

Product Data Sheet

9594314402

VFS0085XUJCZ

RET85-42/14/2TDLOR-
402

ebmpapst

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RET85-42/14/2TDLOR-402

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1 General

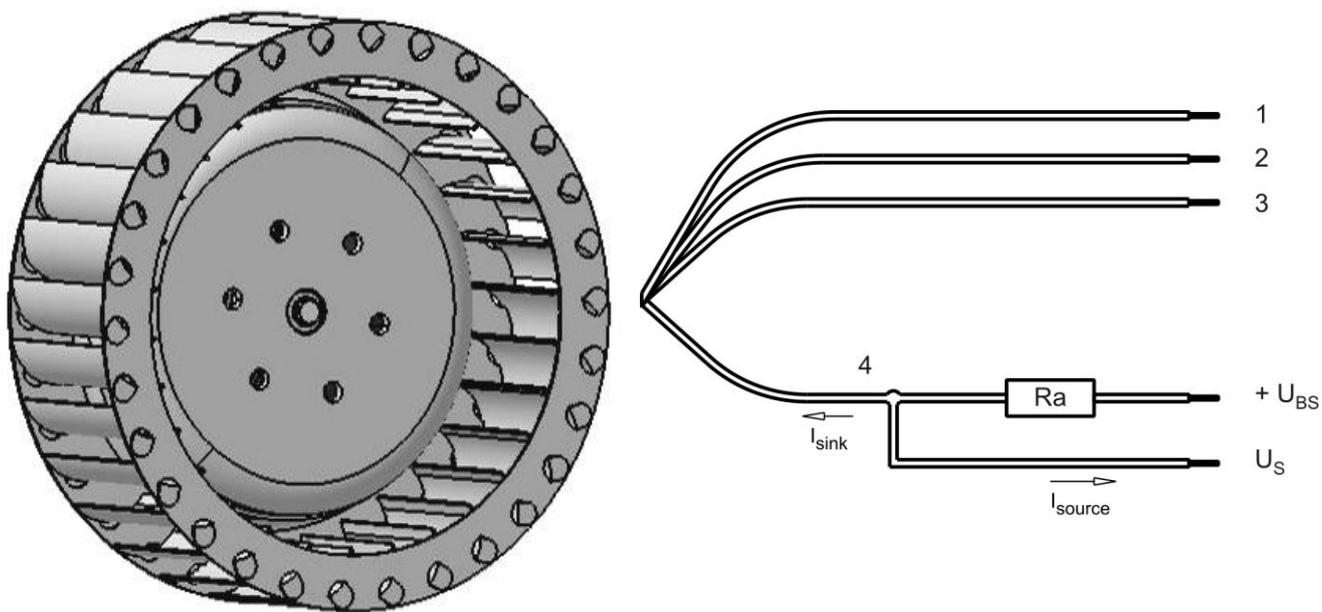
Fan type	Blower without chassis with intake nozzle	
Rotating direction looking at rotor	Clockwise	
Airflow direction	Air in axially, Air out radially	
Bearing system	Ball bearing	
Mounting position - shaft	Any	

2 Mechanics**2.1 General**

Depth	69 mm	
Diameter	85 mm	
Mass	0,45 kg	
Housing material		
Impeller material	Metal	

2.2 Connections

Electrical connection	Wires	
Lead wire length	L = 620 mm	
Tolerance	+ - 10,0 mm	
Tube length	S = 530 mm	
Tolerance	+ - 5,0 mm	



Wire	Color	Operation	Wire size	Insulation diameter
1	red	+ UB	AWG 24	1,1 mm
2	blue	- GND	AWG 24	1,1 mm
3	violet	CONTR	AWG 24	1,1 mm
4	white	Tacho	AWG 24	1,1 mm

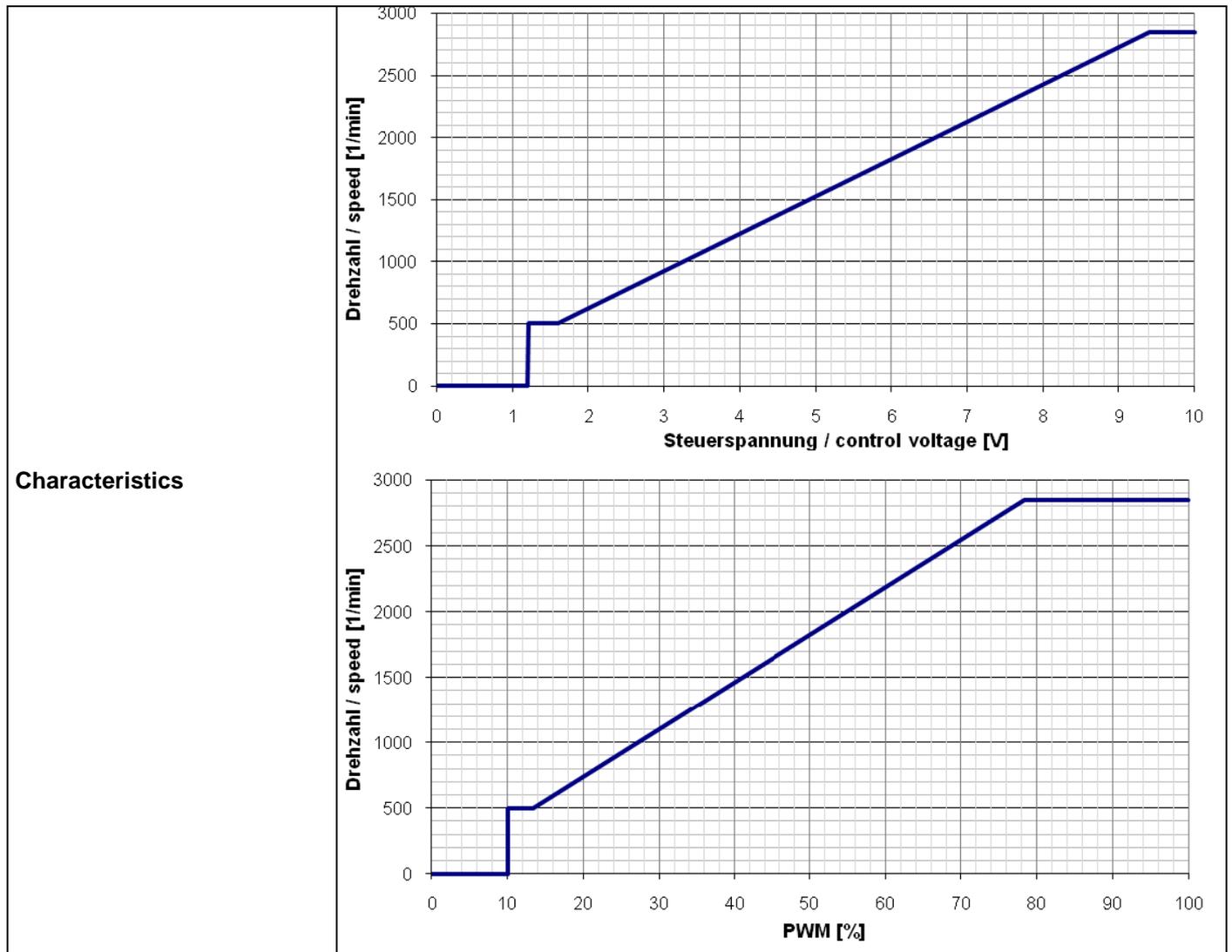
3 Operating Data

3.1 Electrical Interface - Input

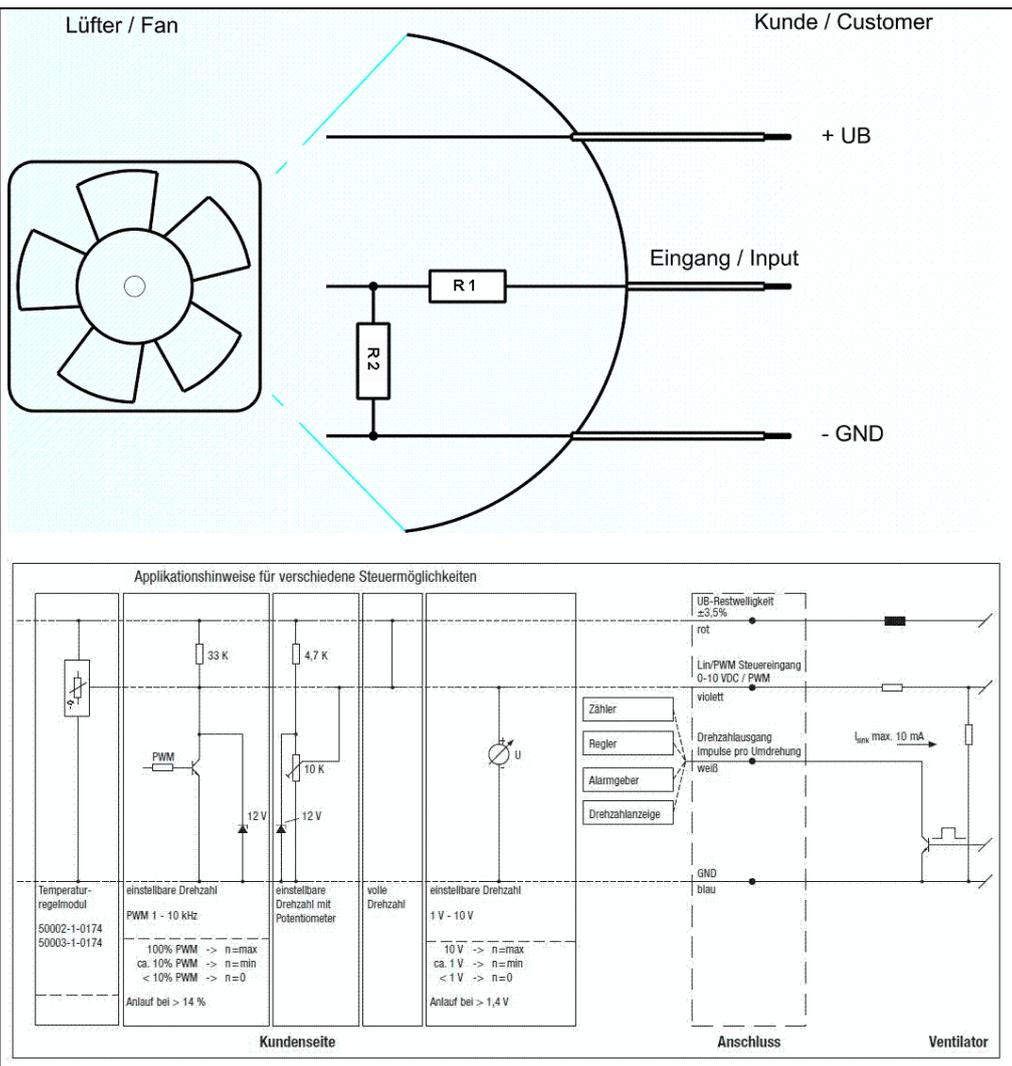
Control input	Analog
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Features

Input type	Active PWM	
PWM - Frequency		1 kHz - 10 kHz typical: 2 kHz



Schematics



Speed control:

Aktiv PWM (12V) and analog voltage (0...10V)

Information to the curve

aktiv PWM:

- 0 % - 10 % PWM: 0 1/min
- 10 % - 14 % PWM: 500 1/min (corresponding to min. speed)
- 14% - 78 % PWM: linear increasing curve
- 78% - 100% PWM: 2.850 1/min (corresponding to max. speed)
- 10 % PWM: 500 1/min (Fan on, comming from 0% PWM)
- 8 % PWM: 0 1/min (Fan off, comming from 100% PWM)

analog voltage:

- 0 V - 1,2 V: 0 1/min
- 1,2 V - 1,6 V: 500 1/min (corresponding to min. speed)
- 1,6 V - 9,2 V: linear increasing curve
- 9,2 V - 10 V: 2.850 1/min (corresponding to max. speed)
- 1,2V: 500 1/min (Fan on, comming from 0% PWM)
- 1 V: 0 1/min (Fan off, comming from 100% PWM)

The fan has no sensor break detection.

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 chapter aerodynamics)

I: corresp. to arithm. mean current value

Name	Condition
U Contr. 0001	U Contr.: 10 V

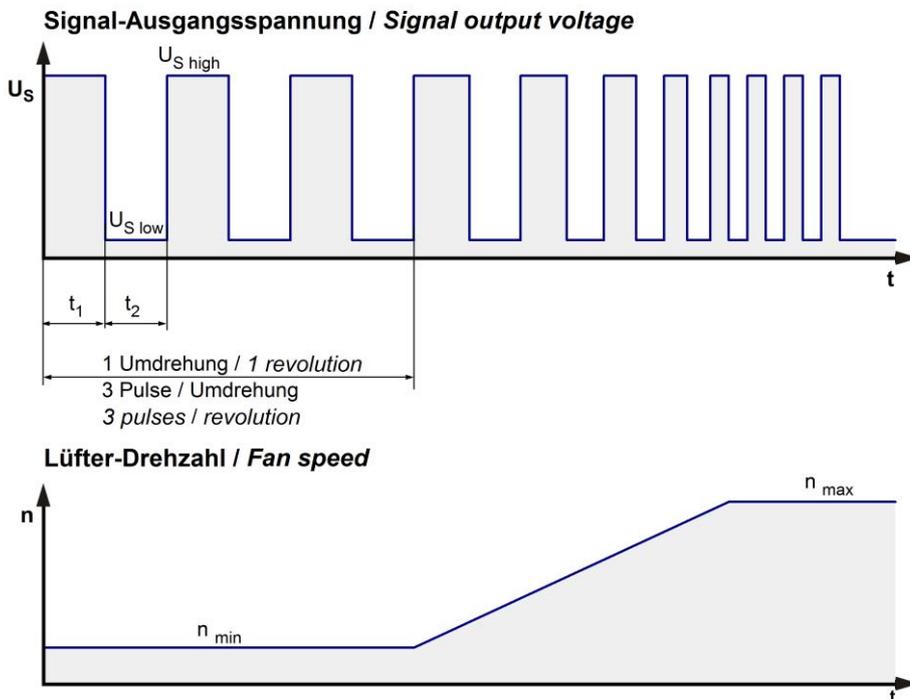
Measurement with spiral casing SK0150004614

Features	Condition	Symbol	Values		
Voltage range		U	20 V		28 V
Nominal voltage		U_N		24 V	
Power consumption	$\Delta p = 0$	P	6,6 W	11,3 W	11,4 W
Tolerance	U Contr. 0010		+/- 10,0 %	+/- 10,0 %	+/- 10,0 %
Current consumption	$\Delta p = 0$	I	330 mA	470 mA	280 mA
Tolerance	U Contr.0010		+/- 10,0 %	+/- 10,0 %	+/- 10,0 %
Speed	$\Delta p = 0$	n	2.700 1/min	2.850 1/min	2.850 1/min
Tolerance	U Contr. 0010		+/- 5 %	+/- 5 %	+/- 5 %

Measurement with spiral housing SK0150004614

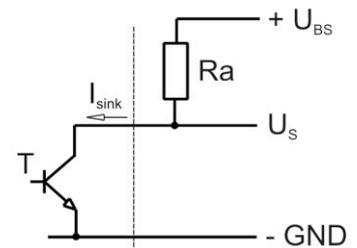
3.3 Electrical Interface - Output

Tacho type	/2 (open collector)
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$$R_a = \frac{U_{BS} - U_{S\ low}}{I_{sink}}$$

Lüfter / Fan Kunde / Customer

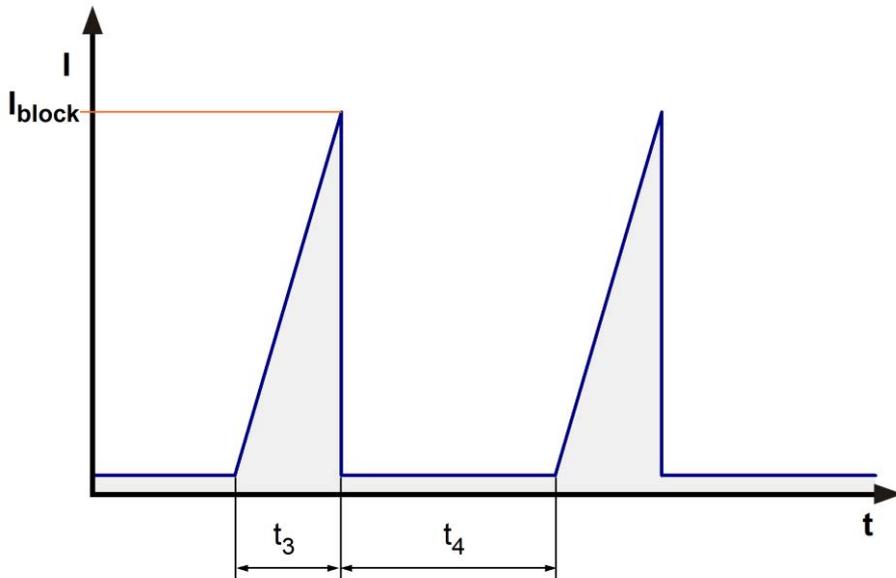


Features	Note	Values
Tacho operating voltage	U_{BS}	$\leq 60\ V$
Tacho signal Low	$U_{S\ low}$	$\leq \leq 0,4\ V$
Tacho signal High	$U_{S\ high}$	$\leq 60\ V$
Maximum sink current	I_{sink}	$\leq 4\ mA$
Maximum source current		$0\ mA$
External resistor	External resistor R_a from U_{BS} to U_S required. All voltages measured to GND.	
Tacho frequency	$(3 \times n) / 60$	
Tacho isolated from motor	No	
Slew rate		$\Rightarrow 0,5\ V/\mu s$

n = revolutions per minute (1/min)

3.4 Electrical Features

Electronic function	Speed-Controlled	
Reversed polarity protection	N-CH FET	
Max. residual current at U_N	$I_F \leq 5 \text{ mA}$	
Locked rotor protection	Auto restart	
Locked rotor current at U_N	I_{block} approx. 1.000 mA	
Clock signal at locked rotor	t_3 / t_4 typical: 3 s / 10 s	



The tolerance of the blocking clock is + -10%.

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°C +/- 3°C;
 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:

2.850 1/min at free air flow	U Contr. 10 V		
Max. free-air flow ($\Delta p = 0 / \dot{V} = \text{max.}$)		94,0 m ³ /h	
Max. static pressure ($\Delta p = \text{max.} / \dot{V} = 0$)		135 Pa	
at free air flow			
at free air flow			



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 semianechoic chamber with a background noise level of $L_p(A) < 5 \text{ dB(A)}$
For further measurement conditions see chapter aerodynamics.

a.) Operation condition:

2.850 1/min at free air flow	U Contr. 10 V		
Optimal operating point	36,0 m ³ /h @ 105 Pa		
Sound power level at the optimal operating point	5,6 bel(A)		
Sound pressure level at free air flow, measured in rubber bands			
at free air flow			
at free air flow			

4 Environment

4.1 General

Min. permitted ambient temperature TU min.	-25 °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, cyclic; according to DIN EN 60068-2-30, 6 cycle	
Water exposure	None	
Dust requirements	Dust check; according to DIN EN 60068-2-68, 6g/m ² d, 1 day	
Salt fog requirements	None	

Permitted 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. Occasionally, temporary conductivity caused by condensation occurs.

Please require severity levels and specification parameters from the responsible development departments.

5 Safety**5.1 Electrical Safety**

Dielectric strength DIN EN 62368 and DIN EN 60335 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. 850 VDC / 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	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	No
CSA	Canadian Standards Association	Yes
CCC	China Compulsory Certification	Not applicable

6 Reliability**6.1 General**

Life expectancy L10 at TU = 40 °C	95.000 h	
Life expectancy L10 at TU = 60 °C	60.000 h	

