Product Data Sheet 6318/2TDH4PU-019

ebmpapst

The engineer's choice



GREEN TECH

6318/2TDH4PU-019

INDEX

1 General 3

2 Mechanics 3

2.1 General 3
2.2 Connections 3

3 Operating Data 4

3.1 Operating Data - Electrical Interface - Input 4
3.2 Electrical Operating Data 5
3.3 Operating Data - Electrical Interface - Output 6
3.4 Electrical Features 7
3.5 Data According ErP Directive 7
3.6 Aerodynamics 8
3.7 Sound Data 9

4 Environment 9

4.1 General 9
4.2 Climatic Requirements 9

5 Safety 10

5.1 Electrical Safety 10
5.2 Approval Tests 10

6 Reliability 10

6.1 General 10

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

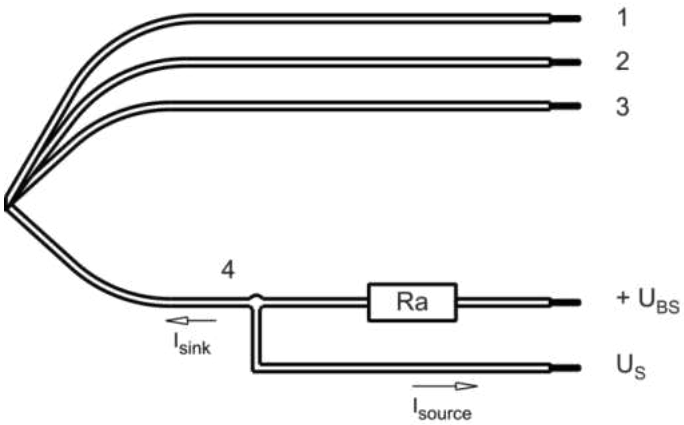
2.1 General

Depth	51,0 mm	
Diameter	172,0 mm	
Mass	0,875 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 = 23 mm +- 2,0 mm	





Wire	Color	Operation	Wire size	Insulation diameter
1	red	+ UB	AWG 20	2,05 mm
2	blue	- GND	AWG 20	2,05 mm
3	violet	PWM	AWG 22	1,3 mm
4	white	Tacho	AWG 22	1,3 mm

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

3 Operating Data

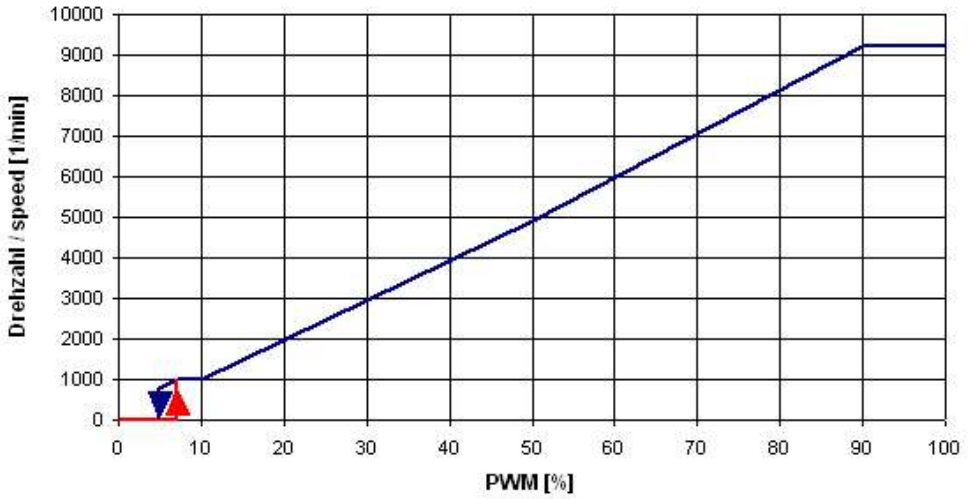
3.1 Operating Data - Electrical Interface - Input

Control input	PWM

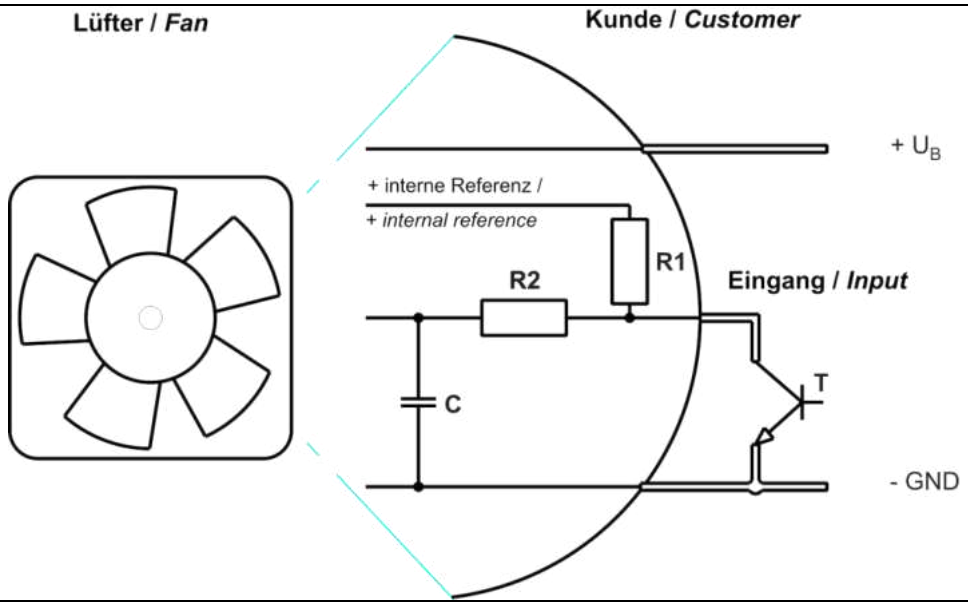
Features

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

Characteristics



Schematics



Information to the curve:

0% - <=7% PWM: 0 1/min (fan off)
7% PWM: 1.000 1/min (start-up, comming from 0% PWM)
7% - 10 % PWM: 1.000 1/min (corresp. to min fan speed)

10% - 90% PWM: Linear increasing curve
90% - 100% PWM: 9.200 1/min (corresp. to max fan speed)
5% PWM: 800 1/min bzw. 0 1/min (fan turns off, comming from 100% PWM)

Speed control:
By pulse width modulation (PWM) 0 ... 100%
Open collector in relation to signal-ground.
The shown pull-up resistor R1 to the internal reference voltage (+5V) has 4.7kOhm.

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

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

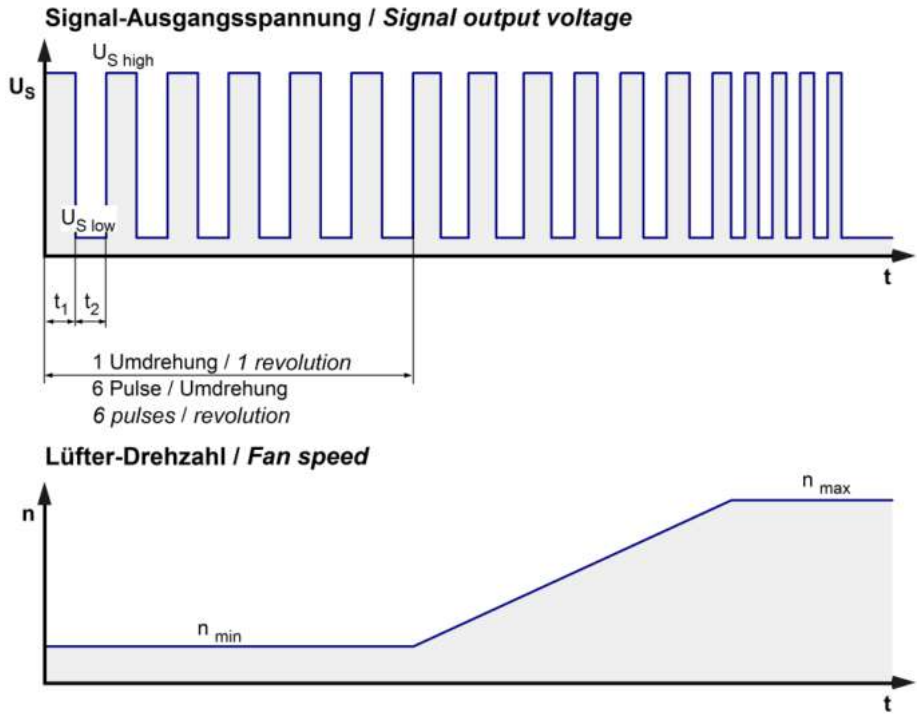
Name	Condition		
PWM 0001	PWM: 100 %; f: 2 kHz		

>90% PWM; f = 2 kHz or broken lead wire (open control input)

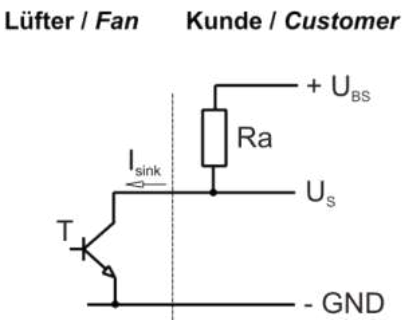
Features	Condition	Symbol	Values		
Voltage range		U	36 V		72 V
Nominal voltage		U_N		48 V	
Power consumption Tolerance	$\Delta p = 0$ PWM 0010	P	140 W +- 10 %	150 W +- 10 %	160 W +- 10 %
Current consumption Tolerance	$\Delta p = 0$ PWM 0010	I	3.900 mA +- 10 %	3.100 mA +- 10 %	2.200 mA +- 10 %
Speed Tolerance	$\Delta p = 0$ PWM 0010	n	8.900 1/min +- 10 %	9.200 1/min +- 10 %	9.200 1/min +- 10 %

3.3 Operating Data - Electrical Interface - Output

Tacho type	/2 (open collector)



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



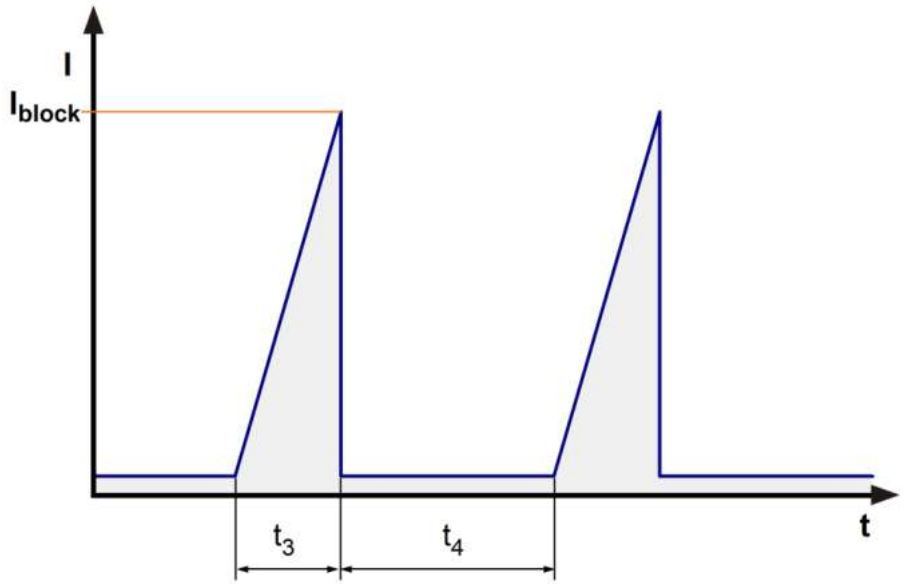
Features		Note	Values
Tacho operating voltage	U_{BS}		<= 60 V
Tacho signal Low	$U_{S\,low}$	I sink: 2 mA	<=0,4 V
Tacho signal High	$U_{S\,high}$	I source: 0 mA	<=60 V
Maximum sink current	I_{sink}		<= 20 mA
External resistor		External resistor Ra from UBS to US required. All voltages measured to GND.	
Tacho frequency		(6 x n) / 60	920 Hz @ 9.200 1/min
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	P-CH FET I_F <= 5 mA	
Locked rotor protection	Auto restart	
Locked rotor current at U_N	I_{block}	
Clock signal at locked rotor	t_3 / t_4 typical: 4 s / 10 s	
Internal fuse	Littelfuse NANO2 > Very Fast-Acting > 451/453 Series 10A / 125V (Art.No.: 0451010.MRL)	
Voltage control *)	Einschalten bei U_B > 34 V oder < 75 V Ausschalten bei U_B < 32 V oder > 78 V	

*) This fan has an undervoltage and overvoltage control circuit integrated which turns the motor off if the voltage is out of range.



3.5 Data According ErP Directive

Installation / Efficency category	A / static
Speed control	integrated
Specific ratio	1,00585
Target overall efficiency 2015	29,8 %
Overall efficiency	42,9 %
Efficiency grade	40
Power input	245 W
Speed	9.360 1/min

All values measured in optimum energy efficiency point.

Productiondatecode is printed on the fan label.

3.6 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. 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:

9.200 1/min at free air flow	PWM 100 %; f: 2 kHz		

Max. free-air flow (Δp = 0 / $\dot{V}$ = max.)	930 m3/h	
Max. static pressure (Δp = max. / $\dot{V}$ =0)	1.310 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:

9.200 1/min at free air flow	PWM 100 %; f: 2 kHz	PWM min.:	PWM max.:

Optimal operating point	910 m3/h @ 34 Pa	
Sound power level at the optimal operating point	8,6 bel(A)	
Sound pressure level at free air flow, measured in rubber bands	75,0 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	

IP54 Water-resistance by the Parylene Coating is given.
But certification can not be created because the coating is not recognized as a cover and as such is also not obvious.

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	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.

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. 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

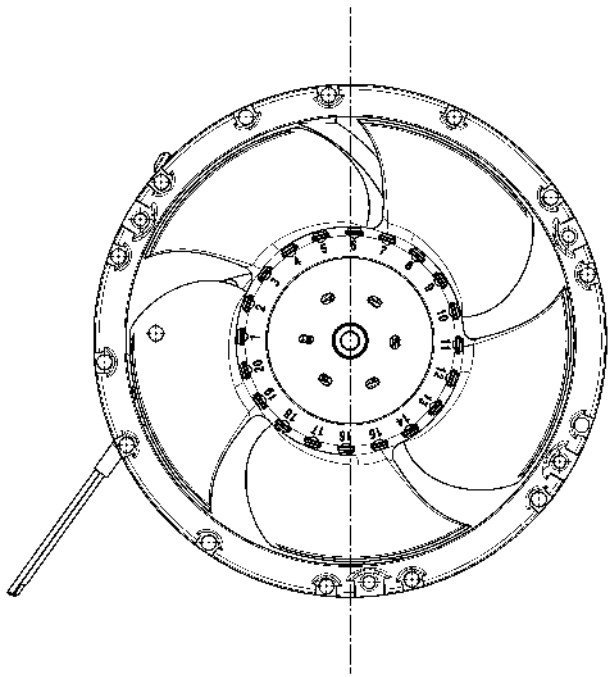
CE	EC Declaration of Conformity	No
EAC	Eurasian Conformity	Yes
UL	Underwriters Laboratories	Yes / UL507, Electric Fans
VDE	Association for Electrical, Electronic and Information Technologies	Yes / Approval acc. to EN 60950 (VDE 0805) - Information technology equipment
CSA	Canadian Standards Association	Yes / C22.2 No. 113 Fans and Ventilators
CCC	China Compulsory Certification	Yes / GB 12350 Safety Requirements for small Power Motors

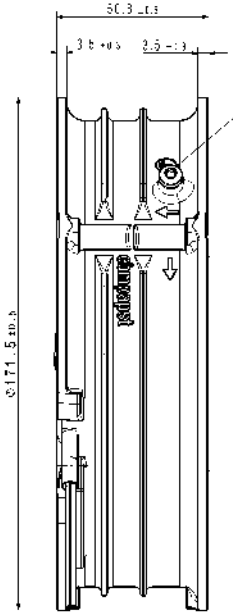
The approval tests are observed to:
U approval max.:72,0 V @ TU approval max.: 65,0 °C

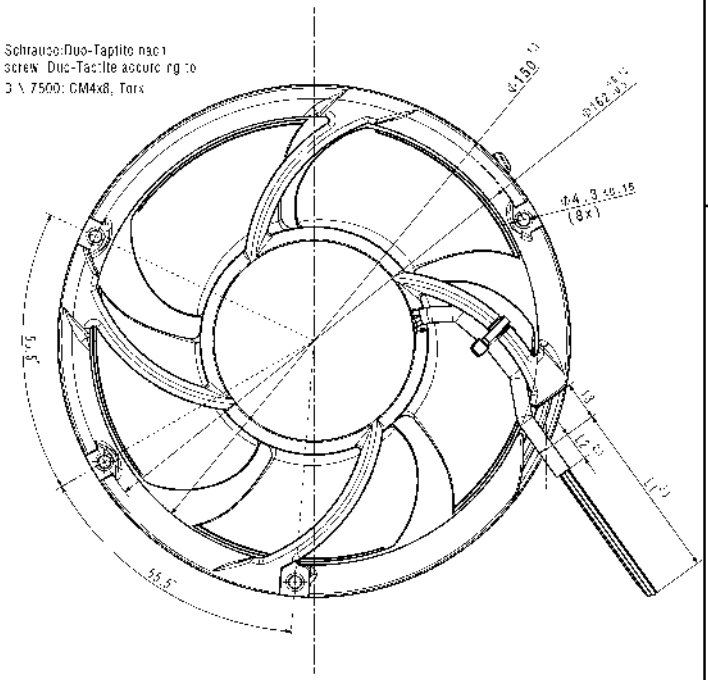
6 Reliability

6.1 General

Life expectancy L10 at TU = 40 °C	52.500 h	
Life expectancy L10 at TU max.	30.000 h	
Life expectancy L10 acc. to IPC 9591 at TU = 40 °C	87.500 h	







1.) Maße aus Montageausschnitt
2.) Anzahl und Länge der Litzen/Schlauch siehe Produktspezifikation Bl. 3

- Axialspiel der Kugellager mit Federspiel frei gelagert

1.) measures of mounting cut out
2.) length an number of wires/tube see product specification page 3

- ball bearing without clearance by a pre-load spring

Zeichnung entspricht 3D Model:
Drawing is equivalent to 3D Model:
92054200 9_CPR_000_-
System: CATIA V5 R19

ebmpapst