

Product Data Sheet

9793510204

VBS0100XUGBS

REF100-11/18/2HPU-
204

ebmpapst

Engineering a better life

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REF100-11/18/2HPU-204

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6.1 General 9

1 General

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

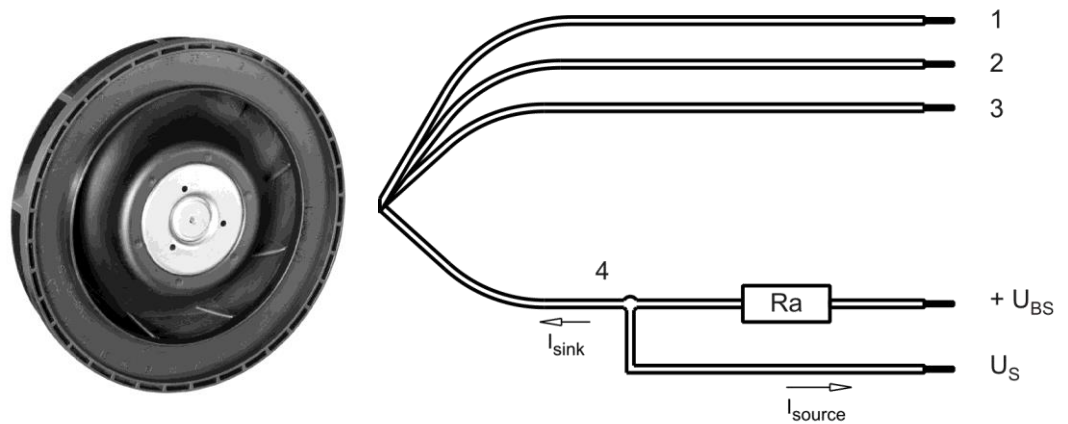
2 Mechanics

2.1 General

| | | |
|-------------------|----------|--|
| Depth | 25,0 mm | |
| Diameter | 104,0 mm | |
| Mass | 0,220 kg | |
| Housing material | | |
| Impeller material | Plastic | |

2.2 Connections

| | | |
|-----------------------|--------------|--|
| Electrical connection | Wires - Plug | |
| Lead wire length | L = 450 mm | |
| Tolerance | +/- 10 mm | |
| Plug | See drawing | |
| Contact | See drawing | |



| 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 | PWM | AWG 24 | 1,1 mm |
| 4 | white | Tacho | AWG 24 | 1,1 mm |

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

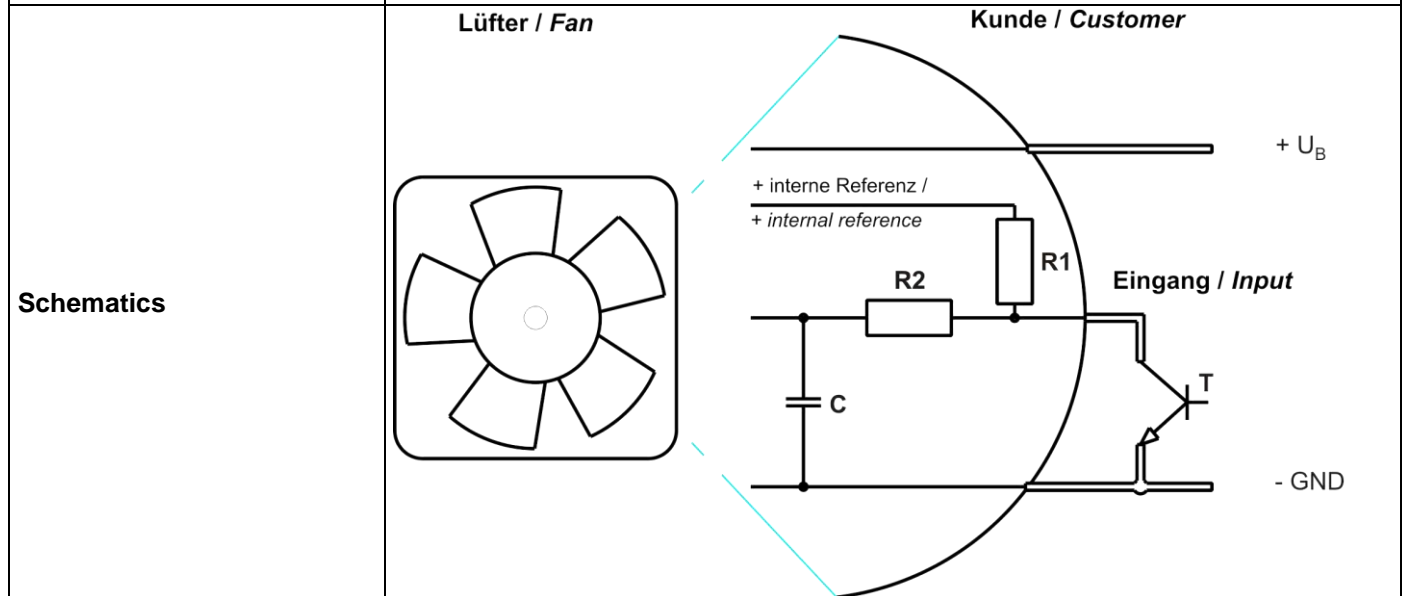
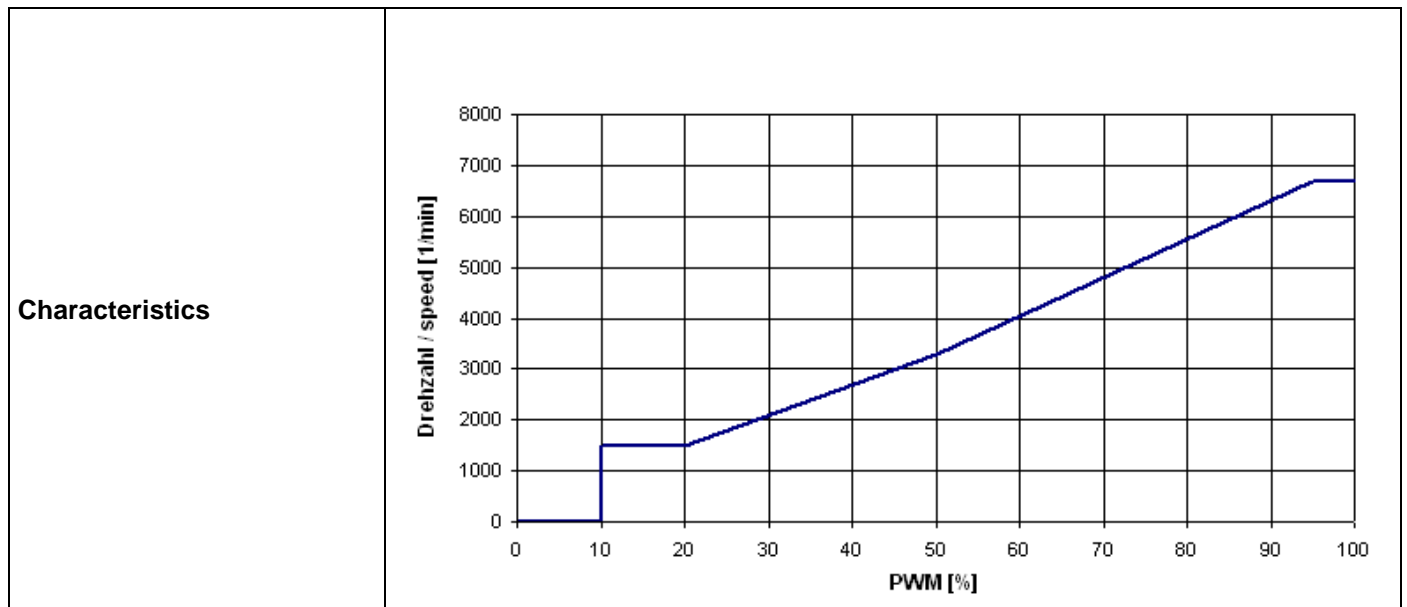
3 Operating Data

3.1 Electrical Interface - Input

| | |
|---------------|-----|
| Control input | PWM |
|---------------|-----|

Features

| | | |
|-----------------|----------------|----------------|
| Input type | Open collector | |
| PWM - Frequency | | 35 Hz - 10 kHz |



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 | | |
|----------|-------------|----------|-----------|
| PWM 0001 | PWM: 100 %; | f: 35 Hz | f: 10 kHz |

| Features | Condition | Symbol | Values | | |
|------------------------------|----------------|----------------|--------------------|--------------------|--------------------|
| Voltage range | | U | 36 V | | 56,0 V |
| Nominal voltage | | U _N | | 48,0 V | |
| Power consumption | $\Delta p = 0$ | P | 9 W | 16,8 W | 20,1 W |
| Tolerance | PWM 0010 | | +/- 17,5 % | +/- 17,5 % | +/- 17,5 % |
| Current consumption | $\Delta p = 0$ | I | 250 mA | 350 mA | 360 mA |
| Tolerance | PWM 0010 | | +/- 17,5 % | +/- 17,5 % | +/- 17,5 % |
| Speed | $\Delta p = 0$ | n | 5.150 1/min **) | 6.400 1/min **) | 6.700 1/min **) |
| Tolerance | PWM 0010 | | | | |
| Starting current consumption | | | | <= 1.100 mA | |

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.

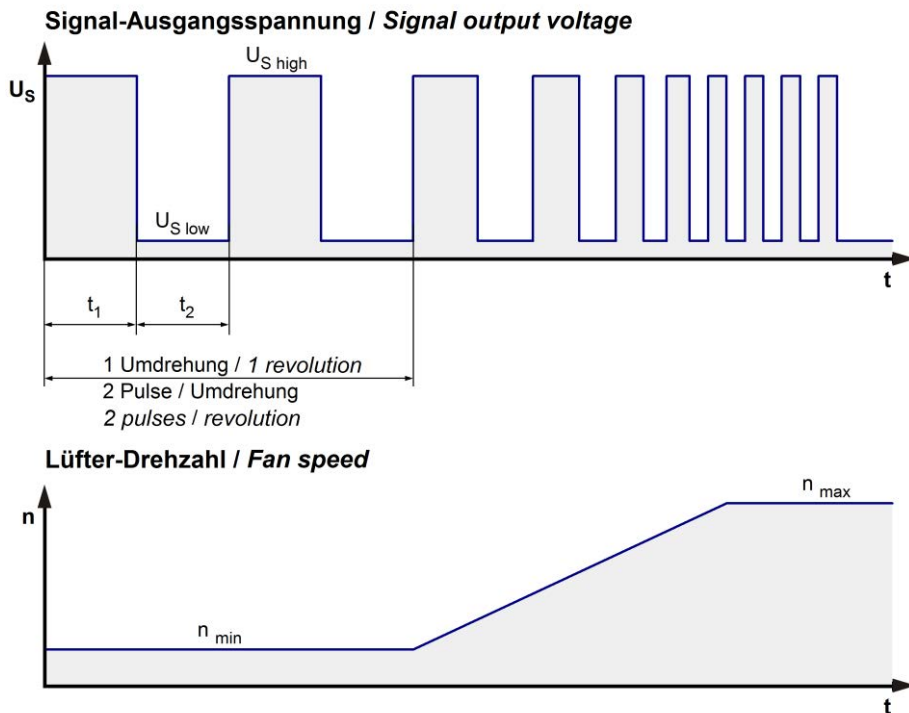
$\Delta p = 0$: corresp. to free air flow (see chapter aerodynamics)
I: corresp. to arithm. mean current value

| Name | Condition | | |
|----------|-------------|----------|-----------|
| PWM 0001 | PWM: 100 %; | f: 35 Hz | f: 10 kHz |

*****) Vario Pro:** Unless otherwise specified in the table a general fan speed tolerance applies, relating to the maximum value of the required characteristic curve. Tolerance: +/- 12,5 %

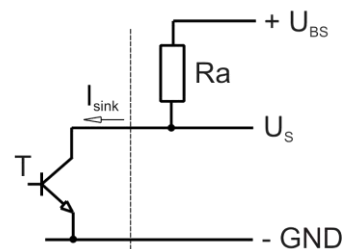
3.3 Electrical Interface - Output

| | |
|------------|---------------------|
| Tacho type | /2 (open collector) |
|------------|---------------------|



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

Lüfter / Fan Kunde / Customer

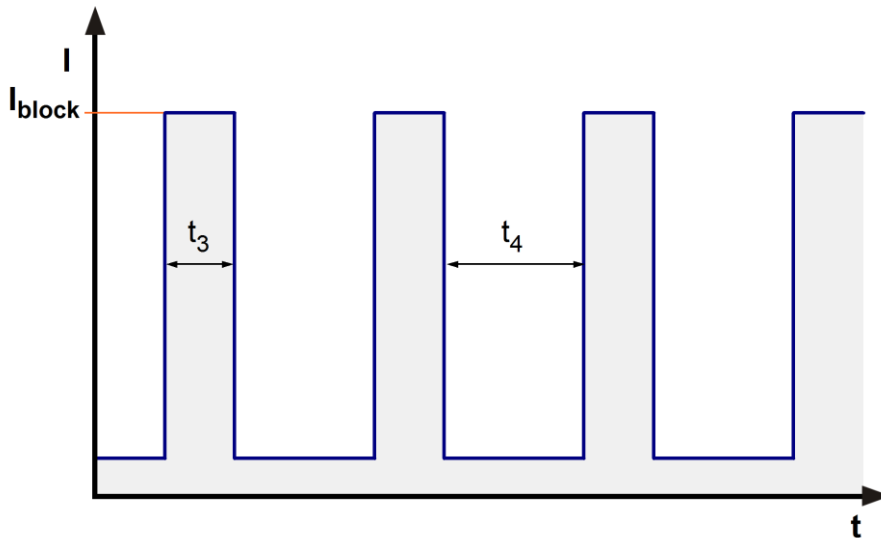


| Features | Note | Values |
|---------------------------|--|----------------------------|
| Tacho operating voltage | U_{BS} | $\leq 60,0\ V$ |
| Tacho signal Low | $U_{S\ low}$ | $\leq 0,4\ V$ |
| Tacho signal High | $U_{S\ high}$ | $60\ V$ |
| Maximum sink current | I_{sink} | $\leq 4\ mA$ |
| External resistor | External resistor R_a from U_{BS} to U_S required. All voltages measured to GND. | |
| Tacho frequency | $(2 \times n) / 60$ | |
| 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 | Rectifying diode | |
| Max. residual current at U_N | $I_F \leq 100 \mu A$ | |
| Locked rotor protection | Auto restart | |
| Locked rotor current at U_N | I_{block} approx. 1.100 mA | |
| Clock signal at locked rotor | t_3 / t_4 typical: 0,25 s / 20,0 s | |



3.5 Aerodynamics

Measurement conditions: Measured with a double chamber intake rig.
 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:

| | |
|------------------|--|
| at free air flow | |
|------------------|--|

3.6 Sound Data

Measurement conditions: Sound pressure level: 1 meter distance between microphone and the air intake.
 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:

| | |
|------------------|--|
| at free air flow | |
|------------------|--|

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 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 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 |
| 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 62368 - Audio/video, information and communication technology equipment |
| CSA | Canadian Standards Association | Yes / CSA audited by UL according to C22.2 No. 113 Fans and Ventilators |
| CCC | China Compulsory Certification | Yes / GB 12350 Safety Requirements for small Power Motors |

6 Reliability**6.1 General**

| | | |
|--|-----------|--|
| Life expectancy L10 at TU = 40 °C | 67.500 h | |
| Life expectancy L10 at TU max. | 32.500 h | |
| Life expectancy L10 acc. to IPC 9591 at TU = 40 °C | 115.000 h | |

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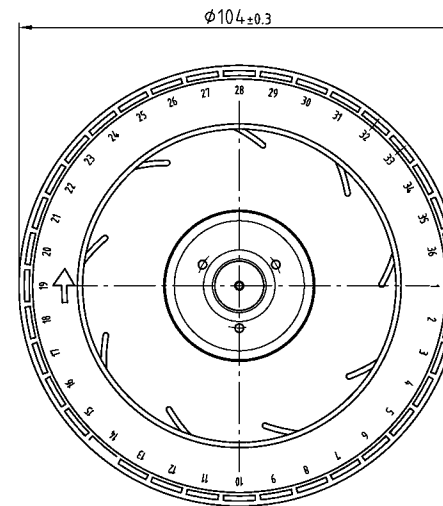
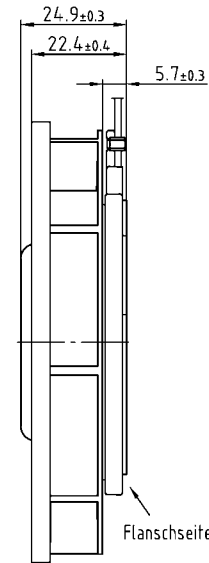
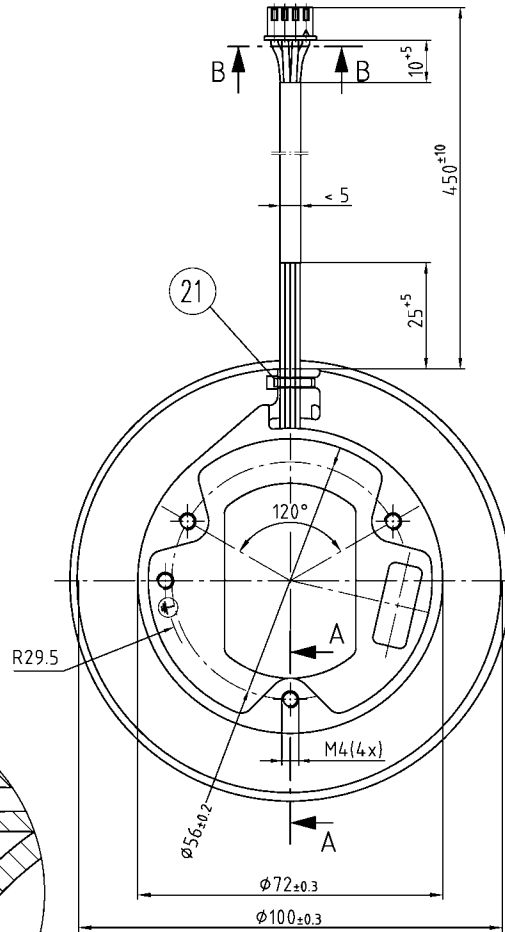
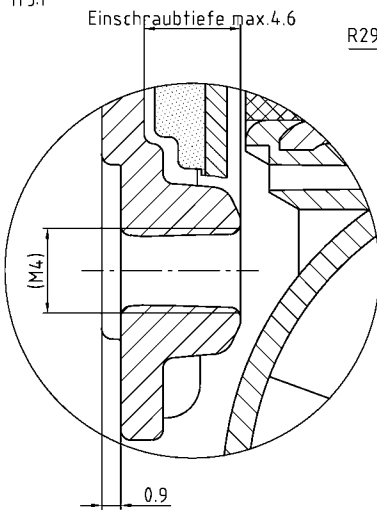
Steckergehäuse: XHP-4 Fa. J.S.T.
 Kontakt: SXH-001T-P0.6 Fa. J.S.T.

B - B



Steckerbelegung:
 Pin 1 = rot (+)
 Pin 2 = violett (PWM)
 Pin 3 = weiss (Tacho)
 Pin 4 = blau (-)

A - A
M5:1



- Kugellagerung (K): 0 (mit Federausgleich)
 Axialspiel bei

| | | | |
|---|---------------------|-------------------------------------|----------------------|
| Tolerierung/Tolerances: DIN 7167 | | | |
| Allgemeintoleranzen/ Gen. tolerances: DIN ISO 2768-mK | | | |
| | | | Artikel/Title |
| Datum/Date | Name/Name | | Massstab/Scale |
| Bearb./Drawn: | | | Zchg.-Nr./ Dwg.-No.: |
| Index/Index | Änd.-Nr./Change-No. | | Blatt/Page |
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