BL-DC Fans for Commercial Vehicles

Product Catalogue 2019-10
BL-DC Fans for Commercial Vehicles

Our BL-DC axial fans and BL-DC dual centrifugal fans with housing are ground breakers in the field of commercial vehicle air conditioning. They not only meet the increased demands for comfort, e.g. in buses but also work wear-free for over 40,000 operating hours as they are brushless. No additional maintenance, no additional servicing. This corresponds to the usual reliability expected from ebm-papst. Data is subject to change without notice at ebm-papst discretion.

Benefits and characteristics at a glance
- over 40,000 operating hours
- variable speed control
- high efficiency
- low sound emission thanks to aerodynamically optimized impellers
- increased reliability due to the electronics’ high integration density
- can be retrofitted into existing systems
- compliance with the most stringent EMC requirements
- high moisture protection class
- temperature and power derating
- extended temperature range
- long-life ball bearings
# BL-DC Fans for Commercial Vehicles

## Information
- About ebm-papst
- Ideas for changing technology in commercial vehicles
- Product overview

## BL-DC Fans for Commercial Vehicles
- BL-DC dual centrifugal fans with housing "Premium" Ø 097 (dual-intake)
- BL-DC dual centrifugal fans with housing "Basic" Ø 097 (dual-intake)
- BL-DC axial fans "Premium & Power" Ø 250 - Ø 385
- BL-DC axial fans "Heavy Duty" Ø 300
- BL-DC axial fans "Basic" Ø 300
- BL-DC centrifugal fan forward curved Ø 146 (without housing, single-intake)
- BL-DC centrifugal fan Radial forward curved Ø 220 - Ø 280

## Accessories
- Cables
- Guard grille
- Inlet rings

## Technology
- Connection diagrams
- Technical parameters & scope

## ebm-papst agents
ebm-papst is a leader in ventilation and drive engineering technology and a much sought-after engineering partner in many industries. With around 20,000 different products, we have the perfect solution for practically every requirement. We have placed the highest emphasis on economy and ecology for many years.

We believe the consistent further development of our highly-efficient GreenTech EC technology provides our customers with the best opportunities for the future in industrial digitization. With GreenIntelligence, ebm-papst already offers intelligent networked complete solutions that are unique anywhere in the world today and that secure our customers a decisive advantage.

Six reasons why we are your ideal partner:

**Our systems expertise.**
Of course you always want the best solution for every project. To get it, you need to consider the ventilation and drive engineering aspects as a whole.
And that is precisely what we do...with motor technology that sets standards, highly sophisticated electronics and aerodynamically optimized designs — all from a single source and perfectly matched. These system solutions release unique synergies worldwide.
What’s more: they save you a lot of work. Using them means you can concentrate on your core business.

**Proximity to our customers.**
ebm-papst has 25 worldwide production facilities, including those in Germany, China, the USA, plus 49 sales offices with an extensive network of sales representatives.
You always have a local contact who speaks your language and is familiar with your market.

**Our quality standards.**
Of course you can rely on the top quality of our products. After all, we employ an uncompromising quality management system at every stage of the process.
This is documented by our certification in accordance with the DIN EN ISO 9001 and DIN EN ISO 14001 international standards, and the TS declaration of conformity.

**Sustainability as a way of life.**
Assuming responsibility – for the environment, our employees and society – is an integral part of our corporate philosophy.
That is why we develop products designed for maximum environmental compatibility and produce them using processes that preserve resources.
We support environmental awareness among our junior staff and are actively involved in sporting, cultural and educational activities.
All of which makes us a better partner.
The story of our success to *market and technology pioneer*

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1963</td>
<td>Founding of Elektrobau Mulfingen GmbH &amp; Co. KG by Gerhard Sturm and Heinz Ziehl.</td>
</tr>
<tr>
<td>1965</td>
<td>First tubeaxial fan developed in EC/DC technology.</td>
</tr>
<tr>
<td>1966</td>
<td>Ebm-papst's success takes off with the new 68 motor.</td>
</tr>
<tr>
<td>1972</td>
<td>The first Ebm foreign subsidiary is established in Sweden.</td>
</tr>
<tr>
<td>1988</td>
<td>Gerhard Sturm is awarded the Federal Cross of Merit.</td>
</tr>
<tr>
<td>1990</td>
<td>The sixty-millionth external-rotor fan is produced.</td>
</tr>
<tr>
<td>1992</td>
<td>Acquisition of PAPST Motoren GmbH in St. Georgen.</td>
</tr>
<tr>
<td>1997</td>
<td>Buyout of the Landshut (mvl) plant.</td>
</tr>
<tr>
<td>1998</td>
<td>Development of first fans with integrated electronics.</td>
</tr>
<tr>
<td>2003</td>
<td>Change of name to ebm-papst.</td>
</tr>
<tr>
<td>2008</td>
<td>The HyBlade® range of fans sets new efficiency standards.</td>
</tr>
<tr>
<td>2010</td>
<td>GreenTech – our sign for energy efficiency and resource preservation.</td>
</tr>
<tr>
<td>2011</td>
<td>RadiCal defines a new standard for EC centrifugal fans.</td>
</tr>
<tr>
<td>2013</td>
<td>Ebm-papst takes over the gearbox specialist Zeitlauf and wins the German Sustainability Award.</td>
</tr>
<tr>
<td>2014</td>
<td>Team partnership with Mercedes-AMG Petronas Formula 1 team.</td>
</tr>
<tr>
<td>2015</td>
<td>RadiPac pushes the limits of efficiency.</td>
</tr>
<tr>
<td>2016</td>
<td>AxiBlade sets new standards in ventilation, refrigeration and air-conditioning.</td>
</tr>
<tr>
<td>2017</td>
<td>Factory expansions Germany: logistics center in Hollenbach and production unit in Hagenmoos.</td>
</tr>
<tr>
<td>2018</td>
<td>GreenIntelligence becomes the new byword for smart complete solutions.</td>
</tr>
</tbody>
</table>
Ideas for changing technology in commercial vehicles

Climate comfort in a commercial vehicle is anything but a question of convenience.
Both the transportation of people in buses and coaches, as well truck journeys which are as stress and fatigue-free as possible, place high demands on vehicle technology; predominantly air conditioning, ventilation, and heating.
For many years, major bus and truck manufacturers have been installing air conditioners with brushless and wear-free centrifugal blowers and axial fans from ebm-papst. In particular, these products are also now widely used in the air conditioning and ventilation systems for the cabs in trucks, tractors and construction machinery, as well as in transport refrigeration systems.
A number of air conditioning manufacturers rely on our experience and outstanding expertise in the core competencies of engine development, aerodynamics, and electronics.

Fans and blowers:
for commercial vehicle air conditioning and cooling of individual components.

However, ebm-papst has even more to offer:
If you are unable to find a solution amongst our products, speak to us. As a competent consultant and practical implementer, we will certainly be able to find you a solution thanks to our in-depth knowledge from many applications.

Counteracting high demands with new technologies:
In modern commercial vehicles, BL-DC technology has now become standard. Our BL-DC axial fans and BL-DC dual centrifugal fans of the newest generation housing set a precedent in global commercial vehicle air conditioning. Our BL-DC fans have even been able to demonstrate their clear superiority in hot countries and tropical regions, where they have also proven their worth. But it is not just in the field of air conditioning products where customers are relying on ebm-papst products: Our BL-DC fans are being used in an increasing number of heavy-duty applications such as vehicle engines. After all, dirt from the road, fine particles and chemically aggressive contamination cannot stop our heavy-duty fans.
In comparison:
In brush motors from various manufacturers, the commutator assumes the role of current distribution to the coils. The commutator consists of copper fins embedded in an insulating compound. Mechanical springs push the integrated carbon brushes to the commutator. These two rubbing mechanical components are the weak spot of conventional DC motors. After around 5,000 operating hours, the carbon brushes are run down and the commutator is worn. As a result, the entire blower must be replaced. In addition, it is only possible to regulate speed via external electronics. The brushless DC motors from ebm-papst are completely different. Here, an electronic controller directly integrated in the motor has the task of distributing current. No brushes means no wearing parts. This increases the service life of these motors to more than 40,000 hours. The user not only saves money in terms of replacement parts and repair costs, he also avoids unproductive downtimes and a possible loss of image. BL-DC motors are energy efficient, because the integrated electronics with variable speed control only draw the energy actually required from the on-board network. In the commercial vehicle sector, it is also crucial that fans withstand constantly changing environmental influences.

Standard products would only provide unsatisfactory results here. For this reason, transportation products from ebm-papst are also reliably protected against load dumping, reverse polarity, shock and vibration, as well as damage from moisture and dirt penetration across a wide temperature range.

This also requires special efforts in terms of the selection of materials and testing of products. With the help of real-world extreme tests that we have defined in collaboration with leading OEMs (e.g., salt spray, vibration and temperature cycling tests), we are able to ensure the performance of the fans.

Apart from the considerably longer service life, our intelligent BL-DC fans provide advanced control and regulation possibilities. The functionality of the fans can be checked via a diagnostic output at any time. Furthermore, these display excellent electromagnetic compatibility traits and operate extremely quietly.
## Product overview

**BL-DC fans for commercial vehicles**

### BL-DC dual centrifugal fans with housing "Premium" (dual-intake)

<table>
<thead>
<tr>
<th>Ø</th>
<th>Nominal voltage VDC</th>
<th>Air performance m³/h</th>
<th>Dual centrifugal fans forward curved with housing</th>
<th>Part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>097</td>
<td>26</td>
<td>1200</td>
<td>VFM0097XUPCS</td>
<td>K3G097AP4601</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>1575</td>
<td>VFM0097XUPCS</td>
<td>K3G097AS8207</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>1125</td>
<td>VFM0097XUPCS</td>
<td>K3G097BP4601</td>
</tr>
</tbody>
</table>

### BL-DC dual centrifugal fans with housing "Basic" (dual-intake)

<table>
<thead>
<tr>
<th>Ø</th>
<th>Nominal voltage VDC</th>
<th>Air performance m³/h</th>
<th>Dual centrifugal fans forward curved with housing</th>
<th>Part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>097</td>
<td>26</td>
<td>1290</td>
<td>VFD0097XUNES</td>
<td>K3G097AK3465</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>1110</td>
<td>VFD0097XUNES</td>
<td>K3G097BK3465</td>
</tr>
</tbody>
</table>

### BL-DC axial fans "Premium & Power"

<table>
<thead>
<tr>
<th>Ø</th>
<th>Nominal voltage VDC</th>
<th>Air performance m³/h</th>
<th>Axial fans</th>
<th>Part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td>26</td>
<td>1240</td>
<td>VWS0250XUNBS</td>
<td>W3G250EC2401</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>1815</td>
<td>VWS0250XUNBS</td>
<td>W3G250EC2811</td>
</tr>
<tr>
<td>300</td>
<td>13</td>
<td>2610</td>
<td>VWS0300XUPCS</td>
<td>W3G300BV1241</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>2510</td>
<td>VWS0300XUPCS</td>
<td>W3G300ME4701</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>3085</td>
<td>VWS0300XUPCS</td>
<td>W3G300ME4811</td>
</tr>
<tr>
<td>385</td>
<td>13</td>
<td>4210</td>
<td>VWS0385XUPES</td>
<td>W3G385CT5361</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>4375</td>
<td>VWS0385XUPES</td>
<td>W3G385CT6521</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>3425</td>
<td>VWS0385XUPCS</td>
<td>W3G385BV4401</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>3425</td>
<td>VWS0385XUPCS</td>
<td>W3G385BS4401</td>
</tr>
</tbody>
</table>

Subject to technical changes.
### BL-DC axial fans "Heavy Duty"

<table>
<thead>
<tr>
<th>Ø</th>
<th>Nominal voltage VDC</th>
<th>Air performance m³/h</th>
<th>Axial fans</th>
<th>on Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>300</td>
<td>26</td>
<td>3160</td>
<td>VW50300XUPCS</td>
<td>W3G300QX2523</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>3685</td>
<td>VW50300XUPCS</td>
<td>W3G300QX2640</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>3315</td>
<td>VW50300XUPCS</td>
<td>W3G300QY2523</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>3685</td>
<td>VW50300XUPCS</td>
<td>W3G300QY2640</td>
</tr>
</tbody>
</table>

### BL-DC axial fans "Basic"

<table>
<thead>
<tr>
<th>Ø</th>
<th>Nominal voltage VDC</th>
<th>Air performance m³/h</th>
<th>Axial fans</th>
<th>on Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>300</td>
<td>13</td>
<td>2340</td>
<td>VWT0300XUNES</td>
<td>W1G300EC1220</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>2840</td>
<td>VWT0300XUNES</td>
<td>W1G300EC2414</td>
</tr>
</tbody>
</table>

### BL-DC centrifugal fans forward curved without housing (*single-intake*)

<table>
<thead>
<tr>
<th>Ø</th>
<th>Nominal voltage VDC</th>
<th>Air performance m³/h</th>
<th>Centrifugal fans forward curved without housing</th>
<th>on Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>146</td>
<td>26</td>
<td>815</td>
<td>VF50146XUPCS</td>
<td>70</td>
</tr>
</tbody>
</table>

### BL-DC centrifugal fans - RadiCal backward curved

<table>
<thead>
<tr>
<th>Ø</th>
<th>Nominal voltage VDC</th>
<th>Air performance m³/h</th>
<th>Centrifugal fans - RadiCal backward curved</th>
<th>on Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>220</td>
<td>12</td>
<td>990</td>
<td>VBS0220RUNCS</td>
<td>76</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>1125</td>
<td>VBS0220RUNCS</td>
<td>R1G220RD6103</td>
</tr>
<tr>
<td>250</td>
<td>12</td>
<td>1095</td>
<td>VBS0250RUNES</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>1375</td>
<td>VBS0250RUNES</td>
<td>R1G250RC7703</td>
</tr>
<tr>
<td>280</td>
<td>26</td>
<td>2740</td>
<td>VBS0280RUPE5</td>
<td>84</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>3345</td>
<td>VBS0280RUPE5</td>
<td>R3G280RU2681</td>
</tr>
</tbody>
</table>
BL-DC dual centrifugal fans with housing "Premium" Ø 097
BL-DC dual centrifugal fans
forward curved with housing, for commercial vehicle applications, Ø 097 mm

Material/surface
- Scroll housing: PP plastic
- Impeller: PA plastic

Mechanical data
- Direction of rotation: Clockwise viewed toward rotor
- Mode: Continuous operation (S1)
- Mounting: Maintenance-free ball bearings, sealed

Standards and approvals
- Approvals: EAC, E1 in preparation

Air performance measured according to: ISO 5801, installation category A, with ebm-papst scroll housing without contact protection.

Intake-side sound level: \( L_{wA} \) according to 13347, \( L_{pA} \) measured at 1 m distance from fan axis. The values given are only applicable under the specified measuring conditions and may differ depending on the installation conditions. In the event of deviation from the standard configuration, the parameters must be checked in installed condition.

#### Measuring requirements:

- Air performance measured according to: ISO 5801, installation category A, with ebm-papst scroll housing without contact protection.
- Intake-side sound level: \( L_{wA} \) according to 13347, \( L_{pA} \) measured at 1 m distance from fan axis. The values given are only applicable under the specified measuring conditions and may differ depending on the installation conditions. In the event of deviation from the standard configuration, the parameters must be checked in installed condition.
## BL-DC dual centrifugal fans "Premium" Ø 097 mm

<table>
<thead>
<tr>
<th>Curve</th>
<th>Operating point</th>
<th>Nominal voltage</th>
<th>Speed n</th>
<th>Max. input power P&lt;sub&gt;n&lt;/sub&gt;</th>
<th>Max. input current I&lt;sub&gt;n&lt;/sub&gt;</th>
<th>Sound power level L&lt;sub&gt;WA&lt;/sub&gt;</th>
<th>Installation position</th>
<th>Perm. ambient temp.</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Conn. diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VDC</td>
<td>rpm</td>
<td>W</td>
<td>A</td>
<td>dB(A)</td>
<td>℃</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>26</td>
<td>3500</td>
<td>320</td>
<td>12,2</td>
<td>81</td>
<td>Any</td>
<td></td>
<td>-40..+85</td>
<td>Motor: IP 24 KM</td>
<td>Electronics:</td>
<td>B TR1)</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>3780</td>
<td>284</td>
<td>10,9</td>
<td>78</td>
<td></td>
<td></td>
<td></td>
<td>IP 66/69 K</td>
<td>IP 66/69 K (mating conn. installed)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>4100</td>
<td>246</td>
<td>9,43</td>
<td>77</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>4630</td>
<td>183</td>
<td>7,03</td>
<td>77</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Any\(\ifer{+75\degree C}\) with power derating

<table>
<thead>
<tr>
<th>B</th>
<th>26</th>
<th>4680</th>
<th>740</th>
<th>28,0</th>
<th>88</th>
<th>Any</th>
<th></th>
<th>-40..+85</th>
<th>Motor: IP 24 KM</th>
<th>Electronics:</th>
<th>B TR2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>26</td>
<td>5025</td>
<td>740</td>
<td>28,0</td>
<td>88</td>
<td></td>
<td></td>
<td></td>
<td>IP 24 KM</td>
<td>Electronics:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>5380</td>
<td>659</td>
<td>25,3</td>
<td>87</td>
<td></td>
<td></td>
<td></td>
<td>IP 66/69 K</td>
<td>IP 66/69 K (mating conn. installed)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>5500</td>
<td>441</td>
<td>16,9</td>
<td>84</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Values set in blue are nominal data at operating point with maximum load.

Subject to change

### Curve

#### BL-DC dual centrifugal fans with housing

<table>
<thead>
<tr>
<th>Type</th>
<th>Part number</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>VFM0097XUPCS</td>
<td>2.00</td>
</tr>
<tr>
<td>B</td>
<td>VFM0097XUPCS</td>
<td>2.00</td>
</tr>
</tbody>
</table>

---

Subject to change
BL-DC dual centrifugal fans “Premium” Ø 097 mm

**VFM0097XUPCS K3G097AP4601** (Dual centrifugal fan)

Dimensions in mm

- **4-pole plug, pluggable with cable from accessories:**

  Accessory part: Cable (460 mm) with mating connector, part no. 02040-4-1021 not included in scope of delivery, 4-pole mating connector TE 1-1716628-1, 2x plug contact TE 1-968855-1, 2x plug contact TE 1-968857-1, 2x seal TE 828905-1, 2x seal TE 828904-1

Pin assignment: (see connection diagram)

- 4: Diagnostic output
- 3: PWM/LIN
- 3: + UB
- 5: GND

---

**Transportation-Katalog_2019_EN__16_10_2019_Final_.indd** 14
BL-DC dual centrifugal fans "Premium" Ø 097 mm

VFM0097XULPCS K3G097AS8207 (Dual centrifugal fan)

Dimensions in mm

- Cable FLRYW 2x 4 mm², 2x 0,75 mm²:
  - 4-pole connector housing Aptiv 12129600, 2x flat plug Aptiv 12048254, 2x flat plug Aptiv 12048159, 2x seal Aptiv 15324981, 2x seal Aptiv 15324985,
  - 4-pole mating connector Aptiv 12129565, TPA (Terminal Position Assurance) 15300016, 2x flat plug Aptiv 12077413, 2x flat plug Aptiv 12077411, 2x seal Aptiv 15324981, 2x seal Aptiv 15324985

Pin assignment: (see connection diagram)

- + UB
- PWM/LIN
- Diagnostic output
- GND
BL-DC dual centrifugal fans
forward curved with housing, for commercial vehicle applications, Ø 097 mm

Material/surface
- Scroll housing: PP plastic
- Impeller: PA plastic

Mechanical data
- Direction of rotation: Clockwise viewed toward rotor
- Mode: Continuous operation (S1)
- Mounting: Maintenance-free ball bearings, sealed

Standards and approvals
- Approvals: E1 in preparation

Air performance measured according to: ISO 5801, installation category A, with ebm-papst scroll housing without contact protection.
Intake-side sound level: LwA according to 13347, LpA measured at 1 m distance from fan axis. The values given are only applicable under the specified measuring conditions and may differ depending on the installation conditions. In the event of deviation from the standard configuration, the parameters must be checked in installed condition.
BL-DC dual centrifugal fans "Premium" Ø 097 mm

<table>
<thead>
<tr>
<th>Curve</th>
<th>Operating point</th>
<th>Nominal voltage</th>
<th>Speed (rpm)</th>
<th>Max. input power P_in (W)</th>
<th>Max. input current I_in (A)</th>
<th>Sound power level LWA (dB(A))</th>
<th>Installation position</th>
<th>Ambient temp. range °C</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Conn. diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td>VDC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-40...+85</td>
<td>Motor: IP 24 KM</td>
<td>Electronics: IP 66/69 K</td>
<td>B TR1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16-32 V DC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>26</td>
<td>3600</td>
<td>310</td>
<td>11,8</td>
<td>79</td>
<td>Any</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>26</td>
<td>3825</td>
<td>278</td>
<td>10,7</td>
<td>77</td>
<td>Any (above +75 °C with power derating)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>26</td>
<td>4160</td>
<td>243</td>
<td>9,34</td>
<td>76</td>
<td>Any (above +75 °C with power derating)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>26</td>
<td>4690</td>
<td>168</td>
<td>6,47</td>
<td>77</td>
<td>Any (above +75 °C with power derating)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Values set in blue are nominal data at operating point with maximum load.

Subject to change

<table>
<thead>
<tr>
<th>Curve</th>
<th>BL-DC dual centrifugal fans with housing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Type</td>
</tr>
<tr>
<td>A</td>
<td>VFM0097XUPCS</td>
</tr>
</tbody>
</table>

Transportation-Katalog_2019_EN__16_10_2019_Final.indd 17
BL-DC dual centrifugal fans “Premium” Ø 097 mm

A VFM0097XUPCS K3G09BP4601 (Dual centrifugal fan)

Dimensions in mm

4-pole plug, pluggable with cable from accessories:
Accessory part: Cable (460 mm) with mating connector, part no. 02040-4-1021 not included in scope of delivery 4-pole mating connector TE 1-1718628-1, 2x plug contact TE 1-968855-1, 2x plug contact TE 1-968857-1, 2x seal TE 828905-1, 2x seal TE 828904-1

Pin assignment: (see connection diagram)
1 Diagnostic output
2 PWM/LIN
3 + UB
4 GND

Transportation-Katalog_2019_EN__16_10_2019_Final.indd 18
BL-DC dual centrifugal fans "Premium" Ø 097 mm
BL-DC dual centrifugal fans with housing "Basic" Ø 097
BL-DC dual centrifugal fans
forward curved with housing, for commercial vehicle applications, Ø 097 mm

Material/surface
- Scroll housing: PP plastic, black
- Impeller: PA plastic (UL94 HB), black

Mechanical data
- Direction of rotation: Clockwise viewed toward rotor
- Mode: Continuous operation (S1)
- Mounting: Maintenance-free ball bearings

Standards and approvals
- Approvals: EAC, E1

---

Air performance measured according to: ISO 5801, installation category A, with ebm-papst scroll housing without contact protection.
Intake-side sound level: $L_{WA}$ according to 13347, $L_{PA}$ measured at 1 m distance from fan axis. The values given are only applicable under the specified measuring conditions and may differ depending on the installation conditions. In the event of deviation from the standard configuration, the parameters must be checked in installed condition.
### BL-DC dual centrifugal fans “Basic” Ø 097 mm

<table>
<thead>
<tr>
<th>Curve</th>
<th>Operating point</th>
<th>Nominal voltage</th>
<th>Speed n</th>
<th>Max. input power $P_{in}$</th>
<th>Max. input current $I_{in}$</th>
<th>Sound power level $L_{wa}$</th>
<th>Installation position</th>
<th>Ambient temp.</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Conn. diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nominal voltage range 16-32 V DC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>26</td>
<td>3830</td>
<td>394</td>
<td>15,2</td>
<td>79</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>26</td>
<td>4075</td>
<td>353</td>
<td>13,5</td>
<td>76</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>26</td>
<td>4320</td>
<td>294</td>
<td>11,3</td>
<td>75</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>26</td>
<td>4670</td>
<td>233</td>
<td>8,9</td>
<td>75</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>26</td>
<td>3145</td>
<td>215</td>
<td>8,3</td>
<td>75</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>26</td>
<td>3315</td>
<td>188</td>
<td>7,2</td>
<td>72</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>26</td>
<td>3470</td>
<td>155</td>
<td>6,0</td>
<td>70</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>26</td>
<td>3670</td>
<td>118</td>
<td>4,5</td>
<td>69</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>26</td>
<td>2245</td>
<td>79</td>
<td>3,1</td>
<td>66</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>26</td>
<td>2325</td>
<td>68</td>
<td>2,6</td>
<td>66</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>26</td>
<td>2415</td>
<td>56</td>
<td>2,2</td>
<td>61</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>26</td>
<td>2490</td>
<td>42</td>
<td>1,6</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Any</td>
<td>-40..+85 (above +75 °C with power derating)</td>
<td>IP 24 KM (without connector)</td>
<td>B TR3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Values set in blue are nominal data at operating point with maximum load.

Subject to change

### BL-DC dual centrifugal fans with housing

<table>
<thead>
<tr>
<th>Curve</th>
<th>Type</th>
<th>Part number</th>
<th>Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>VFD0097XUNES</td>
<td>K3G097AK3465</td>
<td>2,10</td>
</tr>
</tbody>
</table>
BL-DC Fans for Commercial Vehicles · Edition 2019-10

**A VFD0097XUNES K3G097AK3665 (Dual centrifugal fan)**

**Dimensions in mm**

1. **6-pole header TE Junior Power Timer WE_9901118:**
   - Accessory part: Cable (460 mm) with mating connector, part no. 02001-4-1021 not included in scope of delivery, 6-pole mating connector TE 929504-2, 4x plug contact TE 927771-1, 2x plug contact TE 927768-1

2. **Electronics cover blue (RAL 5015)**

**Pin assignment:** (see connection diagram)

- + UB
- GND
- PWM/LIN, 100% speed
- 80% speed
- 60% speed
- Not used / no function

---

**Transportation Katalog_2019_EN_16_10_2019_Final.indd**

24
BL-DC dual centrifugal fans “Basic” Ø 097 mm
BL-DC dual centrifugal fans
forward curved with housing, for commercial vehicle applications, Ø 097 mm

Material/surface
- Scroll housing: PP plastic, black
- Impeller: PA plastic (UL94 HB), black

Mechanical data
- Direction of rotation: Clockwise viewed toward rotor
- Mode: Continuous operation (S1)
- Mounting: Maintenance-free ball bearings

Standards and approvals
- Approvals: EAC, E1

---

Measuring requirements:
Air performance measured according to: ISO 5801, installation category A, with ebm-papst scroll housing without contact protection.
Intake-side sound level: LwA according to 13347, LpA measured at 1 m distance from fan axis. The values given are only applicable under the specified measuring conditions and may differ depending on the installation conditions. In the event of deviation from the standard configuration, the parameters must be checked in installed condition.
### BL-DC dual centrifugal fans “Basic” Ø 097 mm

<table>
<thead>
<tr>
<th>Curve</th>
<th>Operating point</th>
<th>Nominal voltage</th>
<th>Speed n</th>
<th>Max. input power P_{in}</th>
<th>Max. input current I_{in}</th>
<th>Sound power level L_{WA}</th>
<th>Installation position</th>
<th>Perm. ambient temp. °C</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Conn. diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>VDC rpm W A dB(A)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal voltage range 16-32 V DC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Any</td>
<td>-40..+85</td>
<td>IP 24 KM (without connector)</td>
<td>B TR3)</td>
</tr>
<tr>
<td>&lt;sup&gt;A&lt;/sup&gt;</td>
<td>26</td>
<td>4040</td>
<td>344</td>
<td>13,3</td>
<td>81</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;sup&gt;B&lt;/sup&gt;</td>
<td>26</td>
<td>4275</td>
<td>306</td>
<td>11,8</td>
<td>81</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;sup&gt;C&lt;/sup&gt;</td>
<td>26</td>
<td>4595</td>
<td>231</td>
<td>9,7</td>
<td>80</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;sup&gt;D&lt;/sup&gt;</td>
<td>26</td>
<td>4795</td>
<td>238</td>
<td>8,4</td>
<td>80</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;sup&gt;E&lt;/sup&gt;</td>
<td>26</td>
<td>5305</td>
<td>128</td>
<td>7,2</td>
<td>73</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;sup&gt;F&lt;/sup&gt;</td>
<td>26</td>
<td>3425</td>
<td>358</td>
<td>6,1</td>
<td>71</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;sup&gt;G&lt;/sup&gt;</td>
<td>26</td>
<td>3615</td>
<td>128</td>
<td>5,0</td>
<td>70</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;sup&gt;H&lt;/sup&gt;</td>
<td>26</td>
<td>3735</td>
<td>107</td>
<td>4,1</td>
<td>69</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;sup&gt;I&lt;/sup&gt;</td>
<td>26</td>
<td>2325</td>
<td>67</td>
<td>2,6</td>
<td>64</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;sup&gt;J&lt;/sup&gt;</td>
<td>26</td>
<td>2385</td>
<td>58</td>
<td>2,3</td>
<td>62</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;sup&gt;K&lt;/sup&gt;</td>
<td>26</td>
<td>2455</td>
<td>45</td>
<td>1,7</td>
<td>61</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;sup&gt;L&lt;/sup&gt;</td>
<td>26</td>
<td>2505</td>
<td>38</td>
<td>1,5</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Values set in blue are nominal data at operating point with maximum load.
Subject to change

### BL-DC dual centrifugal fans with housing

<table>
<thead>
<tr>
<th>Type</th>
<th>Part number</th>
<th>Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;sup&gt;A&lt;/sup&gt;</td>
<td>VFD009XJUNES</td>
<td>K3G097BK3465</td>
</tr>
</tbody>
</table>
BL-DC dual centrifugal fans “Basic” Ø 097 mm

A VFD0097XUNES K3G097BK346S (Dual centrifugal fan) Dimensions in mm

- 6-pole header TE Junior Power Timer WE_9901118:
  Accessory part: Cable (460 mm) with mating connector, part no. 02001-4-1021 not included in scope of delivery, 6-pole mating connector TE 929504-2, 4x plug contact TE 927771-1, 2x plug contact TE 927768-1
- Electronics cover blue (RAL 5015)

Pin assignment: (see connection diagram)
- 1 + UB
- 2 GND
- 3 PWM/LIN, 100% speed
- 4 80% speed
- 5 60% speed
- 6 Not used / no function
BL-DC dual centrifugal fans “Basic” Ø 097 mm
### BL-DC axial fans

**"Premium & Power"**

Ø 250 - Ø 385

<table>
<thead>
<tr>
<th>Diameter (Ø)</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 250</td>
<td>32</td>
</tr>
<tr>
<td>Ø 300</td>
<td>36</td>
</tr>
<tr>
<td>Ø 385</td>
<td>44</td>
</tr>
</tbody>
</table>
BL-DC axial fans
for commercial vehicle applications, Ø 250 mm

Material/surface
- Impeller: PP plastic
- Housing: PA plastic

Mechanical data
- Direction of rotation: Clockwise viewed toward rotor
- Direction of air flow: "V"
- Mode: Continuous operation (S1)
- Mounting: Maintenance-free ball bearings, sealed

Standards and approvals
- Approvals: EAC, E1 in preparation

---

Measuring requirements:
Air performance measured according to: ISO 5801, installation category A, without contact protection.
Intake-side sound level: L_wA according to 13347, LpA measured at 1 m distance from fan axis. The values given are only applicable under the specified measuring conditions and may differ depending on the installation conditions. In the event of deviation from the standard configuration, the parameters must be checked in installed condition.
### BL-DC axial fans “Premium & Power” Ø 250 mm

<table>
<thead>
<tr>
<th>Curve</th>
<th>Operating point</th>
<th>Nominal voltage</th>
<th>Speed n</th>
<th>Max. input current</th>
<th>Max. input current</th>
<th>Stand power level</th>
<th>Installation position</th>
<th>Ambient temp.</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Conn. diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>VDC rpm</td>
<td>W</td>
<td>A</td>
<td>dB(A)</td>
<td>°C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal voltage range 16-32 V DC</td>
<td>Any</td>
<td>26</td>
<td>2050</td>
<td>38</td>
<td>1,45</td>
<td>67</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>26</td>
<td>2020</td>
<td>42</td>
<td>1,61</td>
<td>66</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>26</td>
<td>1990</td>
<td>45</td>
<td>1,72</td>
<td>66</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>26</td>
<td>1965</td>
<td>47</td>
<td>1,80</td>
<td>66</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>26</td>
<td>3000</td>
<td>110</td>
<td>4.20</td>
<td>77</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>26</td>
<td>2905</td>
<td>118</td>
<td>4.56</td>
<td>75</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>26</td>
<td>2855</td>
<td>128</td>
<td>4.95</td>
<td>74</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>26</td>
<td>2835</td>
<td>136</td>
<td>5.27</td>
<td>75</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Values set in blue are nominal data at operating point with maximum load.

Subject to change

<table>
<thead>
<tr>
<th>Curve</th>
<th>BL-DC axial fans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Part number</td>
</tr>
<tr>
<td>VWS0250XUNBS</td>
<td>W3G250EC2401</td>
</tr>
<tr>
<td>VWS0250XUNBS</td>
<td>W3G250EC2811</td>
</tr>
</tbody>
</table>
BL-DC axial fans “Premium & Power” Ø 250 mm

**Pin assignment:** (see connection diagram)

3 PWM/LIN
3 Diagnostic output
3 + UB
3 GND

1 **4-pole plug, pluggable with cable from accessories:**
Accessory part: Cable (460 mm) with mating connector, part no. 02025-4-1021 not included in scope of delivery.
- 4-pole mating connector TE 1-1428390-1
- 2x socket TE 968857-1
- 2x socket TE 968855-1
- 2x seal TE B28905-1
- 2x seal TE B28904-1

2 **Bayonet attachment (both sides):**
For sheet metal or plastic 1,5 / 2,0 or 2,5 mm thick. Alternatively four fastening holes in each case (on both sides). A detailed drawing of the recess required for bayonet attachment can be obtained from ebm-papst.

3 **Direction of air flow “V”**

Dimensions in mm
BL-DC axial fans “Premium & Power” Ø 250 mm

B VWS0250XUNBS W3G250EC2811 (Axial fan)

Dimensions in mm

1. 4-pole plug, pluggable with cable from accessories:
   Accessory part: Cable (460 mm) with mating connector, part no. 02025-4-1021 not included in scope of delivery, 4-pole mating connector TE 1-14128390-1, 2x socket TE 968857-1, 2x socket TE 968855-1, 2x seal TE 828905-1, 2x seal TE 828904-1

2. Bayonet attachment (both sides):
   For sheet metal or plastic 1,5 / 2,0 or 2,5 mm thick. Alternatively four fastening holes in each case (on both sides). A detailed drawing of the recess required for bayonet attachment can be obtained from ebm-papst.

3. Direction of air flow “V”

Pin assignment: (see connection diagram)

- 3 PWM/LIN
- 4 Diagnostic output
- 5 + UB
- 6 GND
BL-DC axial fans
for commercial vehicle applications, Ø 300 mm

Material/surface
- Impeller: PA plastic (UL94 HB), black
- Housing: PA plastic (UL94 HB), black

Mechanical data
- Direction of rotation: Clockwise viewed toward rotor
- Direction of air flow: "V"
- Mode: Continuous operation (S1)
- Mounting: Maintenance-free ball bearings, sealed

Standards and approvals
- Approvals: EAC, E1

Measuring requirements:
Air performance measured according to: ISO 5801, installation category A, without contact protection.
Intake-side sound level: L_{A} according to 13347, L_{A} measured at 1 m distance from fan axis. The values given are only applicable under the specified measuring conditions and may differ depending on the installation conditions. In the event of deviation from the standard configuration, the parameters must be checked in installed condition.
### BL-DC axial fans “Premium & Power“ Ø 300 mm

<table>
<thead>
<tr>
<th>Curve</th>
<th>Operating point</th>
<th>Nominal voltage</th>
<th>Speed</th>
<th>Max. input power $P_{in}$</th>
<th>Max. input current $I_{in}$</th>
<th>Sound power level $L_{WA}$</th>
<th>Installation position</th>
<th>Perm. ambient temp.</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Conn. diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VDC</td>
<td>rpm</td>
<td>W</td>
<td>A</td>
<td>dB(A)</td>
<td>°C</td>
<td>Any</td>
<td>-40...+85</td>
<td>Motor IP 24 KM</td>
<td>Electronics: IP 66/69 K</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>13</td>
<td>3200</td>
<td>220</td>
<td>16,7</td>
<td>83</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>13</td>
<td>3135</td>
<td>237</td>
<td>18,2</td>
<td>83</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>13</td>
<td>2955</td>
<td>248</td>
<td>19,0</td>
<td>80</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>13</td>
<td>2845</td>
<td>248</td>
<td>19,0</td>
<td>81</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Values set in blue** are nominal data at operating point with maximum load.

Subject to change.

<table>
<thead>
<tr>
<th>Curve</th>
<th>BL-DC axial fans</th>
<th>Type</th>
<th>Part number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>VWS0300XUPCS</td>
<td>W36300BV1241</td>
<td>2,00</td>
<td></td>
</tr>
</tbody>
</table>
BL-DC axial fans "Premium & Power" Ø 300 mm

Dimensions in mm

1. Cable FLRYW 2x 3 mm², 4x 0,75 mm²:
   - 6-pole connector housing TE 1-962349-1, 2x flat plug TE 2-962916-1, 3x flat plug TE 1-962915-1, 1x seal TE 828905-1, 3x seal TE 828904-1, 1x dummy plug TE 828922-1
   - 6-pole mating connector TE 1-963212-1, 3x receptacle TE 929939-1, 2x receptacle TE 929937-1, 1x dummy plug TE 828922-1

2. Direction of air flow "V"

Pin assignment: (see connection diagram)

- † + UB
- ‡ GND
- § PWM/LIN
- ¶ Not used / no function
- †† ABSENK
- †‡ Diagnostic output

VWS0300XUPCS W3G300BV1241 (Axial fan)
BL-DC axial fans “Premium & Power” Ø 300 mm
BL-DC axial fans
for commercial vehicle applications, Ø 300 mm

Material/surface
- Impeller: PA plastic
- Housing: PP plastic

Mechanical data
- Direction of rotation: Clockwise viewed toward rotor
- Direction of air flow: "V"
- Mode: Continuous operation (S1)
- Mounting: Maintenance-free ball bearings, sealed

Standards and approvals
- Approvals: E1 in preparation

Air performance measured according to: ISO 5801, installation category A, without contact protection.

Intake-side sound level: $L_{pA}$ according to 13347, $L_{pA}$ measured at 1 m distance from fan axis. The values given are only applicable under the specified measuring conditions and may differ depending on the installation conditions. In the event of deviation from the standard configuration, the parameters must be checked in installed condition.

<table>
<thead>
<tr>
<th>$q_v$ (m³/h)</th>
<th>$p_f$ (Pa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
<td>0.2</td>
</tr>
<tr>
<td>1000</td>
<td>0.4</td>
</tr>
<tr>
<td>1500</td>
<td>0.6</td>
</tr>
<tr>
<td>2000</td>
<td>0.8</td>
</tr>
<tr>
<td>2500</td>
<td>1</td>
</tr>
</tbody>
</table>

$\varphi$:

- Impeller: PA plastic
- Housing: PP plastic

- Direction of rotation: Clockwise viewed toward rotor
- Direction of air flow: "V"
- Mode: Continuous operation (S1)
- Mounting: Maintenance-free ball bearings, sealed

More at www.ebmpapst.com
BL-DC axial fans “Premium & Power“ Ø 300 mm

<table>
<thead>
<tr>
<th>Curve</th>
<th>Operating point</th>
<th>Nominal voltage</th>
<th>Speed n</th>
<th>Max. Input power P_in</th>
<th>Max. Input current I_in</th>
<th>Fan sound level L_A</th>
<th>Installation position</th>
<th>Temp. ambient</th>
<th>Insulation class</th>
<th>Conn. diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td>VDC rpm W A dB(A)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>26</td>
<td>3000 175 6,70 B2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>26</td>
<td>2930 186 7,17 B1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>26</td>
<td>2920 195 7,49 B2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>26</td>
<td>2915 194 7,47 B4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>26</td>
<td>3650 320 11,4 B8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>26</td>
<td>3650 347 13,3 B7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Any</td>
<td>-40...+85</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>26</td>
<td>3650 365 14,0 B8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>26</td>
<td>3650 376 15,5 B1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Values set in blue are nominal data at operating point with maximum load.
Subject to change

-40..+85 (above +70 °C with power derating)

Motor: IP 24 KM Electronics: IP 66/69 K (mating conn. installed)
B TR1)

Motor: IP 24 KM Electronics: IP 66/69 K (mating conn. installed)
B TR1)

<table>
<thead>
<tr>
<th>Curve</th>
<th>BL-DC axial fans</th>
<th>Type</th>
<th>Part number</th>
<th>Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>VWS0300XUPCS</td>
<td>W3G300ME4701</td>
<td>2,00</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>VWS0300XUPCS</td>
<td>W3G300ME4811</td>
<td>2,00</td>
<td></td>
</tr>
</tbody>
</table>
BL-DC axial fans “Premium & Power” Ø 300 mm

A VWS0300XUPCS W3G300ME4701 (Axial fan)

Dimensions in mm

1. 4-pole plug, pluggable with cable from accessories:
   Accessory part: Cable (460 mm) with mating connector, part no. 02040-4-1021 not included in scope of delivery, 4-pole mating connector TE 1-1718628-1, 2x plug contact TE 1-968855-1, 2x plug contact TE 1-968857-1, 2x seal TE 828955-1, 2x seal TE 828954-1

2. Direction of air flow “V”

Pin assignment: (see connection diagram)

1. Diagnostic output
2. PWM/LIN
3. + UB
4. GND
B VWS0300XUPCS W3G300ME4811 (Axial fan) Dimensions in mm

① 4-pole plug, pluggable with cable from accessories:
Accessory part: Cable (460 mm) with mating connector, part no. 02040-4-1021 not included in scope of delivery, 4-pole mating connector TE 1-1718628-1, 2x plug contact TE 1-968855-1, 2x plug contact TE 1-968857-1, 2x seal TE 828905-1, 2x seal TE 828904-1

② Direction of air flow “V”

Pin assignment: (see connection diagram)
③ Diagnostic output
④ PWM/LIN
⑤ + UB
⑥ GND

16.10.2019 15:44:13
BL-DC axial fans
for commercial vehicle applications, Ø 385 mm

Material/surface
- Impeller: PA plastic
- Housing: PA plastic

Mechanical data
- Direction of rotation: Clockwise viewed toward rotor
- Direction of air flow: "V"
- Mode: Continuous operation (S1)
- Mounting: Maintenance-free ball bearings, sealed

Standards and approvals
- Approvals: EAC, E1

on Page 46  Drawings
on Page 88  Accessories
on Page 98  Connection diagrams and technical features
on Page 114  Technical parameters & scope
More at  www.ebmpapst.com

Measuring requirements:
Air performance measured according to ISO 5801, installation category A, without contact protection.
Intake-side sound level: Lₐ,ₜ₁₉ according to 13347, Lₚₐ measured at 1 m distance from fan axis. The values given are only applicable under the specified measuring conditions and may differ depending on the installation conditions. In the event of deviation from the standard configuration, the parameters must be checked in installed condition.
BL-DC axial fans “Premium & Power” Ø 385 mm

<table>
<thead>
<tr>
<th>Curve</th>
<th>Operating point</th>
<th>Nominal voltage</th>
<th>Speed n</th>
<th>Max. input power $P_{in}$</th>
<th>Max. input current I</th>
<th>Sound power level</th>
<th>Installation position</th>
<th>Perm. ambient temp. °C</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Conn. diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal voltage range 9-16 V DC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>13</td>
<td>3100</td>
<td>445</td>
<td>34,0</td>
<td>89</td>
<td>Any</td>
<td>-40...+105 (above +70 °C with power derating)</td>
<td>Motor: IP 24 KM Electronics: IP 66/69 K (mating conn. installed)</td>
<td>B TR6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>3000</td>
<td>487</td>
<td>37,6</td>
<td>89</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>2935</td>
<td>556</td>
<td>42,6</td>
<td>87</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>2840</td>
<td>591</td>
<td>45,5</td>
<td>88</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal voltage range 16-32 V DC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>26</td>
<td>3300</td>
<td>525</td>
<td>20,0</td>
<td>90</td>
<td>Any</td>
<td>-40...+110 (above +85 °C with power derating)</td>
<td>Motor: IP 24 KM Electronics: IP 66/69 K (mating conn. installed)</td>
<td>B TR7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>3170</td>
<td>618</td>
<td>23,8</td>
<td>88</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>3030</td>
<td>610</td>
<td>23,4</td>
<td>88</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>2900</td>
<td>613</td>
<td>23,6</td>
<td>89</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Values set in blue are nominal data at operating point with maximum load.
Subject to change

<table>
<thead>
<tr>
<th>Curve</th>
<th>BL-DC axial fans</th>
<th>Part number</th>
<th>Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>VWS0385XUPES</td>
<td>W3G385CT5361</td>
<td>3,10</td>
</tr>
<tr>
<td>B</td>
<td>VWS0385XUPES</td>
<td>W3G385CT6521</td>
<td>3,10</td>
</tr>
</tbody>
</table>
BL-DC axial fans “Premium & Power”  Ø 385 mm

A VWS0385XUPES W3G385CT5361 (Axial fan) Dimensions in mm

- Cable FLRYW 2x 6,0 mm², 2x 1,0 mm²:
  4-pole connector housing Amphenol F353200, 2x flat plug FCI 60170261, 2x flat plug TE 964330-1, 2x seal FCI 60993308, 2x seal TE 1394511-1, 4-pole mating connector Amphenol F004200, 2x flat plug FCI 60170261, 2x flat plug TE 927831-1, 2x seal FCI 60993308, 2x seal TE 1394511-1

- Direction of air flow “V”

Pin assignment: (see connection diagram)

1. UB
2. Diagnostic output
3. PWM/LIN
4. GND

Transportation-Katalog_2019_EN__10_10_2019_Final_.indd 46
16.10.2019 15:44:17
BL-DC axial fans “Premium & Power” Ø 385 mm

B VWS0385XUPES W3G385CT6521 (Axial fan)

Dimensions in mm

- Ø 399
- Ø 414
- Ø 422
- 88.5
- 17.1
- 3.9

Pin assignment: (see connection diagram)

1. + UB
2. Diagnostic output
3. PWM/LIN
4. GND

1. Cable FLRYW 2x 6.0 mm², 2x 1.0 mm²:
   4-pole connector housing Amphenol F353200, 2x flat plug FCI 60170261, 2x flat plug TE 964310-1, 2x seal FCI 60993108, 2x seal TE 1394511-1, 4-pole mating connector Amphenol F004200, 2x flat plug FCI 60170261, 2x flat plug TE 927831-1, 2x seal FCI 60993108, 2x seal TE 1394511-1
2. Direction of air flow “V”
BL-DC axial fans
for commercial vehicle applications, Ø 385 mm

Material/surface
- Impeller: PA plastic
- Housing: PA plastic

Mechanical data
- Direction of rotation: Clockwise viewed toward rotor
- Direction of air flow: "V"
- Mode: Continuous operation (S1)
- Mounting: Maintenance-free ball bearings, sealed

Standards and approvals
- Approvals: EAC, E1

<table>
<thead>
<tr>
<th>Page</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>Drawings</td>
</tr>
<tr>
<td>88</td>
<td>Accessories</td>
</tr>
<tr>
<td>98</td>
<td>Connection diagrams and technical features</td>
</tr>
<tr>
<td>114</td>
<td>Technical parameters &amp; scope</td>
</tr>
<tr>
<td></td>
<td>More at <a href="http://www.ebmpapst.com">www.ebmpapst.com</a></td>
</tr>
</tbody>
</table>

Measuring requirements:
Air performance measured according to: ISO 5801, installation category A, without contact protection.
Intake-side sound level: \( L_A \) according to 13347, \( L_pA \) measured at 1 m distance from fan axis. The values given are only applicable under the specified measuring conditions and may differ depending on the installation conditions. In the event of deviation from the standard configuration, the parameters must be checked in installed condition.
### BL-DC axial fans “Premium & Power” Ø 385 mm

<table>
<thead>
<tr>
<th>Curve</th>
<th>Operating point</th>
<th>Nominal voltage</th>
<th>Speed n</th>
<th>Max. Input Power $P_{\text{in}}$</th>
<th>Max. Input Current $I_{\text{in}}$</th>
<th>Sound power level $L_{\text{WA}}$</th>
<th>Installation position</th>
<th>Perm. ambient temp.</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Conn. diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>V DC rpm W A dB(A) °C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal voltage range 16-32 V DC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>26</td>
<td>2600</td>
<td>250</td>
<td>9,60</td>
<td>84</td>
<td>Any</td>
<td>-40..+110 (above +95 °C with power derating)</td>
<td>Motor: IP 24 KM</td>
<td>Electronics: IP 66/69 K (mating conn. installed)</td>
<td>B TR8)</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>26</td>
<td>2600</td>
<td>250</td>
<td>9,60</td>
<td>84</td>
<td>Any</td>
<td>-40..+110 (above +95 °C with power derating)</td>
<td>Motor: IP 24 KM</td>
<td>Electronics: IP 66/69 K (mating conn. installed)</td>
<td>B TR8)</td>
<td></td>
</tr>
</tbody>
</table>

Values set in blue are nominal data at operating point with maximum load.

Subject to change

### BL-DC axial fans

<table>
<thead>
<tr>
<th>Curve</th>
<th>Type</th>
<th>Part number</th>
<th>Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>VWS0385XUPE5</td>
<td>W3G385BV4001</td>
<td>2,70</td>
</tr>
<tr>
<td>B</td>
<td>VWS0385XUPE5</td>
<td>W3G385B54001</td>
<td>2,70</td>
</tr>
</tbody>
</table>
BL-DC axial fans “Premium & Power” Ø 385 mm

A VWS0385XUPCS W3G385BV4401 (Axial fan) Dimensions in mm

- Cable FLRYW 2x 1,5 mm², 4x 0,75 mm²:
  - 6-pole connector housing TE 1-962349-1, 2x flat plug TE 2-962916-1, 4x flat plug
  - TE 1-962915-1, 1x seal TE 963205-1, 2x seal TE 828905-1, 4x seal TE 828904-1
  - 6-pole mating connector TE 1-963212-1, 4x receptacle TE 929939-1, 2x receptacle TE 929937-1

- Direction of air flow “V”

Pin assignment: (see connection diagram)

1. + UB
2. GND
3. PWM/LIN
4. INVLIN
5. ABSENK
6. Diagnostic output
B VWS0385XUPCS W3G385BS4401 (Axial fan) Dimensions in mm

- **Cable FLRYW 2x 1.5 mm², 4x 0.75 mm²:**
  - 6-pole connector housing TE 1-962349-1, 2x flat plug TE 2-962916-1, 4x flat plug
  - TE 1-962915-1, 1x seal TE 963205-1, 2x seal TE 828905-1, 4x seal TE 828904-1
  - 6-pole mating connector TE 1-963212-1, 4x receptacle TE 929939-1, 2x receptacle TE 929937-1

- **Direction of air flow “V”**

- **Pin assignment:** (see connection diagram)
  - 3 + UB
  - 3 GND
  - 3 PWM/LIN
  - 3 INVLIN
  - 3 ABSENK
  - 3 Diagnostic output
BL-DC axial fans
"Heavy Duty"
Ø 300
BL-DC axial fans
for commercial vehicle applications, Ø 300 mm

Material/surface
- Impeller: PA plastic
- Housing: PA plastic

Mechanical data
- Direction of rotation: Clockwise viewed toward rotor
- Direction of air flow: "V"
- Mode: Continuous operation (S1)
- Mounting: Maintenance-free ball bearings, sealed

Standards and approvals
- Approvals: EAC

on Page 56 Drawings
on Page 88 Accessories
on Page 98 Connection diagrams and technical features
on Page 114 Technical parameters & scope
More at www.ebmpapst.com

Air performance measured according to: ISO 5801, installation category A, without contact protection.
Intake-side sound level: L\textsubscript{wA} according to 13347, L\textsubscript{pA} measured at 1 m distance from fan axis. The values given are only applicable under the specified measuring conditions and may differ depending on the installation conditions. In the event of deviation from the standard configuration, the parameters must be checked in installed condition.
### BL-DC axial fans "Heavy Duty" Ø 300 mm

<table>
<thead>
<tr>
<th>Curve</th>
<th>Type</th>
<th>Part number</th>
<th>Weight</th>
<th>kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>VWS0300XUPCS</td>
<td>W36G300XQ2523</td>
<td>2,20</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>VWS0300XUPCS</td>
<td>W36G300XQ2640</td>
<td>2,20</td>
<td></td>
</tr>
</tbody>
</table>

**Values set in blue are nominal data at operating point with maximum load.**

Subject to change

<table>
<thead>
<tr>
<th>Curve</th>
<th>Operating point</th>
<th>Nominal voltage</th>
<th>Speed n</th>
<th>Max input power $P_{in}$</th>
<th>Max input current $I_{in}$</th>
<th>Sound power level $Lw$</th>
<th>Installation position</th>
<th>Pm, ambient temp.</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Conn. diag.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal voltage range 16-32 V DC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### A
- 26: 3800 rpm, 400 W, 15,0 A, 88 dB(A)
- 26: 3725 rpm, 426 W, 16,4 A, 87 dB(A)
- 26: 3700 rpm, 465 W, 17,9 A, 87 dB(A)
- 26: 3700 rpm, 462 W, 17,7 A, 89 dB(A)
- 26: 4400 rpm, 630 W, 24,0 A, 92 dB(A)
- 26: 4250 rpm, 673 W, 25,9 A, 91 dB(A)
- 26: 4065 rpm, 675 W, 26,0 A, 90 dB(A)
- 26: 4065 rpm, 679 W, 26,1 A, 92 dB(A)

#### B
- 26: 4400 rpm, 630 W, 24,0 A, 92 dB(A)
- 26: 4250 rpm, 673 W, 25,9 A, 91 dB(A)
- 26: 4065 rpm, 675 W, 26,0 A, 90 dB(A)
- 26: 4065 rpm, 679 W, 26,1 A, 92 dB(A)

Motor: IP 24 KM
Electronics: IP 66/69 K (mating conn. installed)

- Any: -40°C to +85°C
- (*for higher temperature on request)
- (above +60°C with power derating)

TR9/R7
BL-DC axial fans "Heavy Duty" Ø 300 mm

A VWS0300XUPCS W3G300QX2523 (Axial fan)

Dimensions in mm

Pin assignment: (see connection diagram)
1. + UB
2. GND
3. PWM/LIN
4. Not used / no function
5. Reverse
6. Diagnostic output

Cable FLRYW 2x 3 mm², 3x 0,75 mm²:
- 6-pole connector housing TE 1-962349-1, 2x flat plug TE 2-962916-1, 3x flat plug TE 1-962915-1, 1x seal TE 963205-1, 2x seal TE 828905-1, 3x seal TE 828904-1
- 1x dummy plug TE 828922-1, 6-pole mating connector TE 1-963212-1, 3x receptacle TE 929937-1, 1x dummy plug TE 828922-1

Direction of air flow "V"
**Cable FLRYW 2x 6 mm², 2x 1 mm²:**
- 4-pole connector housing Amphenol F35200, 2x flat plug FCI 60170261, 2x flat plug TE 964310-1, 2x seal FCI 609931308, 2x seal TE 1394511-1
- 4-pole mating connector Amphenol F004200, 2x flat plug FCI 60170261, 2x flat plug TE 927831-1, 2x seal FCI 609931308, 2x seal TE 1394511-1

**Direction of air flow “V”**

**Pin assignment:** (see connection diagram)
- ⚫ + UB
- ⚫ GND
- ⚫ PWM/LIN
- ⚫ Diagnostic output
BL-DC axial fans
for commercial vehicle applications, Ø 300 mm

Material/surface
- Impeller: PA plastic
- Housing: PA plastic

Mechanical data
- Direction of rotation: Clockwise viewed toward rotor
- Direction of air flow: "V"
- Mode: Continuous operation (S1)
- Mounting: Maintenance-free ball bearings, sealed

Standards and approvals
- Approvals: EAC

More at www.ebmpapst.com

Air performance measured according to: ISO 5801, installation category A, without contact protection.
Intake-side sound level: LwA according to 13347, LpA measured at 1 m distance from fan axis. The values given are only applicable under the specified measuring conditions and may differ depending on the installation conditions. In the event of deviation from the standard configuration, the parameters must be checked in installed condition.

**Graphs and charts are not transcribed into plain text.**

Measuring requirements:
- Air performance measured according to: ISO 5801, installation category A, without contact protection.
- Intake-side sound level: LwA according to 13347, LpA measured at 1 m distance from fan axis. The values given are only applicable under the specified measuring conditions and may differ depending on the installation conditions. In the event of deviation from the standard configuration, the parameters must be checked in installed condition.
### BL-DC axial fans "Heavy Duty" Ø 300 mm

<table>
<thead>
<tr>
<th>Type</th>
<th>Part number</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>W3G300QY2523</td>
<td>2.20</td>
</tr>
<tr>
<td>B</td>
<td>W3G300QY2640</td>
<td>2.20</td>
</tr>
</tbody>
</table>

**Values set in blue are nominal data at operating point with maximum load. Subject to change.**

### Nominal voltage range 16-32 V DC

<table>
<thead>
<tr>
<th>Curve</th>
<th>Operating point</th>
<th>Nominal voltage</th>
<th>Speed (rpm)</th>
<th>Max input power ($P_{in}$)</th>
<th>Max input current (A)</th>
<th>Sound power level (dB(A))</th>
<th>Installation position</th>
<th>Tmax °C</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Conn. diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>26</td>
<td>3925</td>
<td>400</td>
<td>15,4</td>
<td>89</td>
<td>Any</td>
<td>TR9</td>
<td>-40...+85*</td>
<td>Motor: IP 24 KM</td>
<td>Electronics: IP 66/69 K (mating conn. installed)</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>3935</td>
<td>516</td>
<td>19,8</td>
<td>88</td>
<td>Any</td>
<td></td>
<td>-40...+85</td>
<td>Motor: IP 24 KM</td>
<td>Electronics: IP 66/69 K (mating conn. installed)</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>3830</td>
<td>530</td>
<td>20,4</td>
<td>88</td>
<td>Any</td>
<td></td>
<td>-40...+85</td>
<td>Motor: IP 24 KM</td>
<td>Electronics: IP 66/69 K (mating conn. installed)</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>3620</td>
<td>499</td>
<td>19,2</td>
<td>92</td>
<td>Any</td>
<td></td>
<td>-40...+85</td>
<td>Motor: IP 24 KM</td>
<td>Electronics: IP 66/69 K (mating conn. installed)</td>
<td>B</td>
</tr>
<tr>
<td>B</td>
<td>26</td>
<td>4400</td>
<td>630</td>
<td>24,0</td>
<td>92</td>
<td>Any</td>
<td>TR7</td>
<td>-40...+85</td>
<td>Motor: IP 24 KM</td>
<td>Electronics: IP 66/69 K (mating conn. installed)</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>4250</td>
<td>673</td>
<td>25,9</td>
<td>92</td>
<td>Any</td>
<td></td>
<td>-40...+85</td>
<td>Motor: IP 24 KM</td>
<td>Electronics: IP 66/69 K (mating conn. installed)</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>4065</td>
<td>675</td>
<td>26,0</td>
<td>90</td>
<td>Any</td>
<td></td>
<td>-40...+85</td>
<td>Motor: IP 24 KM</td>
<td>Electronics: IP 66/69 K (mating conn. installed)</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>4065</td>
<td>679</td>
<td>26,1</td>
<td>92</td>
<td>Any</td>
<td></td>
<td>-40...+85</td>
<td>Motor: IP 24 KM</td>
<td>Electronics: IP 66/69 K (mating conn. installed)</td>
<td>B</td>
</tr>
</tbody>
</table>

#### Notes:
- Nominal voltage range: 16-32 V DC
- Speed: 3925 rpm
- Max input power: 400 W
- Max input current: 15.4 A
- Sound power level: 89 dB(A)
- Installation position: Any
- Tmax °C: -40...+85
- Degree of protection: Motor: IP 24 KM
  - Electronics: IP 66/69 K (mating conn. installed)
- Insulation class: B TR9

Subject to change.
BL-DC axial fans “Heavy Duty” ø 300 mm

A VWS0300XUPCS W3G300QY2523 (Axial fan) Dimensions in mm

- Cable FLRYW 2x 3 mm², 3x 0,75 mm²:
  - 6-pole connector housing TE 1-962349-1, 2x flat plug TE 2-962916-1, 3x flat plug TE 1-962915-1, 1x seal TE 963250-1, 2x seal TE 828905-1, 3x seal TE 828904-1
  - 1x dummy plug TE 828922-1, 6-pole mating connector TE 1-963212-1, 3x receptacle TE 929937-1, 1x dummy plug TE 828922-1
- Direction of air flow “V”

Pin assignment: (see connection diagram)

1. + UB
2. GND
3. PWM/LIN
4. Not used / no function
5. Reverse
6. Diagnostic output
**BL-DC axial fans “Heavy Duty” Ø 300 mm**

**B VWS0300XUPCS W3G300QY2640 (Axial fan)**

Dimensions in mm

1. Cable FLRYW 2x 6 mm², 2x 1 mm²:
   - 4-pole connector housing Amphenol F353200, 2x flat plug FCI 60170261, 2x flat plug TE 964330-1, 2x seal FCI 60993308, 2x seal TE 1394511-1
   - 4-pole mating connector Amphenol F004200, 2x flat plug FCI 60170261, 2x flat plug TE 927831-1, 2x seal FCI 60993308, 2x seal TE 1394511-1

2. Direction of air flow “V”

Pin assignment: (see connection diagram)

- Pin 3 + UB
- Pin 2 GND
- Pin 4 PWM/LIN
- Pin 5 Diagnostic output
## BL-DC axial fans

### "Basic"

Ø 300

| Ø 300 | 64 |
BL-DC axial fans
for commercial vehicle applications, Ø 300 mm

Air performance measured according to: ISO 5801, installation category A, without contact protection.
Intake-side sound level: L_wA according to 13347, L_pA measured at 1 m distance from fan axis. The values given are only applicable under the specified measuring conditions and may differ depending on the installation conditions. In the event of deviation from the standard configuration, the parameters must be checked in installed condition.

Material/surface
- Impeller: PP plastic
- Housing: PP plastic

Mechanical data
- Direction of rotation: Clockwise viewed toward rotor
- Direction of air flow: "V"
- Mode: Continuous operation (S1)
- Mounting: Maintenance-free ball bearings

Standards and approvals
- Approvals: EAC, E1 in preparation

on Page 66 Drawings
on Page 88 Accessories
on Page 98 Connection diagrams and technical features
on Page 114 Technical parameters & scope
More at www.ebmpapst.com

measuring requirements:
Air performance measured according to: ISO 5801, installation category A, without contact protection.
Intake-side sound level L_wA according to 13347, L_pA measured at 1 m distance from fan axis. The values given are only applicable under the specified measuring conditions and may differ depending on the installation conditions. In the event of deviation from the standard configuration, the parameters must be checked in installed condition.
### BL-DC axial fans “Basic” Ø 300 mm

<table>
<thead>
<tr>
<th>Curve</th>
<th>Operating point</th>
<th>Nominal voltage</th>
<th>Speed n</th>
<th>Max. input power $P_{IN}$</th>
<th>Max. input current $I_{IN}$</th>
<th>Max. input power level</th>
<th>Nominal voltage range</th>
<th>Installation position</th>
<th>Remarks</th>
<th>Ambient temp.</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Conn. diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VDC rpm W A dB(A) °C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal voltage range 9-16 V DC</td>
<td>Any</td>
<td>-40..+85 (above +70 °C with power derating)</td>
<td>Motor: IP 24 KM Electronics: IP 66/69 K (mating conn. installed)</td>
<td>B TR10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>13 2500 145 11,0 76</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>13 2455 145 11,0 78</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>13 2415 145 11,0 79</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>13 2365 142 10,9 80</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal voltage range 16-32 V DC</td>
<td>Any</td>
<td>-40..+85 (above +75 °C with power derating)</td>
<td>Motor: IP 24 KM Electronics: IP 66/69 K (mating conn. installed)</td>
<td>B TR11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>26 3000 225 8,50 81</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>26 2955 251 9,64 82</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>26 2925 249 9,58 83</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>26 2850 247 9,48 84</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Values set in blue are nominal data at operating point with maximum load.

Subject to change

### BL-DC axial fans

<table>
<thead>
<tr>
<th>Curve</th>
<th>Type</th>
<th>Part number</th>
<th>Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>VWT0300XUNES W16300EC1220</td>
<td>2,60</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>VWT0300XUNES W16300EC4126</td>
<td>2,60</td>
<td></td>
</tr>
</tbody>
</table>
**BL-DC axial fans “Basic” Ø 300 mm**

**A VWT0300XUNES W1G300EC1220 (Axial fan)**

Dimensions in mm

1. Plug TE MCP 2.8, 3-pole, coded:
   - Accessory part: Cable (420 mm) with mating connector part no. 02020-4-1021 not included in scope of delivery, 3-pole mating connector TE 1-718627-1, 2x socket TE 1241396-1, 1x socket TE 1241388-1, 2x seal TE 963292-1, 1x seal TE 963294-1
2. Direction of air flow "V"
3. On both sides for screws for fastening plastics Ø 3.5 mm

Pin assignment: (see connection diagram)
- + UB
- 0-10 V
- GND
**BL-DC axial fans “Basic” Ø 300 mm**

**B VWT0300XUNES W1G300EC2414 (Axial fan)**

**Dimensions in mm**

1. **Plug TE MCP 2.8, 3-pole, coded:**
   - Accessory part: Cable (420 mm) with mating connector part no. 02020-4-1021 not included in scope of delivery, 3-pole mating connector TE 1-1718627-1, 2x socket TE 1241396-1, 1x socket TE 1241388-1, 2x seal TE 963292-1, 1x seal TE 963294-1

2. **Direction of air flow “V”**

3. **On both sides for screws for fastening plastics Ø 3,5 mm**

**Pin assignment:** (see connection diagram)

- **Pin 3** + UB
- **Pin 3** 0-10 V
- **Pin 3** GND
BL-DC centrifugal fans
forward curved \textit{without housing}
\(\varnothing 146\)
BL-DC centrifugal fans
forward curved without housing, for commercial vehicle applications, Ø 146 mm

Material/surface
- Cover: PP plastic
- Impeller: PA plastic

Mechanical data
- Direction of rotation: Clockwise viewed toward rotor
- Mode: Continuous operation (S1)
- Mounting: Maintenance-free ball bearings, sealed

Standards and approvals
- Approvals: EAC, E1 in preparation

Measuring requirements:
Air performance measured according to: ISO 5801, installation category A, with ebm-papst scroll housing without contact protection.
Intake-side sound level: \( L_{\text{wA}} \) according to 13347, \( L_{\text{pA}} \) measured at 1 m distance from fan axis. The values given are only applicable under the specified measuring conditions and may differ depending on the installation conditions. In the event of deviation from the standard configuration, the parameters must be checked in installed condition.
BL-DC centrifugal fans  Ø 146 mm

<table>
<thead>
<tr>
<th>Curve</th>
<th>Operating point</th>
<th>Nominal voltage</th>
<th>Speed n</th>
<th>Max. input power P in</th>
<th>Max. input current I in</th>
<th>Sound power level LA</th>
<th>Installation position</th>
<th>Perm. ambient temp.</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Conn. diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nominal voltage range 16-32 V DC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>26</td>
<td>2750</td>
<td>280</td>
<td>10,8</td>
<td>79</td>
<td></td>
<td></td>
<td>-40..+85</td>
<td>-40..+85</td>
<td></td>
<td>TR4</td>
</tr>
<tr>
<td>2</td>
<td>26</td>
<td>3245</td>
<td>280</td>
<td>10,8</td>
<td>78</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>26</td>
<td>3815</td>
<td>280</td>
<td>10,8</td>
<td>78</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>26</td>
<td>4225</td>
<td>245</td>
<td>9,55</td>
<td>79</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Values set in blue are nominal data at operating point with maximum load.

Subject to change.
BL-DC centrifugal fans ø 146 mm

A VFS0146XUPCS R3G146EC5001 (Centrifugal fan) Dimensions in mm

1. 4-pole plug, pluggable with cable from accessories:
   Accessory part: Cable (460 mm) with mating connector, part no. 02040-4-1021 not included in scope of delivery 4-pole mating connector TE 1-1718628-1, 2x plug contact TE 1-968855-1, 2x plug contact TE 1-968857-1, 2x seal TE 828905-1, 2x seal TE 828904-1

2. Bayonet attachment for metal or plastic:
   A detailed drawing of the recess required for bayonet attachment can be obtained from ebm-papst.

3. Max. permissible axial bearing loads: 50 N (brief periods during handling or installation)

Pin assignment: (see connection diagram)
- 4 Diagnostic output
- 3 PWM/LIN
- 3 + UB
- 2 GND

Scroll housing on request
BL-DC centrifugal fans Ø 146 mm
BL-DC centrifugal fans - RadiCal
*backward curved*
Ø 220 - Ø 280

<table>
<thead>
<tr>
<th>Fan Size</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 220</td>
<td>76</td>
</tr>
<tr>
<td>Ø 250</td>
<td>80</td>
</tr>
<tr>
<td>Ø 280</td>
<td>84</td>
</tr>
</tbody>
</table>
BL-DC centrifugal fans - RadiCal
backward curved, for commercial vehicle applications, Ø 220 mm

Material/surface
- Impeller: PA plastic
- Rotor surface: Galvanized
- Electronics housing: Die-cast aluminum

Mechanical data
- Direction of rotation: Clockwise viewed toward rotor
- Mode: Continuous operation (S1)
- Mounting: Maintenance-free ball bearings, sealed

Standards and approvals
- Approvals: EAC

on Page 78 | Drawings
on Page 88 | Accessories
on Page 98 | Connection diagrams and technical features
on Page 114 | Technical parameters & scope
More at | www.ebmpapst.com

Measuring requirements:
Air performance measured according to: ISO 5801, installation category A, with ebm-papst inlet ring without contact protection.
Intake-side sound level: \( L_{IA} \) according to 13347, \( L_{PA} \) measured at 1 m distance from fan axis. The values given are only applicable under the specified measuring conditions and may differ depending on the installation conditions. In the event of deviation from the standard configuration, the parameters must be checked in installed condition.
### BL-DC centrifugal fans - RadCal  ø 220 mm

<table>
<thead>
<tr>
<th>Curve</th>
<th>Operating point</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal voltage range 8-16 V DC</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Shaft horizontal or rotor on bottom</td>
<td>-25 ... +60</td>
</tr>
<tr>
<td>Motor: IP 24 KM Electronics: IP 66/69 K</td>
<td>B TR12</td>
</tr>
<tr>
<td>Nominal voltage range 16-28 V DC</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>24</td>
</tr>
<tr>
<td>Shaft horizontal or rotor on bottom</td>
<td>-25 ... +60</td>
</tr>
</tbody>
</table>

Values set in blue are nominal data at operating point with maximum load.

Subject to change

<table>
<thead>
<tr>
<th>Curve</th>
<th>BL-DC centrifugal fans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Part number</td>
</tr>
<tr>
<td>A</td>
<td>VB50220RUNCS</td>
</tr>
<tr>
<td>B</td>
<td>VB50220RUNCS</td>
</tr>
</tbody>
</table>
BL-DC centrifugal fans - RadiCal Ø 220 mm

VBS0220RUNC R1G220RD6103 (Centrifugal fan) Dimensions in mm

1. Cable FLRYW 4x 0.75 mm², 4x splice
2. Accessory part: inlet ring 09609-2-4013 not included in scope of delivery
3. Max. clearance for screw 6 mm
1. Cable FLRYW 4x 0.75 mm², 4x splice
2. Accessory part: inlet ring 09609-2-013 not included in scope of delivery
3. Max. clearance for screw 6 mm
BL-DC centrifugal fans - RadiCal
backward curved, for commercial vehicle applications, Ø 250 mm

Material/surface
- Impeller: PA plastic
- Rotor surface: Galvanized
- Electronics housing: Die-cast aluminum

Mechanical data
- Direction of rotation: Clockwise viewed toward rotor
- Mode: Continuous operation (S1)
- Mounting: Maintenance-free ball bearings, sealed

Standards and approvals
- Approvals: EAC

Air performance measured according to: ISO 5801, installation category A, with ebm-papst inlet ring without contact protection.
Intake-side sound level: LwA according to 13347, LpA measured at 1 m distance from fan axis. The values given are only applicable under the specified measuring conditions and may differ depending on the installation conditions. In the event of deviation from the standard configuration, the parameters must be checked in installed condition.

More at www.ebmpapst.com
### BL-DC centrifugal fans - RadCal Ø 250 mm

#### Curve Operating point

<table>
<thead>
<tr>
<th>Nominal voltage range 8-16 V DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
</tr>
<tr>
<td>12</td>
</tr>
<tr>
<td>12</td>
</tr>
<tr>
<td>12</td>
</tr>
</tbody>
</table>

- Shaft horizontal or rotor on bottom
- -25...+70
- Motor: IP 24 KM Electronics: IP 66/69 K
- B TR12

#### Curve Operating point

<table>
<thead>
<tr>
<th>Nominal voltage range 16-28 V DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
</tr>
<tr>
<td>24</td>
</tr>
<tr>
<td>24</td>
</tr>
<tr>
<td>24</td>
</tr>
</tbody>
</table>

- Shaft horizontal or rotor on bottom
- -25...+60
- Motor: IP 24 KM Electronics: IP 66/69 K
- B TR13

---

Values set in blue are nominal data at operating point with maximum load.

Subject to change.
BL-DC centrifugal fans - RadiCal Ø 250 mm

A VBS0250RUNES R1G250RC7703 (Centrifugal fan) Dimensions in mm

1. Cable FLRYW 4x 0,75 mm², 4x splice
2. Accessory part: inlet ring 96359-2-4013 not included in scope of delivery
3. Max. clearance for screw 6 mm
B VBS0250RUNES R1G250RC8703 (Centrifugal fan) Dimensions in mm

1. Cable FLRYW 4x 0.75 mm², 4x splice
2. Accessory part: inlet ring 96359-2-4013 not included in scope of delivery
3. Max. clearance for screw 6 mm
BL-DC centrifugal fans - RadiCal
backward curved, for commercial vehicle applications, Ø 280 mm

Material/surface
- Impeller: PA plastic
- Rotor surface: Galvanized
- Electronics housing: Die-cast aluminum

Mechanical data
- Direction of rotation: Clockwise viewed toward rotor
- Mode: Continuous operation (S1)
- Mounting: Maintenance-free ball bearings, sealed

Standards and approvals
- Approvals: EAC

Measurement requirements:
Air performance measured according to: ISO 5801, installation category A, with ebm-papst inlet ring without contact protection.
Intake-side sound level: Lw/A according to 13347, LpA measured at 1 m distance from fan axis. The values given are only applicable under the specified measuring conditions and may differ depending on the installation conditions. In the event of deviation from the standard configuration, the parameters must be checked in installed condition.

on Page 86 Drawings
on Page 88 Accessories
on Page 98 Connection diagrams and technical features
on Page 114 Technical parameters & scope
More at www.ebmpapst.com

Graph:.Parameters and performance data for BL-DC centrifugal fans - RadiCal.

Graph: Measurements and performance data for BL-DC centrifugal fans - RadiCal.

Graph: Technical data for BL-DC centrifugal fans - RadiCal.

Graph: Performance curves for BL-DC centrifugal fans - RadiCal.
### BL-DC centrifugal fans - RadiCal Ø 280 mm

<table>
<thead>
<tr>
<th>Curve</th>
<th>Operating point</th>
<th>Nominal voltage</th>
<th>Speed n</th>
<th>Max. input power $P_{IN}$</th>
<th>Max. input current</th>
<th>Sound power level</th>
<th>Installation position</th>
<th>Perm. ambient temp.</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Conn. diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal voltage range 16-32 V DC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>26</td>
<td>2356</td>
<td>252</td>
<td>10,5</td>
<td>80</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40...+70</td>
<td>Motor: IP 24 KM Electronics: IP 66/69 K</td>
<td>B</td>
<td>TR14</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>26</td>
<td>2280</td>
<td>298</td>
<td>12,4</td>
<td>75</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40...+70</td>
<td>Motor: IP 24 KM Electronics: IP 66/69 K</td>
<td>B</td>
<td>TR15</td>
<td></td>
</tr>
</tbody>
</table>

Values set in blue are nominal data at operating point with maximum load.
Subject to change

<table>
<thead>
<tr>
<th>Curve</th>
<th>BL-DC centrifugal fans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Part number</td>
</tr>
<tr>
<td>A</td>
<td>VBS0280RUPES</td>
</tr>
<tr>
<td>B</td>
<td>VBS0280RUPES</td>
</tr>
</tbody>
</table>
BL-DC centrifugal fans - RadiCal Φ 280 mm

A VBS0280RUPES R3G280RU2681 (Centrifugal fan) Dimensions in mm

1. Cable (railway) 2x 2,5 mm², 4x 1,0 mm², 6x crimped ferrules
2. Accessory part: inlet ring 28000-2-4013 not included in scope of delivery
3. Max. clearance for screw 10 mm, tapping hole ready for self-tapping M5 screw
4. Max. clearance for screw 8 mm, tapping hole ready for self-tapping M4 screw
5. Max. clearance for screw 12 mm, tapping hole ready for self-tapping M6 screw
1. Cable halogen-free, BETATrans® 3 GK3 6 mm², 2x crimped ferrules (brown, black),
   BETATrans® 3 GK1 1 mm², 2x crimped ferrules (yellow, white)
2. Accessory part: inlet ring 28000-2-4013 not included in scope of delivery
3. Max. clearance for screw 10 mm, tapping hole ready for self-tapping M5 screw
4. Max. clearance for screw 8 mm, tapping hole ready for self-tapping M4 screw
5. Max. clearance for screw 12 mm, tapping hole ready for self-tapping M6 screw
## Accessories

*for commercial vehicle fans*

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cables</td>
<td>90</td>
</tr>
<tr>
<td>Guard grille</td>
<td>92</td>
</tr>
<tr>
<td>Inlet rings</td>
<td>94</td>
</tr>
</tbody>
</table>
Cables
for commercial vehicle fans

<table>
<thead>
<tr>
<th>Part number</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>02001-4-1021</td>
<td>Dual centrifugal fans with housing</td>
</tr>
<tr>
<td>02020-4-1021</td>
<td>VWT0300XULNES (W1G100EC)</td>
</tr>
</tbody>
</table>

Subject to change
Cables
for commercial vehicle fans

<table>
<thead>
<tr>
<th>Part number</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>02025-4-1021</td>
<td>VWS0250XUNBS (W3G250EC)</td>
</tr>
<tr>
<td>02040-4-1021</td>
<td>VFS0146XUPCS (R3G146EC), VWS0300XUPCS (W3G300ME)</td>
</tr>
</tbody>
</table>

Subject to change
Guard grille
for commercial vehicle fans
Guard grille
for commercial vehicle fans

Guard grille

<table>
<thead>
<tr>
<th>Part number</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>18605-2-4039</td>
<td>VWS0250XUNBS (W3Q250EC)</td>
</tr>
</tbody>
</table>

Subject to change
Inlet rings
for commercial vehicle fans

Fan size 220, RadCal
Part number
09609-2-4023
Inlet rings
for commercial vehicle fans

Fan size 250, RadialCal
Part number
96359-2-4013

Fan size 280, RadialCal
Part number
28000-2-4013
Technology
for commercial vehicle fans

Connection diagrams  98
Technical parameters & scope  114
Connection diagram: TR1)

**Technical features:**
- Control input 0-10 VDC / PWM
- Fault output (Open Collector)
- Reverse polarity protection
- Motor current limiter
- Output limit
- Soft start
- Over-temperature protected electronics
- Temperature derating
- Load-Dump (58 V)

**Designation** | **Assignment / function**
--- | ---
**DIAG** | Diagnostic output: Open Collector, Isource max = 10 mA, Rsource = 2 kΩ; Rsink = 100 kΩ  
Fan OK -> low; fan error -> high

**0-10 V / PWM** | Control input: Ri > 27 kΩ  
0-10 V: (typ. 0.5 V -> Standby; 1.5 V -> n = min.; 9.5 V -> n = max.)  
or PWM: (12 V - Ub; 1 kHz - 10 kHz; typ. < 1 % -> Standby; 10 % -> n = min.; 95 % -> n = max.)

**+UB** | Power supply +

**GND** | Power supply -
Connection diagram: TR2)

Technical features:
• Control input 0-10 VDC / PWM
• Temperature derating
• Reverse polarity and locked-rotor protection
• Motor current limiter
• Load-Dump (58 V)
• Soft start
• Over-temperature protected electronics

### Cable with connector

<table>
<thead>
<tr>
<th>Termin</th>
<th>Assignment / function</th>
</tr>
</thead>
<tbody>
<tr>
<td>+UB</td>
<td>Power supply +</td>
</tr>
<tr>
<td>0-10 V / PWM</td>
<td>Analog voltage control input 0-10 V or PWM</td>
</tr>
<tr>
<td>DIAG</td>
<td>Fan OK -&gt; high; fan error -&gt; low; Isink max = 10 mA</td>
</tr>
<tr>
<td>GND</td>
<td>Power supply -</td>
</tr>
</tbody>
</table>
### Connection diagram: TR3)

#### Technical features:
- Control input 0-10 VDC / PWM
- Start at 85 °C (2 min) permitted
- Overvoltage detection
- Motor current limiter
- Undervoltage detection
- Soft start
- Over-temperature protected electronics
- Passiver Reverse polarity and locked-rotor protection
- Load-Dump (58 V)

#### Pin header

<table>
<thead>
<tr>
<th>Designation</th>
<th>Assignment / function</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ UB</td>
<td>Power supply +</td>
</tr>
<tr>
<td>GND</td>
<td>Power supply -</td>
</tr>
<tr>
<td>100 %, PWM/LIN</td>
<td>100 % speed, analog voltage control input 0-10 V or PWM</td>
</tr>
<tr>
<td>80 %</td>
<td>80 % speed</td>
</tr>
<tr>
<td>60 %</td>
<td>60 % speed</td>
</tr>
<tr>
<td>NC</td>
<td>Not used / no function</td>
</tr>
</tbody>
</table>
Connection diagram: TR4)

Technical features:
• Control input 0-10 VDC / PWM
• Tach output
• Output limit
• Motor current limiter
• Temperature derating
• Soft start
• Over-temperature protected electronics

Connector:
- UB
- GND
- 0-10 V / PWM

Designation | Assignment / function
---|---
+ UB | Power supply +
0-10 V / PWM | Typical values
Control input
RI > 36 kΩ
0-10 V:
< 1 V -> n=0
1,5 V -> n=min
> 9,5 V -> n=max
or PWM (> 10 V; 1-10 kHz):
< 4 % -> n=0
10 % -> n=min
> 95 % -> n=max
DIAG | Tach output: open Collector, 1 pulse per revolution, Isink max = 10 mA, RI = 2,1 kΩ
GND | Power supply -
**Connection diagram: TR5)**

**Technical features:**
- Control input 0-10 VDC / PWM
- Start at 85 °C (2 min) permitted
- Overvoltage detection
- Motor current limiter
- Undervoltage detection
- Soft start
- Over-temperature protected electronics
- Reverse polarity and locked-rotor protection
- Load-Dump (58 V)
- Output limit
- Temperature derating
- Fault output (Highside-Switch max. 30 mA)

<table>
<thead>
<tr>
<th>Designation</th>
<th>Assignment / function</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10 V / PWM</td>
<td>Analog voltage control input 0-10 V or PWM</td>
</tr>
<tr>
<td>DIAG</td>
<td>Diagnostic output</td>
</tr>
<tr>
<td>GND</td>
<td>Power supply -</td>
</tr>
<tr>
<td>ABSENK</td>
<td>Lowering input</td>
</tr>
<tr>
<td>+ UB</td>
<td>Power supply +</td>
</tr>
<tr>
<td>NC</td>
<td>Not used / no function</td>
</tr>
</tbody>
</table>
Connection diagram: TR6)

**Technical features:**
- Control input 0-10 VDC / PWM
- Undervoltage detection
- Overvoltage detection
- Motor current limiter
- Soft start
- Over-temperature protected electronics
- Reverse polarity and locked-rotor protection
- Load-Dump (58 V)
- Output limit
- Temperature derating
- Fault output (Highside-Switch max. 30 mA)

**Designation** | **Assignment / function**
--- | ---
+ UB | Power supply + 13 VDC
DIAG | Diagnostic output
0-10 V / PWM | Analog voltage control input 0-10 V or PWM
GND | Power supply -
Connection diagram: TR7)

**Technical features:**
- Control input 0-10 VDC / PWM
- Undervoltage detection
- Overvoltage detection
- Motor current limiter
- Soft start
- Over-temperature protected electronics
- Reverse polarity and locked-rotor protection
- Load-Dump (58 V)
- Output limit
- Temperature derating
- Fault output (Highside-Switch max. 30 mA)

**Designation** | **Assignment / function**
---|---
+ UB | Power supply + 26 VDC
DIAG | Diagnostic output
0-10 V / PWM | Analog voltage control input 0-10 V or PWM
GND | Power supply -
Connection diagram: TR8)

**Technical features:**
- Control input 0-10 VDC / PWM
- Tach output
- Overvoltage detection
- Motor current limiter
- Undervoltage detection
- Soft start
- Over-temperature protected electronics
- Reverse polarity and locked-rotor protection
- Load-Dump (58 V)
- Output limit
- Temperature derating
- Fault output (Highside-Switch max. 30 mA)
- INVLIN (Control input invers linear)
- Lowering input

**Designation** | **Assignment / function**
---|---
0-10 V / PWM | Analog voltage control input 0-10 V or PWM
DIAG | Diagnostic output
GND | Power supply -
ABSENK | Lowering input
+ UB | Power supply + 26 VDC
INVLIN | Control input invers linear
Connection diagram: TR9)

**Technical features:**
- Control input 0-10 VDC / PWM
- Output limit
- Overvoltage detection
- Motor current limiter
- Undervoltage detection
- Soft start
- Over-temperature protected electronics
- Reverse polarity and locked-rotor protection
- Load-Dump (58 V)
- Temperature derating
- Fault output (Highside-Switch)
- Reverse operation (reversal of rotation)

**Cable with connector**
- 0-10 V / PWM
- Reverse
- NC

<table>
<thead>
<tr>
<th>Designation</th>
<th>Assignment / function</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10 V / PWM</td>
<td>Control input: ( R_i &gt; 42 , k\Omega ) 0-10 V (typ. ( &lt;1 , V \rightarrow n = 0; 1,5 , V \rightarrow n = \text{min.}; 10 , V \rightarrow n = \text{max.} )), potentiometer (limit voltage at potentiometer with 12 V Z-diode) or PWM (( &gt;12 , V; 10-50 , kHz ); typ. ( &lt;2% \rightarrow n = 0; 5% \rightarrow n = \text{min.}; 100% \rightarrow n = \text{max.} ))</td>
</tr>
<tr>
<td>DIAG</td>
<td>Diagnostic output: ( R_i = 0,05 , k\Omega ) output level in nominal operation -&gt; Low</td>
</tr>
<tr>
<td>GND</td>
<td>Power supply -</td>
</tr>
<tr>
<td>Reverse</td>
<td>Reversal of rotation input: Reverse connected with (+ UB = Reverse (R_i = 47 , k\Omega)) direction of rotation is switched over or open -&gt; reversal of rotation inactive</td>
</tr>
<tr>
<td>+ UB</td>
<td>Power supply +</td>
</tr>
<tr>
<td>NC</td>
<td>Not used / no function</td>
</tr>
</tbody>
</table>
Connection diagram: TR10

Technical features:
- Control input 0-10 VDC
- Temperature derating
- Locked-rotor protection
- Motor current limiter
- Soft start
- Over-temperature protected electronics

Designation | Assignment / function
--- | ---
+UB | Power supply + 13 VDC, maximum ripple 3,5 %
0-10 VDC | Control input, 2 speed levels
GND | Power supply -
Connection diagram: TR11)

**Technical features:**
- Control input 0-10 VDC
- Temperature derating
- Locked-rotor protection
- Motor current limiter
- Soft start
- Over-temperature protected electronics
- Start at 85 °C (2 min) permitted

<table>
<thead>
<tr>
<th>Designation</th>
<th>Assignment / function</th>
</tr>
</thead>
<tbody>
<tr>
<td>+UB</td>
<td>Power supply + 24 VDC, maximum ripple 3,5 %</td>
</tr>
<tr>
<td>0-10 VDC</td>
<td>Control input 0-10 V</td>
</tr>
<tr>
<td>GND</td>
<td>Power supply -</td>
</tr>
</tbody>
</table>
Connection diagram: TR12)

Technical features:
- Control input 0-10 VDC / PWM
- Overvoltage detection
- Reverse polarity protection
- Motor current limiter
- Tach output
- Soft start

<table>
<thead>
<tr>
<th>Designation</th>
<th>Color</th>
<th>Assignment / function</th>
</tr>
</thead>
<tbody>
<tr>
<td>UB +12 VDC</td>
<td>red</td>
<td>Power supply 12 VDC, maximum ripple 3,5 %</td>
</tr>
<tr>
<td>0-10 V / PWM</td>
<td>yellow</td>
<td>Control input Re &gt; 40 k (PWM 1-10 kHz / 0-10 V)</td>
</tr>
<tr>
<td>Tacho</td>
<td>white</td>
<td>Tach output, 3 pulses per revolution, Isink max = 10 mA</td>
</tr>
<tr>
<td>GND</td>
<td>blue</td>
<td>Power supply -</td>
</tr>
</tbody>
</table>
Connection diagram: TR13)

**Technical features:**
- Control input 0-10 VDC / PWM
- Overvoltage detection
- Reverse polarity protection
- Motor current limiter
- Tach output
- Soft start
- Over-temperature protected electronics

<table>
<thead>
<tr>
<th>Designation</th>
<th>Color</th>
<th>Assignment / function</th>
</tr>
</thead>
<tbody>
<tr>
<td>UB +24 VDC</td>
<td>red</td>
<td>Power supply 24 VDC, maximum ripple 3.5 %</td>
</tr>
<tr>
<td>0-10 V / PWM</td>
<td>yellow</td>
<td>Control input Re &gt; 40 k</td>
</tr>
<tr>
<td>Tacho</td>
<td>white</td>
<td>Tach output, 3 pulses per revolution, Isink max = 10 mA</td>
</tr>
<tr>
<td>GND</td>
<td>blue</td>
<td>Power supply -</td>
</tr>
</tbody>
</table>

Cable

<table>
<thead>
<tr>
<th>0-10 V / PWM</th>
<th>red</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tacho</td>
<td>yellow</td>
</tr>
<tr>
<td>UB +24 VDC</td>
<td>white</td>
</tr>
<tr>
<td>GND</td>
<td>blue</td>
</tr>
</tbody>
</table>
Connection diagram: TR14)

**Technical features:**
- Control input 0-10 VDC / PWM
- Temperature derating
- Overvoltage detection
- Motor current limiter
- Undervoltage detection
- Soft start
- Over-temperature protected electronics
- Reverse polarity protection
- Load-Dump (58 V)
- Output limit
- Fault output (Highside-Switch)
- INVLIN (Control input invers linear)
- Lowering input

<table>
<thead>
<tr>
<th>Designation</th>
<th>Color</th>
<th>Assignment / function</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ UB</td>
<td>black</td>
<td>Power supply +</td>
</tr>
<tr>
<td>GND</td>
<td>brown</td>
<td>Power supply -</td>
</tr>
<tr>
<td>AUXIN</td>
<td>blue</td>
<td>Digital input: when active (&gt; 4 V), value of PWM signal is halved</td>
</tr>
<tr>
<td>0-10 V / PWM</td>
<td>yellow</td>
<td>Control input: Ri &gt; 47 kΩ</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0-10 V (typ. &lt; 1 V -&gt; n=0; 1,5 V -&gt; n=min; &gt; 10 V -&gt; n=max)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PWM (amplitude 10 V; 1-50 kHz; typ. &lt; 5 % -&gt; n=0; 15 % -&gt; n=min; &gt; 100 % -&gt; n=max)</td>
</tr>
<tr>
<td>DIAG</td>
<td>white</td>
<td>Diagnostic output: open Collector, Isink max = 10 mA, Ri &gt; 50 Ω</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fan OK -&gt; low; fan error -&gt; high</td>
</tr>
<tr>
<td>INVLIN</td>
<td>orange</td>
<td>Control input invers linear</td>
</tr>
</tbody>
</table>
Connection diagram: TR15

### Technical features:
- Control input 0-10 VDC / PWM
- Temperature derating
- Overvoltage detection
- Motor current limiter
- Soft start
- Over-temperature protected electronics
- Reverse polarity protection
- Load-Dump (58 V)
- Standstill in the case of open circuit
- Fault output (Highside-Switch max. 30 mA)
- Start at 85 °C (2 min) permitted

### Cable Designation

<table>
<thead>
<tr>
<th>Designation</th>
<th>Color</th>
<th>Assignment / function</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ UB</td>
<td>black</td>
<td>Power supply +</td>
</tr>
<tr>
<td>GND</td>
<td>brown</td>
<td>Power supply -</td>
</tr>
<tr>
<td>DIAG</td>
<td>white</td>
<td>Diagnostic output: open Collector, Isink max = 10 mA, Ri &gt; 2,1 kΩ  Fan OK -&gt; high; fan error -&gt; low</td>
</tr>
<tr>
<td>0-10 V / PWM</td>
<td>yellow</td>
<td>Control input: Ri &gt; 47 kΩ  0-10 V (typ. &lt; 1 V -&gt; n=0; 1,5 V -&gt; n=min; &gt; 10 V -&gt; n=max)  PWM (amplitude 10 V; 1-50 kHz; typ. &lt; 5 % -&gt; n=0; 15 % -&gt; n=min; &gt; 100 % -&gt; n=max)</td>
</tr>
</tbody>
</table>
High standards for all ebm-papst products

Here at ebm-papst, we constantly strive to further improve our products in order to be able to offer you the best possible product for your application. Careful monitoring of the market ensures that technical innovations are reflected in the improvements of our products. Based on the technical parameters listed below and the ambience you want our product to operate in, we here at ebm-papst can always work out the best solution for your specific application.

General performance parameters
Any deviations from the technical data and parameters described here are listed on the product-specific data sheet.

Degree of protection
The type of protection is specified in the product-specific data sheets.

Insulation class
The insulation class is specified in the product-specific data sheets.

Installation position
The mounting position is specified in the product-specific data sheets.

Condensate discharge holes
Information on the condensate discharge holes is provided in the product-specific data sheets.

Mode of operation
The mode of operation is specified in the product-specific data sheets.

Protection class
The protection class is specified in the product-specific data sheets.

Tightening torques for fan assembly
Please consult your ebm-papst contact for questions about which tightening torque to use.

Service life
The service life of ebm-papst products for commercial vehicles depends on the service life of the bearing system.

The service life of the bearing system depends mainly on the thermal load on the bearing.

The majority of our products use maintenance-free ball bearings for any mounting position possible.

The service life L10 of the ball bearings can be taken as approx. 40,000 operating hours at an ambient temperature of 40 °C, yet this estimate can vary according to the actual ambient conditions. We will gladly provide you with a lifetime calculation taking into account your specific operating conditions.

Motor protection / thermal protection
Information on motor protection and thermal protection is provided in the product-specific data sheets.

Depending on motor type and field of application, the following protective features are realised:
- Thermal overload protector, connected
- PTC/NTC with electronic evaluation
- Current limiting using electronics

Mechanical strain / performance parameters
All ebm-papst products are subjected to comprehensive tests complying with the normative specifications. In addition to this, the tests also reflect the vast experience and expertise of ebm-papst.

High voltage and insulation testing
If high voltage or insulation testing is carried out in the application, then all connection lines from the fan must be disconnected in advance.
Balancing quality
Balancing grade is tested according to the application’s specifications. Residual imbalance is evaluated as specified in DIN ISO 1940 or ISO 14694. Should you require a higher balancing quality level for your specific application, please let us know and specify this when ordering your product.

Chemo-physical strain / performance parameters
Should you have questions about chemo-physical strain, please direct them to your ebm-papst contact.

Fields of application, industries and applications
Our products are used in a variety of industries and applications. Our fans help to keep the traveling temperature in trucks, trains, buses, and motor homes within a comfortable range – reliably and efficiently. As a result, drivers and passengers benefit from perfectly controllable air conditioning that makes everyday life at work more pleasant. In the vehicle engine cooling and transport chilling sectors, our products set the benchmark.

Legal and normative directives
The products described in this catalogue are designed, developed and produced in keeping with the standards in place for the relevant product and, if known, the conditions governing the relevant fields of application.

Standards
Information on standards is provided in the product-specific data sheets.

EMC
Information on EMC standards is provided in the product-specific data sheets. Complying with the EMC standards has to be established on the final appliance, as different mounting situations can result in changed EMC properties.

Approvals
In case you require a specific approval for your ebm-papst product (e1, UL, etc.) please let us know. Most of our products can be supplied with the relevant approval. Information on existing approvals is provided in the product-specific data sheets.

Air performance measurements
All air performance measurements are carried out on suction side and on chamber test beds conforming to the specifications as per ISO 5801 and DIN 24163. The fans under test are installed in the measuring chamber at free air intake and exhaust (installation category A) and are operated at nominal voltage, with AC also at nominal frequency, and without any additional components such as guard grilles. As required by the standard, the air performance curves correspond to an air density of 1.15 kg/m³.
Technical parameters & scope

Measurement conditions for air and noise measurement

**ebm-papst products are measured under the following conditions:**

- Axial and diagonal fans in direction of rotation "V"
  in full nozzle and without guard grill
- Backward curved centrifugal fans, free-running and with inlet nozzle
- Forward curved single and dual inlet centrifugal fans with housing

**Noise measurements**

All noise measurements are carried out in low-reflective test rooms with reverberant floor. Thus the ebm-papst acoustic test chambers meet the requirements of precision class 1 according to DIN EN ISO 3745. For noise measurement, the fans being tested are placed in a reverberant wall and operated at nominal voltage (for AC, also at nominal frequency) without additional attachments such as the guard grill.

**Sound pressure level and sound level**

All acoustic values are established according to ISO 13347, DIN 45635 and ISO 3744/3745 to accuracy class 2 and given in A-rated form.

When the sound pressure level ($L_p$) is measured, the microphone is on the intake side of the fan being tested, usually at a distance of 1 m on the fan axis.

To measure the sound power level ($L_w$), 10 microphones are distributed over an enveloping surface on the intake side of the fan being tested (see graphic). The sound power level measured can be roughly calculated from the sound pressure level by adding 7 dB.

**Measuring configuration as per ISO 13347-3 bzw. DIN 45635-38:**

- 10 measuring points
- $d \geq D$
- $h = 1,5d \ldots 4,5d$
- Measurement area $S = 6d^2 + 7d (h + 1,5d)$
**Combined level of multiple same-level sound sources**

Adding 2 noise sources with the same level results in a level increase of approx. 3 dB.

The noise characteristics of multiple identical fans can be determined in advance based on the noise values specified in the data sheet. This is shown in the diagram opposite.

**Example:** 8 A3G800 axial fans are on a condenser. According to the data sheet, the sound pressure level of a fan is approximately 75 dB(A). The level increase measured from the diagram is 9 dB. Thus the overall sound level of the installation can be expected to be 84 dB(A).

**Combined level of two different-level sound sources**

The acoustic performance of two different fans can be predetermined based on the sound levels given in the data sheet. This is shown in the diagram opposite.

**Example:** There is an axial fan A3G800 with a sound pressure level of 75 dB(A) at the operating point and an axial fan A3G710 with 71 dB(A) in a ventilation unit. The level difference is 4 dB. The level increase can now be read in the diagram as approx. 1.5 dB. This means that the overall sound level of the unit can be expected to be 76.5 dB(A).

**Distance laws**

Sound power level is independent of distance to the sound source. In contrast to this, sound pressure level decreases the further away the noise source is. The adjacent diagram shows the decrease in level under far sound field conditions. Far sound field conditions apply whenever the distance between microphone and fan is big when compared to fan diameter and wavelength to be considered. For more information on far sound field, please consult the relevant literature on this complex topic. Per doubling of distance, the level in the far sound field decreases by 6 dB. In the near field of the fan, other correlations apply and the decrease in levels can be considerably smaller. The following example only applies to far sound field conditions and can vary strongly depending on the installation effects: With an axial fan A3G300, a sound pressure level of 65 dB(A) was measured at a distance of 1 m. According to the adjacent diagram, at a distance of 20 m we would get a reduction by 26 dB, i.e. a sound pressure level of 39 dB(A).
Technical parameters & scope

Aerodynamics fundamentals:

Further information can be found in our brochure "Technology - Basic principles"

Axial fan operating range:
To the right of the saddle point (right section of the air performance curve):
- Maximum efficiency
- Minimum noise

To the left of the saddle point (left section of the air performance curve):
- Stall
- Irruptive efficiency
- Noise suddenly increases

The fan’s optimal range of use is highlighted in green in the adjoining performance curve.

Effects of guard grill:
Installing a guard grill reduces the axial fan’s air performance.

The pressure loss in Pa can be roughly calculated using the following equation:

\[ \Delta p_{SG} = \epsilon_{SG} \cdot 10^8 \cdot \dot{V}^2 \quad \dot{V} \text{ in [m}^3/\text{h]} \]

For the guard grill that ebm-papst used, the correction factor \( \epsilon_{SG} \) dependent on impeller diameter \( D \) can be found in the adjoining table.

<table>
<thead>
<tr>
<th>Diameter D</th>
<th>Correction factor ( \epsilon_{SG} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>400</td>
<td>90</td>
</tr>
<tr>
<td>450</td>
<td>55</td>
</tr>
<tr>
<td>500</td>
<td>35</td>
</tr>
</tbody>
</table>

Centrifugal fan operating range:
Middle section of the air performance curve:
- Maximum efficiency
- Minimum noise

To the left and right of the middle section of the air performance curve:
- Reduced efficiency
- Increasing noise

The fan’s optimal range of use is highlighted in green in the adjoining performance curve.
Effects of installation space
Installation in a square box may cause a reduction of the air performance.

\[ d_h = \text{hydraulic diameter} \]
Formula: \( d_h = \frac{2 \times W \times H}{W + H} \)

\( W = \text{Width of the box} \)
\( H = \text{Height of the box} \)
\( D = \text{Outside diameter of the fan} \)

Airflow determination for inlet rings with pressure tap:
The differential pressure method compares the static pressure upstream of the inlet ring with the static pressure in the inlet ring. The airflow can be calculated from the differential pressure (between the static pressures) according to the following equation:

\[ q = k \cdot \sqrt[3]{\Delta p} \]
\( q \) in \([\text{m}^3/\text{h}]\) and \( \Delta p \) in \([\text{Pa}]\)

If the airflow is to be regulated to remain constant, the inlet pressure must be kept constant:

\[ \Delta p = q^2 \cdot k^2 \]
\( k \) takes the specific properties of the inlet ring into account.

The pressure is tapped at 1 (4) point(s) on the circumference of the inlet ring. The customer connection consists of a built-in T-shaped hose fitting. The hose fitting is suitable for pneumatic hoses with an inside diameter of 4 mm.

Influence of Speed \( n \) on the sound power level \( L_w \):
The sound power level for changes in speed can be approximately determined based on the adjoining diagram and the following formula:

\[ L_{w_2} - L_{w_1} = 50 \text{ dB} \cdot \log (n_2 : n_1) \]

\( L_{w_1} = \text{Sound power level after speed change} \)
\( L_{w_2} = \text{Sound power level before speed change} \)
\( n_1 = \text{Changed speed} \)
\( n_2 = \text{Initial speed} \)
ebm-papst Mulfingen GmbH & Co. KG
Bachmühle 2
74673 Mulfingen
GERMANY
Phone +49 7938 81-0
Fax +49 7938 81-110
info1@de.ebmpapst.com

ebm-papst St. Georgen GmbH & Co. KG
Hermann-Papst-Straße 1
78112 St. Georgen
GERMANY
Phone +49 7724 81-0
Fax +49 7724 81-1309
info2@de.ebmpapst.com

ebm-papst Landshut GmbH
Hofmark-Aich-Straße 25
84030 Landshut
GERMANY
Phone +49 871 707-0
Fax +49 871 707-465
info3@de.ebmpapst.com
<table>
<thead>
<tr>
<th>Agents Worldwide</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Page</strong></td>
</tr>
<tr>
<td>ebm-papst in Germany</td>
</tr>
<tr>
<td>ebm-papst in Europe</td>
</tr>
<tr>
<td>ebm-papst in America and Africa</td>
</tr>
<tr>
<td>ebm-papst in Asia</td>
</tr>
<tr>
<td>ebm-papst in Oceania</td>
</tr>
</tbody>
</table>
ebmpapst in Germany

Berlin
Dipl.-Ing. (TH) Jens Duchow
Händelstraße 7
16341 Panketal
GERMANY
Phone +49 30 944149-62
Fax +49 30 944149-63
Jens.Duchow@de.ebmpapst.com

Bielefeld
Dipl.-Ing. (FH) Wolf-Jürgen Weber
Münchenerstraße 13
3379 Bielefeld
GERMANY
Phone +49 5206 91732-31
Fax +49 5206 91732-35
Wolf-Juergen.Weber@de.ebmpapst.com

Dortmund
Dipl.-Ing. (FH) Hans-Joachim Pundt
Auf den Steinern 3
59519 Möhnesee-Völlingenhausen
GERMANY
Phone +49 2925 800-407
Fax +49 2925 800-408
Hans-Joachim.Pundt@de.ebmpapst.com

Frankfurt
Dipl.-Ing. Christian Kleffmann
Dr.-Hermann-Krause-Straße 23
63452 Hanau
GERMANY
Phone +49 6181 1898-12
Fax +49 6181 1898-13
Christian.Kleffmann@de.ebmpapst.com

Halle
Dipl.-Ing. (TU) Michael Hanning
Lerchen 4
06198 Salzatal / OT Lieskau
GERMANY
Phone +49 345 55124-56
Fax +49 345 55124-57
Michael.Hanning@de.ebmpapst.com

Hamburg
Ingenieurbüro Breuell GmbH
Ing. Dirk Kahl
Elektroingenieur
Oststraße 96
22844 Norderstedt
GERMANY
Phone +49 40 538092-19
Fax +49 40 538092-84
Kahl@breuell-hilgenfeldt.de

Heilbronn / Heidelberg
Wolfgang Richter
Büttelsbergweg 18
79780 Bad Mergenthal-Rengershausen
GERMANY
Phone +49 7938 81-110
Fax +49 7938 81-110
Wolfgang.Richter@de.ebmpapst.com

Kassel
Dipl.-Ing. (FH) Ralph Brück
Hoheranstraße 3 b
35075 Glaudenbach
GERMANY
Phone +49 6462 4071-10
Fax +49 6462 4071-11
Ralph.Brucek@de.ebmpapst.com

Koblenz
Winfried Schaefer
Hinter der Kirch 10
56767 Uersfeld
GERMANY
Phone +49 2657 16-96
Fax +49 2657 16-76
Winfried.Schaefer@de.ebmpapst.com

Munich
Dipl.-Wirts.-Ing. (FH) Jens Peter
Schönermäcker 14
86727 Fichteningen
GERMANY
Phone +49 7971 91909-49
Fax +49 7971 91909-51
Jens.Peter@de.ebmpapst.com

Nuremberg
Dipl.-Wirts.-Ing. (FH) Axel Resch
Schillerstraße 25
74632 Neuenstein
GERMANY
Phone +49 7942 947-8483
Fax +49 7942 947-8970
Axel.Resch@de.ebmpapst.com

Offenburg
Dipl.-Ing. (FH) Ralf Braun
Hubenw 21
7704 Oberkirch
GERMANY
Phone +49 7802 9822-52
Fax +49 7802 9822-53
Ralf.Braun@de.ebmpapst.com

Stuttgart
Dipl.-Ing. (FH) Rudi Weinmann
Hindenburgstraße 100/1
72097 Plochingen
GERMANY
Phone +49 7153 9289-80
Fax +49 7153 9289-81
Rudi.Weinmann@de.ebmpapst.com

Ulm
M.Sc. Reinhard Sommerreisser
Einsteinstraße 7a
86674 Baar / Schwaben
GERMANY
Phone +49 8276 5899-775
Fax +49 8276 5899-775
Reinhard.Sommerreisser@de.ebmpapst.com

North
Breuell + Hilgenfeldt GmbH
Oststraße 96
22844 Norderstedt
GERMANY
Phone +49 40 538092-20
Fax +49 40 538092-84
info@breuell-hilgenfeldt.de

South
HDS Ventilatoren Vertriebs GmbH
Glasswiesenstraße 1
74677 Dörsbach
GERMANY
Phone +49 7937 80355-20
Fax +49 7937 80355-25
info@hds-gmbh.net
www.hds-gmbh.net

Express Service Center
North
Breuell + Hilgenfeldt GmbH
Oststraße 96
22844 Norderstedt
GERMANY
Phone +49 40 538092-20
Fax +49 40 538092-84
info@breuell-hilgenfeldt.de

South
HDS Ventilatoren Vertriebs GmbH
Glasswiesenstraße 1
74677 Dörsbach
GERMANY
Phone +49 7937 80355-20
Fax +49 7937 80355-25
info@hds-gmbh.net
www.hds-gmbh.net

Distributors
Frankfurt
R.E.D. Handelsgesellschaft mbH
Gutenbergstraße 3
63210 Rodgau - Jügesheim
GERMANY
Phone +49 6106 841-0
Fax +49 6106 841-111
info@red-elektromechanik.de
www.red-elektromechanik.de

Hamburg
Breuell + Hilgenfeldt GmbH
Oststraße 96
22844 Norderstedt
GERMANY
Phone +49 40 538092-20
Fax +49 40 538092-84
info@breuell-hilgenfeldt.de

Munich
A. Schweiger GmbH
Ohrnmstraße 1
82054 Sauerlach
GERMANY
Phone +49 8104 897-0
Fax +49 8104 897-90
info@schweiger-gmbh.de
www.schweiger-gmbh.com
ebm-papst in America & Africa

**America**

**Argentina**
- ebm-papst Argentina S.A.
- Parque Industrial Canning Etapa II - Nave 61A, Perito Moreno 845, Canning (1804), Buenos Aires
- Phone +54 11 46576135
- Fax +54 11 46572092
- ventas@ar.ebmpapst.com
- www.ebmpapst.com.ar

**Brazil**
- ebm-papst Motores Ventiladores Ltda.
- Av. Józi Giorgi, 301 Galpões B6+B7
- Condominio Logical Center
- 06707-100 Cotia - São Paulo
- BRAZIL
- Phone +55 11 4613-8700
- Fax +55 11 4777-1456
- vendas@br.ebmpapst.com
- www.ebmpapst.com.br

**Canada**
- ebm-papst Canada Inc.
- 419 King Street West, Suite 603A
- Oshawa, ON, L1J2K5
- CANADA
- Phone +1 905 420-3533
- Fax +1 905 420-3772
- sales@ca.ebmpapst.com
- www.ebmpapst.ca

**Mexico**
- ebm Industrial S. de R.L. de C.V.
- Paseo de Tamarindos 400-A-Sto Piso
- Col. Bosques de las Lomas
- Mexico 05120, D.F.
- MEXICO
- Phone +52 55 3300-5144
- Fax +52 55 3300-5243
- sales@mx.ebmpapst.com
- www.ebmpapst.com.mx

**USA**
- ebm-papst Inc.
- P.O. Box 4009
- 100 Hyde Road
- Farmington, CT 06034
- UNITED STATES
- Phone +1 860 674-1515
- Fax +1 860 674-8536
- sales@us.ebmpapst.com
- www.ebmpapst.us

**Africa**

**South Africa**
- ebm-papst South Africa (Pty) Ltd.
- P.O. Box 3124
- 1119 Yacht Avenue
- 2040 Honeydew
- SOUTH AFRICA
- Phone +27 11 794-3434
- Fax +27 11 794-5020
- info@za.ebmpapst.com
- www.ebmpapst.co.za

**Agent Locations**
- fan agent
- compact fan agent
- motor specialist
- motor agent
ebm-papst in Asia

Asia

China
ebm-papst Ventilator (Shanghai) Co., Ltd.
No. 418, Huajing Road
Waigaoqiao Free Trade Zone
No. 2001, Yang Gao (N) Road
20181 Shanghai
P. R. of CHINA
Phone +86 21 5046-0183
Fax +86 21 5046-1119
sales.cn@ebmpapst.com
www.ebmpapst.com.cn

Hong Kong
ebm-papst Hong Kong Ltd.
Room 17E, MG Tower
133 Hoi Bun Road, Kwun Tong
Hong Kong
P. R. of CHINA
Phone +852 2145-8678
Fax +852 2145-7678
info@hk.ebmpapst.com

India
ebm-papst India Pvt. Ltd.
26/3, G.N.T. Road, Erukkencherry
Chennai-600118
INDIA
Phone +91 44 25372556
Fax +91 44 25371349
sales@in.ebmpapst.com
www.ebmpapst.in

Indonesia
ebm-papst SEA Pte. Ltd.
Representative Office - Indonesia
Graha Telkomsigma, 4th Floor, Suite 4470
15321 Tangerang
INDONESIA
Phone +62 21 5376250-52
Fax +62 21 5388305
sales@id.ebmpapst.com

Japan
ebm-papst Japan K.K.
Attend on Tower 13F
Shin Yokohama 2-8-12, Kohoku-ku
222-0033 Yokohama-City, Kanagawa
JAPAN
Phone +81 45 47057-51
Fax +81 45 47057-52
info@jp.ebmpapst.com
www.ebmpapst.jp

Korea
ebm-papst Korea Co. Ltd.
A-13F, Doosan The Land Tower
152, Magokseo-ro
Gangseo-gu
Seoul 07788
KOREA
Phone +82 2 366213-24
Fax +82 2 366213-26
info@kr.ebmpapst.com
www.ebmpapst.co.kr

Malaysia
ebm-papst SEA Pte. Ltd.
Representative Office - Malaysia
No. 16-1, Jalan Putra Mahkota 7/8A
Putra Heights
Selangor Darul Ehsan
47600 Subang Jaya
MALAYSIA
Phone +60 3 5192-7688
Fax +60 3 5161-3078
sales@my.ebmpapst.com

Philippines
ebm-papst SEA Pte. Ltd.
Representative Office - Philippines
Coherco Financial Tower
Trade Street Corner Investment Drive
Unit 1101 Madrigal Business Park
Ayala Alabang / Muntinlupa City
Phone +63 02 8042747
Fax +63 02 8042757
sales@ph.ebmpapst.com

Singapore
ebm-papst SEA Pte. Ltd.
10 Changi South Street 2
#01-01/02
Singapore 486596
SINGAPORE
Phone +65 65613789
Fax +65 68428439
sales@sg.ebmpapst.com

Taiwan
ETECO Engineering & Trading Corp.
10F-1, No. 92, Teh-Wei Str.
Tsin-Hsin District, Kaohsiung
TAIWAN
Phone +886 7 557-4268
Fax +886 7 557-2788
eteco@ms22.hinet.net
www.ebmpapst.com.tw

Thailand
ebm-papst Thailand Co., Ltd.
99/9 Moo 2, Central Chaengwattana Tower
8th Floor, Room 801-802
Chaengwattana Road Bangtaraad, Pakkret
11120 Nonthaburi
THAILAND
Phone +66 2 8353785-7
Fax +66 2 8353788
sales@th.ebmpapst.com

United Arab Emirates
ebm-papst Middle East FZE
PO Box 17755
Jebel Ali Free Zone / FZS1 / AP05
Dubai
UNITED ARAB EMIRATES
Phone +971 4 88608-26
Fax +971 4 88608-27
info@ae.ebmpapst.com
www.ebmpapst.ae

Vietnam
ebm-papst SEA Pte. Ltd.
Representative Office - Vietnam
Floor M, Phuong Long Building,
506 Nguyen Dinh Chieu Street,
Ward 4, District 3,
Ho Chi Minh City
VIETNAM
Phone +84 28 3929 0699
Fax +84 28 3929 0669
sales@vn.ebmpapst.com

Agents

fan agent
compact fan agent
motor specialist
motor agent
ebm-papst in Oceania

Oceania

Australia
ebm-papst A&NZ Pty Ltd.
10 Oxford Road
Laverton North, Victoria, 3026
AUSTRALIA
Phone +61 3 9360-6400
Fax +61 3 9360-6466
sales@ebmpapst.com.au
www.ebmpapst.com.au

New Zealand
ebm-papst A&NZ Pty Ltd.
61 Hugo Johnston Drive, Unit H
Penrose 1061, Auckland
NEW ZEALAND
PO Box 112278,
Penrose 1642, Auckland
Phone +64 9 525-0245
Fax +64 9 525-0246
sales@ebmpapst.com.au
www.ebmpapst.com.au
ebm-papst
Mulfingen GmbH & Co. KG
Bachmühle 2
74673 Mulfingen
Germany
Phone +49 7938 81-0
Fax +49 7938 81-110
info1@de.ebmpapst.com