Product Data Sheet DV6318/2TDH5PR-101

ebmpapst

Die Wahl der Ingenieure



GREEN TECH

DV6318/2TDH5PR-101

INDEX

1 General 3

2 Mechanics 3

2.1 General 3
2.2 Connections 3

3 Operating Data 5

3.1 Operating Data - Electrical Interface - Input 5
3.2 Electrical Operating Data 7
3.3 Operating Data - Electrical Interface -Output 8
3.4 Electrical Features 9
3.5 Data according ErP directive 9
3.6 Aerodynamic 10
3.7 Sound Data 11

4 Environment 11

4.1 General 11
4.2 Climatic requirements*) 11

5 Safety 12

5.1 Electrical Safety 12
5.2 Approval Tests 12

6 Reliability 12

1 General

Fan type	Mixed-flow fan	
Rotational direction looking at rotor	counterclockwise	
Airflow direction	Air outlet over struts	
Bearing system	Ball bearing	
Mounting position	any	

2 Mechanics

2.1 General

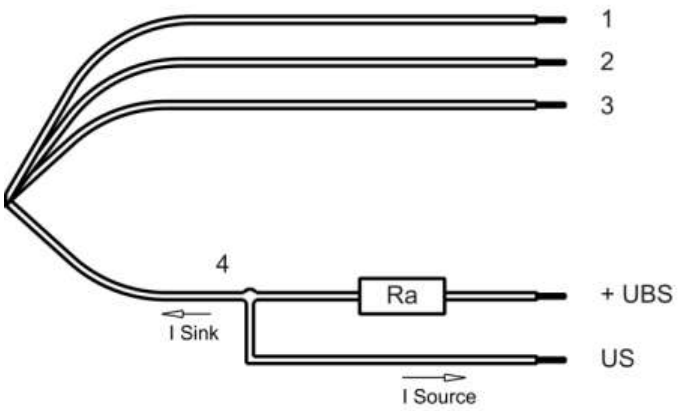
Depth	54 mm	
Diameter	178 mm	
Weight	1,0 kg	
Housing material	Metal	
Impeller material	Plastic	
Max. torque when mounted across both mounting flanges Screw size	wire outlet corner: 180 Ncm remaining corners: 180 Ncm ISO 4762 - M4 degreased, without an additional brace and without washer	

Do not cover the ventilation holes in the flange.

2.2 Connections

Electrical connection	Wires - Plug		
Length of lead wire Tolerance	see drawing		
Wire gauge (AWG)	18	22	
Insulation diameter	2,20 mm	1,35 mm	
Connector / contact	see drawing		





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

Lead wire 1 - 2: AWG18 (Insulation diameter 2,20 mm)
Lead wire 3 - 4: AWG22 (Insulation diameter 1,35 mm)

3 Operating Data

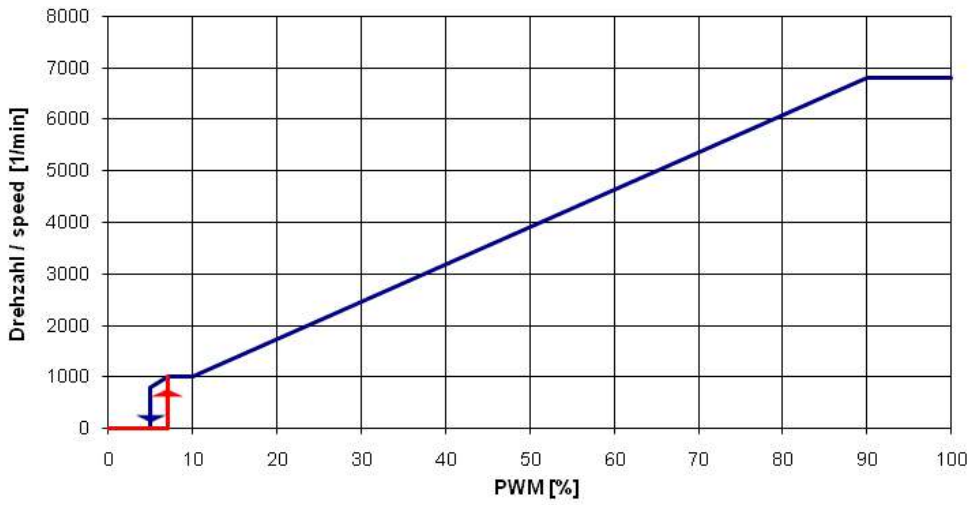
3.1 Operating Data - Electrical Interface - Input

Control input	PWM

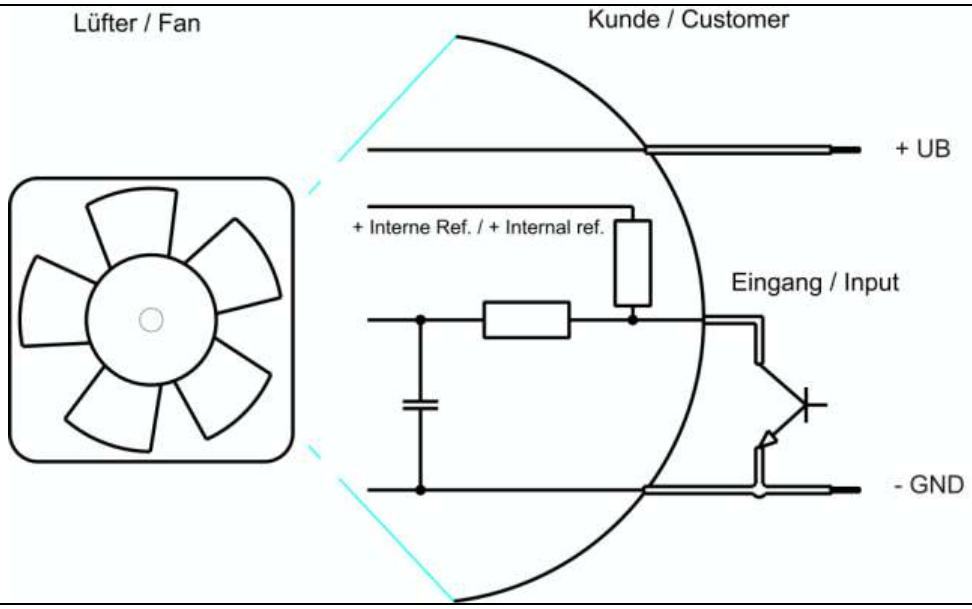
Features

Inpute type	Open collector	
PWM - Frequency		1 kHz - 10 kHz Typical: 2 kHz

Characteristics



Schematics



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

Information to the curve PWM vs Speed:

0 % - <7% PWM:	0 1/min
7 % PWM:	1.000 1/min (Fan on, comming from 0% PWM)
7 % - 10% PWM:	1.000 1/min (corresponding to min. speed)
10 % - 90% PWM:	linear increasing curve
90 % - 100% PWM:	6.800 1/min (corresponding to max. speed)
7 % - >5 % PWM:	linear decreasing curve (comming from 100% PWM)
5 % PWM:	800 1/min or 0 1/min (Fan off, comming from 100% PWM)

Due to the power boost feature in the saddle area, the maximum speed can be 7500 1/min.

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 section 3.5)
I: corresp. to arithm. mean current value

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

Features	Condition	Symbol	Values		
Voltage range	$\Delta p = 0$	U	36,0 V		72,0 V
Nominal voltage	$\Delta p = 0$	U_N		48,0 V	
Power consumption Tolerance	$\Delta p = 0$ PWM 0001	P	198,0 W +- 10,0 %	336,0 W +- 10,0 %	346 W +- 10,0 %
Current consumption Tolerance	$\Delta p = 0$ PWM 0001	I	5.500 mA +- 10,0 %	7.000 mA +- 10,0 %	4.800 mA +- 10,0 %
Speed Tolerance	$\Delta p = 0$ PWM 0001	n	5.800 1/min +- 5,0 %	6.900 1/min +- 3,0 %	6.900 1/min +- 5,0 %
recommended slew rate of the input voltage			$\Delta U / \Delta t$ = 100 V / sec.		
max. allowed input voltage ripple (within the specified voltage range)			+- 3 %		
max. allowed input voltage ripple (within the specified voltage range)			>= 50 Hz		

Note:
Do not run the fan with a current sinkable power supply!

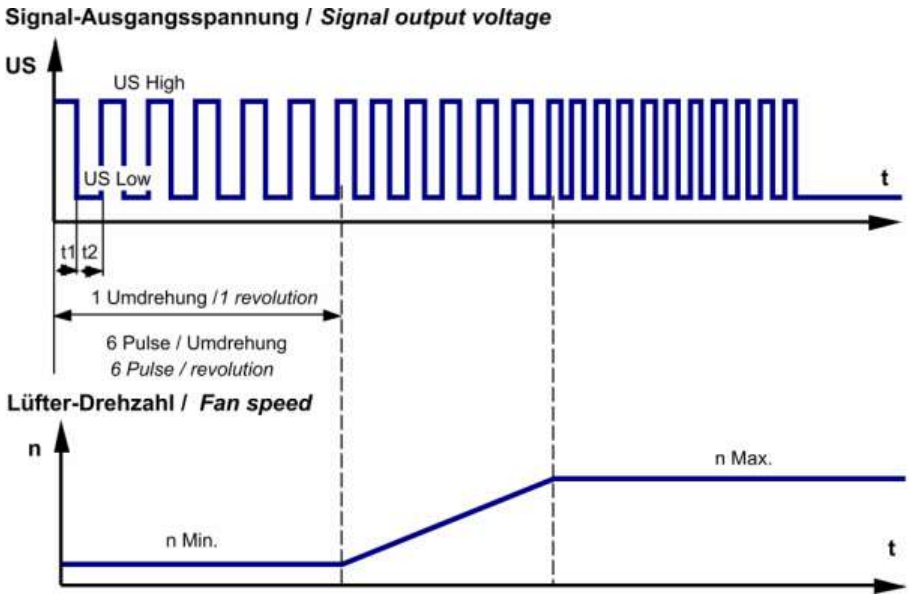
Built into the fan is an additional under- and overvoltage control, which switches the power stage and the fan off if the following conditions are reached.
At U <= 32 V and / or U >= 80 V is n= 0 1/min.

Name	Condition		
PWM 0002	PWM: 50 %; f: 2 kHz		

Features	Condition	Symbol	Values		
Voltage range	$\Delta p = 0$	U	36,0 V		72,0 V
Nominal voltage	$\Delta p = 0$	U_N		48,0 V	
Power consumption Tolerance	$\Delta p = 0$ PWM 0002	P	62,0 W +- 15,0 %	64,0 W +- 15,0 %	68,0 W +- 15,0 %
Current consumption Tolerance	$\Delta p = 0$ PWM 0002	I	1.750 mA +- 15,0 %	1.350 mA +- 15,0 %	950 mA +- 15,0 %
Speed Tolerance	$\Delta p = 0$ PWM 0002	n	3.950 1/min +- 7,0 %	3.900 1/min +- 8,0 %	3.950 1/min +- 8,0 %

3.3 Operating Data - Electrical Interface -Output

Tacho type	/2 (Open collector)



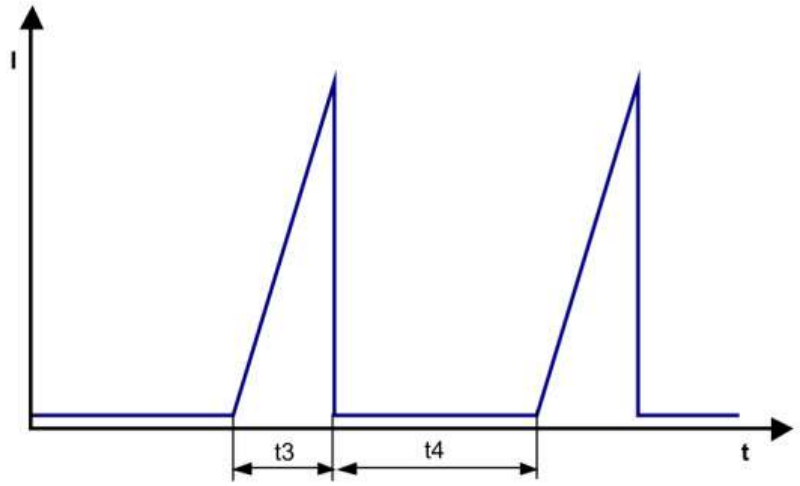
$$Ra = \frac{UBS - US\ Low}{I\ Sink}$$

Features	Note	Values
Tacho operating voltage (UBS)		<= 60 V
Tacho signal Low	I sink: 2 mA	<= 0,4 V
Tacho signal High	I source: 0 mA	<= 60 V
Maximum sink current		<= 20 mA
External resistor	External resistor Ra from UBS to US required. All voltages measured to GND.	
Tacho frequency	(6 x n) / 60	
Tacho isolated from motor	No	

Alarm type	None

3.4 Electrical Features

Electronic function	Speed-Controlled	
Reversed polarity protection Max. residual current at Un	N-CH FET IF <= 5 mA	
Locked rotor protection	Auto restart	
Locked rotor current at Un	approx. 2.000 mA	
Clock signal t3/t4 at locked rotor	Typical: 5,5 s / 10,0 s	



3.5 Data according ErP directive

Installation / Efficency category	A / static
Speed control	integrated
Specific ratio	1,00588
Target overall efficiency 2015	34,0 %
Overall efficiency	37,1 %
Efficiency grade	50
Power input	300 W
Speed	6.740 1/min

All values measured in optimum energy efficiency point.

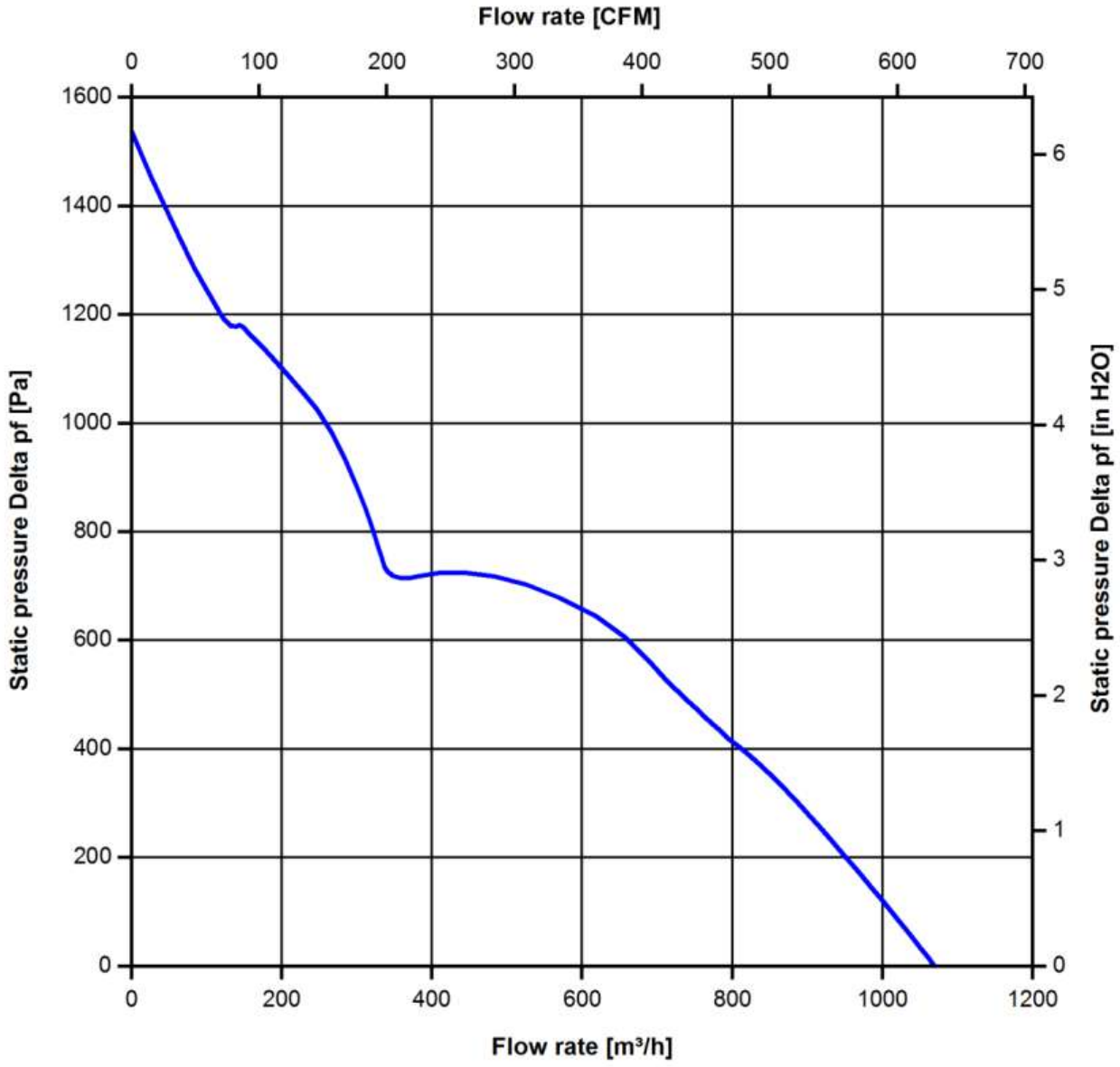
3.6 Aerodynamic

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. 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:

6.900 1/min at free air flow	PWM 100 %; f: 2 kHz		

Max. free-air flow (Δp = 0 / $\dot{V}$ = max.)	1.070,0 m3/h	
Max. static pressure (Δp = max. / $\dot{V}$ =0)	1.535 Pa	



3.7 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:

6.900 1/min at free air flow	PWM 100 %; f: 2 kHz	PWM min.:	PWM max.:

Optimal operating point	570,0 m3/h @ 605 Pa	
Sound power level at the optimal operating point	9,0 bel(A)	
Sound pressure level at free air flow, measured in rubber bands	79,0 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 cycles	
Water exposure	None	
Dust requirements	Dust check; according to DIN EN 60068-2-68, 6g/m2d, 1 day	
Salt fog 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

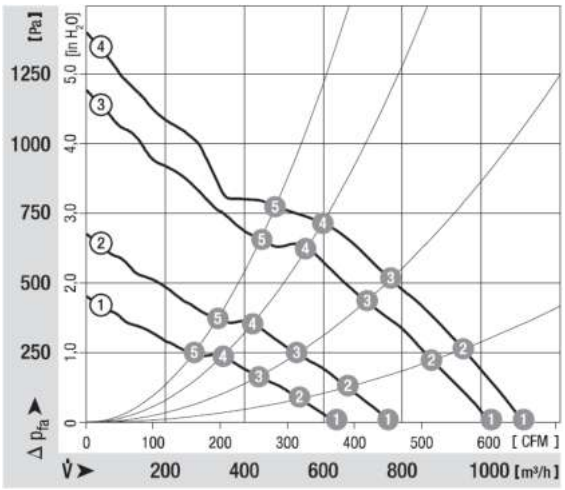
Dielectric strength DIN EN 60950 (VDE 0805) and DIN EN 60335 (VDE 0700) A.) Type test Measuring conditions: After 48h of storage at 95% R.H. and 25°C. No arcing or breakdown is allowed! All connections together to ground. B.) Routine test Measuring conditions: At indoor climate. No arcing or breakdown is allowed! All connections together to ground.	1000 VAC / 1 Min. 1000 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 / 1,5 mm	
Protection class	I	

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 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

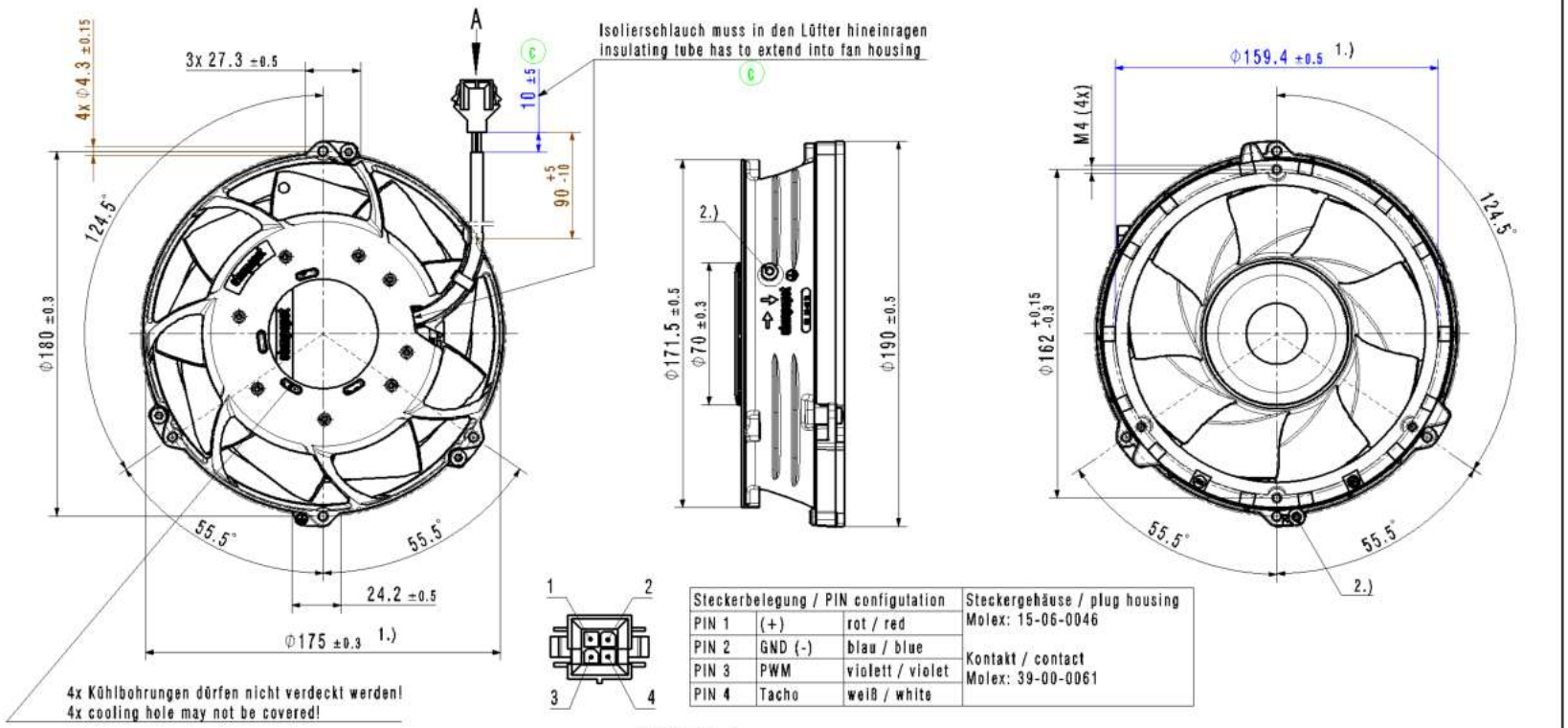
6 Reliability

Curve 4 for DV6318/2TDH5PR-101:



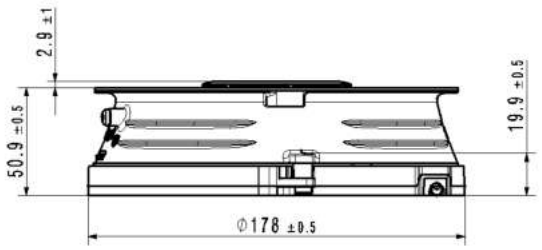
	n [min⁻¹]	P1 [W]	LwA [dB(A)]	L10 (40°C)	L10 (65°C)	L10IPC (40°C)
④ ❶	6950	345	92	40 000	22 500	67 500
④ ❷	6720	345	91	57 500	32 500	97 500
④ ❸	6630	345	89,5	62 500	35 000	105 000
④ ❹	6850	345	89	67 500	37 500	115 000
④ ❺	7300	345	94	72 500	40 000	122 500

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Steckerbelegung / PIN configutation			Steckergehäuse / plug housing
PIN 1	(+)	rot / red	Molex: 15-06-0046
PIN 2	GND (-)	blau / blue	
PIN 3	PWM	violett / violet	Kontakt / contact
PIN 4	Tacho	weiß / white	Molex: 39-00-0061

Ansicht A
view A
1:1



1.) Maße für Montageausschnitt
2.) Erdungsschraube nach DIN 7500, CM4x8, Torx, nur wenn in Stückliste enthalten
--- Axialspiel der Kugellager mit Feder spielfrei gelagert

1.) measures for mounting cut out
2.) grounding screw according to DIN 7500, CM4x8, Torx, only if included in bill of material
--- ball bearing without clearance by a pre-load spring

SAP-Status/State	Aend.-Nr./ Change-No.	CATIA-System-Version/ CATIA-System-Version	CAD-Umgebung/ CAD-Environment	Werkstoff / Material: -			Volumen / Volume (mm³):	
							Gewicht / Mass (g):	
		92004201B1 CPA-DDC 42020116ZTE CPA-DDC		Artikel / Title:				
		3D-Referenzmodell / 3D-Reference model						
Tolerierung / Tolerances:		Datum	Name					
	Bearb./ Drawn							
Allgemeintoleranzen / Gen. Tolerances:	Gepr./ Checked			Zchg.-Nr./ Drawing No:			Ers.f.Zchg. / Replaces:	
	Freig./ Released							
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