:

5.000 1/min at free air flow

Max. free-air flow (Δp = 0 / $\dot{V}$ = max.)	260,0 m3/h	
Max. static pressure (Δp = max. / $\dot{V}$ =0)	210 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 section 3.5

a.) Operation condition:

5.000 1/min at free air flow

Optimal operating point	160,0 m3/h @ 100 Pa	
Sound power level at the optimal operating point	6,7 bel(A)	
Sound pressure level at free air flow, measured in rubber bands	60,0 dB(A)	

4 Environment

4.1 General

Min. permitted ambient temperature TU min.	-20 °C	
Max. permitted ambient temperature TU max.	65 °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, cyclic; according to DIN EN 60068-2-30, 6 cycle	
Water exposure	None	
Radiation exposure	None	
Dust requirements	Dust check; according to DIN EN 60068-2-68, 6g/m2d, 1 day	
Salt fog requirements	None	
Harmful gas requirements	None	

*) Permittet application area:
The product is for the use in sheltered rooms with limited controlled temperature. Occasionally condensed water is allowed. Direct exposure to water must be avoided. Saline ambient conditions must be avoided.

Pollution degree 2 (according DIN EN 60664-1)
It occurs only non-conductive pollution. Occassionally, temporary conductivity caused by condensation occurs.

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. B.) Routine test Measuring conditions: At indoor climate. No arcing or breakdown is allowed! All connections together to ground.	500 VAC / 1 Min. 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	Yes
UL	Yes / UL507, Electric Fans
VDE	Yes / Approval acc. to EN 60950 (VDE 0805) - Information technology equipment
CSA	Yes / C22.2 No. 113 Fans and Ventilators
CCC	No

The approval tests are observed to:
U approval max.:30,0 V @ TU approval max.: 65,0 °C

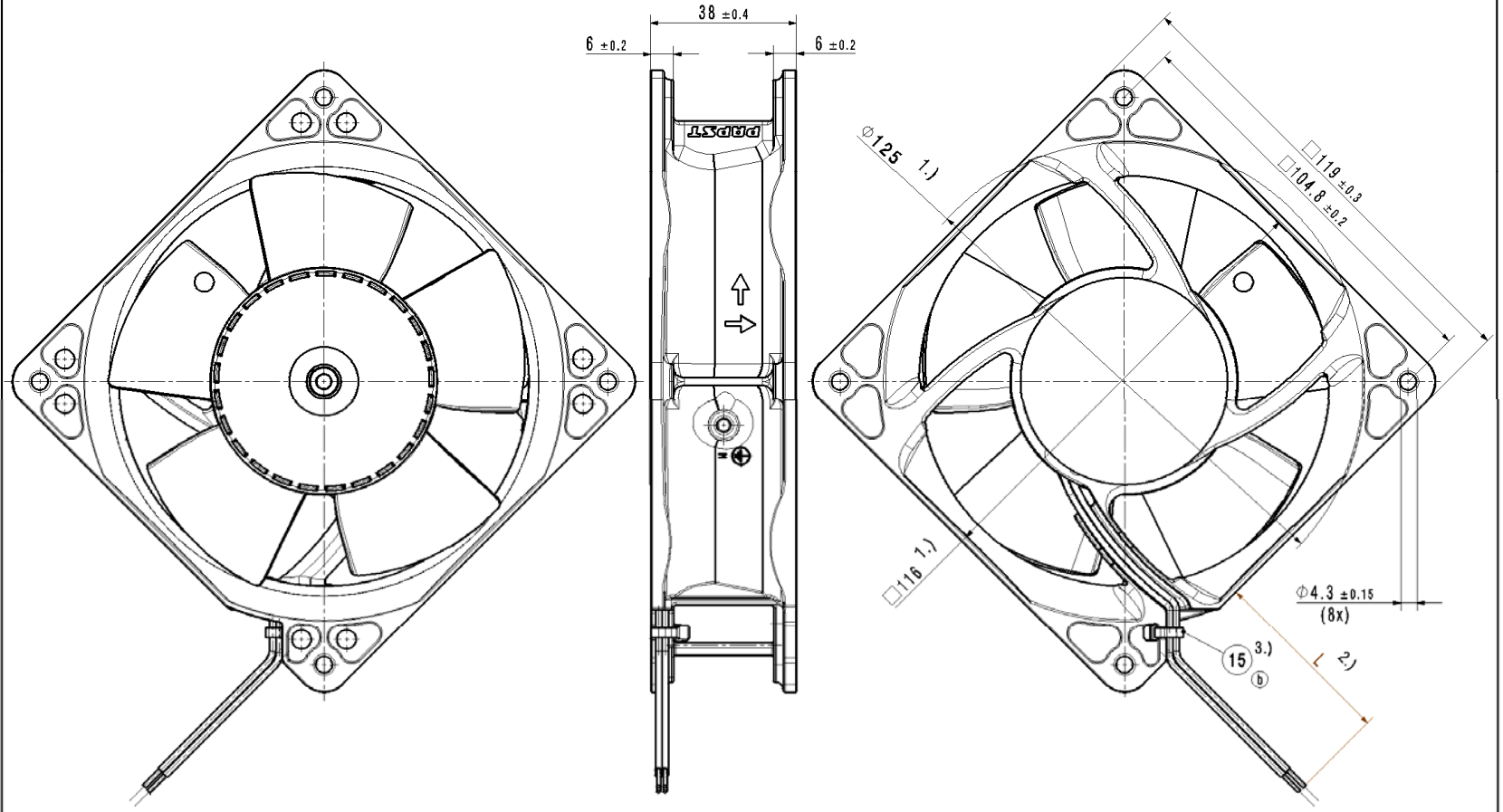
6 Reliability

6.1 General

Life expectancy L10 at TU = 40 °C	70.000 h	
Life expectancy L10 at TU max.	52.500 h	
Life expectancy L10 Delta (40 °C)	147.500 h	

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Schutzvermerk nach DIN 34 beachten!
Refer to protection notice ISO 16016!



1.) Maße für Montageausschnitt
2.) Anzahl und Länge der Litzen siehe BV - Blatt 1
ⓑ 3.) nur wenn in Stückliste enthalten
- Axialspiel der Kugellager mit Feder spielfrei verspannt

1.) measures for mounting cut-out
2.) length and number of wires see design specification page 1
ⓑ 3.) only if enclosed in the bill of material
- ball bearing without axial clearance by a pre-loaded spring

SAP-Status/State	Aend.-Nr./ Change-No.	CATIA-System-Version/ CATIA-System-Version	CAD-Umgebung/ CAD-Environment	Werkstoff / Material:	Volumen / Volume (mm³):
		9894S0265 GPR:00A			Gewicht / Mass (g):
		SD-Referenzmodell / SD-Reference model		Artikel / Title:	
Tolerierung / Tolerances:		Datum	Name		
		Bearb./ Drawn			
Allgemeintoleranzen / Gen. Tolerances:		Gepr./ Checked		Zchg.-Nr./ Drawing No:	Ers.f.Zchg. / Replaces:
		Freig./ Release			
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