

**Product Data Sheet**    **9693510219**  
VWC0092JUGBZ  
3218 JNPU-219

**ebmpapst**  
The engineer's choice



## 3218 JNPU-219

## INDEX

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## 1 General

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

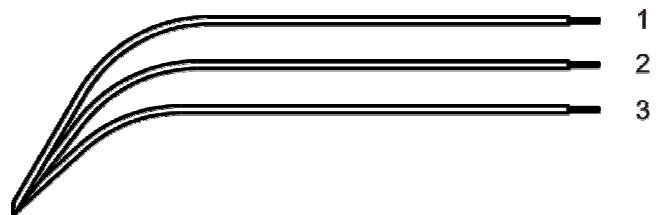
## 2 Mechanics

### 2.1 General

|                                                       |                                                                         |  |
|-------------------------------------------------------|-------------------------------------------------------------------------|--|
| Width                                                 | 92,0 mm                                                                 |  |
| Height                                                | 92,0 mm                                                                 |  |
| Depth                                                 | 38,0 mm                                                                 |  |
| Mass                                                  | 0,255 kg                                                                |  |
| Housing material                                      | Plastic                                                                 |  |
| Impeller material                                     | Plastic                                                                 |  |
| Max. torque when mounted across both mounting flanges | Wire outlet corner: 140 Ncm<br>Remaining corners: 190 Ncm               |  |
| Screw size                                            | ISO 4762 - M4 degreased, without an additional brace and without washer |  |

### 2.2 Connections

|                       |              |  |
|-----------------------|--------------|--|
| Electrical connection | Wires - Plug |  |
| Lead wire length      | L = 252 mm   |  |
| Tolerance             | + - 5,0 mm   |  |
| Tube length           | S = 185 mm   |  |
| Tolerance             | + - 5,0 mm   |  |
| Plug                  | See drawing  |  |
| Contact               | See drawing  |  |



| Wire | Color  | Operation | Plug connection | Wire size | Insulation diameter |
|------|--------|-----------|-----------------|-----------|---------------------|
| 1    | red    | + UB      | Pin 1           | AWG 20    | 1,85 mm             |
| 2    | blue   | - GND     | Pin 3           | AWG 20    | 1,85 mm             |
| 3    | violet | PWM       | Pin 2           | AWG 20    | 1,85 mm             |

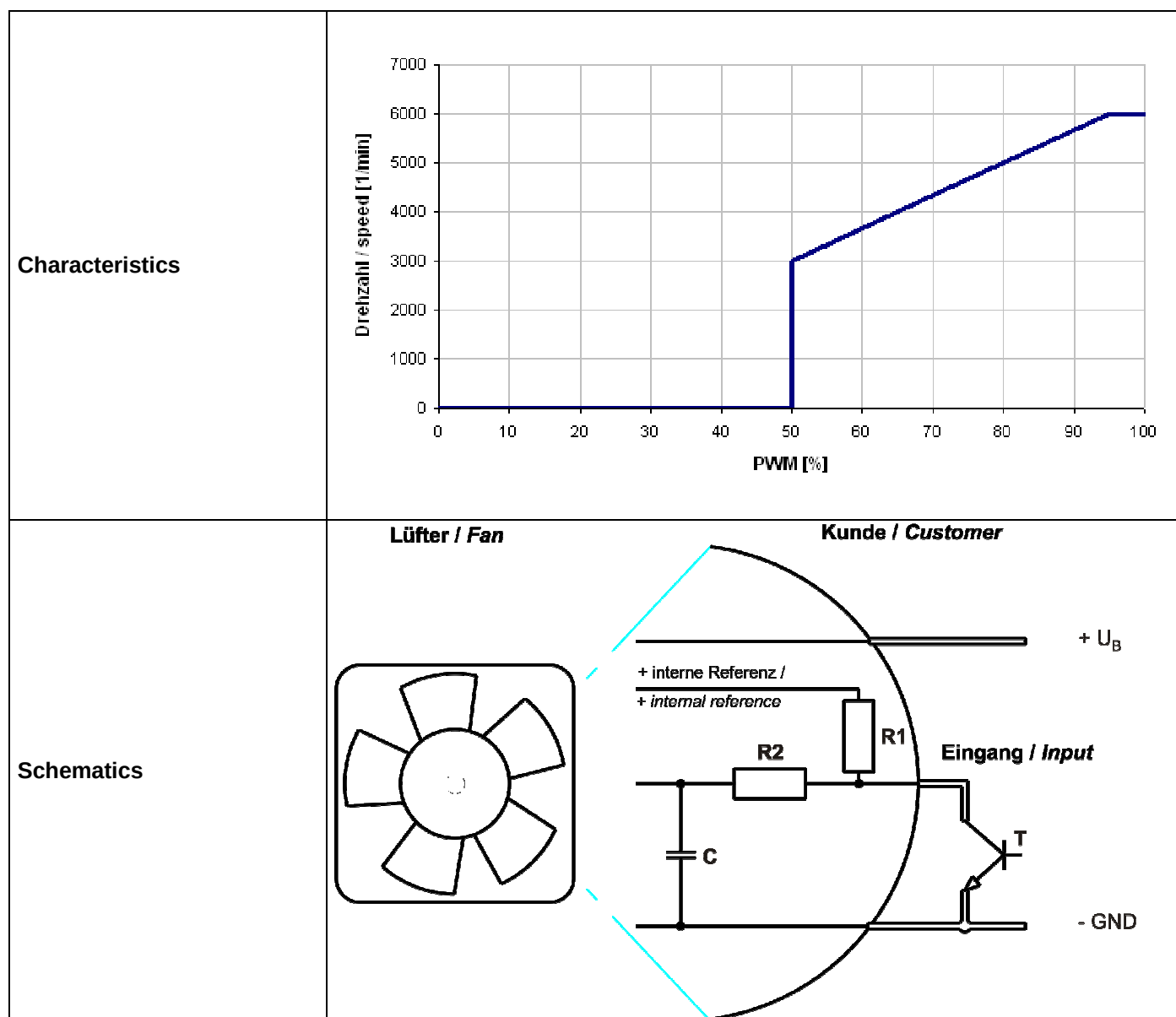
### 3 Operating Data

#### 3.1 Electrical Interface - Input

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

#### Features

|                 |                |                |
|-----------------|----------------|----------------|
| Input type      | Open collector |                |
| PWM - Frequency |                | 1 kHz - 30 kHz |



### 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: 1 kHz | f: 30 kHz |

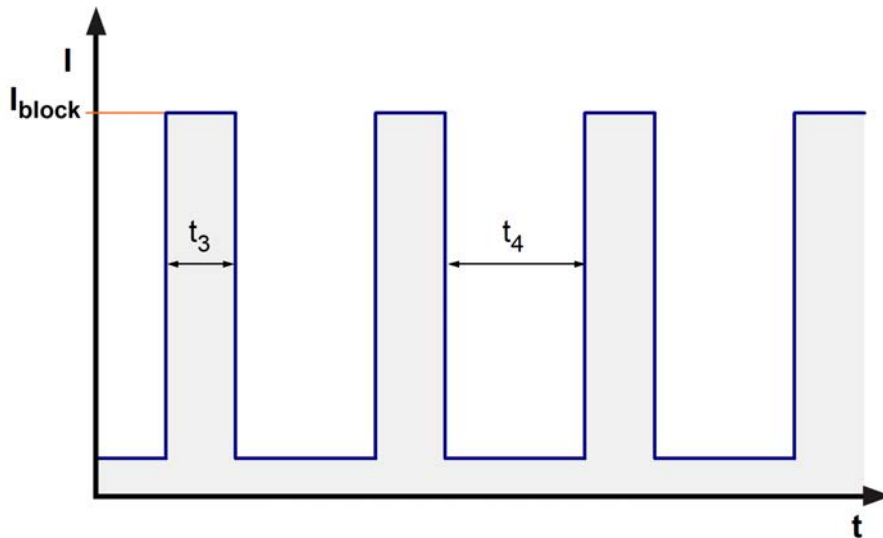
Startup peakpulse current:  $I_{pmax} = 900\text{mA}$

Startup peakpulse duration:  $t_{pmax} = 6 \times 1,6\text{ms}$  (See osz-picture under "Dokumentdaten"!)

| Features                     | Condition      | Symbol | Values      |             |             |
|------------------------------|----------------|--------|-------------|-------------|-------------|
| Voltage range                |                | U      | 33,0 V      |             | 60,0 V      |
| Nominal voltage              |                | $U_N$  |             | 48,0 V      |             |
| Power consumption            | $\Delta p = 0$ | P      | 2,8 W       | 6,25 W      | 6,0 W       |
| Tolerance                    | PWM 0010       |        | +/- 17,5 %  | +/- 25,0 %  | +/- 25,0 %  |
| Current consumption          | $\Delta p = 0$ | I      | 85 mA       | 130 mA      | 100 mA      |
| Tolerance                    | PWM 0010       |        | +/- 17,5 %  | +/- 25,0 %  | +/- 25,0 %  |
| Speed                        | $\Delta p = 0$ | n      | 4.430 1/min | 6.000 1/min | 6.000 1/min |
| Tolerance                    | PWM 0010       |        | **)         | **)         | **)         |
| Starting current consumption |                |        |             | 900 mA      |             |

### 3.3 Electrical Features

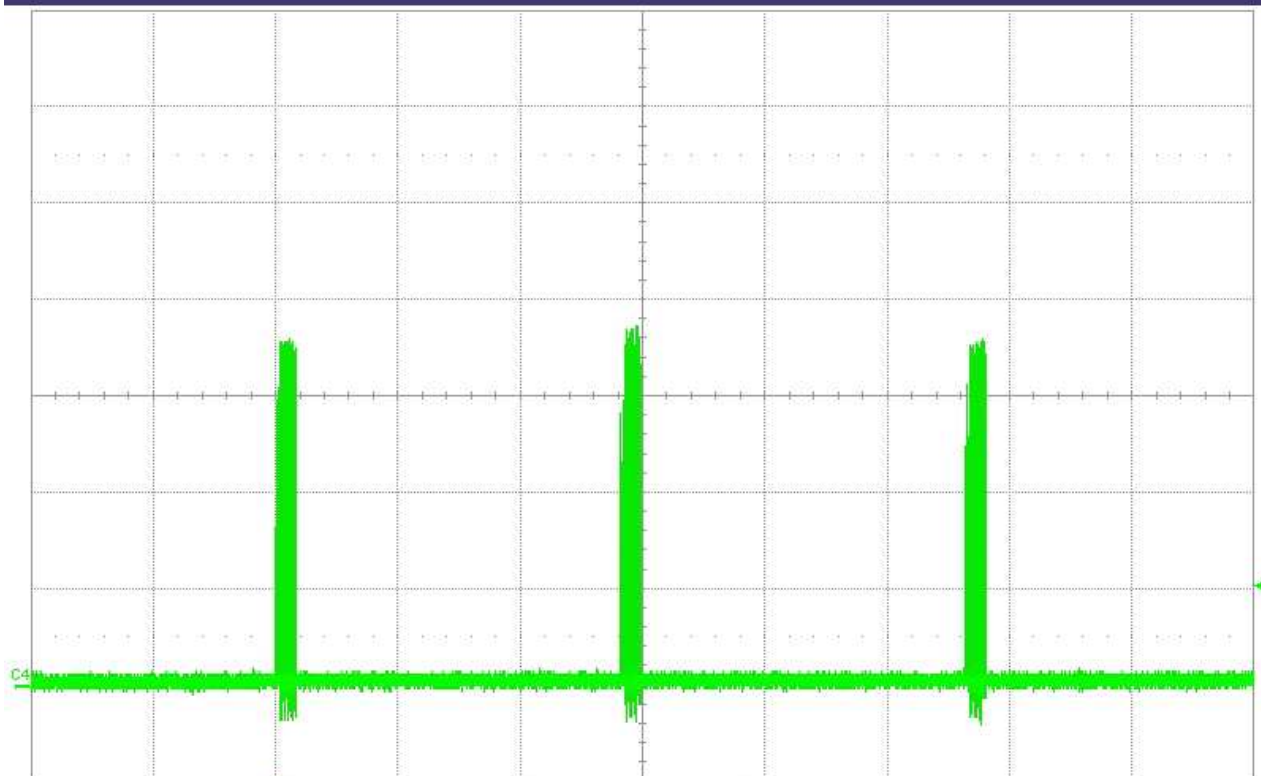
|                                |                                     |  |
|--------------------------------|-------------------------------------|--|
| Electronic function            | Speed-Controlled                    |  |
| Reversed polarity protection   | Rectifying diode                    |  |
| 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. 900 mA          |  |
| Clock signal at locked rotor   | $t_3 / t_4$ typical: 0,33 s / 5,3 s |  |



The fan has a special blocking cycle. The behavior of this cycle differs marginally between a blocked rotor when the fan gets started and a blocked rotor during the running operation of the fan. The following figures describe this characteristic.

1. Blocked rotor at the start of the fan

Datei Vertikal Zeitbasis Trigger Anzeige Cursor Messung Mathe Analyse Utilities Hilfe

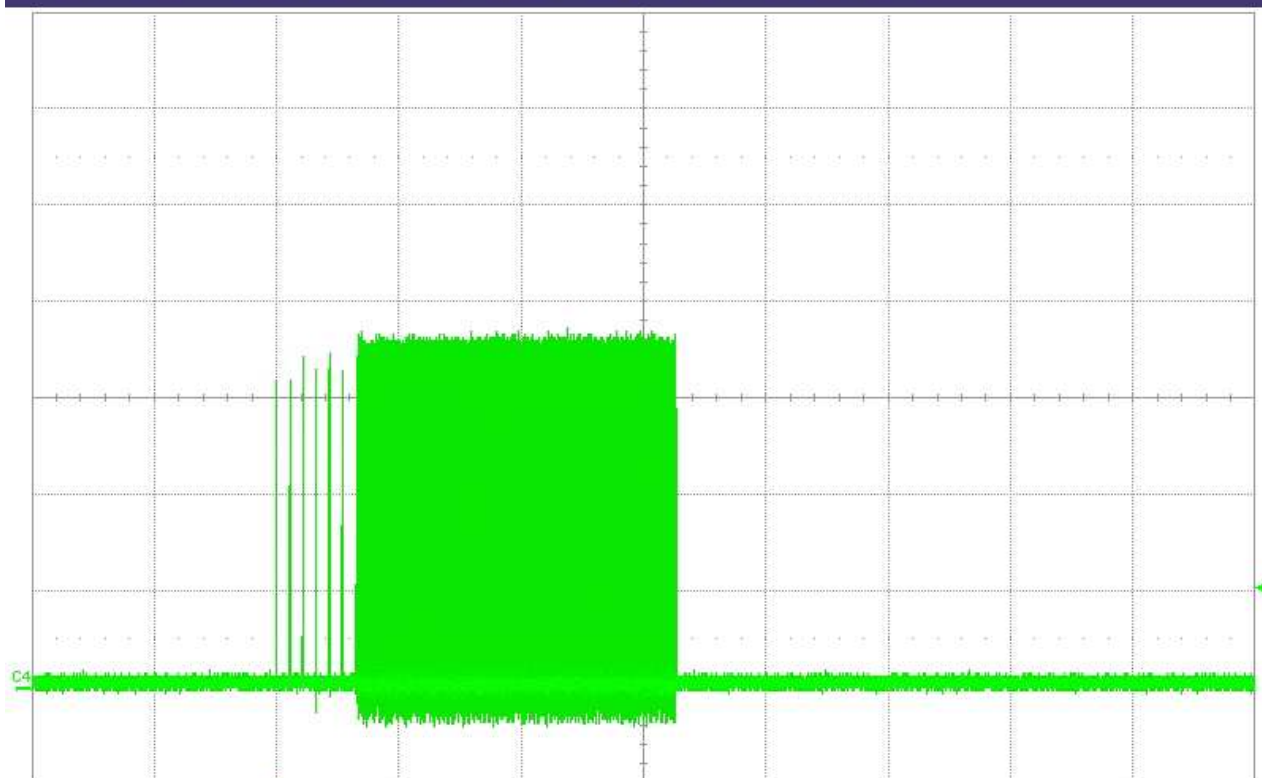


C4 BwL DC  
200 mA/div  
-604.0 mA  
TELEDYNE LECROY

|           |            |         |         |
|-----------|------------|---------|---------|
| Zeitbasis | -6.00 s    | Trigger | C4 DC   |
| Roll      | 2.00 s/div | Stopp   | 208 mA  |
| 50.0 kS   | 2.5 kS/s   | Edge    | Positiv |

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C4 BwL DC  
200 mA/div  
-604.0 mA

TELEDYNE LECROY

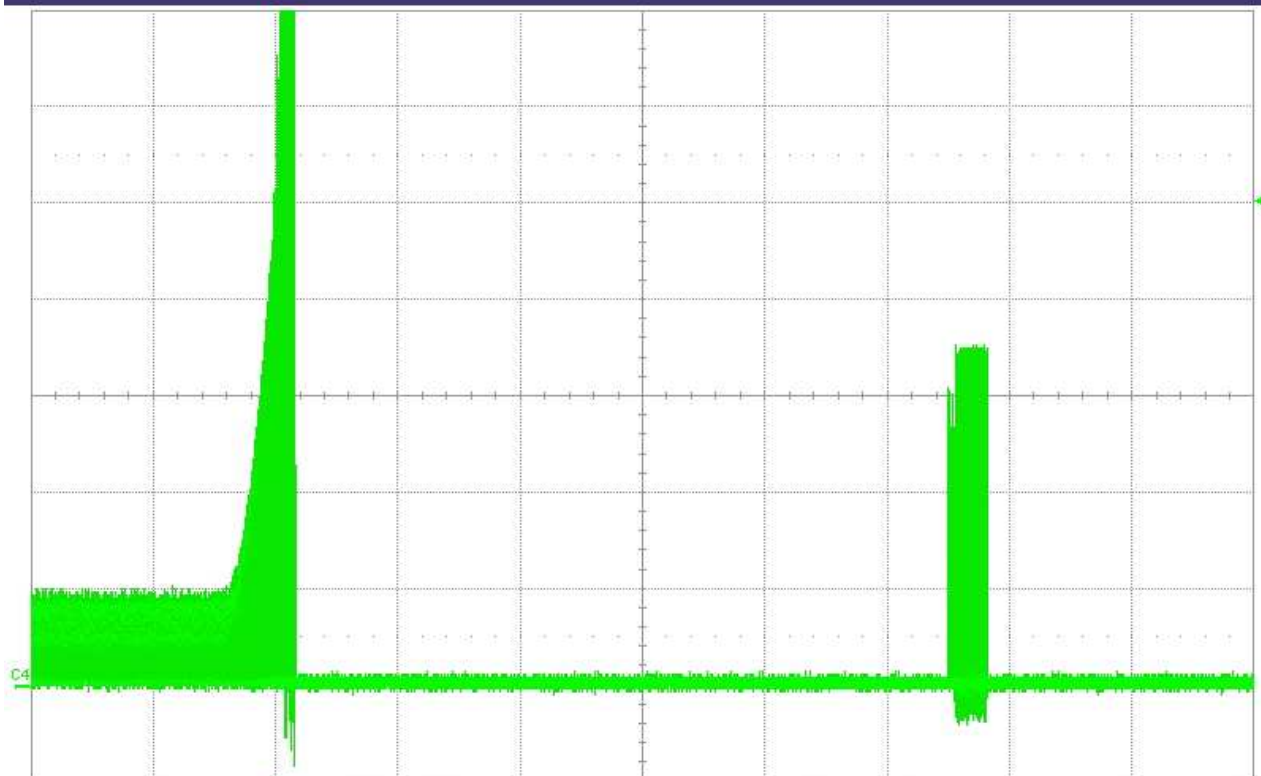
Zeitbasis -300 ms Trigger C4 DC  
Roll 100 ms/div Stopp 208 mA  
50.0 kS 50 kS/s Edge Positiv

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2. Blocked rotor after the normal operation of the fan

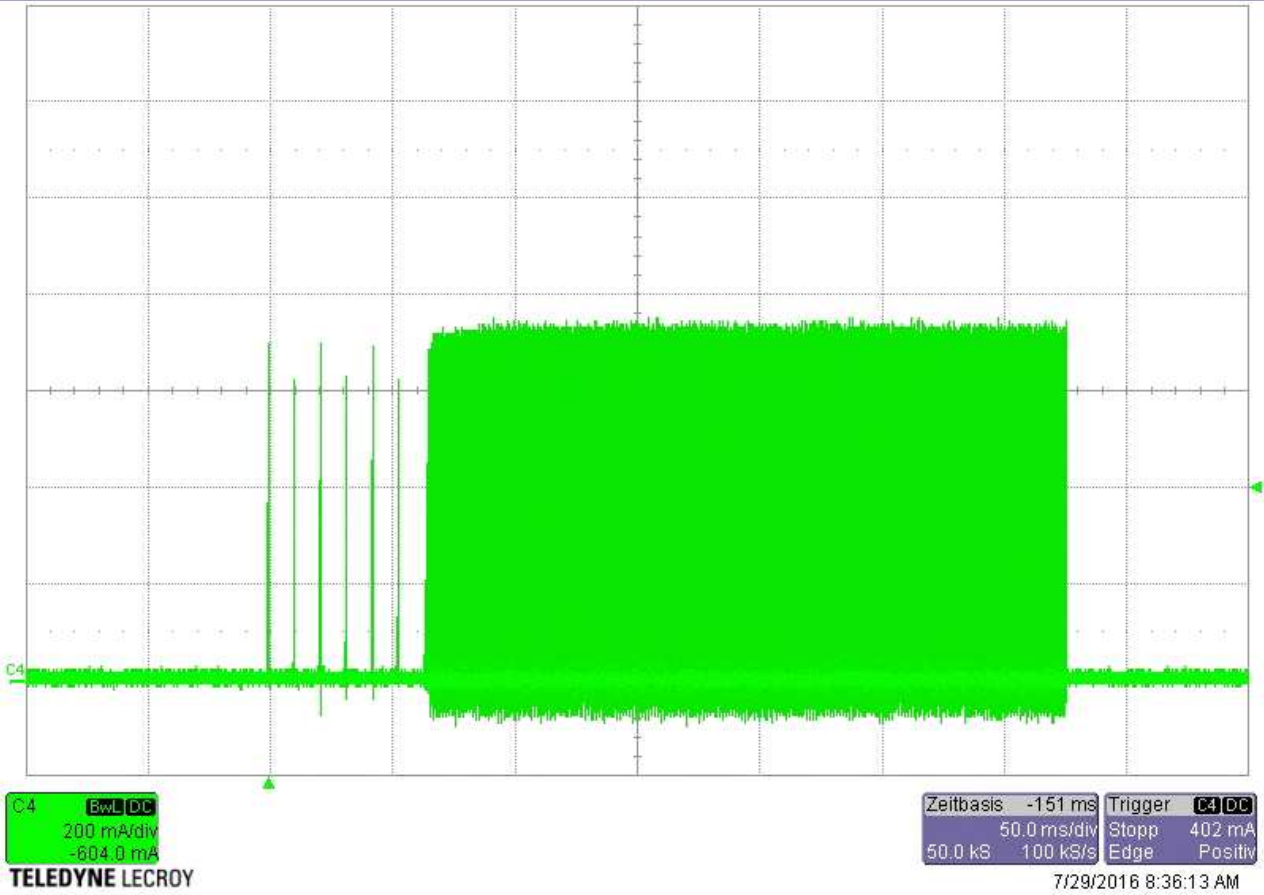


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C4 BwL DC  
200 mA/div  
-604.0 mA  
TELEDYNE LECROYZeitbasis -3.02 s  
Roll 1.00 s/div  
50.0 kS  
Trigger C4 DC  
Stopp 1.006 A  
Edge Positiv

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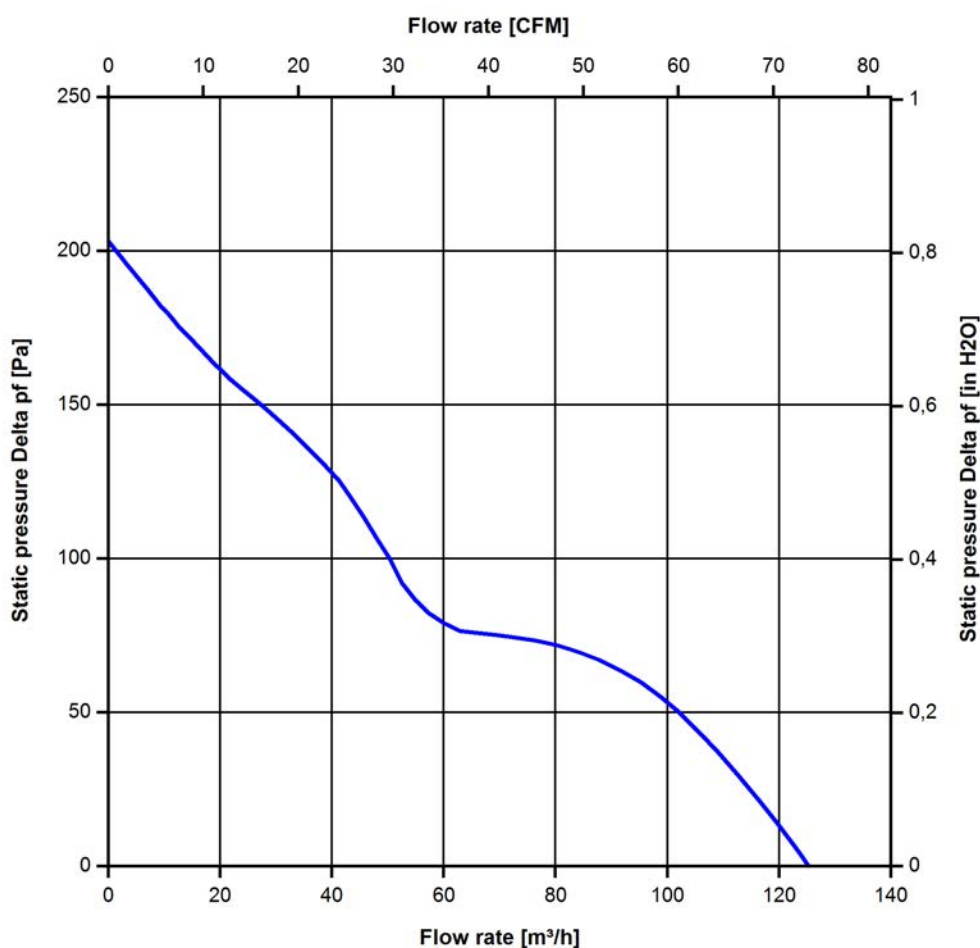
### 3.4 Aerodynamics

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.

a.) Operation condition:

|                              |              |          |           |
|------------------------------|--------------|----------|-----------|
| 6.000 1/min at free air flow | PWM >= 95 %; | f: 1 kHz | f: 30 kHz |
|------------------------------|--------------|----------|-----------|

|                                                           |                       |  |
|-----------------------------------------------------------|-----------------------|--|
| Max. free-air flow ( $\Delta p = 0 / \dot{V} = \max.$ )   | 125 m <sup>3</sup> /h |  |
| Max. static pressure ( $\Delta p = \max. / \dot{V} = 0$ ) | 203 Pa                |  |



### 3.5 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  $L_p(A) < 5 \text{ dB(A)}$   
For further measurement conditions see chapter aerodynamics.

a.) Operation condition:

|                              |                    |          |           |
|------------------------------|--------------------|----------|-----------|
| 6.000 1/min at free air flow | PWM $\geq 95 \%$ ; | f: 1 kHz | f: 30 kHz |
|------------------------------|--------------------|----------|-----------|

|                                                                 |                              |  |
|-----------------------------------------------------------------|------------------------------|--|
| Optimal operating point                                         | 95 m <sup>3</sup> /h @ 61 Pa |  |
| Sound power level at the optimal operating point                | 6,2 bel(A)                   |  |
| Sound pressure level at free air flow, measured in rubber bands | 51 dB(A)                     |  |

## 4 Environment

### 4.1 General

|                                            |        |  |
|--------------------------------------------|--------|--|
| Min. permitted ambient temperature TU min. | -20 °C |  |
| Max. permitted ambient temperature TU max. | 80 °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.

### 4.3 EMC

|                        |                                             |
|------------------------|---------------------------------------------|
| <b>Kind</b>            | <b>Radiated Emission; 30 MHz - 1000 MHz</b> |
| According              | DIN EN 55032:2016-02                        |
| Check accuracy / Limit | Class B                                     |
| Result                 | Below limit Class B                         |

|                        |                                                                                                                                                                                                                                          |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Kind</b>            | <b>Electrostatic Discharge Immunity Test</b>                                                                                                                                                                                             |
| According              | DIN EN 61000-4-2:2001-12                                                                                                                                                                                                                 |
| Check accuracy / Limit | Contact Discharge +/- 4 kV; Air Discharge +/- 8 kV                                                                                                                                                                                       |
| Result                 | B: The monitored function may deviate from designed performance to a specified level during exposure to a disturbance or revert to a fail safe mode or operation, but shall return to normal operation after the disturbance is removed. |

|                        |                                                                                            |
|------------------------|--------------------------------------------------------------------------------------------|
| <b>Kind</b>            | <b>Electromagnetic Field Immunity Test</b>                                                 |
| According              | DIN EN 61000-4-3:2006-12                                                                   |
| Check 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. |

|                        |                                                                                            |
|------------------------|--------------------------------------------------------------------------------------------|
| <b>Kind</b>            | <b>Immunity to Conducted Disturbances, Induced by RF-Fields</b>                            |
| According              | DIN EN 61000-4-6:2001-12                                                                   |
| Check accuracy / Limit | 10 Vrms; 150 kHz - 80 MHz; 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<br>DIN EN 60950 (VDE 0805) and DIN EN 60335 (VDE 0700)<br>A.) Type test<br>Measuring conditions: After 48h of storage at 95% R.H. and 25°C.<br>No arcing or breakdown is allowed!<br>All connections together to ground.<br>B.) Routine test<br>Measuring conditions: At indoor climate.<br>No arcing or breakdown is allowed!<br>All connections together to ground. | 500 VAC / 1 Min.<br><br>850 VDC / 1 Sec. |  |
| Isolation resistance<br>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 60950 (VDE 0805) - Information technology equipment |
| CSA | Canadian Standards Association                                      | Yes / 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**

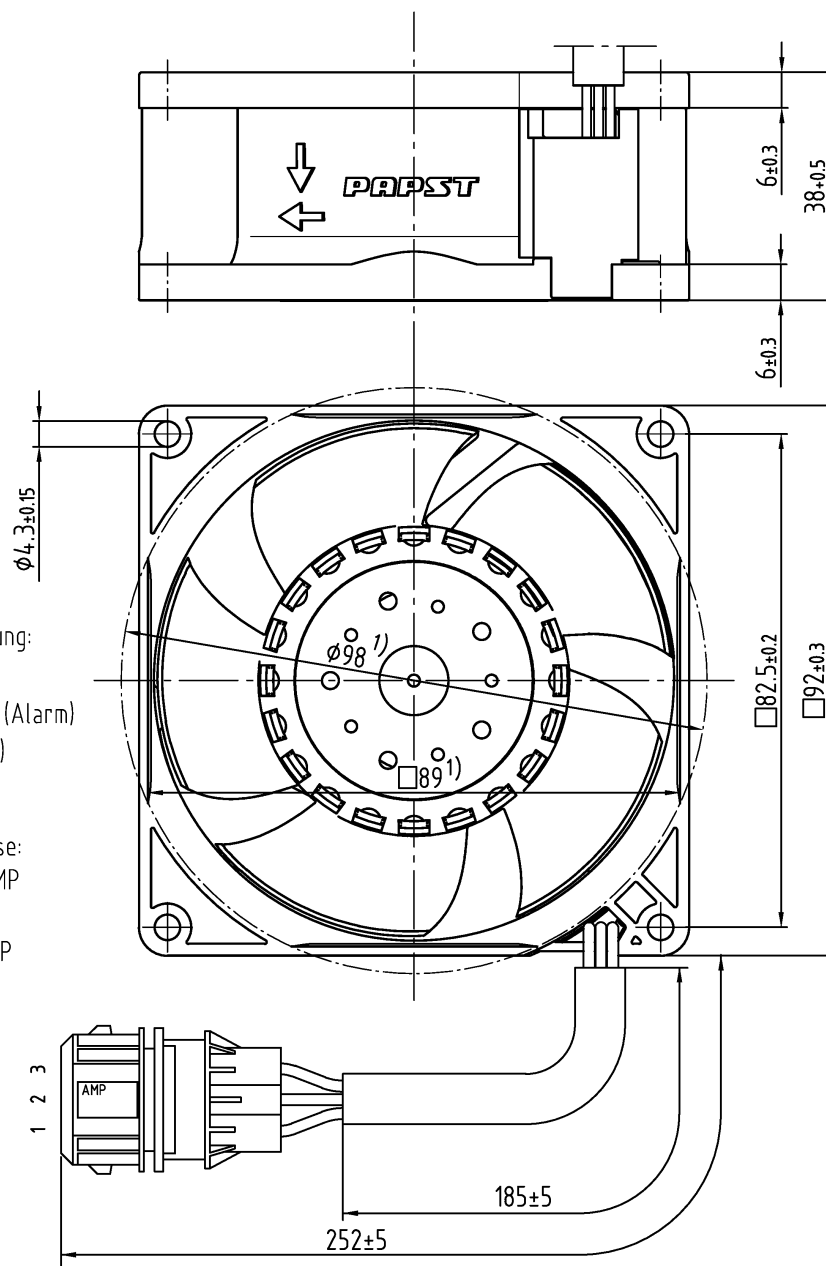
|                                                    |           |  |
|----------------------------------------------------|-----------|--|
| Life expectancy L10 at TU = 40 °C                  | 70.000 h  |  |
| Life expectancy L10 at TU max.                     | 22.500 h  |  |
| Life expectancy L10 acc. to IPC 9591 at TU = 40 °C | 117.500 h |  |

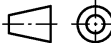
Steckerbelegung:  
PIN 1 = rot (+)  
PIN 2 = violett (Alarm)  
PIN 3 = blau (-)

Steckergehäuse:  
1-962 581-1 AMP  
Kontakte:  
1-962915-1 AMP  
Dichtung:  
828904-1 AMP

Axialspiel bei  
- Kugellagerung (K): 0 (mit Federausgleich)  
- Gleitlagerung (G): 0.1 - 1.6

1) Maße für Montagewand



|                                                                                     |                      |                                     |  |                                  |  |                              |  |                           |  |                       |  |                        |  |                |  |
|-------------------------------------------------------------------------------------|----------------------|-------------------------------------|--|----------------------------------|--|------------------------------|--|---------------------------|--|-----------------------|--|------------------------|--|----------------|--|
|                                                                                     |                      |                                     |  | ebmpapst                         |  | Werkstoff/Material:          |  |                           |  | Volumen/Volume (mm³): |  |                        |  |                |  |
| SAP-Status/State                                                                    | Aend.-Nr./Change-No. | AutoCAD-System-Version              |  | CAD-Umgebung/<br>CAD-Environment |  |                              |  |                           |  | Gewicht/Mass (g):     |  |                        |  |                |  |
|  |                      | Datum/Date                          |  | Name/Name                        |  | Artikel/Title                |  |                           |  |                       |  |                        |  |                |  |
|                                                                                     |                      | Bearb./<br>Drawn                    |  |                                  |  |                              |  |                           |  |                       |  |                        |  |                |  |
| Tolerierung/Tolerances:                                                             |                      | Gepr./<br>Checked                   |  |                                  |  |                              |  |                           |  |                       |  |                        |  |                |  |
| Allgemeintoleranzen/Gen. tolerances:                                                |                      | Freig./<br>Releas.                  |  |                                  |  | Zchg.-Nr./ Drawing.-No.:     |  |                           |  |                       |  | Ers.f.Zchg./ Replaces: |  |                |  |
|                                                                                     |                      |                                     |  |                                  |  |                              |  |                           |  |                       |  |                        |  |                |  |
|                                                                                     |                      | <b>ebmpapst</b>                     |  |                                  |  |                              |  |                           |  |                       |  |                        |  |                |  |
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