Product Data Sheet **8315100253**
VWS0112EUGAS
AR126-00253 12V P/2
Rev 4.200

ebmpapst

engineering a better life



AR126-00253 12V P/2 Rev 4.200

INDEX

1 General 3

2 Mechanics 3

2.1 General 3
2.2 Connections 3

3 Operating Data 5

3.1 Electrical Interface - Input 5
3.2 Electrical Operating Data 6
3.3 Electrical Interface - Output 7
3.4 Electrical Features 8
3.5 Aerodynamics 9
3.6 Sound Data 11

4 Environment 11

4.1 General 11
4.2 Climatic Requirements 11
4.3 Mechanical Requirements 12
4.4 EMC 12

5 Safety 14

5.1 Electrical Safety 14
5.2 Approval Tests 14

6 Reliability 14

6.1 General 14

1 General

Fan type	Axial	
Rotating direction looking at rotor	Clockwise - reversible	
Airflow direction	Air inlet and air outlet axially	
Bearing system	Ball bearing	
Mounting position - shaft	Any	

2 Mechanics

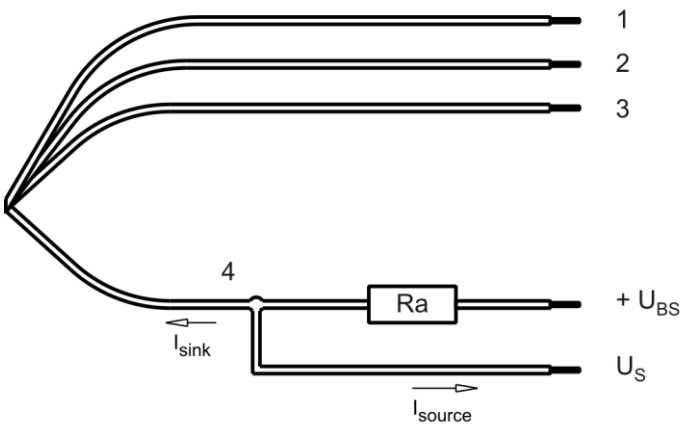
2.1 General

Width	126 mm	
Height	123 mm	
Depth	26,4 mm	
Diameter	126 mm	
Mass	0,17 kg	
Housing material	Plastic	
Impeller material	Plastic	

2.2 Connections

Electrical connection	Wires	
Lead wire length Tolerance	L = 310 mm +- 10 mm	
Wire size (AWG)	26	
Insulation diameter		





Wire	Color	Operation
1	red	+ UB
2	blue	- GND
3	violet	CTRL
4	white	Tacho

3 Operating Data

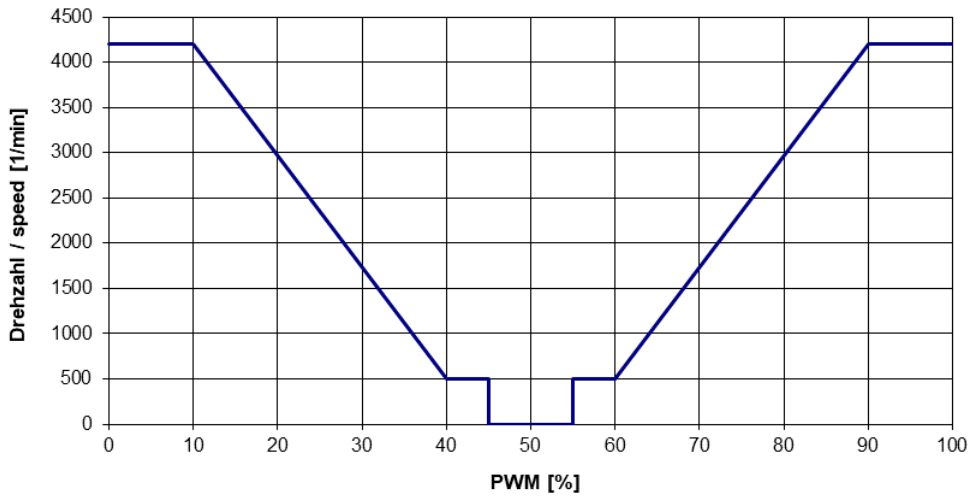
3.1 Electrical Interface - Input

Control input	PWM

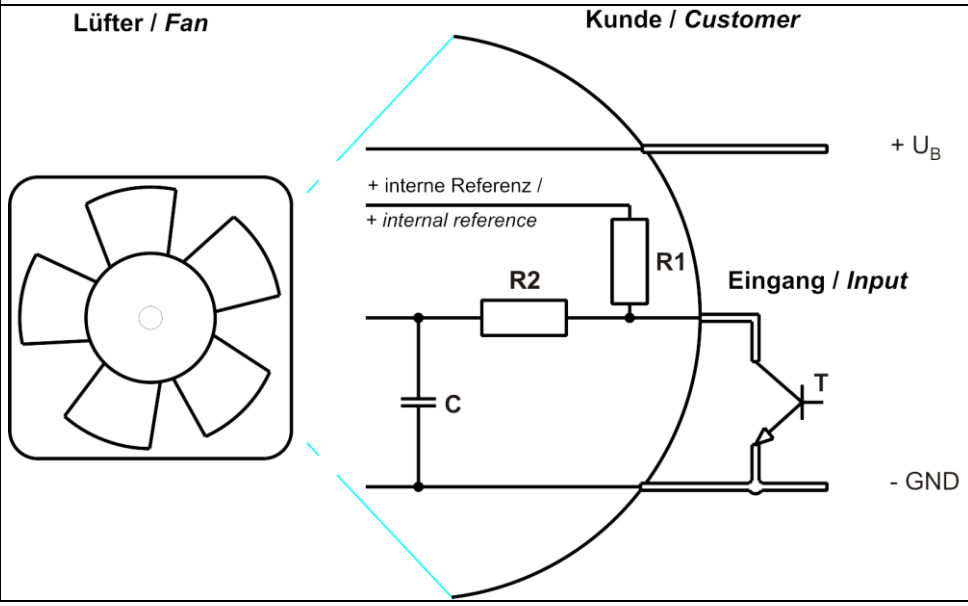
Features

Inpute type	Open collector	
PWM - Frequency		1 kHz - 5 kHz typical: 2 kHz

Characteristics



Schematics



When 50% PWM is applied to the control input, the fan brakes actively from a speed of less than or equal to 2600 rpm so that the rotor stops immediately.

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. 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

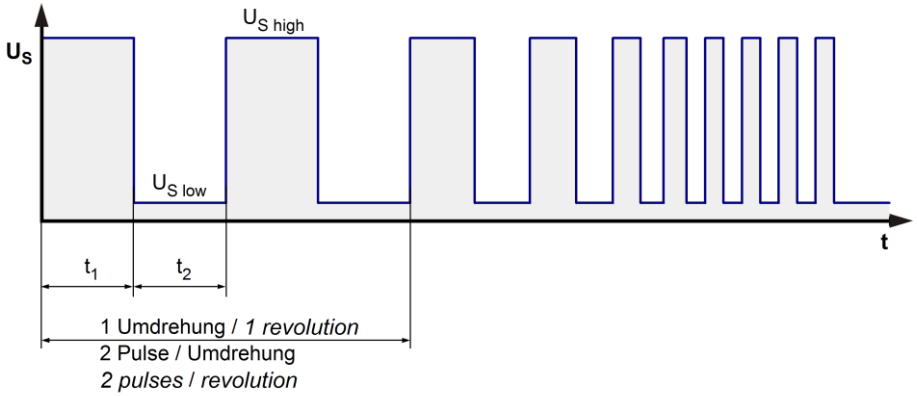
Name	Condition		
PWM 0001	PWM: 5 %; f: 2 kHz		

Features	Condition	Symbol	Values		
Voltage range		U	10,8 V		13,2 V
Nominal voltage		U_N		12 V	
Power consumption Tolerance	$\Delta p = 0$ PWM 0010	P	2,4 W +- 12 %	2,5 W +- 12 %	2,6 W +- 12 %
Current consumption Tolerance	$\Delta p = 0$ PWM 0010	I	220 mA +- 12 %	210 mA +- 12 %	200 mA +- 12 %
Speed Tolerance	$\Delta p = 0$ PWM 0010	n	4.200 1/min +- 10 %	4.200 1/min +- 10 %	4.200 1/min +- 10 %

3.3 Electrical Interface - Output

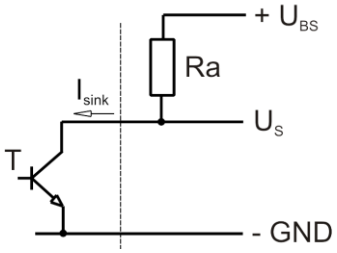
Tacho type	/2 (open collector)

Signal-Ausgangsspannung / *Signal output voltage*

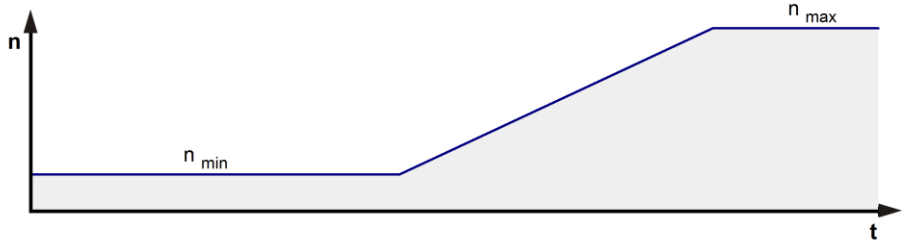


$$Ra = \frac{U_{BS} - U_{S\,low}}{I_{sink}}$$

Lüfter / *Fan* **Kunde / *Customer***



Lüfter-Drehzahl / *Fan speed*



Features		**Note**	**Values**
Tacho operating voltage	U_{BS}		<= 30 V
Tacho signal Low	$U_{S\,low}$	I sink: 2 mA	<= 0,4 V
Tacho signal High	$U_{S\,high}$	I source: 0 mA	<=30 V
Maximum sink current	I_{sink}		<= 4 mA
Maximum source current			0 mA
External resistor		External resistor Ra from UBS to US required. All voltages measured to GND.	
Tacho frequency		(2 x n) / 60	140 Hz @ 4.200 1/min

n = revolutions per minute (1/min)

3.4 Electrical Features

Electronic function	Speed-Controlled	
Reversed polarity protection Max. residual current at U_N	Rectifying diode I_F <= 15 mA	
Locked rotor protection	Auto restart	
Locked rotor current at U_N	I_{block} approx. 70 mA	
Clock signal at locked rotor	t_3 / t_4 typical: 2 s / 2 s	

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. 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:

4.200 1/min at free air flow	PWM 5 %; f: 2 kHz		

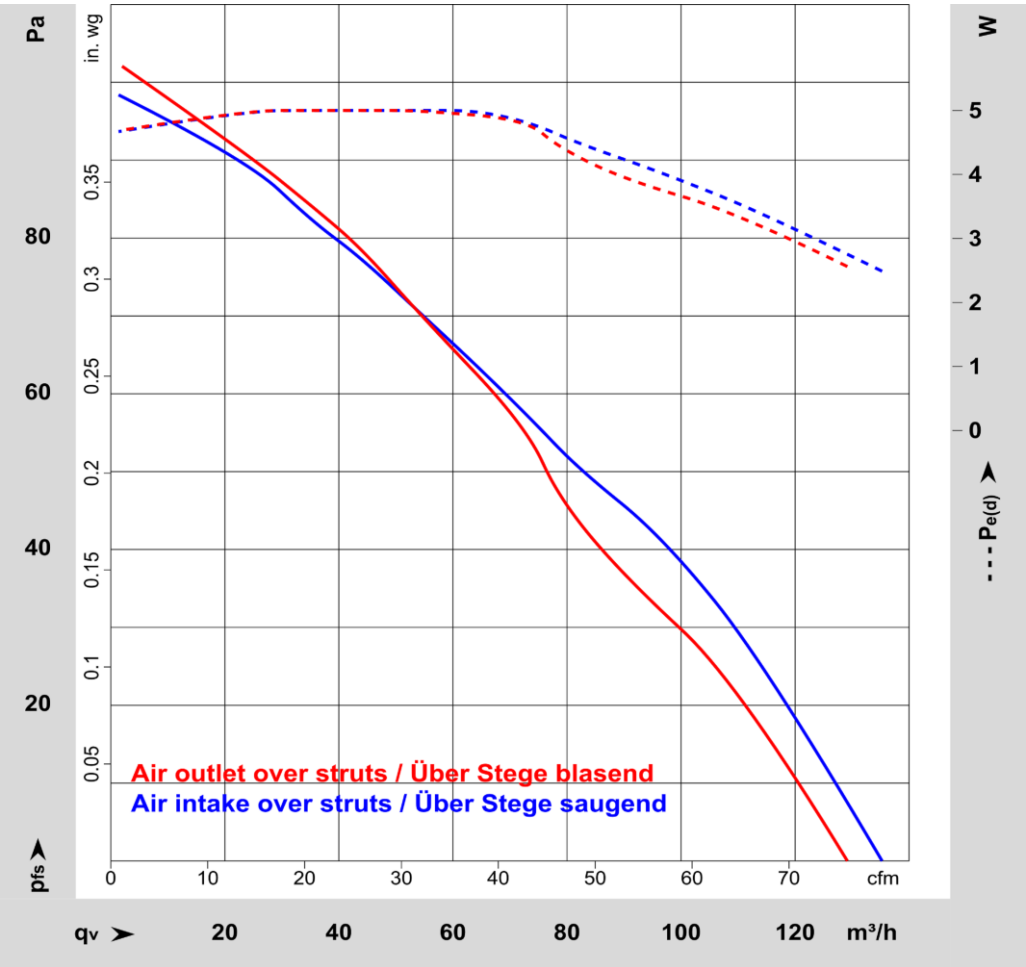
Max. free-air flow (Δp = 0 / $\dot{V}$ = max.)	130 m3/h	
Max. static pressure (Δp = max. / $\dot{V}$ =0)	102 Pa	

130 m³/h Air outlet over struts, 135 m³/h Air intake over struts.

b.) Operation condition:

4.200 1/min at free air flow	PWM 95 %; f: 2 kHz		

Max. free-air flow (Δp = 0 / $\dot{V}$ = max.)	135 m3/h	
Max. static pressure(Δp = max. / $\dot{V}$ =0)	98 Pa	


Pa
in. wg
W
80
60
40
20
0.35
0.3
0.25
0.2
0.15
0.1
0.05
5
4
3
2
1
0
- - - Pe(d)
pfs
Air outlet over struts / Über Stege blasend
Air intake over struts / Über Stege saugend
0
10
20
30
40
50
60
70
cfm
qv
20
40
60
80
100
120
m³/h

3.6 Sound Data

Measurement conditions:	Sound pressure level: 1 meter distance between microphone and the air intake. Sound power level: According to ISO 13347-3.Sound power level: According to ISO 13347-3. Measured in a semianechoic chamber with a background noise level of Lp(A) < 5 dB(A) For further measurement conditions see chapter aerodynamics.

a.) Operation condition:

4.200 1/min at free air flow	PWM 5 %; f: 2 kHz		

Optimal operating point	130 m3/h @ 0 Pa	
Sound power level at the optimal operating point	6,2 bel(A)	
Sound pressure level at free air flow, measured in rubber bands	52 dB(A)	

b.) Operation condition:

4.200 1/min at free air flow	PWM 95 %; f: 2 kHz		

Optimal operating point	135 m3/h @ 0 Pa	
Sound power level at the optimal operating point	6,5 bel(A)	
Sound pressure level at free air flow, measured in rubber bands	55 dB(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.	-35 °C	
Max. permitted storage temperature TL max.	85 °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/m2d, 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. Occassionally, temporary conductivity caused by condensation occurs.

4.3 Mechanical Requirements

severity level	stationary use		
1	storage / transportation	Random vibration not in use IEC 60068-2-64 Frequency range / ASD G_{RMS} Axes of vibration Test duration	 Random vibration 5 - 20 Hz : 1,0 m^2 / s^3 20 - 500 Hz : - 3 dB / Oct 0,91 G 3 3 x 5 h
	storage / transportation	Bump not in use IEC 60068-2-29 Shock spectrum Acceleration Duration Number of bumps (+X, -X, -Y, +Y, -Z, +Z) Total bumps	 Bump half sine 18 G 6 ms 100 in each direction 600
	stationary use	Random vibration in use IEC 60068-2-64 Frequency range / ASD G_{RMS} Axes of vibration Test duration	 Random vibration 5 - 20 Hz : 2,0 m^2 / s^3 20- 150 Hz : - 3 dB / Oct 0,83 G 3 3 x 5 h
	stationary use	Bump in use IEC 60068-2-29 Shock spectrum Acceleration Duration Number of bumps (+X, -X, -Y, +Y, -Z, +Z) Total bumps	 Bump half sine 5 G 11 ms 100 in each direction 600

4.4 EMC

Kind	**Conducted Emission; Voltage; 150 kHz-30 MHz (without PE)**
According	DIN EN 55032:2016-02
Ceck accuracy / Limit	Class B
Result	Below limit Class B

Kind	**Radiated Emission; 30 MHz - 1000 MHz (without PE)**
According	DIN EN 55032:2016-02
Ceck accuracy / Limit	Class B
Result	Below limit Class B

Kind	**Electrostatic Discharge Immunity Test**
According	DIN EN 61000-4-2:2001-12
Ceck accuracy / Limit	Contact Discharge +/- 4 kV; Air Discharge +/- 8 kV
Result	A: The monitored function operates as designed during and after exposure to a disturbance.

Kind	**Electromagnetic Field Immunity Test**
According	DIN EN 61000-4-3:2006-12
Ceck accuracy / Limit	10 V/m; 80 - 1000 MHz; AM; m = 0,8; f = 1 kHz; 1%; t = 3 s
Result	A: The monitored function operates as designed during and after exposure to a disturbance.

Kind	**Electrical Fast Transient / Burst Immunity Test**
According	DIN EN 61000-4-4:2005-07
Ceck accuracy / Limit	+/- 2 kV on Power Lines; Coupling: POS, NEG, {PE}, ALL, 5 kHz and 100 kHz; 1 min
Result	A: The monitored function operates as designed during and after exposure to a disturbance.

Kind	**Immunity to Conducted Disturbances, Induced by RF-Fields**
According	DIN EN 61000-4-6:2001-12
Ceck accuracy / Limit	10 Vrms; 150 kHz - 80 MHz; AM; m = 0,8; f = 1 kHz; 1%; t = 3 s
Result	A: The monitored function operates as designed during and after exposure to a disturbance.

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.	Not applicable 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.		
Clearance / creepage distance		
Protection class	III	

5.2 Approval Tests

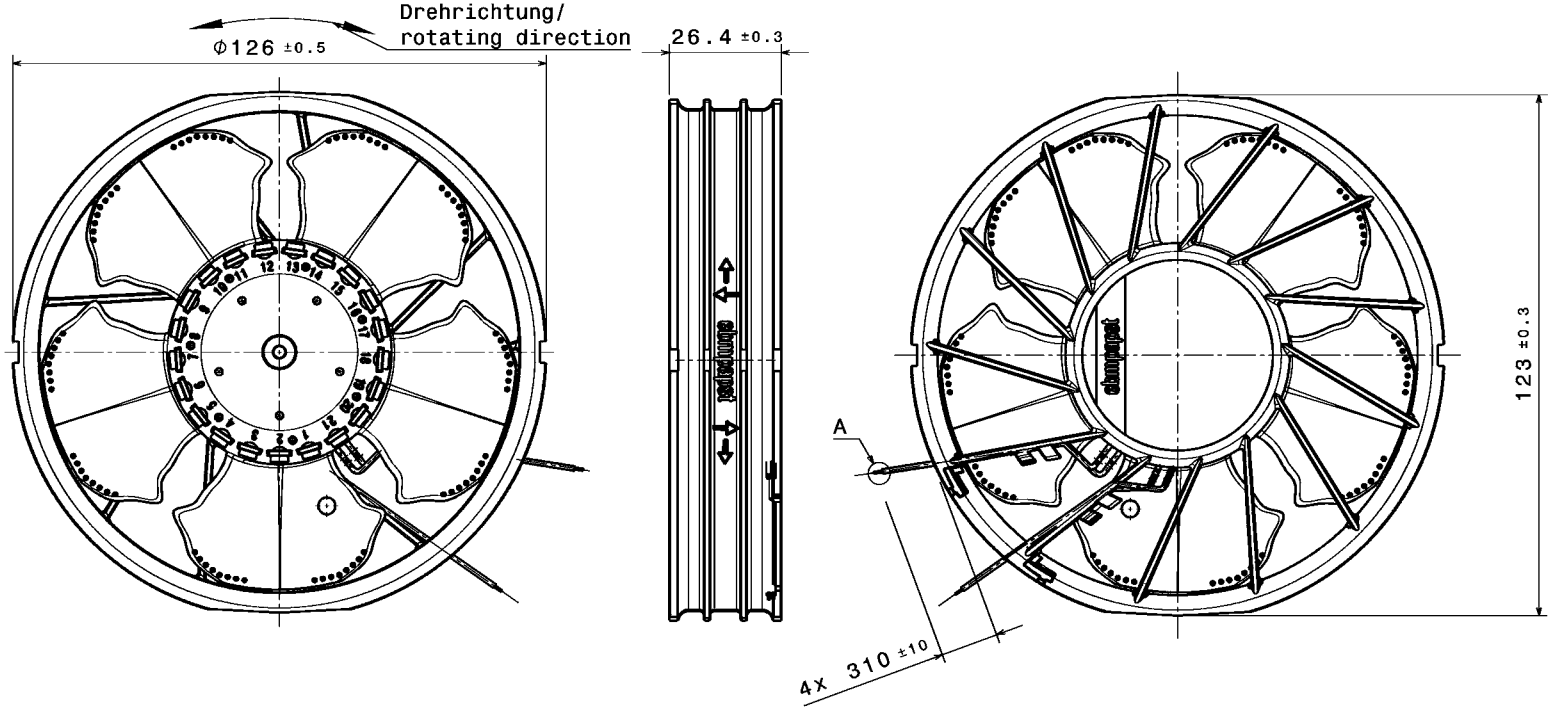
CE	EC Declaration of Conformity	Yes
EAC	Eurasian Conformity	Yes
UL	Underwriters Laboratories	Yes / UL507, Electric Fans E38324
VDE	Association for Electrical, Electronic and Information Technologies	Yes / Approval acc. to EN 60335 (VDE 0700) - Safety for household and similar electrical appliances
CSA	Canadian Standards Association	Yes / CSA audited by UL according to C22.2 No. 113 Fans and Ventilators
CCC	China Compulsory Certification	Not applicable

6 Reliability

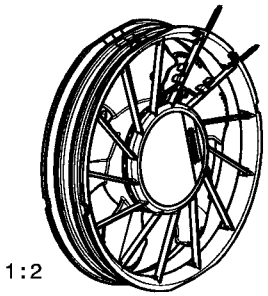
6.1 General

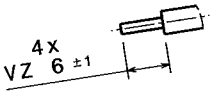
Upon request

The reproduction, distribution and utilization of this document as well as the communication of its contents to others without express authorization is prohibited. Offenders will be held liable for the payment of damages. All rights reserved. In the event of the grant of a patent, utility model or design, Refer to protection notice ISO 16016!



Litze	Farbe	Bezeichnung	Pin Pos.
AWG 26	Rot	+	1
AWG 26	Blau	-	2
AWG 26	Weis	Tacho	3
AWG 26	Violett	PWM	4





Title				Material	Digital signature
First created for	Index –	Doc type	Sheet		Change-No.
	Designed name		Designed date	Volume (mm³)	CAD environment
Substitute for	Released name		Released date	Mass (g)	CAD release
ebmpapst ebm-papst St. Georgen GmbH & Co. KG	Tolerances			General tolerances	3D-reference model 8315100253 CPR 000 -
	Scale	Format	Document status		