

**Product Data Sheet**    **9695480300**  
VWEG172PJLRS  
6314 N/2HHP

**ebmpapst**

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6314 N/2HHP

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**1 General**

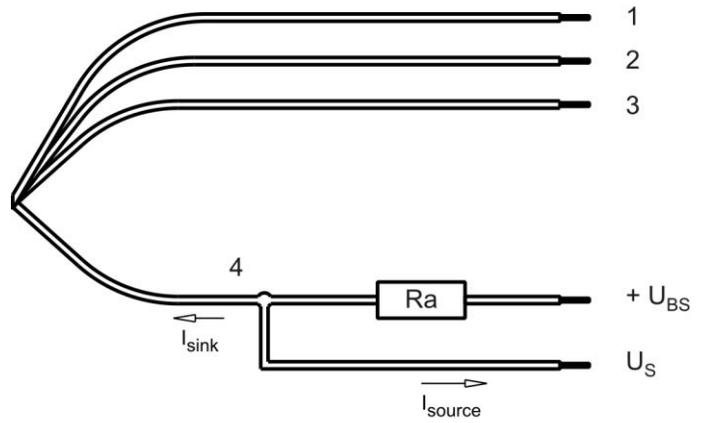
Fan type	Axial-Panel-Fan	
Rotating direction looking at rotor	Counterclockwise	
Airflow direction	Air outlet over struts	
Bearing system	Ball bearing	
Mounting position - shaft	Any	

**2 Mechanics****2.1 General**

Depth	51,0 mm	
Diameter	172,0 mm	
Mass	0,685 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	L = 365 mm	
Tolerance	+ - 10,0 mm	
Tube length	S = 10 mm	
Tolerance	+ - 5,0 mm	



Wire	Color	Operation	Wire size	Insulation diameter
1	red	+ UB	AWG 22	1,7 mm
2	blue	- GND	AWG 22	1,7 mm
3	violet	PWM	AWG 24	1,55 mm
4	white	Tacho	AWG 24	1,55 mm

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

3 Operating Data

3.1 Electrical Interface - Input

Control input	PWM
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Features

Input type	Open collector	
PWM - Frequency		1 kHz - 20 kHz typical: 2 kHz

<p><b>Characteristics</b></p>	
<p><b>Schematics</b></p>	

The shown pull-up resistor to the internal reference voltage (+5V) has 4.7kOhm.

**Transistor requirements:**

VCE max.  $\geq$  12V ; Isink max  $>$  5mA ; VCEsat  $<$  0,15V

**Information to the curve:**

0% - <=7% PWM:	0 1/min (Fan off)
7% PWM:	500 1/min (Start-up, coming from 0% PWM)
7% - 10 % PWM:	500 1/min (corresp. to min fan speed)
10% - 90% PWM:	Linear increasing curve
90% - 100% PWM:	4.000 1/min (corresp. to max fan speed)

### 3.2 Electrical Operating Data

Measurement conditions: Normal air density = 1,2 kg/m<sup>3</sup>; 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

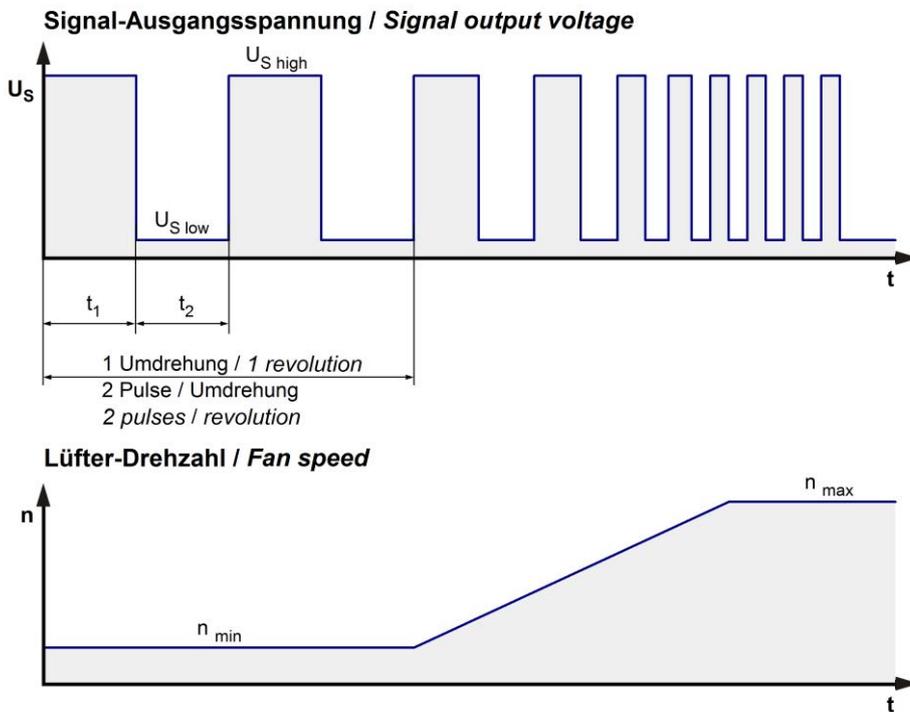
Name	Condition
PWM 0001	PWM: 95 %; f: 2 kHz

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

Features	Condition	Symbol	Values		
Voltage range		U	16 V		32,0 V
Nominal voltage		U <sub>N</sub>		24,0 V	
Power consumption	$\Delta p = 0$	P	16 W	32 W	33 W
Tolerance	PWM 0010		+/- 10 %	+/- 10 %	+/- 10 %
Current consumption	$\Delta p = 0$	I	1.000 mA	1.300 mA	1.030 mA
Tolerance	PWM 0010		+/- 10 %	+/- 10 %	+/- 10 %
Speed	$\Delta p = 0$	n	3.000 1/min	4.000 1/min	4.000 1/min
Tolerance	PWM 0010		+/- 10 %	+ 5 %	+ 5 %

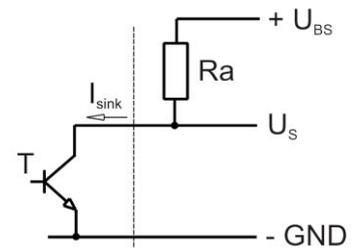
3.3 Electrical Interface - Output

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

Lüfter / Fan      Kunde / Customer



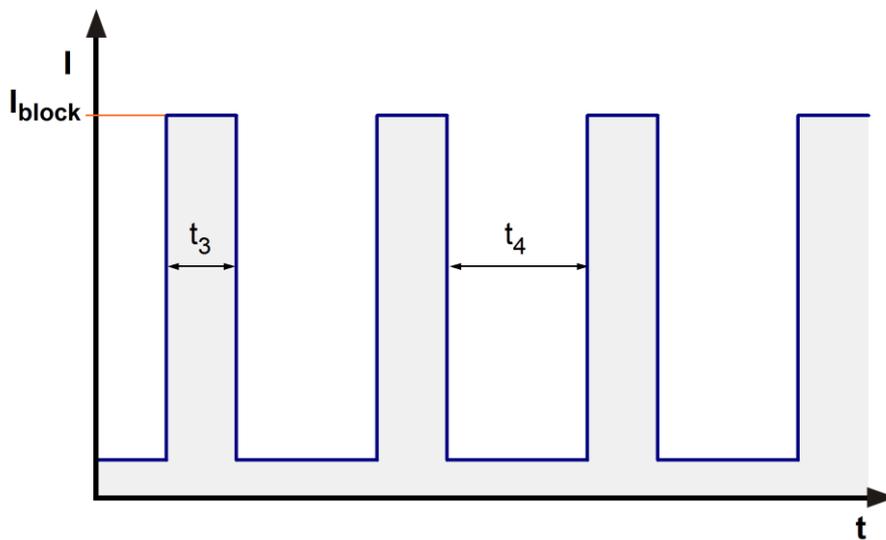
Features	Note	Values
Tacho operating voltage	$U_{BS}$	$\leq 32\text{ V}$
Tacho signal Low	$U_{S\ low}$	$\leq 0,4\text{ V}$
Tacho signal High	$U_{S\ high}$	$\leq 32\text{ V}$
Maximum sink current	$I_{sink}$	20 mA
External resistor	External resistor $R_a$ from $U_{BS}$ to $U_S$ required. All voltages measured to GND.	
Tacho frequency	$(2 \times n) / 60$	133 Hz @ 4.000 1/min
Tacho isolated from motor	No	
Slew rate		$\geq 0,5\text{ V/us}$

n = revolutions per minute (1/min)

3.4 Electrical Features

Electronic function	Speed-Controlled	
Reversed polarity protection	Rectifying diode	
Max. residual current at $U_N$	$I_F \leq 1 \text{ mA}$	
Locked rotor protection	Auto restart	
Locked rotor current at $U_N$	$I_{block}$ approx. 600 mA	
Clock signal at locked rotor	$t_3 / t_4$ typical: 0,5 s / 10,0 s	
Internal fuse	Littelfuse NANO2 > Very Fast-Acting > 451/453 Series 4A / 125V (Art.No.: 0451004.MRL)	
Voltage control *)	Fan turns on at $U_B > 13 \text{ V}$ or $< 37 \text{ V}$ Fan turns off at $U_B < 12 \text{ V}$ or $> 39 \text{ V}$	

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



This fan has a startup delay of 2,2 seconds after applying supply voltage.

### 3.5 Aerodynamics

Measurement conditions:

Measured with a double chamber intake rig acc. to DIN EN ISO 5801.

Normal air density = 1,2 kg/m<sup>3</sup>; Temperature 23°C +/- 3°C;

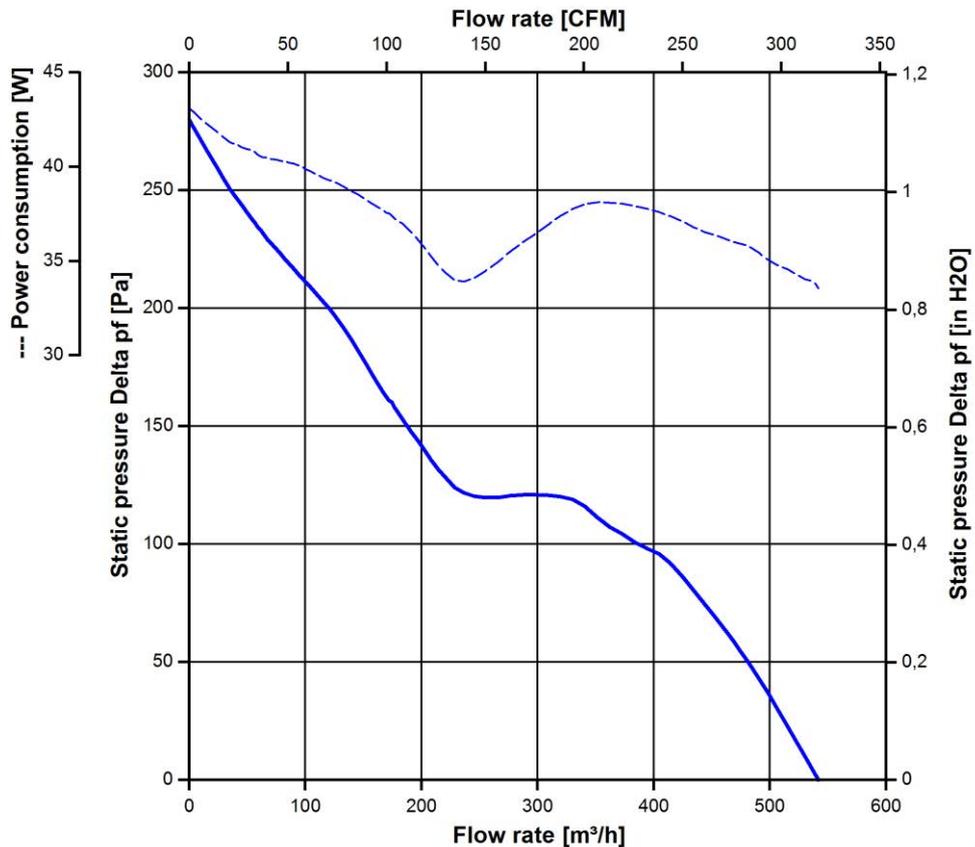
In the intake and outlet area should not be any solid obstruction within 0,5 m. Motor shaft horizontal.

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. Power consumption of the fan motor when operating at normal voltage is shown. Depending on the operating conditions of the application, the power input may be higher.

a.) Operation condition:

4.000 1/min at free air flow	PWM 95 %; f: 2 kHz		
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Max. free-air flow ( $\Delta p = 0 / \dot{V} = \text{max.}$ )	540 m <sup>3</sup> /h	
Max. static pressure ( $\Delta p = \text{max.} / \dot{V} = 0$ )	280 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 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:

4.000 1/min at free air flow	PWM 95 %; f: 2 kHz		
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Optimal operating point	380 m <sup>3</sup> /h @ 102 Pa		
Sound power level at the optimal operating point	6,6 bel(A)		
Sound pressure level at free air flow, measured in rubber bands	60 dB(A)		

**4 Environment**

**4.1 General**

Min. permitted ambient temperature TU min.	-20 °C		
Max. permitted ambient temperature TU max.	70 °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	

Permitted 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.

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 / 1,5 mm	
Protection class	III	

**5.2 Approval Tests**

CE	EC Declaration of Conformity	Yes
UKCA	UK Conformity Assessed	Not applicable
EAC	Eurasian Conformity	Yes
America	UL - Underwriters Laboratories	Yes / UL507, Electric Fans E38324
Europe	VDE - Association for Electrical or UL - Underwriters Laboratories or comparable	Yes / Approval acc. to EN 62368 - Audio/video, information and communication technology equipment
Canada	UL - Underwriters Laboratories or CSA - Canadian Standards Association	Yes / C22.2 No. 113 Fans and Ventilators
China	CCC - China Compulsory Certification or CQC - China Quality Certification	Not applicable

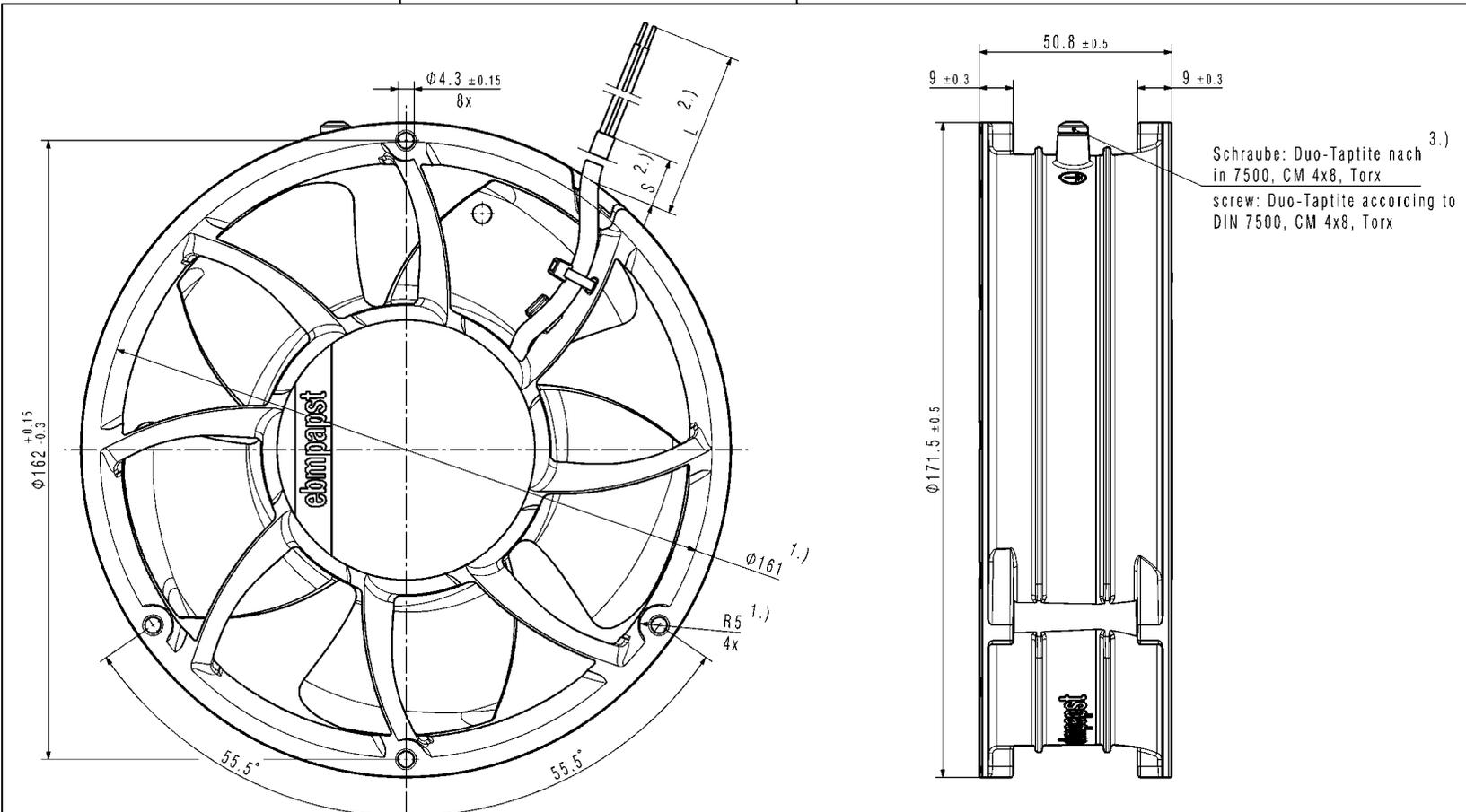
**6 Reliability**

**6.1 General**

Life expectancy L10 at TU = 40 °C	80.000 h	
Life expectancy L10 at TU max.	40.000 h	
Life expectancy L10 acc. to IPC 9591 at TU = 40 °C	135.000 h	

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Schutzrecht nach DIN ISO 10000 Invention / Refer to protection notice DIN ISO 10000 !



- 1.) Maße aus Montageausschnitt
- 2.) Anzahl und Länge der Litzen/Schlauch siehe Produktspezifikation
- 3.) Erdungsschraube nur wenn in der Lueftergehaeusestueckliste enthalten

- Axialspiel der Kugellager mit Feder spielfrei gelagert

- 1.) measures of mounting cut out
- 2.) length an number of wires/tube see product specification
- 3.) grounding screw only if contained in the fan housing part list

- ball bearing without clearance by a pre-load spring

SAP-Status/State		Änd.-Nr./ Change No.		CATIA-System-Version/ CATIA-System-Version		CAD-Umgebung/ CAD-Environment		Werkstoff / Material:		Volumen / Volume (cm <sup>3</sup> ):	
				9695480300 CPRO00 -				Artikel / Title:		Gewicht / Mass (g):	
Tolerierung / Tolerances:		3D-Referenzmodell / 3D-Referenzmodell		Datum		Name		Zug.-Nr. / Drawing No:		Ers.-Zug. / Replaces:	
Allgemeintoleranzen / Gen. Tolerances:		Bearb./ Drawn:		Gepr./ Checked:		Freig./ Released:		Dokumenttyp / Type of Document		Teildokument (Blatt/Page)	
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