Product Data Sheet | RET97-25/14/2TDP



The engineer's choice

ebmpapst

RET97-25/14/2TDP

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6.1 General 13

1 General

Fan type	Blower without chassis	
Rotational direction looking at rotor	clockwise	
Airflow direction	Air in axially, Air out radially	
Bearing system	Ball bearing	
Mounting position	any	

2 Mechanics

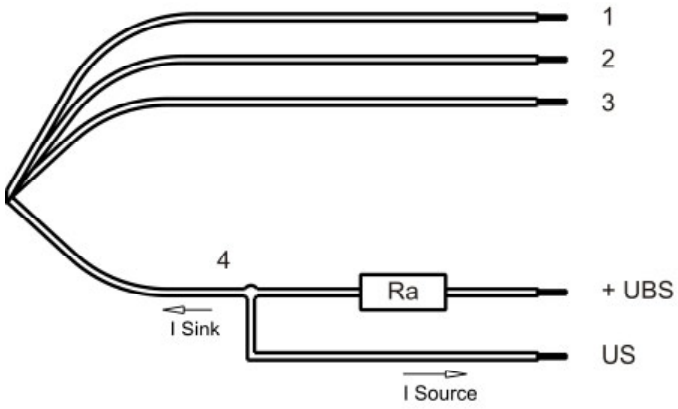
2.1 General

Depth	40,0 mm	
Diameter	97,0 mm	
Weight	0,43 kg	
Housing material		
Impeller material	Metal	

2.2 Connections

Electrical connection	Wires	
Length of lead wire Tolerance	L = 310 mm +- 10,0 mm	
Length of tube Tolerance	S = 65 mm +- 5,0 mm	
Wire gauge (AWG)	18	
Insulation diameter	2,2 mm	
Contact	see drawing	





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

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

3 Operating Data

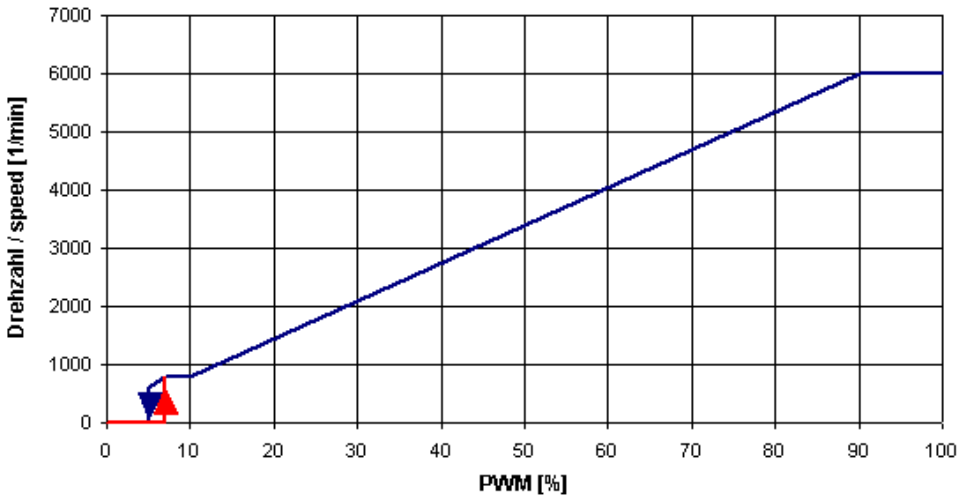
3.1 Operating Data - Electrical Interface - Input

Control input	PWM

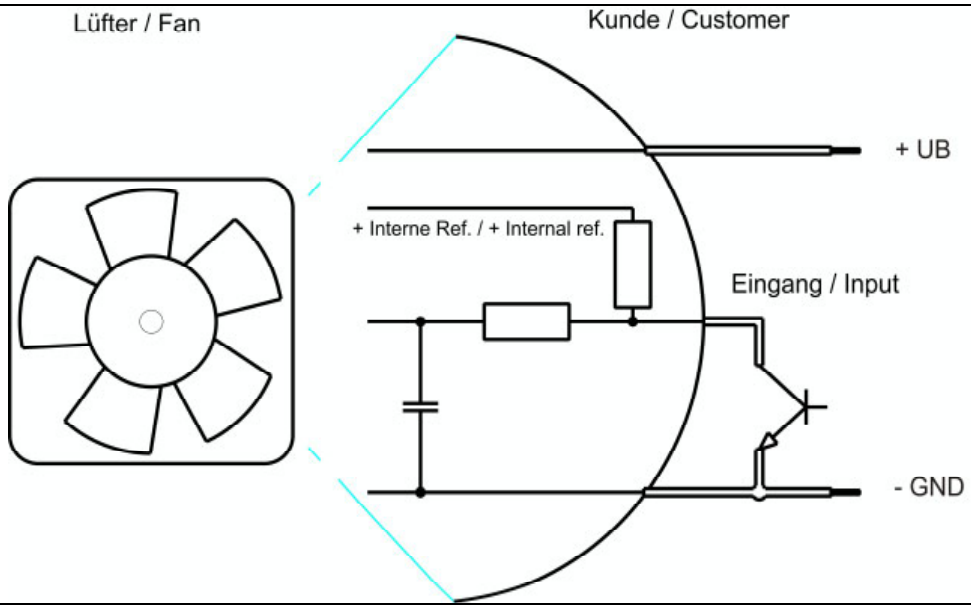
Features

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

Characteristics



Schematics



Speed control:
By Puls width modulation (PWM) 0 ... 100%, f = 2kHz +-20%.
Open collector in relation to signal-ground.

f

Information to the curve:

0 % - 7% PWM:	0 1/min
7 % - 10% PWM:	800 1/min (corresponding to min. speed)
10 % - 90% PWM:	linear increasing curve
90 % - 100% PWM:	6.000 1/min (corresponding to max. speed)
7 % PWM:	800 1/min (Fan on, comming from 0% PWM)
5 % PWM:	600 1/min or 0 1/min (Fan off, comming from 100% PWM)

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

Name	Condition		
PWM 0001	PWM: 90 %;		

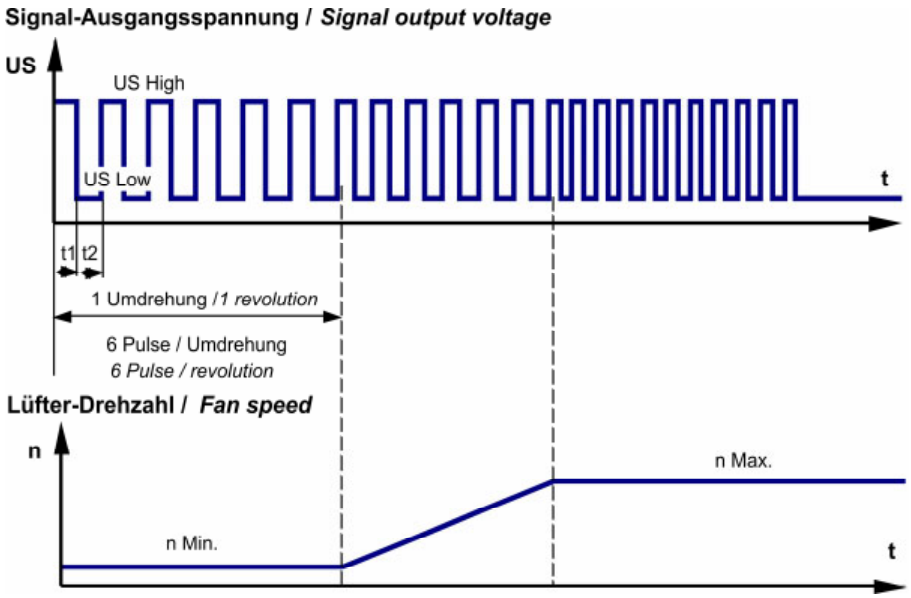
Features	Condition	Symbol	Values		
Voltage range	Δp = 0	U	16,0 V		32,0 V
Nominal voltage	Δp = 0	U_N		24,0 V	
Power consumption Tolerance	Δp = 0 PWM 0001	P	74,6 W +- 12,5 %	134,4 W +- 12,5 %	135,0 W +- 12,5 %
Current consumption Tolerance	Δp = 0 PWM0001	I	4.660 mA +- 12,5 %	5.600 mA +- 12,5 %	4.220 mA +- 12,5 %
Speed Tolerance	Δp = 0 PWM 0001	n	4.600 1/min +- 10,0 %	5.600 1/min +- 10,0 %	5.600 1/min +- 10,0 %
Starting current consumption				8.400 mA	
max. allowed input voltage ripple (within the specified voltage range)			+- 3 %		
max. allowed input voltage ripple (within the specified voltage range)			>= 50 Hz		

Name	Condition		
PWM 0002	PWM: 50 %;		

Features	Condition	Symbol	Values		
Voltage range	Δp = 0	U	16,0 V		32,0 V
Nominal voltage	Δp = 0	U_N		24,0 V	
Power consumption Tolerance	Δp = 0 PWM 0002	P	25,5 W +- 12,5 %	25,9 W +- 12,5 %	26,7 W +- 12,5 %
Current consumption Tolerance	Δp = 0 PWM 0002	I	1.590 mA +- 12,5 %	1.080 mA +- 12,5 %	835 mA +- 12,5 %
Speed Tolerance	Δp = 0 PWM 0002	n	3.300 1/min +- 5,0 %	3.300 1/min +- 5,0 %	3.300 1/min +- 5,0 %

3.3 Operating Data - Electrical Interface -Output

Tacho type	/2 (Open collector)



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

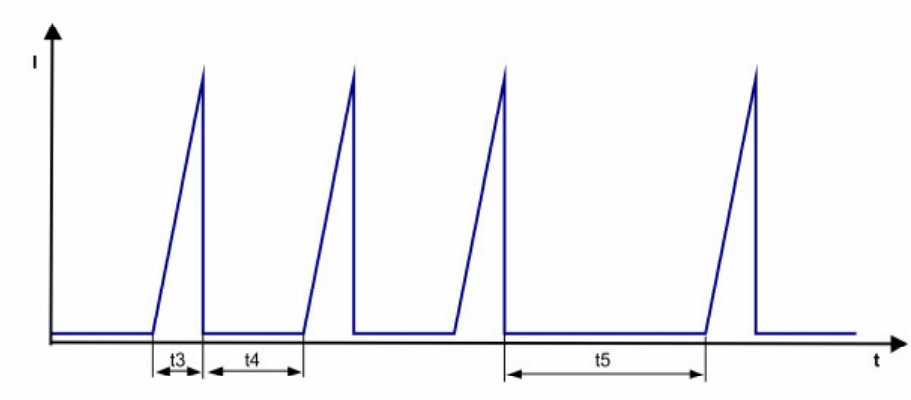
Features	Note	Values
Tacho operating voltage (UBS)		<= 32 V
Tacho signal Low	I sink: 2 mA	<= 0,4 V
Tacho signal High	I source: 0 mA	<= 32 V
Maximum sink current		<= 20 mA
Maximum source current		0 mA
External resistor	External resistor Ra from UBS to US required. All voltages measured to GND.	
Tacho frequency	(6 x n) / 60	600 Hz
Tacho isolated from motor	No	
Slew rate		=> 0,5 V/us

Please note:
At zero speed the tacho signal is at a static HIGH. It will be also HIGH when the fan is still spinning, but the speed control signal is set to zero speed already.
The tacho signal is only activated after the start-up is completed.

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. 1.700 mA	
Clock signal t3/t4 at locked rotor	Typical: 8,2 s / 10 s	



Locked rotor signal t5:

After 4 failed start-ups there is an extended timeout of 40 s.

3.5 Aerodynamic

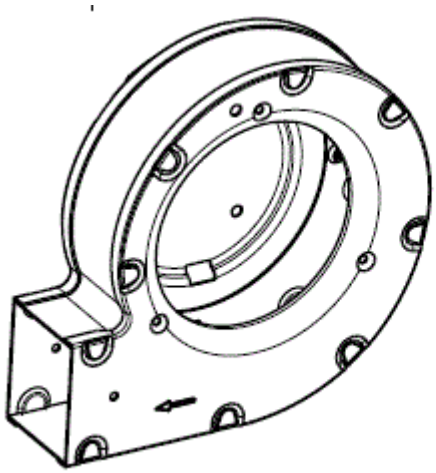
Measurement conditions:	Measured with a double chamber intake rig acc. to DIN EN ISO 5801. Normal air density = 1,2 kg/m3; Temperature 23°C +/- 3°C; In the intake and outlet area should not be any solid obstruction within 0,5 m. The information is only valid under the specified test conditions and may 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.

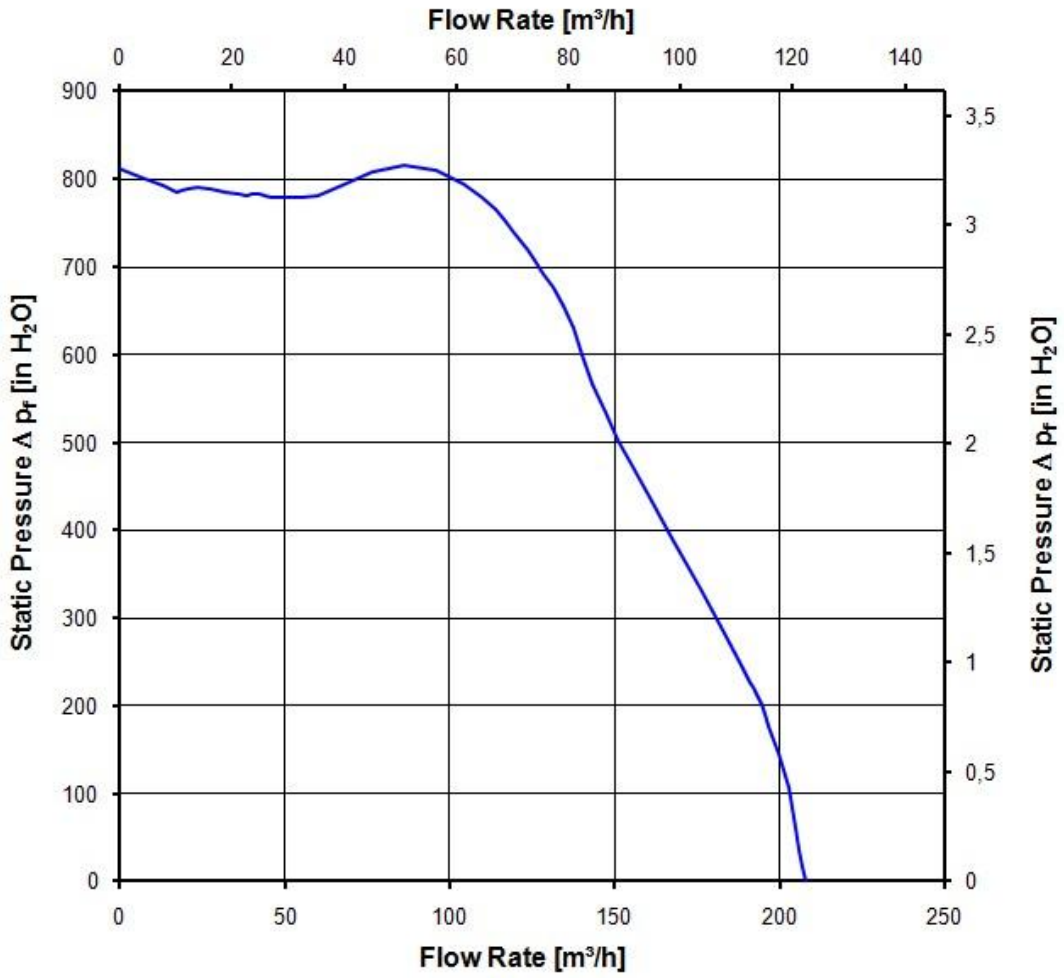
a.) Operation condition:

5.600 1/min at free air flow	PWM 90 %;		

Max. free-air flow (Δp = 0 / $\dot{V}$ = max.)	208,0 m3/h	
Max. static pressure (Δp = max. / $\dot{V}$ =0)	810 Pa	

The measurements were taken in the volute housing of G2S097-... The speed at free air is at 24 V approx. 5.700 1/min.





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:

5.600 1/min at free air flow	PWM 90 %; f:	PWM min.: ; f:	PWM max.:; f:

Optimal operating point	115,0 m3/h @ 658 Pa	
Sound power level at the optimal operating point	8,2 bel(A)	

4 Environment

4.1 General

Min. permitted ambient temperature TU min.	-20 °C	
Max. permitted ambient temperature TU max.	60 °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	

*) Permittet 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.

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	

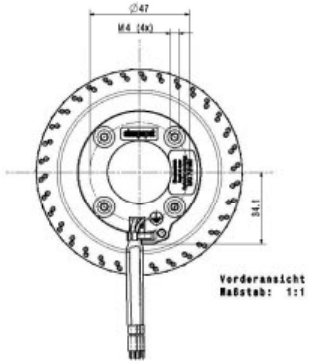
5.2 Approval Tests

CE	No
UL	No
VDE	No
CSA	No
CCC	No

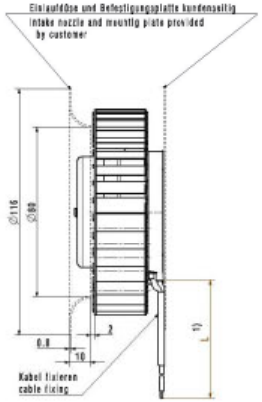
6 Reliability

6.1 General

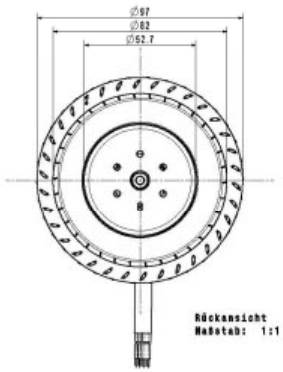
Life expectancy L10 at TU = 40 °C	80.000 h	
Life expectancy L10 at TU max.	50.000 h	
Life expectancy L10 IPC (40 °C)	135.000 h	



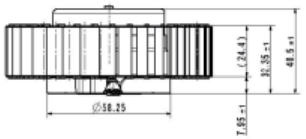
Vorderansicht
Maßstab: 1:1



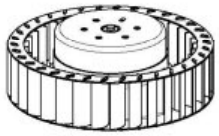
Seitenansicht links
Maßstab: 1:1



Rückansicht
Maßstab: 1:1



Hilfsansicht A
Maßstab: 1:1



Isometrische Ansicht
Maßstab: 1:1

1.) Anzahl und Länge der Litzen sowie Länge des Schlauches siehe Produktspezifikation

- Axialspiel der Kugellager mit Feder spielfrei gelagert

1.) length and number of wires and length of tube see design specification

-ball bearing without clearance by a pre-load spring

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	-	FK-Merkmale / FK-Characteristics

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