Fans and drive concepts for rail technology

Product Catalogue 2018-09
Fans and drive concepts for rail technology

Those who have to guarantee maximum reliability every day and want to offer optimum comfort need technologies they can rely on.

To this end, we develop ventilation and drive technology that sets standards - even under consideration of the strictest requirements.
# Fans and drive concepts for rail technology

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## Fans and drive concepts for rail technology

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As technological leader for ventilation and drive engineering, **ebm-papst is in demand as an engineering partner in many industries. With over 15,000 different products, we provide the right solution for just about any challenge. Our fans and drives are reliable, quiet and energy-efficient.**

Six reasons that make us the ideal partner:

**Our systems expertise.**
You want the best solution for every project. The interrelationships between ventilation and drive engineering must thus be considered as a whole.
And that’s what we do – with motor technology that sets standards, sophisticated electronics and aerodynamic designs – all from a single source and perfectly matched. These system solutions release unique synergies worldwide. And in particular – they relieve you of a lot of work, so that you can concentrate on your core competency.

**The ebm-papst spirit of invention.**
In addition to our wide range of products, we are always able to develop customized solutions for you. A diversified team of 600 engineers and technicians works at our three locations in Germany: Mulfingen, Landshut and St. Georgen.
Contact us to discuss your next project.

**Our lead in technology.**
As pioneer and trail-blazer for developing highly efficient EC technology, we are way ahead of other motor manufacturers. Almost all our products are also available with GreenTech EC technology. The list of benefits is long: higher efficiency, maintenance-free, longer service life, sound reduction, intelligent control characteristics and unrivalled energy efficiency with savings of up to 80% compared to conventional AC technology. Let our technology be your competitive advantage as you lead in your industry.

**Closeness to our customers.**
ebm-papst has 25 production locations worldwide (including facilities in Germany, China and the USA), together with 49 sales offices, each of which has a dense network of sales representatives. You will always have a local contact, someone who speaks your language and knows your market.

**Our standard of quality.**
Of course you can rely on the highest standards of quality with our products. Our quality management is uncompromising, at every step in every process. This is underscored by our certification according to international standards including DIN EN ISO 9001, TS declaration of conformity and DIN EN ISO 14001.

**Our sustainable approach.**
Assuming responsibility for the environment, for our employees and for society is an integral part of our corporate philosophy. We develop products with an eye to maximum environmental compatibility, in particular resource-preserving production methods. We promote environmental awareness among our young staff and are actively involved in sports, culture and education. That’s what makes us a leading company – and an ideal partner for you.
The story of our success to *market and technology pioneer.*

1963  Founding of *Elektrobau Mulfingen GmbH & Co. KG* by Gerhard Sturm and Heinz Ziehl.

1965  First tubeaxial fan developed in EC/DC technology.

1966  *ebm's success* takes off with the new 68 motor.

1972  The first *ebm* foreign subsidiary is established in Sweden.

1988  Gerhard Sturm is awarded the Federal Cross of Merit.

1990  The sixty-millionth external-rotor fan is produced.

1992  Acquisition of *PAPST Motoren GmbH* in St. Georgen.

1997  Buyout of the *Landshut* (mvl) plant.

1998  Development of first fans with integrated electronics.

2003  Change of name to *ebm-papst.*

2008  The *HyBlade* range of fans sets new efficiency standards.

2010  *GreenTech* – our sign for energy efficiency and resource preservation.

2011  *RadiCal* defines a new standard for EC centrifugal fans.

2013  *ebm-papst* takes over the gearbox specialist Zeitlauf and wins the *German Sustainability Award.*

2014  Team partnership with Mercedes AMG PETRONAS Formula 1 team.

2015  *RadiPac* pushes the limits of efficiency.

2016  *AxiBlade* sets new standards in ventilation, refrigeration and air-conditioning.
ebm-papst: Your highly competent partner in rail engineering

Creating the ideal fan solution.

The area of railways places particular requirements on a product. Fans developed uniquely for rail technology and for the specific field of application will help to achieve a high level of customer satisfaction in the long-term. Introducing standard products in rail vehicles is frivolous and sooner or later becomes expensive for the customer. To find the best solution for the individual rail use in each case, a comparison of the requirements in the field and the performance features of the fan is necessary.

Our advantage lies in the perfect interaction.

Significantly increased passenger and cargo demands due to advancing globalization require new solutions, particularly in rail traffic. Powerful and reliable vehicle concepts provide the basis for vehicles for transport solutions that are more efficient and, above all, more environmentally friendly. An essential part of this effort is cooling both diesel-powered and electrically powered rail cars as well as providing maximum comfort for passenger transportation. Precisely in this area, ebm-papst has time and again set new standards with brushless fans.

Leading technologies, groundbreaking application solutions, innovative products – all of these would not be possible if we did not see the big picture:

Aerodynamic optimization and therefore the perfect combination of motor technology, electronics and aerodynamics. Our three core competencies are in direct relationship to each other in our products. The objective is always to use air and motion as efficiently as possible, whether in the tightest spaces, in large dimensions or under extreme ambient conditions. We believe that this cohesive strategy is the only way to give our customers high quality and perfectly optimized end products. Whether they are high-performance driver’s cab climate control systems and heating units, versatile passenger compartment systems or effective cooling of power electronics in locomotives.

In order to achieve an aerodynamically optimum shape for our fans, we design fan blades, impellers and ducted housings to match the relevant application environment. From seemingly small details, such as the bladetip slip with winglets, result significant optimizations for noise reduction with even higher efficiencies. And when they are combined with intelligent electronics, the drive engine and aero dynamics then operate as a system solution optimally matched to each other. The perfect combination thus arises: our lead in global competition.

If the conditions under application exceed the tested requirements, then please arrange a consultation with ebm-papst.
Fire safety in *rail vehicles*

The European standard EN 45545 for fire safety in rail vehicles was ratified in 2013, and the transitional period for national sets of rules expired at the end of March 2016.

The seven-part standard has the objective of protecting passengers and staff in case of fire on board and assuring evacuation. Part 2 of the standard describes the requirements for the degree of flammability of materials and components.

The level of severity of the limit values to be adhered to depends on the hazard level. There are three hazard levels (HL). HL1 is the lowest level and HL3 designates the strictest limit values.

The operating and construction classes of the respective components determine the component’s hazard level.

With its series for railway applications, ebm-papst offers fans that are precisely tailored to comply with the fire safety criteria.

Compliance with the requirements of the standards is proven with material tests and extensive product assessment, as well as with independent appraisals.

The findings confirm that the design and material selection completely satisfy the requirements of DIN EN 45545-2 and meet the requirements for HL3.

Concretely, this means that all the relevant components possess the test certificates they require and that they are all currently valid. Specific properties of the products’ construction were also verified. Ebm-papst subjected the products to voluntary testing and certification by TÜV SÜD.

The test certificates granted confirm that the ebm-papst fans presented in this catalog for railway applications meet all the relevant safety requirements and possess the relevant product properties required.

The certification also includes regular production facilities monitoring.

The fire safety substantiation confirms the fans’ unlimited suitability for use in rail vehicles.
### Product overview – Fans and drive concepts for rail technology

#### EC / DC dual centrifugal fans (forward curved with housing)

<table>
<thead>
<tr>
<th>Ø</th>
<th>Nominal voltage</th>
<th>Air performance</th>
<th>Dual centrifugal fan (forward curved with housing)</th>
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#### EC / DC centrifugal fans (backward curved)

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### EC / DC axial fans

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<th>With round full nozzle</th>
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<th>Radial fan</th>
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Subject to technical changes.
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<th>Centrifugal fan backward curved</th>
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<tbody>
<tr>
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Subject to technical changes.
### AC centrifugal fans (forward curved with housing)

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<th>Centrifugal fan forward curved with housing single-intake</th>
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<td>140</td>
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## Product overview – Fans and drive concepts for rail technology

<table>
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<tr>
<th>Ø</th>
<th>Nominal voltage</th>
<th>Air performance</th>
<th>Centrifugal fan forward curved with housing dual-intake</th>
<th>on Page</th>
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<tbody>
<tr>
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<td>480 V AC / Y / 60 Hz</td>
<td>2300</td>
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</table>

Subject to technical changes.
EC / DC dual centrifugal fans
*forward curved with housing*
Ø 097

<table>
<thead>
<tr>
<th>Ø 097</th>
<th>16</th>
</tr>
</thead>
</table>

EC / DC dual centrifugal fans
forward curved with housing, Ø 097 mm

Material/surface
- Scroll housing: PA66 plastic, black
- Impeller: PA66 plastic, black

Mechanical data
- Mode: Continuous operation (S1)
- Mounting: Maintenance-free ball bearings
- Cable exit: lateral

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

Connection diagrams and technical features on Page 192
Technical parameters & scope on Page 204
More at www.ebmpapst.com
<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>Protection class</th>
<th>Installation position</th>
<th>Perm. ambient temp.</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Connection diagram</th>
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<tr>
<td></td>
<td>Voltage range 16-32 V DC</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Voltage range 77-138 V DC</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

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

Subject to change.
EC / DC dual centrifugal fans Ø 097 mm

A  K3G097AS8181   (Dual centrifugal fan)

Dimensions in mm

Cable (halogen-free):
① BETAtrans® 3 GKWR 2.5 mm², 2x crimped ferrules (brown, black)
② BETAtrans® 3 GKWR 1.0 mm², 4x crimped ferrules (yellow, orange, blue, white)

Pin assignment: see connection diagram

B  K3G097AS8282   (Dual centrifugal fan)

Dimensions in mm

Cable (halogen-free):
① BETAtrans® 3 GKWR 6.0 mm², 2x crimped ferrules (brown, black)
② BETAtrans® 3 GKWR 1.0 mm², 2x crimped ferrules (yellow, white)

Pin assignment: see connection diagram
**C K3G097AT85P1** (Dual centrifugal fan)

**Dimensions in mm**

Cable (halogen-free):

- BETAtan® GKW Flex R, 10G 1.0 mm², 10x crimped splices

Pin assignment: see connection diagram
<table>
<thead>
<tr>
<th>Fan Type</th>
<th>Page</th>
</tr>
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<tbody>
<tr>
<td>Ø 190 RadiCal</td>
<td>22</td>
</tr>
<tr>
<td>Ø 220 RadiCal</td>
<td>26</td>
</tr>
<tr>
<td>Ø 250 RadiCal</td>
<td>30</td>
</tr>
<tr>
<td>Ø 250 Aluminium impeller</td>
<td>38</td>
</tr>
<tr>
<td>Ø 280 RadiCal</td>
<td>42</td>
</tr>
<tr>
<td>Ø 280 Aluminium impeller</td>
<td>50</td>
</tr>
<tr>
<td>Ø 310 RadiCal</td>
<td>54</td>
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<tr>
<td>Ø 310 Aluminium impeller</td>
<td>60</td>
</tr>
<tr>
<td>Ø 355 RadiCal</td>
<td>64</td>
</tr>
<tr>
<td>Ø 400 Aluminium impeller</td>
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</tbody>
</table>
EC / DC centrifugal fans
backward curved, Ø 190 mm

Material/surface
- Impeller: PA66 plastic, black
- Rotor: Painted black/galvanized
- Electronics housing: Die-cast aluminium

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

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

Measuring requirements:
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 ISO 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.
### EC / DC centrifugal fans Ø 190 mm

<table>
<thead>
<tr>
<th>Curve</th>
<th>Voltage range 16-32 V DC</th>
<th>Voltage range 77-138 V DC</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>16-32 V DC</td>
<td>77-138 V DC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>24 4200 135 5,60 81</td>
<td>24 5420 270 2,50 88</td>
</tr>
<tr>
<td>B</td>
<td>40 4080 142 5,90 77</td>
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<td>24 3985 147 6,12 73</td>
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<td>24 4115 140 5,83 75</td>
<td>110 5000 270 2,50 80</td>
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**Values set in blue** are nominal data at operating point with maximum load.

Subject to change.

---

### EC / DC centrifugal fans Ø 190 mm

#### Curve

<table>
<thead>
<tr>
<th>Part number</th>
<th>Weight kg</th>
</tr>
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<tr>
<td>R1G190RD7981</td>
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<tr>
<td>R3G190RY85P1</td>
<td>2,00</td>
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</table>
A R1G190RD7981 (Centrifugal fan)

<table>
<thead>
<tr>
<th>Ø88</th>
<th>Ø122.2</th>
<th>73.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø88</td>
<td>Ø122.2</td>
<td>73.7</td>
</tr>
<tr>
<td>62.5</td>
<td>68.5±1</td>
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</tr>
</tbody>
</table>

Dimensions in mm

1. **Accessory part:** Inlet ring 09576-2-4013, not included in scope of delivery
   Dimensions: see "Accessories" chapter
2. **Max. clearance of screw:** max. 6 mm
3. **Cable:** 4x BETAtans® GKW R 0.75 mm², 4x crimped splices

Pin assignment: see connection diagram
B R3G190RY85P1 (Centrifugal fan)

Dimensions in mm

Accessories:

1. Accessory part: Inlet ring 09576-2-4013, not included in scope of delivery
   Dimensions: see "Accessories" chapter
2. Max. clearance of screw: max. 10 mm
3. Max. clearance of screw: max. 8 mm
4. Cable (halogen-free): BETAtrans® GKW Flex R, 10G 1.0 mm², 10x crimped splices

Pin assignment: see connection diagram
EC / DC centrifugal fans
backward curved, Ø 220 mm

Measuring requirements
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 ISO 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.

Material/surface
- Impeller: PA66 plastic, black
- Rotor: Painted black/galvanized
- Electronics housing: Die-cast aluminium

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

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

Material/surface
- Impeller: PA66 plastic, black
- Rotor: Painted black/galvanized
- Electronics housing: Die-cast aluminium

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

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

on Page 28 Drawings
on Page 182 Accessories
on Page 192 Connection diagrams and technical features
on Page 204 Technical parameters & scope
More at www.ebmpapst.com

Measurement requirements:
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 ISO 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.
## EC / DC centrifugal fans  Ø 220 mm

<table>
<thead>
<tr>
<th>Voltage range 16-32 V DC</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>Protection class</th>
<th>Installation position</th>
<th>Perm. ambient temp.</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Conn. diagram</th>
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</thead>
<tbody>
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<td>Voltage range 77-138 V DC</td>
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<td></td>
<td></td>
<td></td>
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</table>

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

Subject to change

### Centrifugal fan

<table>
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<tr>
<th>Curve</th>
<th>Part number</th>
<th>Weight</th>
<th>kg</th>
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<tbody>
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<tr>
<td>B</td>
<td>R1G220RY90P1</td>
<td>2.10</td>
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</table>
EC / DC centrifugal fans Ø 220 mm

A R1G220RD1081 (Centrifugal fan) 

Dimensions in mm

1. Accessory part: Inlet ring 09609-2-4013, not included in scope of delivery
2. Max. clearance of screw: max. 6 mm
3. Cable: 4x BETATrans® GKW R 0.75 mm², 4x crimped splices

Pin assignment: see connection diagram

Accessory part: Inlet ring 09609-2-4013, not included in scope of delivery
Dimensions: see "Accessories" chapter
Max. clearance of screw: max. 6 mm
Cable: 4x BETATrans® GKW R 0.75 mm², 4x crimped splices
B R3G220RY90P1 (Centrifugal fan)

Dimensions in mm

1. Accessory part: Inlet ring 09609-2-4013, not included in scope of delivery
   Dimensions: see "Accessories" chapter

2. Max. clearance of screw: max. 10 mm
3. Max. clearance of screw: max. 8 mm
4. Cable (halogen-free): BETAtans GKW Flex R, 10G 1.0 mm², 10x crimped splices

Pin assignment: see connection diagram
EC / DC centrifugal fans
backward curved, Ø 250 mm

Material/surface
- Impeller: PA66 plastic, black
- Rotor: Painted black/galvanized
- Electronics housing: Die-cast aluminium
- Support structure: Aluminium
- Inlet ring: Sheet steel, galvanized

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

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

Air performance measured according to: ISO 5801, installation category A, with ebm-papst inlet ring without contact protection.
Intake-side sound level: L_w A according to ISO 13347, L_p 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.
### EC / DC centrifugal fans Ø 250 mm

#### Curve Operating point Nominal voltage Speed n Max. input power Pmax Max. input current I A Sound power level LwA Protection class Nom. ambient temp. Installation position Degree of protection Insulation class Conn. diagram

<table>
<thead>
<tr>
<th>Voltage range 16-32 V DC</th>
<th>A</th>
<th>Voltage range 77-138 V DC</th>
<th>B</th>
<th>Voltage range 380-480 V AC</th>
<th>C</th>
<th>Nominal voltage range 380-480 V AC</th>
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<td>24 2500 120 4,90 75</td>
<td>III</td>
<td>24 2500 120 4,90 75</td>
<td>III</td>
<td>110 3195 250 2,30 84</td>
<td>I</td>
<td>24 2500 120 4,90 75</td>
<td>III</td>
</tr>
<tr>
<td>24 2420 123 5,14 73</td>
<td>III</td>
<td>24 2420 123 5,14 73</td>
<td>III</td>
<td>110 3045 250 2,30 79</td>
<td>I</td>
<td>24 2500 120 4,90 75</td>
<td>III</td>
</tr>
<tr>
<td>24 2350 130 5,39 69</td>
<td>III</td>
<td>24 2350 130 5,39 69</td>
<td>III</td>
<td>110 2950 250 2,30 73</td>
<td>I</td>
<td>24 2500 120 4,90 75</td>
<td>III</td>
</tr>
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<td>24 2420 124 5,16 71</td>
<td>III</td>
<td>24 2420 124 5,16 71</td>
<td>III</td>
<td>110 3130 250 2,30 78</td>
<td>I</td>
<td>24 2500 120 4,90 75</td>
<td>III</td>
</tr>
</tbody>
</table>

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

Subject to change

---

### Centrifugal fan with support structure

<table>
<thead>
<tr>
<th>Curve</th>
<th>Part number</th>
<th>Weight kg</th>
<th>Part number</th>
<th>Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
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<td>R1G250RC87B1</td>
<td>2,00</td>
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</tr>
<tr>
<td>B</td>
<td>R3G250RU27B1</td>
<td>2,80</td>
<td>K3G250RU27B1</td>
<td>8,70</td>
</tr>
<tr>
<td>C</td>
<td>R3G250WR90P1</td>
<td>2,30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>R3G250WR90P1</td>
<td>4,10</td>
<td>K3G250WR90P1</td>
<td>9,20</td>
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<tr>
<td>E</td>
<td>R3G250RR04N1</td>
<td>4,60</td>
<td>K3G250RR04N1</td>
<td>11,70</td>
</tr>
</tbody>
</table>
**EC / DC centrifugal fans  Ø 250 mm**

**A** R1G250RC8781  (Centrifugal fan)

### Dimensions in mm

1. **Accessory part:** Inlet ring 96359-2-4013, not included in scope of delivery
   - Dimensions: see "Accessories" chapter
2. **Max. clearance of screw:** max. 6 mm
3. **Cable:** 4x BETAtans® GKW R 0.75 mm², 4x crimped splices

---

**Pin assignment:** see connection diagram
**B R3G250RU2781** (Centrifugal fan)

Dimensions in mm

---

**B K3G250RU2781** (Centrifugal fan with support structure)

Dimensions in mm

---

1. **Accessory part:** Inlet ring 96359-2-4013, not included in scope of delivery
   
   Dimensions: see "Accessories" chapter

2. **Max. clearance of screw:** max. 12 mm, tapping hole ready for self-tapping M6 screw

3. **Max. clearance of screw:** max. 10 mm, tapping hole ready for self-tapping M5 screw

4. **Max. clearance of screw:** max. 8 mm, tapping hole ready for self-tapping M4 screw

5. **Cable (halogen-free):** 2x BETAtrans® GKW R 2.5 mm², 2x crimped ferrules
   
   2x BETAtrans® GKW R 1.0 mm², 2x crimped ferrules

Pin assignment: see connection diagram

Mounting Dimensions for centrifugal modules:

see "Accessories" chapter
C R3G250RY90P1 (Centrifugal fan)

Dimensions in mm

1. Accessory part: Inlet ring 96359-2-4013, not included in scope of delivery
   Dimensions: see "Accessories" chapter
2. Max. clearance of screw: max. 10 mm
3. Max. clearance of screw: max. 8 mm
4. Cable (halogen-free): BETAtans® GKW Flex R, 10G 1.0 mm², 10x crimped splices

Pin assignment: see connection diagram
D R3G250RR09P1 (Centrifugal fan)

Dimensions in mm

Mounting Dimensions for centrifugal modules:
see "Accessories" chapter

Accessory part: Inlet ring 96359-2-4013, not included in scope of delivery
Dimensions: see "Accessories" chapter
Max. clearance of screw: max. 16 mm
Cable (halogen-free): 3x BETATrans® 3 GKW flex, 4G 1.5 mm², 3x crimped ferrules
Cable (halogen-free): 7x BETATrans® 3 GKW flex, 7x 0.5 mm², 7x crimped ferrules

Pin assignment: see connection diagram

D K3G250RR09P1 (Centrifugal fan with support structure)

Dimensions in mm

Mounting Dimensions for centrifugal modules:
see "Accessories" chapter

Pin assignment: see connection diagram

Accessory part: Inlet ring 96359-2-4013, not included in scope of delivery
Dimensions: see "Accessories" chapter
Max. clearance of screw: max. 16 mm
Cable (halogen-free): 3x BETATrans® 3 GKW flex, 4G 1.5 mm², 3x crimped ferrules
Cable (halogen-free): 7x BETATrans® 3 GKW flex, 7x 0.5 mm², 7x crimped ferrules
EC / DC centrifugal fans Ø 250 mm

**E** R3G250RR04N1 (Centrifugal fan)

Dimensions in mm

**E** K3G250RR04N1 (Centrifugal fan with support structure)

Dimensions in mm

1. **Accessory part**: Inlet ring 96359-2-4013, not included in scope of delivery
   Dimensions: see "Accessories" chapter
2. **Max. clearance of screw**: max. 16 mm
3. **Cable (halogen-free)**: 4x BETAtrans® 3 GKW flex, 4G 1.5 mm², 4x crimped ferrules
4. **Cable (halogen-free)**: 7x BETAtrans® 3 GKW flex, 7x 0.5 mm², 7x crimped ferrules

**Pin assignment**: see connection diagram

**Mounting Dimensions for centrifugal modules**: see "Accessories" chapter
EC / DC centrifugal fans
backward curved, Ø 250 mm, Aluminium impeller

Material/surface
- Impeller: Sheet aluminium
- Rotor: Painted black
- Electronics housing: Die-cast aluminium
- Support structure: Aluminium
- Inlet ring: Sheet steel, galvanized

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

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

Air performance measured according to: ISO 5801, installation category A, with ebm-papst inlet ring without contact protection.
Intake-side sound level: \( L_{wA} \) according to ISO 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.

More at www.ebmpapst.com
<table>
<thead>
<tr>
<th>Curve</th>
<th>Operating point</th>
<th>Nominal voltage</th>
<th>Speed n</th>
<th>Max. Input current I</th>
<th>Max. Input power P_{ed}</th>
<th>Sound power level L_{wA}</th>
<th>Protection class</th>
<th>Installation position</th>
<th>Perm. ambient temp.</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Conn. diagram</th>
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<tbody>
<tr>
<td>A</td>
<td>Voltage range 77-138 V DC</td>
<td>110</td>
<td>3695</td>
<td>671</td>
<td>6,10</td>
<td>85</td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40...+60</td>
<td>IP 55 acc. to EN 60529</td>
<td>F</td>
<td>BA6)</td>
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<td>110</td>
<td>3635</td>
<td>765</td>
<td>6,95</td>
<td>81</td>
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<td>Nominal voltage range 380-480 V AC</td>
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<td>759</td>
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<td>86</td>
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<tr>
<td>B</td>
<td></td>
<td>400</td>
<td>4000</td>
<td>781</td>
<td>1,26</td>
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<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
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<td>400</td>
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<td>981</td>
<td>1,55</td>
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Values set in blue are nominal data at operating point with maximum load.
Subject to change

<table>
<thead>
<tr>
<th>Curve</th>
<th>Centrifugal fan with support structure</th>
<th>Weight</th>
<th>Part number</th>
<th>Weight</th>
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<tbody>
<tr>
<td>A</td>
<td>R3G250BB09S1</td>
<td>5,10</td>
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<td>B</td>
<td>R3G250BB01N1</td>
<td>5,10</td>
<td>K3G250BB01N1</td>
<td>11,30</td>
</tr>
</tbody>
</table>
**A R3G250BB09S1 (Centrifugal fan)**

Dimensions in mm

1. **Accessory part:** Inlet ring 25070-2-4013, not included in scope of delivery
   
2. **Pin assignment:** see connection diagram

**B K3G250BB09S1 (Centrifugal fan with support structure)**

Dimensions in mm

1. **Accessory part:** Inlet ring 25070-2-4013, not included in scope of delivery
   
2. **Max. clearance of screw:** max. 16 mm

3. **Cable (halogen-free):** 3x BETAtans® 3 GKW flex, 4G 1.5 mm², 3x crimped ferrules

4. **Cable (halogen-free):** 7x BETAtans® 3 GKW flex, 7x 0.5 mm², 7x crimped ferrules

Mounting Dimensions for centrifugal modules:

see "Accessories" chapter
**R3G250BB01N1** (Centrifugal fan)

Dimensions in mm

- Accessory part: Inlet ring 25070-2-4013, not included in scope of delivery
- Max. clearance of screw: max. 16 mm
- Cable (halogen-free): 4x BETAtrans® 3 GKW flex, 4G 1.5 mm², 4x crimped ferrules
- Cable (halogen-free): 7x BETAtrans® 3 GKW flex, 7x 0.5 mm², 7x crimped ferrules

**K3G250BB01N1** (Centrifugal fan with support structure)

Dimensions in mm

- Pin assignment: see connection diagram
- Mounting Dimensions for centrifugal modules:
  - see "Accessories" chapter
EC / DC centrifugal fans
backward curved, Ø 280 mm

Material/surface
- Impeller: PA66 plastic, black
- Rotor: Painted black
- Electronics housing: Die-cast aluminium
- Support structure: Aluminium
- Inlet ring: Sheet steel, galvanized

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

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC
### EC / DC centrifugal fans 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 $I_{in}$</th>
<th>Sound power level $L_{wA}$</th>
<th>Protection class</th>
<th>Installation position</th>
<th>Perm. ambient temp. °C</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Conn. diagram</th>
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<tbody>
<tr>
<td>A</td>
<td>Voltage range 16-32 V DC</td>
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<td></td>
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<td></td>
<td>III Any</td>
<td>B</td>
<td>-25...+60</td>
<td>Motor: IP 24 KM Electr.: IP 66/69 K</td>
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<td>BA1)</td>
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<td></td>
<td>Voltage range 77-138 V DC</td>
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<td></td>
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<td>B</td>
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<td>Nominal voltage range 380-480 V AC</td>
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<td>III Any</td>
<td>B</td>
<td>-40...+60</td>
<td>IP 55 acc. to EN 60529</td>
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<td>BA6)</td>
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<td>B</td>
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<td>Motor: IP 24 KM Electr.: IP 66/69 K</td>
<td>B</td>
<td>BA1)</td>
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<td>Voltage range 77-138 V DC</td>
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<td>III Any</td>
<td>B</td>
<td>-40...+70</td>
<td>Motor: IP 24 KM Electr.: IP 66/69 K</td>
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<td>III Any</td>
<td>B</td>
<td>-40...+60</td>
<td>IP 55 acc. to EN 60529</td>
<td>F</td>
<td>BA6)</td>
</tr>
</tbody>
</table>

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

Subject to change

### Centrifugal fan with support structure

<table>
<thead>
<tr>
<th>Part number</th>
<th>Weight kg</th>
<th>Part number</th>
<th>Weight kg</th>
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<td>R1G280RU661</td>
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<td>R1G280RU661</td>
<td>3,00</td>
<td>K3G280RU2681</td>
<td>9,20</td>
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<td>R1G280RU6582</td>
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<td>R1G280RR10P1</td>
<td>4,20</td>
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<tr>
<td>R1G280RR05N1</td>
<td>4,90</td>
<td>K3G280RR05N1</td>
<td>11,70</td>
</tr>
</tbody>
</table>
EC / DC centrifugal fans Ø 280 mm

A R1G280RC7181 (Centrifugal fan) Dimensions in mm

- Accessory part: Inlet ring 28000-2-4013, not included in scope of delivery
- Dimensions: see "Accessories" chapter
- Max. clearance of screw: max. 6 mm
- Cable: 4x BETAtrens® GKW R 0.75 mm², 4x crimped splices

Pin assignment: see connection diagram
**B R3G280RU2681 (Centrifugal fan)**

Dimensions in mm

Accessories: Inlet ring 28000-2-4013, not included in scope of delivery

Max. clearance of screw: max. 12 mm, tapping hole ready for self-tapping M6 screw

Max. clearance of screw: max. 10 mm, tapping hole ready for self-tapping M5 screw

Max. clearance of screw: max. 8 mm, tapping hole ready for self-tapping M4 screw

Cable (halogen-free): 2x BETAttrans® GKW R 2.5 mm², 2x crimped ferrules

4x BETAttrans® GKW R 1.0 mm², 4x crimped ferrules

**Pin assignment:** see connection diagram

**Mounting Dimensions for centrifugal modules:**
see "Accessories" chapter

---

**B K3G280RU2681 (Centrifugal fan with support structure)**

Dimensions in mm

Accessory part: Inlet ring 28000-2-4013, not included in scope of delivery

Dimensions: see "Accessories" chapter

Max. clearance of screw: max. 12 mm, tapping hole ready for self-tapping M6 screw

Max. clearance of screw: max. 10 mm, tapping hole ready for self-tapping M5 screw

Max. clearance of screw: max. 8 mm, tapping hole ready for self-tapping M4 screw

Cable (halogen-free): 2x BETAttrans® GKW R 2.5 mm², 2x crimped ferrules

4x BETAttrans® GKW R 1.0 mm², 4x crimped ferrules

**Pin assignment:** see connection diagram

**Mounting Dimensions for centrifugal modules:**
see "Accessories" chapter
**EC / DC centrifugal fans Ø 280 mm**

**C** R3G280RU6582 (Centrifugal fan)

- **Dimensions in mm**
  - Ø187.5
  - Ø294
  - 127
  - 148.5

**K3G280RU6582 (Centrifugal fan with support structure)

- **Dimensions in mm**
  - Ø144
  - 112
  - 199±3
  - 177±2

---

1. **Accessory part**: Inlet ring 280000-2-0103, not included in scope of delivery
   - Dimensions: see "Accessories" chapter
2. **Max. clearance of screw**: max. 12 mm, tapping hole ready for self-tapping M6 screw
3. **Max. clearance of screw**: max. 10 mm, tapping hole ready for self-tapping M5 screw
4. **Max. clearance of screw**: max. 8 mm, tapping hole ready for self-tapping M4 screw
5. **Cable (halogen-free)**: 2x BETAtrans® GKW R 2.5 mm², 2x crimped ferrules
   - 2x BETAtrans® GKW R 1.0 mm², 2x crimped ferrules

---

**Pin assignment**: see connection diagram

**Mounting Dimensions for centrifugal modules**:
- see "Accessories" chapter
Después de ver el documento, parece que se trata de una página de un catálogo de ventiladores para el sector ferroviario. Aunque la imagen no es legible en su totalidad, se pueden extraer algunas piezas de información:

- **R3G280RR10P1 (Centrifugal fan)**: Dimensiones en mm

- **K3G280RR10P1 (Centrifugal fan with support structure)**: Dimensiones en mm

Además, se menciona la asignación de clavijas: vea el diagrama de conexión. Se detallan varios elementos de montaje:

- **Accesorio**: Anillo de entrada 28000-2-4013, no incluido en el alcance de entrega.

- **Dimensiones**: vea el capítulo "Accesorios".

- **Max. Clearance of Screw**: max. 16 mm

- **Cable (Halogen-free)**: 3x BETATrans® 3 GKW flex, 4G 1.5 mm², 3x ferrules

- **Cable (Halogen-free)**: 7x BETATrans® 3 GKW flex, 7x 0.5 mm², 7x ferrules

Además, se menciona la profundidad de cableado y los ensambles de terminales.

El documento también incluye ilustraciones detalladas de los ventiladores, que muestran dimensiones precisas y detalles de montaje.
EC / DC centrifugal fans Ø 280 mm

**R3G280RR05N1** (Centrifugal fan) Dimensions in mm

- **Pin assignment:** see connection diagram
- **Accessory part:** Inlet ring 28000-2-4013, not included in scope of delivery
- **Max. clearance of screw:** max. 16 mm
- **Cable (halogen-free):** 4x BETAtrans® 3 GKW flex, 4G 1.5 mm², 4x crimped ferrules
- **Cable (halogen-free):** 7x BETAtrans® 3 GKW flex, 7x 0.5 mm², 7x crimped ferrules

**K3G280RR05N1** (Centrifugal fan with support structure) Dimensions in mm

- **Mounting Dimensions for centrifugal modules:** see "Accessories" chapter
- **Pin assignment:** see connection diagram

**Dimensions in mm**

- Ø 280 mm
- Ø 246 mm
- Ø 186 mm
- Ø 169.5 mm
- Ø 142.8 mm
- 234 mm
- 169.5 mm
- 16 mm
- 85 ± 1.6
- 100 ± 1.6
- 100 ± 1.6
EC / DC centrifugal fans Ø 280 mm
EC / DC centrifugal fans
backward curved, Ø 280 mm, Aluminium impeller

Material/surface
■ Impeller: Sheet aluminium
■ Rotor: Painted black
■ Electronics housing: Die-cast aluminium
■ Support structure: Aluminium
■ Inlet ring: Sheet steel, galvanized

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

Standards and approvals
■ Conformity with standards: see page 6
■ Approvals: EAC

Drawings
on Page 52

Accessories
on Page 182

Connection diagrams and technical features
on Page 192

Technical parameters & scope
on Page 204

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_wA according to ISO 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.
## EC / DC centrifugal fans Ø 280 mm

### Specifications

<table>
<thead>
<tr>
<th>Operating point</th>
<th>Nominal voltage</th>
<th>Speed n (rpm)</th>
<th>Max. input power Pped (W)</th>
<th>Max. input current I (A)</th>
<th>Sound power level LwA (dB(A))</th>
<th>Protection class</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Conn. diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Voltage range 77-138 V DC</strong></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td></td>
<td>110</td>
<td>3140</td>
<td>743</td>
<td>6,80</td>
<td>88</td>
<td>shaft horizontal or rotor on bottom</td>
<td>IP 55 acc. to EN 60529</td>
<td>F</td>
</tr>
<tr>
<td>B</td>
<td></td>
<td>110</td>
<td>3120</td>
<td>882</td>
<td>8,00</td>
<td>85</td>
<td>-40...+60</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td>110</td>
<td>3100</td>
<td>920</td>
<td>8,40</td>
<td>82</td>
<td>-40...+60</td>
<td>F</td>
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<tr>
<td>D</td>
<td></td>
<td>110</td>
<td>3140</td>
<td>861</td>
<td>7,80</td>
<td>82</td>
<td>-40...+60</td>
<td>F</td>
<td></td>
</tr>
</tbody>
</table>

| Nominal voltage range 380-480 V AC | | | | | | | | | |
| A               |                | 400           | 3140                      | 743                      | 1,21                          | 87              | shaft horizontal or rotor on bottom | IP 55 acc. to EN 60529 | F       |
| B               |                | 400           | 3140                      | 922                      | 1,47                          | 83              | -40...+60                        | F       |
| C               |                | 400           | 3140                      | 975                      | 1,50                          | 80              | -40...+60                        | F       |
| D               |                | 400           | 3140                      | 931                      | 1,48                          | 82              | -40...+60                        | F       |

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

Subject to change

---

### Centrifugal fan with support structure

<table>
<thead>
<tr>
<th>Curve</th>
<th>Part number</th>
<th>Weight (kg)</th>
<th>Part number</th>
<th>Weight (kg)</th>
</tr>
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<tr>
<td>A</td>
<td>R3G280BD13S1</td>
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<td>K3G280BD13S1</td>
<td>14,40</td>
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<td>B</td>
<td>R3G280BC01N1</td>
<td>6,90</td>
<td>K3G280BC01N1</td>
<td>13,30</td>
</tr>
</tbody>
</table>
**EC / DC centrifugal fans Ø 280 mm**

**A R3G280BD13S1** (Centrifugal fan)  
Dimensions in mm

![Diagram of R3G280BD13S1](image1)

**A K3G280BD13S1** (Centrifugal fan with support structure)  
Dimensions in mm

![Diagram of K3G280BD13S1](image2)

1. **Accessory part**: Inlet ring 28070-2-4013, not included in scope of delivery  
   Dimensions: see "Accessories" chapter
2. **Max. clearance of screw**: max. 16 mm
3. **Cable (halogen-free)**: 3x BETAtrans® 3 GKW flex, 4G 1.5 mm², 3x crimped ferrules
4. **Cable (halogen-free)**: 7x BETAtrans® 3 GKW flex, 7x 0.5 mm², 7x crimped ferrules

**Pin assignment**: see connection diagram

**Mounting Dimensions for centrifugal modules**:  
see "Accessories" chapter
**R3G280BC01N1  (Centrifugal fan)**

- **Accessory part:** Inlet ring 28070-2-4013, not included in scope of delivery
- **Dimensions:** see "Accessories" chapter
- **Max. clearance of screw:** max. 16 mm
- **Cable (halogen-free):** 4x BETAtrans® 3 GKW flex, 4G 1.5 mm², 4x crimped ferrules
- **Mounting Dimensions for centrifugal modules:** see "Accessories" chapter

**K3G280BC01N1  (Centrifugal fan with support structure)**

- **Pin assignment:** see connection diagram
- **Mounting Dimensions for centrifugal modules:** see "Accessories" chapter

---

**Specifications:**
- **EC/DC centrifugal fans Ø 280 mm**
- **Dimensions in mm**

---

**Diagram Details:**
- **Dimensions:** Ø197.4 mm, 4x90°, 45°, 90°
- **Mounting Dimensions:** Ø186 mm, 4x90°, 45°, 90°
- **Dimensions:** Ø319
- **Cable (halogen-free):** 4x BETAtrans® 3 GKW flex, 4G 1.5 mm², 4x crimped ferrules
- **Cable (halogen-free):** 7x BETAtrans® 3 GKW flex, 7x 0.5 mm², 7x crimped ferrules

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**Note:**
- **Ebmpapst**
- **Fans and drive concepts for rail technology - Edition 2018-09**
- **Bahnsteilkatalog 2018 EN __18_10_2018.indd  53**
EC / DC centrifugal fans
backward curved, Ø 310 mm

Material/surface
- Impeller: PA66 plastic, black
- Rotor: Painted black
- Electronics housing: Die-cast aluminium
- Support structure: Aluminium
- Inlet ring: Sheet steel, galvanized

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

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

More at www.ebmpapst.com
### EC/DC Centrifugal Fans Ø 310 mm

#### Voltage Range 16-32 V DC

<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 L_{wA}</th>
<th>Protection Class</th>
<th>Installation Position</th>
<th>Temp.</th>
<th>Degree of Protection</th>
<th>Insulation Class</th>
<th>Conn. Diagram</th>
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<tbody>
<tr>
<td>A</td>
<td>24</td>
<td>2550</td>
<td>470</td>
<td>19,5</td>
<td>81</td>
<td>81</td>
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<td>Any</td>
<td>-40..+70</td>
<td>Motor: IP 24 KM</td>
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<td>78</td>
<td>Any</td>
<td>IV</td>
<td>-40..+60</td>
<td>Electr.: IP 66/69 K</td>
<td>-40..+60</td>
<td>B</td>
</tr>
<tr>
<td>C</td>
<td>24</td>
<td>2380</td>
<td>581</td>
<td>24,2</td>
<td>74</td>
<td>74</td>
<td>I</td>
<td>i.e. horizontal or rotor on top</td>
<td>-40..+60</td>
<td>IP 55 acc. to EN 60529</td>
<td>-40..+60</td>
<td>F</td>
</tr>
</tbody>
</table>

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

Subject to change.

### Accessories

<table>
<thead>
<tr>
<th>Curve</th>
<th>Centrifugal fan</th>
<th>with support structure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Part number</td>
<td>Weight kg</td>
</tr>
<tr>
<td>A</td>
<td>R3G310RU2981</td>
<td>3,00</td>
</tr>
<tr>
<td>B</td>
<td>R3G310RR12P1</td>
<td>4,60</td>
</tr>
<tr>
<td>C</td>
<td>R3G310RR05N1</td>
<td>5,20</td>
</tr>
</tbody>
</table>
**EC / DC centrifugal fans Ø 310 mm**

### A R3G310RU2981 (Centrifugal fan)

- **Dimensions in mm**

### K3G310RU2981 (Centrifugal fan with support structure)

- **Dimensions in mm**

---

1. **Accessory part:** Inlet ring 31000-2-4013, not included in scope of delivery
   - Dimensions: see "Accessories" chapter
2. **Max. clearance of screw:** max. 12 mm, tapping hole ready for self-tapping M6 screw
3. **Max. clearance of screw:** max. 10 mm, tapping hole ready for self-tapping M5 screw
4. **Max. clearance of screw:** max. 8 mm, tapping hole ready for self-tapping M4 screw
5. **Cable (halogen-free):** 2x BETAtrans® GKW R 2.5 mm², 2x crimped ferrules
   - 2x BETAtrans® GKW R 1.0 mm², 2x crimped ferrules

---

6. **Pin assignment:** see connection diagram
7. **Mounting Dimensions for centrifugal modules:**
   - see "Accessories" chapter
B R3G310RR12P1 (Centrifugal fan) Dimensions in mm

B K3G310RR12P1 (Centrifugal fan with support structure) Dimensions in mm

1. **Accessory part:** Inlet ring 310000-2-4013, not included in scope of delivery
2. **Max. clearance of screw:** max. 16 mm
3. **Cable (halogen-free):** 3x BETAtrans® 3 GKW flex, 4G 1.5 mm², 3x crimped ferrules
4. **Cable (halogen-free):** 7x BETAtrans® 3 GKW flex, 7x 0.5 mm², 7x crimped ferrules

**Pin assignment:** see connection diagram

**Mounting Dimensions for centrifugal modules:**
see "Accessories" chapter
**EC / DC centrifugal fans Ø 310 mm**

**C R3G310RR05N1 (Centrifugal fan)**

Dimensions in mm

- **Pin assignment:** see connection diagram
- **Mounting Dimensions for centrifugal modules:**
  - see "Accessories" chapter
- **Accessory part:** Inlet ring 310002-4-013, not included in scope of delivery
  - Dimensions: see "Accessories" chapter
- **Max. clearance of screw:** max. 16 mm
- **Cable (halogen-free):**
  - 4x BETAtrans® 3 GKW flex, 4G 1.5 mm², 4x crimped ferrules
  - 3x GKW flex, 3x 0.5 mm², 3x crimped ferrules

**C K3G310RR05N1 (Centrifugal fan with support structure)**

Dimensions in mm

- **Pin assignment:** see connection diagram
- **Mounting Dimensions for centrifugal modules:**
  - see "Accessories" chapter

Accessory part: Inlet ring 310002-4-013, not included in scope of delivery
Dimensions: see "Accessories" chapter
Max. clearance of screw: max. 16 mm
Cable (halogen-free):
- 4x BETAtrans® 3 GKW flex, 4G 1.5 mm², 4x crimped ferrules
- 3x GKW flex, 3x 0.5 mm², 3x crimped ferrules
EC / DC centrifugal fans
backward curved, Ø 310 mm, Aluminium impeller

Material/surface
- Impeller: Sheet aluminium
- Rotor: Painted black
- Electronics housing: Die-cast aluminium
- Support structure: Aluminium
- Inlet ring: Sheet steel, galvanized

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

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

Air performance measured according to: ISO 5801, installation category A, with ebm-papst inlet ring without contact protection.
Intake-side sound level: L\textsubscript{wA} according to ISO 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.

Measuring requirements
- Q\textsubscript{A} in m\textsuperscript{3}/h
- P\textsubscript{A} in Pa
- \textit{A}\textsubscript{1} on Page 62
- Drawings
- on Page 182
- Accessories
- on Page 192
- Connection diagrams and technical features
- on Page 204
- Technical parameters & scope
- More at www.ebmpapst.com

on Page 62 Drawings
on Page 182 Accessories
on Page 192 Connection diagrams and technical features
on Page 204 Technical parameters & scope
More at www.ebmpapst.com
### EC / DC centrifugal fans Ø 310 mm

<table>
<thead>
<tr>
<th>Curve</th>
<th>Operating point</th>
<th>Nominal voltage</th>
<th>Speed n</th>
<th>Max. Input power $P_{ed}$</th>
<th>Max. Input current $I_{ed}$</th>
<th>Sound power level $L_w$</th>
<th>Protection class</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>A</td>
<td>Voltage range 77-138 V DC</td>
<td>VDC rpm W A dB(A) °C</td>
<td>110 2915 995 9,00 88</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40..+60</td>
<td>F BA6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>110 2730 995 9,00 82</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>110 2650 995 9,00 77</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>110 2765 995 9,00 84</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>Nominal voltage range 380-480 V AC</td>
<td></td>
<td>400 3135 1229 1,89 90</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40..+60</td>
<td>F BA7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>400 3005 1300 2,00 85</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>400 2900 1300 2,00 80</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>400 2970 1300 2,00 85</td>
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<td></td>
<td></td>
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<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.

### Centrifugal fan with support structure

<table>
<thead>
<tr>
<th>Curve</th>
<th>Part number</th>
<th>Weight</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>R3G310BE84S1</td>
<td>8,50</td>
<td>K3G310BE84S1 15,0</td>
</tr>
<tr>
<td>B</td>
<td>R3G310BE90N1</td>
<td>8,50</td>
<td>K3G310BE90N1 15,0</td>
</tr>
</tbody>
</table>
**EC / DC centrifugal fans · Ø 310 mm**

**A R3G310BE84S1  (Centrifugal fan)**

- **Pin assignment:** see connection diagram
- **Mounting Dimensions for centrifugal modules:**
  - Accessory part: Inlet ring 31570-2-4013, not included in scope of delivery
  - Dimensions: see "Accessories" chapter
  - Max. clearance of screw: max. 16 mm
  - Cable (halogen-free): 3x BETAtrens® 3 GKW flex, 4G 1.5 mm², 3x crimped ferrules
  - Cable (halogen-free): 7x BETAtrens® 3 GKW flex, 7x 0.5 mm², 7x crimped ferrules

**A K3G310BE84S1  (Centrifugal fan with support structure)**

- **Pin assignment:** see connection diagram
- **Mounting Dimensions for centrifugal modules:**
  - Accessory part: Inlet ring 31570-2-4013, not included in scope of delivery
  - Dimensions: see "Accessories" chapter
  - Max. clearance of screw: max. 16 mm
  - Cable (halogen-free): 3x BETAtrens® 3 GKW flex, 4G 1.5 mm², 3x crimped ferrules
  - Cable (halogen-free): 7x BETAtrens® 3 GKW flex, 7x 0.5 mm², 7x crimped ferrules
**B R3G310BE90N1** (Centrifugal fan)

**Dimensions in mm**

<table>
<thead>
<tr>
<th>Part</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø310mm</td>
<td>600x600</td>
</tr>
<tr>
<td>0.6s.</td>
<td>147</td>
</tr>
</tbody>
</table>

**Accessory part:** Inlet ring 31570-2-4013, not included in scope of delivery

**Max. clearance of screw:** max. 16 mm

**Cable (halogen-free):** 4x BETATrans® KGW flex, 4G 1.5 mm², 4x crimped ferrules

**Cable (halogen-free):** 7x BETATrans® KGW flex, 7x 0.5 mm², 7x crimped ferrules

**Pin assignment:** see connection diagram

---

**B K3G310BE90N1** (Centrifugal fan with support structure)

**Dimensions in mm**

<table>
<thead>
<tr>
<th>Part</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø310mm</td>
<td>600x600</td>
</tr>
<tr>
<td>Ø116</td>
<td>191±2.5</td>
</tr>
<tr>
<td>Ø186</td>
<td>245.5±3</td>
</tr>
</tbody>
</table>

**Accessory part:** Inlet ring 31570-2-4013, not included in scope of delivery

**Max. clearance of screw:** max. 16 mm

**Cable (halogen-free):** 4x BETATrans® KGW flex, 4G 1.5 mm², 4x crimped ferrules

**Cable (halogen-free):** 7x BETATrans® KGW flex, 7x 0.5 mm², 7x crimped ferrules

**Mounting Dimensions for centrifugal modules:**

see "Accessories" chapter
EC / DC centrifugal fans
backward curved, Ø 355 mm

Material/surface
- Impeller: PA66 plastic, black
- Rotor: Painted black
- Electronics housing: Die-cast aluminium

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

Standards and approvals
- Conformity with standards: see page 6
- 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 ISO 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.
### EC / DC centrifugal fans  Ø 355 mm

#### Voltage range 77-138 V DC

<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 LwA</th>
<th>Protection class</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>A</td>
<td>110 2035</td>
<td>475</td>
<td>4,32</td>
<td>81</td>
<td>470</td>
<td>76</td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40..+60</td>
<td>IP 55 acc. to EN 60529</td>
<td>F</td>
<td>BA6</td>
</tr>
<tr>
<td>B</td>
<td>110 2035</td>
<td>500</td>
<td>4,70</td>
<td>76</td>
<td>470</td>
<td>74</td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40..+60</td>
<td>IP 55 acc. to EN 60529</td>
<td>F</td>
<td>BA6</td>
</tr>
</tbody>
</table>

#### Nominal voltage range 380-480 V AC

<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 LwA</th>
<th>Protection class</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>A</td>
<td>400 2400</td>
<td>777</td>
<td>1,20</td>
<td>90</td>
<td></td>
<td>90</td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40..+60</td>
<td>IP 55 acc. to EN 60529</td>
<td>F</td>
<td>BA7</td>
</tr>
<tr>
<td>B</td>
<td>400 2400</td>
<td>1037</td>
<td>1,59</td>
<td>83</td>
<td></td>
<td>83</td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40..+60</td>
<td>IP 55 acc. to EN 60529</td>
<td>F</td>
<td>BA6</td>
</tr>
<tr>
<td>C</td>
<td>400 2400</td>
<td>1100</td>
<td>1,70</td>
<td>75</td>
<td></td>
<td>75</td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40..+60</td>
<td>IP 55 acc. to EN 60529</td>
<td>F</td>
<td>BA7</td>
</tr>
</tbody>
</table>

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

Subject to change

---

### Centrifugal fan

<table>
<thead>
<tr>
<th>Part number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>R3G355RS13P1</td>
<td>5.50</td>
</tr>
<tr>
<td>R3G355RS85S1</td>
<td>8.40</td>
</tr>
<tr>
<td>R3G333JR76N1</td>
<td>8.40</td>
</tr>
</tbody>
</table>
EC / DC centrifugal fans   Ø 355 mm

A  R3G355RS13P1   (Centrifugal fan)

Dimensions in mm

Pin assignment: see connection diagram

Accessory part: Inlet ring 35500-2-4013, not included in scope of delivery
Dimensions: see "Accessories" chapter
Max. clearance of screw: max. 16 mm
Cable (halogen-free): 3x BETAtrans® 3 GKW flex, 4G 1.5 mm², 3x crimped ferrules
Cable (halogen-free): 7x BETAtrans® 3 GKW flex, 7x 0.5 mm², 7x crimped ferrules

B  K3G355JR85S1   (Centrifugal fan)

Dimensions in mm

Pin assignment: see connection diagram

Accessory part: Inlet ring 35500-2-4013, not included in scope of delivery
Dimensions: see "Accessories" chapter
Max. clearance of screw: max. 16 mm
Cable (halogen-free): 3x BETAtrans® 3 GKW flex, 4G 1.5 mm², 3x crimped ferrules
Cable (halogen-free): 7x BETAtrans® 3 GKW flex, 7x 0.5 mm², 7x crimped ferrules
C R3G355RJ76N1 (Centrifugal fan) Dimensions in mm

1. **Accessory part**: Inlet ring 35500-2-4013, not included in scope of delivery
   Dimensions: see "Accessories" chapter

2. **Max. clearance of screw**: max. 16 mm

3. **Cable (halogen-free)**: 4x BETAtrans® 3 GKW flex, 4G 1.5 mm², 4x crimped ferrules

4. **Cable (halogen-free)**: 7x BETAtrans® 3 GKW flex, 7x 0.5 mm², 7x crimped ferrules

Pin assignment: see connection diagram
EC / DC centrifugal fans
backward curved, Ø 400 mm, Aluminium impeller

Material/surface
- Impeller: Sheet aluminium
- Rotor: Painted black
- Electronics housing: Die-cast aluminium

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

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

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

Intake-side sound level: $L_{wA}$ according to ISO 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.
### EC / DC centrifugal fans Ø 400 mm

#### Nominal voltage range 380-480 V AC

<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>Protection class</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>A</td>
<td>400 2600 2400 3,70 95</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40..+60</td>
<td>IP 55</td>
<td>F</td>
<td>BA8</td>
</tr>
<tr>
<td>B</td>
<td>400 2430 2400 3,70 89</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>C</td>
<td>400 2400 2400 3,70 84</td>
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<td>D</td>
<td>400 2505 2372 3,67 88</td>
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<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

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

Subject to change
EC / DC centrifugal fans Ø 400 mm

**A R3G400BE08N1 (Centrifugal fan)**

**Dimensions in mm**

1. **Accessory part:** Inlet ring 40070-2-4013, not included in scope of delivery
   - Dimensions: see "Accessories" chapter
2. **Max. clearance of screw:** max. 20 mm
3. **Cable diameter:** min. 4 mm, max. 10 mm, Tightening torque 2 ± 0.3 Nm
4. **Tightening torque:** 1.5 ± 0.2 Nm

**Pin assignment:** see connection diagram
EC / DC centrifugal fans Ø 400 mm
### EC / DC axial fans Ø 300 - Ø 500

<table>
<thead>
<tr>
<th>Model</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 300-385</td>
<td>74</td>
</tr>
<tr>
<td>Ø 300-350 HyBlade</td>
<td>78</td>
</tr>
<tr>
<td>Ø 400 HyBlade</td>
<td>82</td>
</tr>
<tr>
<td>Ø 450 HyBlade</td>
<td>86</td>
</tr>
<tr>
<td>Ø 500 HyBlade</td>
<td>90</td>
</tr>
</tbody>
</table>
EC / DC axial fans
Ø 300-385 mm

Material/surface
- Housing and Impeller: PA66 plastic, black

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

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

Air performance measured according to: ISO 5801, installation category A, without contact protection.
Intake-side sound level: LwA according to ISO 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
## Voltage range 16-32 V DC

<table>
<thead>
<tr>
<th>Curve</th>
<th>VDC</th>
<th>rpm</th>
<th>W</th>
<th>A</th>
<th>dB(A)</th>
<th>°C</th>
<th>Motor</th>
<th>Insulation class</th>
<th>Installation position</th>
<th>Protection class</th>
<th>Perm. ambient temp.</th>
<th>Degree of protection</th>
<th>Installation data</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>24</td>
<td>3350</td>
<td>230</td>
<td>9,00</td>
<td>83</td>
<td>III</td>
<td>Any</td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>24</td>
<td>3350</td>
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</tbody>
</table>

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

Subject to change
EC / DC axial fans  Ø 300-385 mm

A W3G300BV2582 (Axial fan)  Dimensions in mm

- Direction of air flow: “V”
- Cable: with plug tyco Junior Power Timer 1-962349-1, 6-pole, coded
  Mating plug tyco 1-962312-1 not included in scope of delivery

Pin assignment: see connection diagram
EC / DC axial fans Ø 300-385 mm

**B W3G385CT6581 (Axial fan)**

### Dimensions in mm

- **Diameter**: 399 mm
- **Height**: 17 mm
- **Width**: 450 mm
- **Depth**: 24°
- **Cable**: BETAtrans® 3 GKW 6 mm², 2x crimped ferrules (brown, black)
- **Pin assignment**: see connection diagram

**Direction of air flow**: "V"

**Cable (halogen-free)**:
- BETAtrans® 3 GKW 6 mm², 2x crimped ferrules (brown, black)
- BETAtrans® GKW R 1.0 mm², 2x crimped ferrules (yellow, white)
EC / DC axial fans
Ø 300-350 mm, HyBlade

Material/surface
- Impeller: PP plastic, black
- Housing: Painted black
- Rotor: Painted black
- Electronics housing: Die-cast aluminium

Mechanical data
- Direction of rotation: Clockwise viewed toward rotor
- Direction of air flow: “A”
- Mode: Continuous operation (S1)
- Mounting: Maintenance-free ball bearings
- Cable exit: lateral

Standards and approvals
- Conformity with standards: see page 6
- According to EN 45545-2 only for outside the passenger compartment application
- Approvals: EAC

Connections and technical features
- Air performance measured according to: ISO 5801, installation category A, without contact protection.
- Intake-side sound level: $L_{wA}$ according to ISO 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.

More at www.ebmpapst.com
### EC / DC axial fans Ø 300-350 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>Protection class</th>
<th>Installation position</th>
<th>Perm. ambient temp. $T_{a}$</th>
<th>Degree of protection</th>
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Values set in blue are nominal data at operating point with maximum load.

Subject to change

### Curve

<table>
<thead>
<tr>
<th>Part number</th>
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<tr>
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<td>4,20</td>
</tr>
<tr>
<td>W3G350CT81P1</td>
<td>4,80</td>
</tr>
</tbody>
</table>
EC / DC axial fans Ø 300-350 mm

W3G300CT80P1 (Axial fan)

Dimensions in mm

1. Direction of air flow: "A"
2. Cable (halogen-free):
   BETAtans® GKW Flex R, 10G 1.0 mm², 10x crimped splices

Pin assignment: see connection diagram
W3G350CT81P1 (Axial fan)

- **Direction of air flow:** "A"
- **Cable (halogen-free):**
  - BETAtrans® GKW Flex R, 10G 1.0 mm², 10x crimped splices

**Pin assignment:** see connection diagram

**Dimensions in mm**

- Ø460
- Ø390
- 12
- 80
- 6
- 85
- 1000

- 16°
- 6x60°
- Ø9 (6x)
EC / DC axial fans
Ø 400 mm, HyBlade

Material/surface
- Impeller: PA66 plastic, sheet-metal plate painted black
- Housing: Sheet steel, galvanized and coated with black plastic
- Support ring: Stainless steel
- Rotor: Painted black
- Electronics housing: Die-cast aluminium

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

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

On Page 84
- Drawings

On Page 192
- Connection diagrams and technical features

On Page 204
- 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: $L_w$ according to ISO 13347, $L_p$ 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.
EC / DC axial fans  Ø 400 mm

<table>
<thead>
<tr>
<th>Curve</th>
<th>Operating point</th>
<th>Nominal voltage</th>
<th>Speed n</th>
<th>Max. Input power Pmax</th>
<th>Max. Input current I</th>
<th>Sound power level LwA</th>
<th>Max. back pressure Pa</th>
<th>Protection class</th>
<th>Installation position</th>
<th>Ambient temp.</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Conn. diagram</th>
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<tbody>
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<td></td>
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Values set in blue are nominal data at operating point with maximum load.

Subject to change
EC / DC axial fans Ø 400 mm

A  A3G400BK13P3 (Axial fan) Dimensions in mm

1. Direction of air flow: "A"
2. Max. clearance of screw: max. 16 mm
3. Cable (halogen-free): 3x BETAttrans® 3 GKW flex, 4G 1.5 mm², 3x crimped ferrules
4. Cable (halogen-free): 7x BETAttrans® 3 GKW flex, 7x 0.5 mm², 7x crimped ferrules

Pin assignment: see connection diagram
W3G400CK13P3 (Axial fan with round full nozzle)

Dimensions in mm

1. Direction of air flow: "A"
2. Cable (halogen-free): 3x BETAtrans® 3 GKW flex, 4G 1.5 mm², 3x crimped ferrules
3. Cable (halogen-free): 7x BETAtrans® 3 GKW flex, 7x 0.5 mm², 7x crimped ferrules

Pin assignment: see connection diagram
EC / DC axial fans
Ø 450 mm, HyBlade

Material/surface
- Impeller: PA66 plastic, sheet-metal plate painted black
- Housing: Sheet steel, galvanized and coated with black plastic
- Support ring: Stainless steel
- Rotor: Painted black
- Electronics housing: Die-cast aluminium

Mechanical data
- Direction of rotation: Clockwise viewed toward rotor
- Direction of air flow: “A”
- Mode: Continuous operation (S1)
- Mounting: Maintenance-free ball bearings
- Cable exit: lateral

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

Measuring requirements:
- Air performance measured according to: ISO 5801, installation category A, without contact protection.
- Intake-side sound level: $L_{wA}$ according to ISO 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.

Connection diagrams and technical features on Page 192
Technical parameters & scope on Page 204
More at www.ebmpapst.com

on Page 88
Drawings
## EC / DC axial fans Ø 450 mm

### Curve | Operating point | Nominal voltage | Speed n | Max. input power P<sub>in</sub> | Max. input current I | Sound power level L<sub>SN</sub> | Max. back pressure Δp<sub>max</sub> | Protection class |Installation position | Perm. ambient temp. | Degree of protection | Insulation class | Conn. diagram
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ---
A | Voltage range 77-138 V DC |
| ❶ | 110 | 1550 | 429 | 3,90 | 76 |
| ❼ | 110 | 1550 | 490 | 4,50 | 72 |
| ❾ | 110 | 1535 | 530 | 4,80 | 71 |
| ❾ | 110 | 1500 | 530 | 4,80 | 75 |
B | Nominal voltage range 380-480 V AC |
| ❼ | 400 | 1500 | 391 | 0,66 | 76 |
| ⩾ | 400 | 1500 | 441 | 0,73 | 72 |
| ⩾ | 400 | 1500 | 481 | 0,78 | 70 |
| ⩾ | 400 | 1500 | 500 | 0,83 | 72 |

### Nominal data

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

Subject to change

### Axial fan with round full nozzle

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<th>Curve</th>
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<th>Weight</th>
<th>Part number</th>
<th>Weight</th>
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<td>12,30</td>
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</table>

### Accessories

- **Technology**: 
- **Agents**: 

### Additional Information

- **Shaft**: horizontal or rotor on top
- **Temp.**: -40..+60
- **Protection class**: IP 55 acc. to EN 60529
- **Insulation class**: F

---

**Note**: The values are subject to change.
EC / DC axial fans  Ø 450 mm

**A3G450BL17P3 (Axial fan)**

- **Dimensions in mm**
- **Pin assignment:** see connection diagram
- **Direction of air flow:** "A"
- **Max. clearance of screw:** max. 16 mm
- **Cable (halogen-free):** 3x BETAtrans® 3 GKW flex, 4G 1.5 mm², 3x crimped ferrules
- **Cable (halogen-free):** 7x BETAtrans® 3 GKW flex, 7x 0.5 mm², 7x crimped ferrules

**A W3G450CL17P3 (Axial fan with round full nozzle)**

- **Dimensions in mm**

---

Ebmpapst
B A3G450BL12N1 (Axial fan) Dimensions in mm

B W3G450CL12N1 (Axial fan with round full nozzle) Dimensions in mm

1. Direction of air flow: "A"
2. Max. clearance of screw: max. 16 mm
3. Cable (halogen-free): 3x BETATrans® 3 GKW flex, 4G 1.5 mm², 3x crimped ferrules
4. Cable (halogen-free): 7x BETATrans® 3 GKW flex, 7x 0.5 mm², 7x crimped ferrules

Pin assignment: see connection diagram
EC / DC axial fans
Ø 500 mm, HyBlade

Measuring requirements
Air performance measured according to: ISO 5801, installation category A, without contact protection.
Intake-side sound level: $L_{pA}$ according to ISO 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: PA66 plastic
- Housing: Sheet steel, galvanized and coated with black plastic
- Support ring: Stainless steel
- Rotor: Painted black
- Electronics housing: Die-cast aluminium

Mechanical data
- Direction of rotation: Clockwise viewed toward rotor
- Direction of air flow: “A”
- Mode: Continuous operation (S1)
- Mounting: Maintenance-free ball bearings
- Cable exit: lateral

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

More at www.ebmpapst.com
### EC/DC Axial Fans Ø 500 mm

#### Curve 

<table>
<thead>
<tr>
<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. Back Pressure $Pa$</th>
<th>Protection class</th>
<th>Installation position</th>
<th>Ambient temp.</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Conn. Diagram</th>
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<td>210</td>
<td>Shaft horizontal or rotor on top</td>
<td>-40 to +60</td>
<td>IP 55 acc. to EN 60529</td>
<td>F BA6)</td>
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<tr>
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<td>1600</td>
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<td>-40 to +60</td>
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<td>F BA7)</td>
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<tr>
<td>Nominal voltage range 380-480 V AC</td>
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<td>F BA7)</td>
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Values set in blue are nominal data at operating point with maximum load.

Subject to change.

### Part Numbers

<table>
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<th>Curve</th>
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<th>Part number</th>
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<tbody>
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<tr>
<td>B</td>
<td>7.40</td>
<td>A3G500BA74N1</td>
</tr>
</tbody>
</table>

### Axial fans with round full nozzle

- **Curve**: A
- **Part number**: A3G500BA73S1
- **Weight**: 7.40 kg

- **Curve**: B
- **Part number**: A3G500BA74N1
- **Weight**: 7.40 kg
EC / DC axial fans Ø 500 mm

A A3G500BA73S1 (Axial fan)  Dimensions in mm

A W3G500CA73S1 (Axial fan with round full nozzle)  Dimensions in mm

1. Direction of air flow: “A”
2. Max. clearance of screw: max. 16 mm
3. Cable (halogen-free): 3x BETA trans 3 GKW flex, 4G 1.5 mm², 3x crimped ferrules
4. Cable (halogen-free): 7x BETA trans 3 GKW flex, 7x 0.5 mm², 7x crimped ferrules

Pin assignment: see connection diagram
B A3G500BA74N1 (Axial fan) Dimensions in mm

1. Direction of air flow: "A"
2. Max. clearance of screw: max. 16 mm
3. Cable (halogen-free): 3x BETAtrans<sup>®</sup> 3 GKW flex, 4G 1.5 mm<sup>2</sup>, 3x crimped ferrules
4. Cable (halogen-free): 7x BETAtrans<sup>®</sup> 3 GKW flex, 7x 0.5 mm<sup>2</sup>, 7x crimped ferrules

Pin assignment: see connection diagram

B W3G500CA74N1 (Axial fan with round full nozzle) Dimensions in mm

1. Direction of air flow: "A"
2. Max. clearance of screw: max. 16 mm
3. Cable (halogen-free): 3x BETAtrans<sup>®</sup> 3 GKW flex, 4G 1.5 mm<sup>2</sup>, 3x crimped ferrules
4. Cable (halogen-free): 7x BETAtrans<sup>®</sup> 3 GKW flex, 7x 0.5 mm<sup>2</sup>, 7x crimped ferrules

Pin assignment: see connection diagram
Fans and drive concepts for rail technology · Edition 2018-09
## DC compact fans

<table>
<thead>
<tr>
<th>Fan Type</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axial fan 6300 NTD</td>
<td>96</td>
</tr>
<tr>
<td>Centrifugal fan RLF 100</td>
<td>100</td>
</tr>
</tbody>
</table>
DC axial fan
Ø 172 x 51 mm

Material/surface
- Impeller: Plastic, black
- Housing: Metal, black

Mechanical data
- Direction of rotation: Counter-clockwise viewed toward rotor
- Direction of airflow: Blowing over struts
- Installation position: Any
- Mode: Continuous operation (S1)
- Mounting: Maintenance-free ball bearings
- Cable exit: lateral

Electrical data
- Protection class: III

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

More at www.ebmpapst.com
### DC compact fan axial

<table>
<thead>
<tr>
<th>Curve</th>
<th>Nominal voltage</th>
<th>Speed n</th>
<th>Input power P</th>
<th>Input current</th>
<th>Sound power level Lw</th>
<th>Pamb, ambient temp.</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Conn. diagram</th>
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</thead>
<tbody>
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<td>VDC</td>
<td>rpm</td>
<td>W</td>
<td>A</td>
<td>dB(A)</td>
<td>°C</td>
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<tr>
<td>A</td>
<td>24</td>
<td>6000</td>
<td>90</td>
<td>3,75</td>
<td>79</td>
<td>-20..+70</td>
<td>IP 68</td>
<td>E</td>
<td>BA10</td>
</tr>
</tbody>
</table>

**Specification of nominal data:** free blowing

Subject to change

### Axial fan

<table>
<thead>
<tr>
<th>Curve</th>
<th>Part number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>6314N2TDHOU-305</td>
<td>0,85</td>
</tr>
</tbody>
</table>
DC compact fan axial

6300 NTD (Axial fan)

Dimensions: for mounting cutout

1. Dimensions: for mounting cutout
2. Screw: Duo-Taptite according to DIN 7500, CM 4x8, Torx
3. Cable: 2x AWG 22 und 2x AWG 18, 4x crimped ferrules

Pin assignment: see connection diagram
DC compact fan axial
DC centrifugal fan
□ 127 x 25 mm

Material/surface
- Impeller: Plastic
- Housing: Plastic
- Housing bottom: Sheet steel

Mechanical data
- Direction of rotation: Clockwise viewed toward rotor
- Direction of air flow: Axial sucking in, radial blowing out
- Installation position: Any
- Mode: Continuous operation (S1)
- Mounting: Maintenance-free ball bearings
- Cable exit: Lateral

Electrical data
- Protection class: III

Standards and approvals
- Conformity with standards: On request
- Approvals: EAC

Air performance measured according to: ISO 5801, installation category A, with ebm-papst scroll housing without contact protection. Intake-side sound level $L_A$ measured according to ISO 10302. 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](http://www.ebmpapst.com)

Connections diagrams and technical features on Page 192
Technical parameters & scope on Page 204
## DC compact fan radial

<table>
<thead>
<tr>
<th>Curve</th>
<th>Nominal voltage</th>
<th>Speed n</th>
<th>Input power P_e</th>
<th>Input current I_e</th>
<th>Sound power level Lw,A</th>
<th>Perm. ambient temp. °C</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Constr. diagram</th>
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<tbody>
<tr>
<td></td>
<td>VDC</td>
<td>rpm</td>
<td>W</td>
<td>A</td>
<td>dB(A)</td>
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<td>E</td>
<td>BA11</td>
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</table>

Specification of nominal data: free blowing

Subject to change
DC compact fan radial

A RLF 100  (Centrifugal fan) Dimensions in mm

Cable: 3x AWG 22

Pin assignment: see connection diagram
<table>
<thead>
<tr>
<th>Diameter (mm)</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 190 RadiCal</td>
<td>106</td>
</tr>
<tr>
<td>Ø 220 RadiCal</td>
<td>110</td>
</tr>
<tr>
<td>Ø 250 RadiCal</td>
<td>114</td>
</tr>
<tr>
<td>Ø 280 RadiCal</td>
<td>118</td>
</tr>
</tbody>
</table>
AC centrifugal fans
backward curved, Ø 190 mm

Material/surface
- Impeller: PA66 plastic, sheet-metal plate painted black
- Rotor: Painted black

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

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

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on Page 108
Accessories
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Connection diagrams and technical features
on Page 192
Technical parameters & scope
on Page 204
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 $L_{WA}$ according to ISO 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.
### AC centrifugal fans Ø 190 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>Protection class</th>
<th>Installation position</th>
<th>Perm. ambient temp. $t_{amb}$</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Conn. diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td>Nominal voltage 400 V AC, 50 Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IP 44</td>
<td>F</td>
<td>BA9)</td>
</tr>
<tr>
<td></td>
<td>400 Y</td>
<td>2665</td>
<td>42</td>
<td>0,08</td>
<td>68</td>
<td></td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40...+80</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>400 Y</td>
<td>2620</td>
<td>46</td>
<td>0,09</td>
<td>63</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>400 Y</td>
<td>2550</td>
<td>50</td>
<td>0,09</td>
<td>62</td>
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<td></td>
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</tr>
<tr>
<td></td>
<td>400 Y</td>
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<td>65</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td>Nominal voltage 400 V AC, 60 Hz</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td></td>
<td>400 Y</td>
<td>2945</td>
<td>59</td>
<td>0,09</td>
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<td></td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40...+80</td>
<td>IP 44</td>
<td>F</td>
<td>BA9)</td>
</tr>
<tr>
<td></td>
<td>400 Y</td>
<td>2855</td>
<td>65</td>
<td>0,10</td>
<td>65</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>400 Y</td>
<td>2750</td>
<td>70</td>
<td>0,11</td>
<td>63</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>400 Y</td>
<td>2855</td>
<td>64</td>
<td>0,10</td>
<td>67</td>
<td></td>
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<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

### Centrifugal fan

<table>
<thead>
<tr>
<th>Curve</th>
<th>Part number</th>
<th>Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>R2D190RB1811</td>
<td>1,60</td>
</tr>
</tbody>
</table>

**Fans and drive concepts for rail technology - Edition 2018-09**
AC centrifugal fans Ø 190 mm

R2D190RB1811 (Centrifugal fan)

Pin assignment: see connection diagram

1. Accessory part: Inlet ring 09576-2-4013, not included in scope of delivery
   Dimensions: see "Accessories" chapter
2. Max. clearance of screw: max. 5 mm
3. Cable (halogen-free): 9x BETAtrans® 3G KF 0,5 mm², 9x crimped splices
AC centrifugal fans Ø 190 mm
AC centrifugal fans
backward curved, Ø 220 mm

Material/surface
- Impeller: PA66 plastic, sheet-metal plate painted black
- Rotor: Painted black

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

Standards and approvals
- Conformity with standards: see page 6
- 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: L₁ₐ according to ISO 13347, L₁ₐ 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

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on Page 192 Connection diagrams and technical features
on Page 204 Technical parameters & scope

Connections diagrams and technical features
### AC centrifugal fans  Ø 220 mm

| Curve | Operating point | Nominal voltage | Speed n rpm | Max. Input power P_{in} W | Max. Input current I A | Sound power level Lw A dB(A) | Protection class | Installation position | Perm. ambient temp. °C | Degree of protection | Insulation class | Conn. diagram |
|-------|----------------|-----------------|-------------|---------------------------|-----------------------|---------------------------|-------------------------|----------------------|-----------------------|------------------------|-----------------|---------------|--------------|
| A     | A              | 400 V AC, 50 Hz | 2800        | 98                        | 0,25                  | 70                        | I                       | Shaft horizontal      | -40..+70              | IP 44 installation and position-dependent | F               | BA9)          |
|       | B              | 400 V AC, 50 Hz | 2765        | 110                       | 0,26                  | 67                        | I                       | Shaft horizontal      | -40..+70              | IP 44 installation and position-dependent | F               | BA9)          |
|       | C              | 400 V AC, 50 Hz | 2750        | 120                       | 0,27                  | 65                        | I                       | Shaft horizontal      | -40..+70              | IP 44 installation and position-dependent | F               | BA9)          |
|       | D              | 400 V AC, 50 Hz | 2755        | 111                       | 0,26                  | 68                        | I                       | Shaft horizontal      | -40..+70              | IP 44 installation and position-dependent | F               | BA9)          |
|       | E              | 400 V AC, 50 Hz | 2756        | 112                       | 0,27                  | 68                        | I                       | Shaft horizontal      | -40..+70              | IP 44 installation and position-dependent | F               | BA9)          |
|       | F              | 400 V AC, 50 Hz | 2757        | 113                       | 0,28                  | 69                        | I                       | Shaft horizontal      | -40..+70              | IP 44 installation and position-dependent | F               | BA9)          |

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

Subject to change

### Centrifugal fan

<table>
<thead>
<tr>
<th>Curve</th>
<th>Part number</th>
<th>Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>R2D220RC3611</td>
<td>2,10</td>
</tr>
</tbody>
</table>

Rahmentech-Katalog_2018_EN__18_10_2018_.indd   111
04.03.2019   11:18:50
AC centrifugal fans Ø 220 mm

**A B C D**

**R2D220RC3611** (Centrifugal fan)

*Dimensions in mm*

1. **Accessory part:** Inlet ring 09609-2-4013, not included in scope of delivery
   - Dimensions: see "Accessories" chapter
2. **Max. clearance of screw:** max. 5 mm
3. **Cable (halogen-free):** 9x BETAtrens® 3 GKW flex, 9G 0.5 mm², 9x crimped splices

**Pin assignment:** see connection diagram
AC centrifugal fans Ø 220 mm
AC centrifugal fans
backward curved, Ø 250 mm

Material/surface
- Impeller: PA66 plastic, sheet-metal plate painted black
- Rotor: Painted black

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

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

Air performance measured according to: ISO 5801, installation category A, with ebm-papst inlet ring without contact protection.
Intake-side sound level: $L_{wA}$ according to ISO 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 inlet ring without contact protection.
Intake-side sound level: $L_{wA}$ according to ISO 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.
### AC centrifugal fans Ø 250 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>Protection class</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>A</td>
<td>400 $\Delta$</td>
<td>2755</td>
<td>174</td>
<td>0.31</td>
<td>78</td>
<td>IP 44 installation and position-dependent</td>
<td>F</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40...+80</td>
<td>BA9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>400 $\Delta$</td>
<td>2730</td>
<td>192</td>
<td>0.33</td>
<td>74</td>
<td>IP 44 installation and position-dependent</td>
<td>F</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40...+80</td>
<td>BA9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>400 $\Delta$</td>
<td>2700</td>
<td>215</td>
<td>0.36</td>
<td>70</td>
<td>IP 44 installation and position-dependent</td>
<td>F</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40...+80</td>
<td>BA9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>400 $\Delta$</td>
<td>2720</td>
<td>199</td>
<td>0.34</td>
<td>72</td>
<td>IP 44 installation and position-dependent</td>
<td>F</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40...+80</td>
<td>BA9)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Accessories Technology Agents

- Shaft horizontal or rotor on bottom
- Perm. ambient temp.: -40...+80
- Degree of protection: IP 44
- Insulation class: F
- Conn. diagram: BA9)

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

Subject to change

---

### Centrifugal fan

<table>
<thead>
<tr>
<th>Curve</th>
<th>Part number</th>
<th>Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>R2D250RC1011</td>
<td>4.70</td>
</tr>
</tbody>
</table>
AC centrifugal fans Ø 250 mm

Accessory part: Inlet ring 96359-2-4013, not included in scope of delivery
Dimensions: see "Accessories" chapter
Max. clearance of screw: max. 10 mm
Cable (halogen-free): 9x BETAtrans® 3 GKW flex, 9G 0.5 mm², 9x crimped splices

Pin assignment: see connection diagram
AC centrifugal fans Ø 250 mm
AC centrifugal fans
backward curved, Ø 280 mm

Material/surface
- Impeller: PA66 plastic, sheet-metal plate painted black
- Rotor: Painted black

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

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

---

**Measuring requirements**
Air performance measured according to: ISO 5801, installation category A, with ebm-papst inlet ring without contact protection.
Intake-side sound level \( L_{WA} \) according to ISO 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.

---

**Curve diagram:**
- Q: Flow rate in m³/h
- H: Pressure rise in Pa
- \( L_{WA} \): Intake-side sound level in dB
- \( L_{PA} \): Sound pressure level in dB

---

More at [www.ebmpapst.com](http://www.ebmpapst.com)
<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 $L_{wA}$</th>
<th>Protection class</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 400 V AC, 50 Hz</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>A</td>
<td>400 Δ</td>
<td>2635</td>
<td>448</td>
<td>0,76</td>
<td>83</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>400 Δ</td>
<td>2565</td>
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<td>0,85</td>
<td>78</td>
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<tr>
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<td>400 Δ</td>
<td>2500</td>
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</tr>
<tr>
<td></td>
<td>400 Δ</td>
<td>2580</td>
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<td>0,81</td>
<td>76</td>
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<tr>
<td>B</td>
<td>400 Y</td>
<td>2010</td>
<td>300</td>
<td>0,47</td>
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<td>1980</td>
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<td>400 Y</td>
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<td>307</td>
<td>0,48</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

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

Subject to change
AC centrifugal fans Ø 280 mm

Accessory part: Inlet ring 28000-2-4013, not included in scope of delivery
Dimensions: see "Accessories" chapter
Max. clearance of screw: max. 10 mm
Cable (halogen-free): 9x BETAtrans® 3 GKW flex, 9G 0.5 mm², 9x crimped splices

Pin assignment: see connection diagram
AC centrifugal fans Ø 280 mm
**AC centrifugal fans**

*forward curved with housing*

Ø 120 - Ø 280, *single-intake*

<table>
<thead>
<tr>
<th>Diameter (Ø)</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 120 (2-pole)</td>
<td>124</td>
</tr>
<tr>
<td>Ø 140 (2-pole)</td>
<td>128</td>
</tr>
<tr>
<td>Ø 160 (2-pole)</td>
<td>132</td>
</tr>
<tr>
<td>Ø 180 (2-pole)</td>
<td>136</td>
</tr>
<tr>
<td>Ø 180 (4-pole)</td>
<td>140</td>
</tr>
<tr>
<td>Ø 200 (4-pole)</td>
<td>144</td>
</tr>
<tr>
<td>Ø 225 (4-pole)</td>
<td>148</td>
</tr>
<tr>
<td>Ø 250 (4-pole)</td>
<td>152</td>
</tr>
</tbody>
</table>
AC centrifugal fans
forward curved with housing, Ø 120 mm

Material/surface
- Impeller: Sheet steel galvanized
- Housing: Die-cast aluminium
- Rotor: Painted black

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

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

<table>
<thead>
<tr>
<th>qm³/h</th>
<th>cfm</th>
<th>pfs Pa</th>
<th>in. wg</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>50</td>
<td>1</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>100</td>
<td>2</td>
<td>100</td>
<td>3</td>
</tr>
<tr>
<td>150</td>
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<td>250</td>
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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 ISO 13347, LwA 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.
### AC centrifugal fans Ø 120 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_{W} )</th>
<th>Installation position</th>
<th>Protection class</th>
<th>Ambient temp.</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Conn. diagram</th>
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<tbody>
<tr>
<td><img src="image" alt="Centrifugal fan with housing" /></td>
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<td>Nominal voltage 400 V AC, 50 Hz</td>
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<td><img src="image" alt="Centrifugal fan with housing" /></td>
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<td><img src="image" alt="Centrifugal fan with housing" /></td>
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<tr>
<td><img src="image" alt="Centrifugal fan with housing" /></td>
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</tr>
</tbody>
</table>

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

Subject to change.
AC centrifugal fans Ø 120 mm

G2D120AA2203 (Centrifugal fan with housing)

Dimensions in mm

Cable (halogen-free): BETAtrend® GKW flex R, 9G 0.5 mm², 9x crimped splices

Pin assignment: see connection diagram
AC centrifugal fans Ø 120 mm
AC centrifugal fans
forward curved with housing, Ø 140 mm

Material/surface
- Impeller: Sheet steel galvanized
- Housing: Die-cast aluminium
- Rotor: Painted black

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

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

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\textsubscript{wA} according to ISO 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.

More at www.ebmpapst.com
### AC centrifugal fans Ø 140 mm

#### Nominal voltage 400 V AC, 50 Hz

<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>Min. Back pressure $p_{min}$</th>
<th>Protection class</th>
<th>Installation position</th>
<th>Ambient temp. $t_{amb}$</th>
<th>Insulation class</th>
<th>Conn. diagram</th>
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<td>F BA9)</td>
<td>-40..+80</td>
<td>F BA9)</td>
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<td>B</td>
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<td>-40..+80</td>
<td>F BA9)</td>
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<td>F BA9)</td>
<td>-40..+80</td>
<td>F BA9)</td>
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#### Nominal voltage 480 V AC, 60 Hz

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<thead>
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<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>Min. Back pressure $p_{min}$</th>
<th>Protection class</th>
<th>Installation position</th>
<th>Ambient temp. $t_{amb}$</th>
<th>Insulation class</th>
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<td>Shaft horizontal or rotor on bottom</td>
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<td>-40..+80</td>
<td>F BA9)</td>
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<td>-40..+80</td>
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<td></td>
<td>480 Δ</td>
<td>3110</td>
<td>134</td>
<td>0,18</td>
<td>74</td>
<td>IP 44</td>
<td>Shaft horizontal or rotor on bottom</td>
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<td>F BA9)</td>
<td>-40..+80</td>
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<td>480 Y</td>
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<td>0,15</td>
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<td>-40..+80</td>
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<td>F BA9)</td>
<td>-40..+80</td>
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</table>

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

Subject to change

### Centrifugal fan with housing

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<th>Part number</th>
<th>Weight kg</th>
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<tbody>
<tr>
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<td>G2D140AC3803</td>
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</table>
AC centrifugal fans Ø 140 mm

G2D140AC3803  (Centrifugal fan with housing)  Dimensions in mm

A B C D

Pin assignment: see connection diagram

Cable (halogen-free): BETAttrans® GKW flex R, 9G 0.5 mm², 9x crimped splices
AC centrifugal fans Ø 140 mm
AC centrifugal fans
forward curved with housing, Ø 160 mm

Material/surface
- Impeller: Sheet steel galvanized
- Housing: Die-cast aluminium
- Rotor: Painted black

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

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

Connections and technical features:
on Page 134: Drawings
on Page 132: Connection diagrams and technical features
on Page 204: Technical parameters & scope
More at: www.ebmpapst.com

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 ISO 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.
### AC centrifugal fans Ø 160 mm

#### Nominal voltage 400 V AC, 50 Hz

<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>Min. Back pressure</th>
<th>Protection class</th>
<th>Installation position</th>
<th>Perm. ambient temp.</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Conn. diagram</th>
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<td>78</td>
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<td>0</td>
<td>I</td>
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<td>-40..+55</td>
<td>IP 44 installation- and position-dependent</td>
<td>F</td>
<td>BA9)</td>
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<td>C</td>
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<td>0,34</td>
<td>76</td>
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<td>Shaft horizontal or rotor on bottom</td>
<td>-40..+50</td>
<td>IP 44 installation- and position-dependent</td>
<td>F</td>
<td>BA9)</td>
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<td>0,27</td>
<td>74</td>
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<td>0</td>
<td>I</td>
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<td>-40..+55</td>
<td>IP 44 installation- and position-dependent</td>
<td>F</td>
<td>BA9)</td>
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<td>0,24</td>
<td>67</td>
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<td>Shaft horizontal or rotor on bottom</td>
<td>-40..+55</td>
<td>IP 44 installation- and position-dependent</td>
<td>F</td>
<td>BA9)</td>
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<td>400 Y 1555</td>
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<td>0,23</td>
<td>67</td>
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<td>Shaft horizontal or rotor on bottom</td>
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<td>IP 44 installation- and position-dependent</td>
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<td>BA9)</td>
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<td>Shaft horizontal or rotor on bottom</td>
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<td>IP 44 installation- and position-dependent</td>
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<td>-40..+55</td>
<td>IP 44 installation- and position-dependent</td>
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<td>BA9)</td>
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#### Nominal voltage 400 V AC, 60 Hz

<table>
<thead>
<tr>
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<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>Min. Back pressure</th>
<th>Protection class</th>
<th>Installation position</th>
<th>Perm. ambient temp.</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Conn. diagram</th>
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<td>Shaft horizontal or rotor on bottom</td>
<td>-40..+50</td>
<td>IP 44 installation- and position-dependent</td>
<td>F</td>
<td>BA9)</td>
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<td>0,39</td>
<td>76</td>
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<td>Shaft horizontal or rotor on bottom</td>
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<td>IP 44 installation- and position-dependent</td>
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<td>BA9)</td>
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<td>IP 44 installation- and position-dependent</td>
<td>F</td>
<td>BA9)</td>
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<td>400 Y 1650</td>
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<td>64</td>
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<td>0</td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40..+50</td>
<td>IP 44 installation- and position-dependent</td>
<td>F</td>
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<td>-40..+50</td>
<td>IP 44 installation- and position-dependent</td>
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<td>-40..+50</td>
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<td>-40..+50</td>
<td>IP 44 installation- and position-dependent</td>
<td>F</td>
<td>BA9)</td>
</tr>
</tbody>
</table>

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

Subject to change

---

**Curve**: Centrifugal fan with housing

<table>
<thead>
<tr>
<th>Part number</th>
<th>Weight</th>
<th>kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>G2D160AF1203</td>
<td>4,00</td>
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</table>
AC centrifugal fans Ø 160 mm

G2D160AF1203 (Centrifugal fan with housing) Dimensions in mm

1 Cable (halogen-free): BETAtans® GKW flex R; 9G 0.5 mm²; 9x crimped splices
2 For self-tapping M4 screws

Pin assignment: see connection diagram
AC centrifugal fans Ø 160 mm
AC centrifugal fans
forward curved with housing, Ø 180 mm

Material/surface
- Impeller: Sheet steel galvanized
- Housing: Die-cast aluminium
- Rotor: Painted black

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

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

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 ISO 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.
## AC centrifugal fans Ø 180 mm

### Curve

<table>
<thead>
<tr>
<th>Part number</th>
<th>Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>G2D180AB1003</td>
<td>5.40</td>
</tr>
</tbody>
</table>

### Operating point

<table>
<thead>
<tr>
<th>Nominal voltage 400 V AC, 50 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
</tr>
<tr>
<td>B</td>
</tr>
<tr>
<td>C</td>
</tr>
<tr>
<td>D</td>
</tr>
</tbody>
</table>

### Nominal voltage 480 V AC, 60 Hz

<table>
<thead>
<tr>
<th>Nominal voltage 480 V AC, 60 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
</tr>
<tr>
<td>B</td>
</tr>
<tr>
<td>C</td>
</tr>
<tr>
<td>D</td>
</tr>
</tbody>
</table>

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

Subject to change
AC centrifugal fans Ø 180 mm

G2D180AB1003 (Centrifugal fan with housing)

Dimensions in mm

- Cable (halogen-free): BETAttrans® GKW flex R, 9G 0.5 mm², 9x crimped splices
- For self-tapping M4 screws

Pin assignment: see connection diagram
AC centrifugal fans Ø 180 mm
AC centrifugal fans
forward curved with housing, Ø 180 mm

Material/surface
- Impeller: Sheet steel galvanized
- Housing: Sheet steel galvanized
- Rotor: Painted black

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

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

Measuring requirements:
Air performance measured according to ISO 5801, installation category A, with ebm-papst scroll housing without contact protection.
Intake-side sound level, LA according to ISO 13347, 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.
### AC centrifugal fans Ø 180 mm

#### Curve:

<table>
<thead>
<tr>
<th>Operating point</th>
<th>Nominal voltage</th>
<th>Speed n</th>
<th>Max. Input power P2</th>
<th>Max. Input current</th>
<th>Stand power level</th>
<th>Min. Back pressure</th>
<th>Protection class</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>A</td>
<td>400 V AC, 50 Hz</td>
<td>1300</td>
<td>190</td>
<td>0,40</td>
<td>72</td>
<td>0 I</td>
<td></td>
<td></td>
<td>-40...+65</td>
<td>IP 44 installation- and position-dependent</td>
<td>F</td>
<td>BA9)</td>
</tr>
<tr>
<td>B</td>
<td>400 V AC, 50 Hz</td>
<td>1350</td>
<td>162</td>
<td>0,34</td>
<td>70</td>
<td>0 I</td>
<td></td>
<td></td>
<td>-40...+65</td>
<td>IP 44 installation- and position-dependent</td>
<td>F</td>
<td>BA9)</td>
</tr>
<tr>
<td>C</td>
<td>480 V AC, 60 Hz</td>
<td>1500</td>
<td>300</td>
<td>0,47</td>
<td>76</td>
<td>0 I</td>
<td></td>
<td></td>
<td>-40...+50</td>
<td>IP 44 installation- and position-dependent</td>
<td>F</td>
<td>BA9)</td>
</tr>
<tr>
<td>D</td>
<td>480 V AC, 60 Hz</td>
<td>1580</td>
<td>253</td>
<td>0,40</td>
<td>74</td>
<td>0 I</td>
<td></td>
<td></td>
<td>-40...+50</td>
<td>IP 44 installation- and position-dependent</td>
<td>F</td>
<td>BA9)</td>
</tr>
</tbody>
</table>

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

Subject to change

---

#### Centrifugal fan with housing:

<table>
<thead>
<tr>
<th>Part number</th>
<th>Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>G4D180FF2402</td>
<td>6,00</td>
</tr>
</tbody>
</table>
AC centrifugal fans Ø 180 mm

G4D180FF2402 (Centrifugal fan with housing)

Dimensions in mm

Pin assignment: see connection diagram

Cable (halogen-free): BETAtrans® 3 GKW flex, 9G 0.75 mm², 9x crimped splices
AC centrifugal fans Ø 180 mm
AC centrifugal fans
forward curved with housing, Ø 200 mm

Material/surface
- Impeller: Sheet steel galvanized
- Housing: Sheet steel galvanized
- Rotor: Painted black

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

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

Measurements and requirements:
Air performance measured according to: ISO 5801, installation category A, with ebm-papst scroll housing without contact protection.
Intake-side sound level $L_A$ according to ISO 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.

More at www.ebmpapst.com
AC centrifugal fans  Ø 200 mm

<table>
<thead>
<tr>
<th>Curve</th>
<th>Nominal voltage 400 V AC, 50 Hz</th>
<th>Nominal voltage 480 V AC, 60 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>400 V 1250 300 0,55 74</td>
<td>480 V 1600 325 0,55 74</td>
</tr>
<tr>
<td>B</td>
<td>400 V 1325 250 0,48 72</td>
<td>480 V 1635 288 0,47 73</td>
</tr>
<tr>
<td>C</td>
<td>400 V 1360 215 0,44 70</td>
<td>480 V 1665 246 0,44 72</td>
</tr>
<tr>
<td>D</td>
<td>400 V 1415 149 0,39 67</td>
<td>480 V 1690 213 0,41 71</td>
</tr>
<tr>
<td></td>
<td></td>
<td>480 V 1200 220 0,31 66</td>
</tr>
<tr>
<td>E</td>
<td>480 Y 1010 152 0,25 65</td>
<td>480 Y 1290 200 0,28 67</td>
</tr>
<tr>
<td>F</td>
<td>480 Y 1090 152 0,25 65</td>
<td>480 Y 1375 180 0,25 67</td>
</tr>
<tr>
<td>G</td>
<td>480 Y 1250 109 0,19 64</td>
<td>480 Y 1445 160 0,23 67</td>
</tr>
</tbody>
</table>

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

Subject to change

Curves

<table>
<thead>
<tr>
<th>Curve</th>
<th>Operating point</th>
<th>Nominal voltage</th>
<th>Speed n</th>
<th>Max. Input power Pmax</th>
<th>Max. Input current I</th>
<th>Min. Back pressure</th>
<th>Protection class</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Degree of protection</th>
<th>Insulation class</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1250 rpm</td>
<td>400 V Δ</td>
<td>300</td>
<td>0,55</td>
<td>74</td>
<td>0</td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>IP 44 installation- and position-dependent</td>
<td>F</td>
<td>BA9)</td>
</tr>
<tr>
<td>B</td>
<td>1325 rpm</td>
<td>400 V Δ</td>
<td>250</td>
<td>0,48</td>
<td>72</td>
<td>0</td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>IP 44 installation- and position-dependent</td>
<td>F</td>
<td>BA9)</td>
</tr>
<tr>
<td>C</td>
<td>1360 rpm</td>
<td>400 V Δ</td>
<td>215</td>
<td>0,44</td>
<td>70</td>
<td>0</td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>IP 44 installation- and position-dependent</td>
<td>F</td>
<td>BA9)</td>
</tr>
<tr>
<td>D</td>
<td>1415 rpm</td>
<td>400 V Δ</td>
<td>149</td>
<td>0,39</td>
<td>67</td>
<td>0</td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>IP 44 installation- and position-dependent</td>
<td>F</td>
<td>BA9)</td>
</tr>
<tr>
<td>E</td>
<td>1010 rpm</td>
<td>480 Y</td>
<td>168</td>
<td>0,28</td>
<td>65</td>
<td>0</td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>IP 44 installation- and position-dependent</td>
<td>F</td>
<td>BA9)</td>
</tr>
<tr>
<td>F</td>
<td>1090 rpm</td>
<td>480 Y</td>
<td>152</td>
<td>0,25</td>
<td>65</td>
<td>0</td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>IP 44 installation- and position-dependent</td>
<td>F</td>
<td>BA9)</td>
</tr>
<tr>
<td>G</td>
<td>1250 rpm</td>
<td>480 Y</td>
<td>109</td>
<td>0,19</td>
<td>64</td>
<td>0</td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>IP 44 installation- and position-dependent</td>
<td>F</td>
<td>BA9)</td>
</tr>
</tbody>
</table>

Centrifugal fan with housing

<table>
<thead>
<tr>
<th>Curve</th>
<th>Part number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>G4D200BL1903</td>
<td>7,30</td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

Subject to change
AC centrifugal fans Ø 200 mm

G4D200BL1903 (Centrifugal fan with housing)

Dimensions in mm

Pin assignment: see connection diagram

1. Cable (halogen-free): BETATrans® 3 GKW flex, 9G 0.75 mm², 9x crimped splices
AC centrifugal fans Ø 200 mm
AC centrifugal fans
forward curved with housing, Ø 225 mm

Material/surface
- Impeller: Sheet steel galvanized
- Housing: Sheet steel galvanized
- Rotor: Painted black

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

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

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 ISO 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.
**AC centrifugal fans  Ø 225 mm**

<table>
<thead>
<tr>
<th>Curve</th>
<th>Operating point</th>
<th>Nominal voltage</th>
<th>Speed n</th>
<th>Max. Input power $P_{max}$</th>
<th>Max. Input current $I_{max}$</th>
<th>Sound power level $L_{wA}$</th>
<th>Min. Back pressure $P_{back}$</th>
<th>Protection class</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><strong>A</strong></td>
<td>400 $\Delta$</td>
<td>400</td>
<td>1375</td>
<td>347</td>
<td>0.70</td>
<td>77</td>
<td>0</td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40..+80</td>
<td>IP 54</td>
<td>F</td>
<td>BA9)</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>400 $\Delta$</td>
<td>1435</td>
<td>207</td>
<td>0.57</td>
<td>71</td>
<td>0</td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40..+80</td>
<td>IP 54</td>
<td>F</td>
<td>BA9)</td>
<td></td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>400 $\Delta$</td>
<td>1405</td>
<td>281</td>
<td>0.63</td>
<td>75</td>
<td>0</td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40..+80</td>
<td>IP 54</td>
<td>F</td>
<td>BA9)</td>
<td></td>
</tr>
<tr>
<td><strong>D</strong></td>
<td>400 $\Delta$</td>
<td>1435</td>
<td>207</td>
<td>0.57</td>
<td>71</td>
<td>0</td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40..+80</td>
<td>IP 54</td>
<td>F</td>
<td>BA9)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Curve</th>
<th>Centrifugal fan with housing</th>
<th>Part number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td>G4D225FK2002</td>
<td>9.50</td>
<td></td>
</tr>
<tr>
<td><strong>B</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>C</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>D</strong></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

---

**Nominal voltage 400 V AC, 50 Hz**

<table>
<thead>
<tr>
<th>Nominal voltage 400 V AC, 50 Hz</th>
<th>Operating point</th>
<th>Speed n</th>
<th>Max. Input power $P_{max}$</th>
<th>Max. Input current $I_{max}$</th>
<th>Sound power level $L_{wA}$</th>
<th>Min. Back pressure $P_{back}$</th>
<th>Protection class</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><strong>A</strong></td>
<td>400 $\Delta$</td>
<td>1350</td>
<td>405</td>
<td>0.80</td>
<td>80</td>
<td>0</td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40..+80</td>
<td>IP 54</td>
<td>F</td>
<td>BA9)</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>400 $\Delta$</td>
<td>1375</td>
<td>347</td>
<td>0.70</td>
<td>77</td>
<td>0</td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40..+80</td>
<td>IP 54</td>
<td>F</td>
<td>BA9)</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>400 $\Delta$</td>
<td>1435</td>
<td>207</td>
<td>0.57</td>
<td>71</td>
<td>0</td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40..+80</td>
<td>IP 54</td>
<td>F</td>
<td>BA9)</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td>400 $\Delta$</td>
<td>1405</td>
<td>281</td>
<td>0.63</td>
<td>75</td>
<td>0</td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40..+80</td>
<td>IP 54</td>
<td>F</td>
<td>BA9)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nominal voltage 480 V AC, 60 Hz</th>
<th>Operating point</th>
<th>Speed n</th>
<th>Max. Input power $P_{max}$</th>
<th>Max. Input current $I_{max}$</th>
<th>Sound power level $L_{wA}$</th>
<th>Min. Back pressure $P_{back}$</th>
<th>Protection class</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><strong>A</strong></td>
<td>480 $\Delta$</td>
<td>1600</td>
<td>600</td>
<td>0.90</td>
<td>82</td>
<td>100</td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40..+50</td>
<td>IP 54</td>
<td>F</td>
<td>BA9)</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>480 $\Delta$</td>
<td>1640</td>
<td>512</td>
<td>0.81</td>
<td>80</td>
<td>100</td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40..+50</td>
<td>IP 54</td>
<td>F</td>
<td>BA9)</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>480 $\Delta$</td>
<td>1670</td>
<td>436</td>
<td>0.72</td>
<td>79</td>
<td>100</td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40..+50</td>
<td>IP 54</td>
<td>F</td>
<td>BA9)</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td>480 $\Delta$</td>
<td>1700</td>
<td>346</td>
<td>0.64</td>
<td>76</td>
<td>100</td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40..+50</td>
<td>IP 54</td>
<td>F</td>
<td>BA9)</td>
</tr>
</tbody>
</table>
AC centrifugal fans Ø 225 mm

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>G4D225FK2002 (Centrifugal fan with housing)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dimensions in mm

Cable (halogen-free): BETAtrans® 3 GKW flex, 9G 0.75 mm², 9x crimped splices

Pin assignment: see connection diagram
AC centrifugal fans Ø 225 mm
AC centrifugal fans
forward curved with housing, Ø 250 mm

Material/surface
- Impeller: Sheet steel galvanized
- Housing: Sheet steel galvanized
- Rotor: Painted black

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

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

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 ISO 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.

More at www.ebmpapst.com
### AC centrifugal fans Ø 250 mm

#### Nominal voltage 400 V AC, 50 Hz

<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>Min. Back pressure $P_{back}$</th>
<th>Protection class</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>A</td>
<td>1</td>
<td>400 Δ</td>
<td>1340</td>
<td>575</td>
<td>1,10</td>
<td>82</td>
<td>0</td>
<td>I</td>
<td>Shaft horizontal or rotor on bottom</td>
<td>-40..+70</td>
<td>IP 54</td>
<td>F</td>
<td>BA9</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>400 Δ</td>
<td>1375</td>
<td>482</td>
<td>0,98</td>
<td>80</td>
<td></td>
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<tr>
<td></td>
<td>3</td>
<td>400 Δ</td>
<td>1405</td>
<td>386</td>
<td>0,87</td>
<td>76</td>
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<tr>
<td></td>
<td>4</td>
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#### Nominal voltage 480 V AC, 60 Hz

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<th>Max. input current $I_{in}$</th>
<th>Sound power level $L_{wA}$</th>
<th>Min. Back pressure $P_{back}$</th>
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Values set in blue are nominal data at operating point with maximum load.

Subject to change
AC centrifugal fans Ø 250 mm

G4D250DC1402 (Centrifugal fan with housing)

Dimensions in mm

Cable (halogen-free): BETAtans® 3 GKW flex, 9G 0.75 mm², 9x crimped splices

Pin assignment: see connection diagram
AC centrifugal fans Ø 250 mm
AC centrifugal fans
forward curved with housing
Ø 133 - Ø 200, dual-intake

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<tr>
<th>Diameter (Ø)</th>
<th>Page</th>
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<td>Ø 133 (2-pole)</td>
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<tr>
<td>Ø 146 (2-pole)</td>
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<td>Ø 160 (2-pole)</td>
<td>166</td>
</tr>
<tr>
<td>Ø 180 (4-pole)</td>
<td>170</td>
</tr>
<tr>
<td>Ø 200 (4-pole)</td>
<td>174</td>
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</tbody>
</table>
AC centrifugal fans
forward curved with housing, Ø 133 mm

Material/surface
- Impeller: Sheet steel galvanized
- Housing: Sheet steel galvanized
- Rotor: Painted black

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

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

---

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_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.
### AC centrifugal fans Ø 133 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>Back pressure $P_b$</th>
<th>Protection class</th>
<th>Installation position</th>
<th>Ambient temp.</th>
<th>Degree of protection</th>
<th>Insulation class</th>
<th>Conn. diagram</th>
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Values set in blue are nominal data at operating point with maximum load.

Subject to change
AC centrifugal fans Ø 133 mm

D2D133DB4003 (Centrifugal fan with housing)

Pin assignment: see connection diagram

Cable (halogen-free): BETAtrans® GKW flex, 9G 0.5 mm², 9x crimped splices
AC centrifugal fans Ø 133 mm
AC centrifugal fans
forward curved with housing, Ø 146 mm

Material/surface
- Impeller: Sheet steel galvanized
- Housing: Sheet steel galvanized
- Rotor: Painted black

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

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

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 ISO 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.
### AC centrifugal fans Ø 146 mm

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<th>Current I</th>
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<td>Shaft horizontal</td>
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Values set in blue are nominal data at operating point with maximum load.

Subject to change.

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### Parts list

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<th>Weight</th>
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**Note:**
- The values in blue are nominal data at the operating point with maximum load.
- The parts are subject to change.

---

**Diagram:**

- Centrifugal fan with housing
- Part number: D2D146AA1203
- Weight: 4.40 kg
AC centrifugal fans Ø 146 mm

Pin assignment: see connection diagram

Cable (halogen-free): BETAtrans® GKW flex R; 9G 0.5 mm²; 9x crimped splices

Dimensions in mm
AC centrifugal fans
forward curved with housing, Ø 160 mm

Material/surface
- Impeller: Sheet steel galvanized
- Housing: Sheet steel galvanized
- Rotor: Painted black

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

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

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 ISO 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.

Measurements:
- $Q$: Air flow rate in m³/h
- $P$: Pressure in Pa
- $A$: Noise level in dB

Technical parameters & scope
More at www.ebmpapst.com
### AC centrifugal fans  Ø 160 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 L_{wA}</th>
<th>Min. back pressure</th>
<th>Protection class</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 400 V AC, 50 Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>A</td>
<td>400 Y</td>
<td>400 V 2700</td>
<td>700</td>
<td>1,28</td>
<td>80</td>
<td></td>
<td></td>
<td></td>
<td>Shaft horizontal</td>
<td>-40..+75</td>
<td>IP 00</td>
<td>F</td>
<td>BA9)</td>
</tr>
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<td>80</td>
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<td></td>
<td>400 Y</td>
<td>2835</td>
<td>428</td>
<td>0,93</td>
<td>81</td>
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</tr>
<tr>
<td>B</td>
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<td>400 Y</td>
<td>3000</td>
<td>1055</td>
<td>1,70</td>
<td>83</td>
<td></td>
<td></td>
<td></td>
<td>Shaft horizontal</td>
<td>-40..+65</td>
<td>IP 00</td>
<td>F</td>
<td>BA9)</td>
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<td>400 Y</td>
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<td>689</td>
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<td>84</td>
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<tr>
<td></td>
<td>400 Y</td>
<td>3315</td>
<td>560</td>
<td>0,97</td>
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</table>

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

Subject to change

### Centrifugal fan with housing

<table>
<thead>
<tr>
<th>Part number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>D2D160BE0203</td>
<td>9,80</td>
</tr>
</tbody>
</table>
AC centrifugal fans  Ø 160 mm

D2D160BE0203  (Centrifugal fan with housing)

Dimensions in mm

Cable (halogen-free): BETAtrans® GKW flex R, 9G 0.5 mm², 6x crimped splices

Pin assignment: see connection diagram
AC centrifugal fans Ø 160 mm
AC centrifugal fans
forward curved with housing, Ø 180 mm

Material/surface
- Impeller: Sheet steel galvanized
- Housing: Sheet steel galvanized
- Rotor: Painted black

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

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

[Graph showing performance characteristics]

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 ISO 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.
### AC centrifugal fans Ø 180 mm

<table>
<thead>
<tr>
<th>Curve</th>
<th>Operating point</th>
<th>Nominal voltage</th>
<th>Speed n (rpm)</th>
<th>Max. input voltage U_in</th>
<th>Max. input current I</th>
<th>Min. back pressure Δp</th>
<th>Protection class</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</td>
<td></td>
<td>W</td>
<td>A</td>
<td>dB(A)</td>
<td>Pa</td>
<td>°C</td>
<td></td>
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<tr>
<td>A</td>
<td>400 Y</td>
<td>1100</td>
<td>255</td>
<td>0.50</td>
<td>73</td>
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<td></td>
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<tr>
<td>A</td>
<td>400 Y</td>
<td>1175</td>
<td>216</td>
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<tr>
<td>A</td>
<td>400 Y</td>
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<tr>
<td>A</td>
<td>400 Y</td>
<td>1345</td>
<td>125</td>
<td>0.33</td>
<td>64</td>
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<td></td>
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</tr>
<tr>
<td>Nominal voltage 480 V AC, 60 Hz</td>
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<tr>
<td>B</td>
<td>480 Y</td>
<td>1370</td>
<td>320</td>
<td>0.50</td>
<td>73</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>480 Y</td>
<td>1450</td>
<td>274</td>
<td>0.44</td>
<td>71</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>480 Y</td>
<td>1515</td>
<td>232</td>
<td>0.40</td>
<td>70</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>480 Y</td>
<td>1575</td>
<td>194</td>
<td>0.37</td>
<td>69</td>
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</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>Part number</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Centrifugal fan with housing</td>
<td>D4D180BB0903</td>
<td>9.10</td>
</tr>
</tbody>
</table>
AC centrifugal fans Ø 180 mm

D4D180BB0903  (Centrifugal fan with housing)

Dimensions in mm

Pin assignment: see connection diagram

Cable (halogen-free): BETAtrans® 3 GKW flex, sw 6G 0.5 mm², 6x crimped splices
AC centrifugal fans Ø 180 mm
AC centrifugal fans
forward curved with housing, Ø 200 mm

Material/surface
- Impeller: Sheet steel galvanized
- Housing: Sheet steel galvanized
- Rotor: Painted black

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

Standards and approvals
- Conformity with standards: see page 6
- Approvals: EAC

---

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 ISO 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.
### AC centrifugal fans Ø 200 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 $L_{W,A}$</th>
<th>Min. back pressure $P_{a}$</th>
<th>Protection class</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><strong>A</strong></td>
<td>400 V AC, 50 Hz</td>
<td>400 Y</td>
<td>1100</td>
<td>405</td>
<td>0.75</td>
<td>76</td>
<td>0</td>
<td>I</td>
<td>Shaft horizontal</td>
<td>-40..+65</td>
<td>IP 54</td>
<td>F</td>
<td>BA9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>400 Y</td>
<td>1185</td>
<td>345</td>
<td>0.66</td>
<td>73</td>
<td>0</td>
<td>I</td>
<td>Shaft horizontal</td>
<td>-40..+65</td>
<td>IP 54</td>
<td>F</td>
<td>BA9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>400 Y</td>
<td>1250</td>
<td>286</td>
<td>0.59</td>
<td>70</td>
<td>0</td>
<td>I</td>
<td>Shaft horizontal</td>
<td>-40..+65</td>
<td>IP 54</td>
<td>F</td>
<td>BA9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>400 Y</td>
<td>1330</td>
<td>211</td>
<td>0.52</td>
<td>67</td>
<td>0</td>
<td>I</td>
<td>Shaft horizontal</td>
<td>-40..+65</td>
<td>IP 54</td>
<td>F</td>
<td>BA9</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>480 V AC, 60 Hz</td>
<td>480 Y</td>
<td>1370</td>
<td>500</td>
<td>0.80</td>
<td>75</td>
<td>150</td>
<td>I</td>
<td>Shaft horizontal</td>
<td>-40..+60</td>
<td>IP 54</td>
<td>F</td>
<td>BA9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>480 Y</td>
<td>1445</td>
<td>445</td>
<td>0.70</td>
<td>74</td>
<td>0</td>
<td>I</td>
<td>Shaft horizontal</td>
<td>-40..+60</td>
<td>IP 54</td>
<td>F</td>
<td>BA9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>480 Y</td>
<td>1505</td>
<td>384</td>
<td>0.64</td>
<td>73</td>
<td>0</td>
<td>I</td>
<td>Shaft horizontal</td>
<td>-40..+60</td>
<td>IP 54</td>
<td>F</td>
<td>BA9</td>
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<td>1565</td>
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<td>Shaft horizontal</td>
<td>-40..+60</td>
<td>IP 54</td>
<td>F</td>
<td>BA9</td>
</tr>
</tbody>
</table>

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

Subject to change

### Curve

<table>
<thead>
<tr>
<th>Part number</th>
<th>Weight</th>
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</thead>
<tbody>
<tr>
<td>D4D200BA0103</td>
<td>10.80</td>
</tr>
</tbody>
</table>
AC centrifugal fans Ø 200 mm

D4D200BA0103 (Centrifugal fan with housing)

Dimensions in mm

Pin assignment: see connection diagram

Cable (halogen-free): BETAtrans® 3 GKW flex, sw 6G 0.5 mm², 6x crimped splices
AC centrifugal fans  Ø 200 mm
it's time for tomorrow
We extend the limits of what's feasible every day. Our longstanding engineering expertise gives us the capability to lead the way in technological development. We have a range of products with an enormous potential for efficient allround solutions to meet each individual facet of your needs. We're your partner at every phase of the process chain, coming up with new ideas while keeping the big picture in mind. We have a wide range of product-specific knowledge in building the right drive designs for you. We're always in tune with the times to offer you excellent ideas, outstanding innovations and hands-on-service.

EO³ – Inclusive of Economic Quality
EO³ is the ebm-papst concept for the future, which combines intelligent drive solutions with important performance characteristics. All gear motors impress with unsurpassed values in terms of lifetime and performance, and move the future through environmental protection with the highest level of efficiency. Creating the future together – it's time for tomorrow!
Drive concepts ebm-papst

Powerful, Safe, Reliable

Solutions for the most demanding requirements  180
Solutions for the most demanding requirements

Drive concepts with future

The highest level of safety for passenger transportation
Personal safety plays an especially important role in the transportation of passengers in public transit. In this context, the focus is on components for moving entry aids and door systems, which have their own special requirements with regard to performance. Demographic change also puts high demands on systems that automatically open and close doors, and with respect the management of barriers.

The right drive concept at every step
With its technologically exemplary drive concepts, ebm-papst implements innovative and reliable gear motors for many conceivable motion requirements in the area of passenger transportation. Mature technologies, maximum efficiency and reliability along with extreme resilience and lifetime are supplemented by technical refinements and a broad service range. Comprehensive development services and decades of experience stand for extraordinary solutions that also allow for the combination of planetary, spur and angle gearheads.

Trailblazing drive solutions
Motion components are subject to great loads, especially when it comes to train operations, and result in important aspects in terms of implementation:
- Target-oriented implementation of demanding market requirements in view of performance density and durability
- Compliance with specifications and technical requirement by legislation and standards
- High corrosion-resistance and functional safety even in extreme weather conditions
- Vibration resistance to compensate for vibration responses

 ebm-papst considers these requirements the main criteria for the design of these intelligent and powerful gear motors. They are virtually unbeatable when it comes to durability, quality and safety, and hence represent a safe and profitable investment.

Services for sophisticated needs
Our well-rounded range of effective services adds to your advantages. We assume responsibility for the finished, delivered product providing you with reliability, attentiveness and excellent performance throughout the entire product design and manufacturing cycles. Our employees, who daily live up their commitment to service, are your guarantee for success.

The bottom line is service unparalleled in the market.
A) Door drives:

- One-stage planetary gearhead for train doors.
- Planetary gearhead motor Performax 63 for sliding and locking.
- Angle/planetary gearhead combination for the safe sliding and locking of train doors.
- Special drive for sliding plug door drives with two outputs.

B) Drives for entry aids:

- Three-stage spur gearheads for the sliding and holding of sliding steps.
- Special angle gearhead with combined planetary/crown technology for folding steps and ramps.

C) Special applications:

- Two-stage EtaCrown gearhead with special reinforcements for windscreen wipers.
- One-stage EtaCrown angle gearhead for tilt technology.
Fans and drive concepts for rail technology - Edition 2018-09
## Accessories for rail technology

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>FlowGrid air inlet grill</td>
<td>184</td>
</tr>
<tr>
<td>Mounting dimensions for centrifugal modules</td>
<td>185</td>
</tr>
<tr>
<td>Inlet rings for centrifugal fans</td>
<td>186</td>
</tr>
</tbody>
</table>
FlowGrid air inlet grill

The air performance of ebm-papst fans is not the only thing measured on the state-of-the-art, in-house test stand. The acoustic behavior of the fans is also examined and the measuring results are included in the technical documentation. Please note that the measurements are taken under ideal conditions with undisturbed inflow and outflow. If the fans are later installed in applications where limited space is available, the noise information listed in the documentation will probably not be applicable. In order to minimize the negative impact of the installation situation, ebm-papst offers the FlowGrid air inlet guard shown here. It is mounted on the fan’s intake side and effectively reduces the noise in the fan’s overall frequency range; especially the disturbing tonal noise in the low frequency range. The result is a far lower sound pressure level and pleasant running noise. Since the level of noise reduction is dependent on the installation circumstances, it is not possible to provide generally applicable information here.

<table>
<thead>
<tr>
<th>Part number</th>
<th>Fan size</th>
<th>Ø B (mm)</th>
<th>Ø C (mm)</th>
<th>Ø E (mm)</th>
<th>S (mm)</th>
<th>H (mm)</th>
<th>N* (mm)</th>
<th>Weight (g)</th>
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<tbody>
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<td>20282-2-2957</td>
<td>250</td>
<td>280</td>
<td>245</td>
<td>4,5</td>
<td>3,5</td>
<td>40</td>
<td>2 ± 0,5 Nm</td>
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<td>25312-2-2957</td>
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<td>315</td>
<td>288</td>
<td>5,5</td>
<td>3,5</td>
<td>49</td>
<td>2 ± 0,5 Nm</td>
<td>232</td>
</tr>
</tbody>
</table>

* Recommended tightening torque for fastening screws

Would you like to find out more?

If you need an installation guide or more information about the dimensions, go to:

www.ebmpapst.com
/flowgrid-manual

or scan the QR code below:
Mounting dimensions
for EC centrifugal modules Ø 250, Ø 280, Ø 310
Inlet rings
for centrifugal fans

Fan size 190, Radial
Part number
09576-2-4013

Fan size 220, Radial
Part number
09609-2-4013
Fan size 250, RadiCal
Part number
96359-2-4013

Fan size 250, Aluminium impeller
Part number
25070-2-4013

Fan size 280, RadiCal
Part number
28000-2-4013
Inlet rings
for centrifugal fans

Fan size 280, Aluminium impeller
Part number
28070-2-4013

Fan size 310, RadiCal
Part number
31000-2-4013
Fan size 310, Aluminium impeller

Part number
31570-2-4013

Fan size 355, RadiCal

Part number
35500-2-4013

Fan size 400, Aluminium impeller

Part number
40070-2-4013

Fans and drive concepts for rail technology - Edition 2018-09
Technology

rail technology

<table>
<thead>
<tr>
<th>Connection diagrams</th>
<th>192</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical parameters &amp; scope</td>
<td>204</td>
</tr>
</tbody>
</table>

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Connection diagram: BA1)

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

Wire  | Designation      | Colour | Assignment / function
--- | ----------------- | ------ | ---------------------
1   | UN +24 VDC       | red    | Power supply 24 VDC, residual ripple 3,5 %
0-10 V / PWM | yellow | Control input: Ri > 40 k
          |        | 0-10 V (Typ. < 1 V -> n=0; 1,5 V -> n=min; > 10 V -> n=max)
          |        | PWM (Amplitude 10 V; 1-50 kHz; Typ. < 5 % -> n=0; 15 % -> n=min; 100 % -> n=max)
DUE | white          | Speed monitoring output, Open Collector, 3 pulses per revolution,
GND | blue           | Reference Ground
Connection diagram: BA2)

### Technical features
- Control input 0-10 VDC / PWM
- Output limit
- Reverse polarity and locked-rotor protection
- Motor current limiter
- Temperature derating
- Soft start
- Over-temperature protected electronics
- Diagnostic output
- Load Dump (58 V)
- Overvoltage detection

### Wire Table

<table>
<thead>
<tr>
<th>Wire</th>
<th>Designation</th>
<th>Colour</th>
<th>Assignment / function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>UN +24 VDC</td>
<td>black</td>
<td>Power supply, voltage range see nameplate</td>
</tr>
<tr>
<td></td>
<td>GND</td>
<td>brown</td>
<td>Power supply, voltage range see nameplate</td>
</tr>
<tr>
<td></td>
<td>DIAG</td>
<td>white</td>
<td>Diagnostic output: Open Collector, Isink max = 10 mA, Ri &gt; 2,1 kΩ &lt;br&gt;fan ok -&gt; high; fan error -&gt; low</td>
</tr>
<tr>
<td></td>
<td>0-10 V / PWM</td>
<td>yellow</td>
<td>Control input: Ri &gt; 47 kΩ &lt;br&gt;0-10 V (Typ. &lt; 1 V -&gt; n=0; 1,5 V -&gt; n=min; &gt; 10 V -&gt; n=max) &lt;br&gt;PWM (Amplitude 10 V; 1-50 kHz; Typ. &lt; 5 % -&gt; n=0; 15 % -&gt; n=min; 100 % -&gt; n=max)</td>
</tr>
</tbody>
</table>
Connection diagram: BA3)

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

### Connection diagram

#### Wire 1

<table>
<thead>
<tr>
<th>Wire</th>
<th>Designation</th>
<th>Colour</th>
<th>Assignment / function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>UB +24 V DC</td>
<td>black</td>
<td>Power supply 24 V DC</td>
</tr>
<tr>
<td></td>
<td>GND</td>
<td>brown</td>
<td>Power supply GND, reference ground</td>
</tr>
<tr>
<td></td>
<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; 100 % -&gt; n=max)</td>
</tr>
<tr>
<td></td>
<td>INVLIN</td>
<td>orange</td>
<td>Control input invers linear (U&lt;sub&gt;B&lt;/sub&gt;= Standby, 21 V= n min, 0 V= n max)</td>
</tr>
<tr>
<td></td>
<td>ABSENK</td>
<td>blue</td>
<td>Lowering input: when active (&gt;4 V) value of the control input is halved</td>
</tr>
<tr>
<td></td>
<td>DU</td>
<td>white</td>
<td>Diagnostic output, Highside-switch, Isink&lt;sub&gt;max&lt;/sub&gt; = 10 mA, Ri &gt; 50 Ω fan ok -&gt; low; fan error -&gt; high</td>
</tr>
</tbody>
</table>
### Technical features
- Control input 0-10 VDC / PWM
- Fault output (Highside-Switch max. 10 mA)
- Temperature derating
- Output limit
- Reverse polarity and locked-rotor protection
- Soft start
- Over-temperature protected electronics

- Motor current limiter
- Overvoltage detection
- Load-Dump (58 V)

### Wire and Designation

<table>
<thead>
<tr>
<th>Wire</th>
<th>Designation</th>
<th>Colour</th>
<th>Assignment / function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>UN +24 VDC</td>
<td>black</td>
<td>Power supply 24 VDC</td>
</tr>
</tbody>
</table>
|      | DIAG        | white  | Diagnostic output, Highside-switch, Isink_{max} = 10 mA, Ri > 50 Ω  
|      |             |        | fan ok -> low; fan error -> high |
| 0-10 V / PWM | yellow | Control input: Ri > 75 kΩ  
|      |            |        | 0-10 V (Typ. < 1 V -> n=0; 1,5 V -> n=Min; > 10 V -> n=Max)  
|      |            |        | PWM (Amplitude 10 V; 1-50 kHz; Typ. < 5% -> n=0; 15% -> n=Min; 100% -> n=Max) |
|      | GND        | brown  | Power supply GND, reference ground |
Connection diagram: BA5)

### Technical features
- Control input 0-10 VDC / PWM
- Output 10 VDC, max. 10 mA
- Alarm relay
- Integrated PID controller
- Output limit
- Run monitoring
- Reverse polarity and locked-rotor protection
- Soft start
- Motor current limiter
- Overvoltage / Undervoltage detection
- RS485 MODBUS-RTU
- Maximum EEPROM write cycles 100.000
- Control interface with SELV potential
- Over-temperature protected electronics

### Connection diagram

#### Wire 1

<table>
<thead>
<tr>
<th>Wire</th>
<th>Designation</th>
<th>Colour</th>
<th>Assignment / function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PE</td>
<td>green/yellow</td>
<td>Protective earth</td>
</tr>
<tr>
<td>-</td>
<td>black</td>
<td>Power supply GND, voltage range see name plate</td>
<td></td>
</tr>
<tr>
<td>+</td>
<td>brown</td>
<td>Power supply, voltage range see name plate</td>
<td></td>
</tr>
<tr>
<td>COM</td>
<td>grey</td>
<td>Status relay, floating status contact, common connection, contact rating 250 VAC / max. 2 A (AC1) / min. 1 mA / 5 V, reinforced insulation according to EN 50124-1 for switching voltages up to 110 VDC</td>
<td></td>
</tr>
<tr>
<td>NC</td>
<td>violett</td>
<td>Status relay, floating status contact, break for failure, contact rating 250 VAC / max. 2 A (AC1) / min. 1 mA / 5 V, reinforced insulation according to EN 50124-1 for switching voltages up to 110 VDC</td>
<td></td>
</tr>
<tr>
<td>0-10 V / PWM</td>
<td>yellow</td>
<td>Control input: ( R_i = 100 , \text{k}\Omega )&lt;br&gt;0-10 V (Typ. ( &lt; 1 , \text{V} \Rightarrow n=0; 1,5 , \text{V} \Rightarrow n=\text{min}; &gt; 10 , \text{V} \Rightarrow n=\text{max} ))&lt;br&gt;PWM (Amplitude 10 V; 1-50 kHz; Typ. ( &lt; 5 % \Rightarrow n=0; 15 % \Rightarrow n=\text{min}; 100 % \Rightarrow n=\text{max} ))&lt;br&gt;parametrisable curve, SELV</td>
<td></td>
</tr>
<tr>
<td>RSB</td>
<td>orange</td>
<td>RS485 interface for MODBUS, RSB, SELV</td>
<td></td>
</tr>
<tr>
<td>RSA</td>
<td>white</td>
<td>RS485 interface for MODBUS, RSA, SELV</td>
<td></td>
</tr>
<tr>
<td>GND</td>
<td>blue</td>
<td>Signal ground for control interface, SELV</td>
<td></td>
</tr>
<tr>
<td>+10 V</td>
<td>red</td>
<td>Fixed voltage output 10 VDC, (+10 , \text{V} +/- 3 % ), max. 10 mA, short-circuit-proof, power supply for external devices (e.g. potentiometer), SELV</td>
<td></td>
</tr>
</tbody>
</table>
Connection diagram: BA6

### Technical features
- Control input 0-10 VDC / PWM
- Output 10 VDC, max. 10 mA
- Alarm relay
- Integrated PID controller
- Overvoltage / Undervoltage detection
- RS485 MODBUS-RTU
- Maximum EEPROM write cycles 100.000
- Control interface with SELV potential
- Over-temperature protected electronics / Motor
- Motor current limiter
- Overvoltage / Undervoltage detection
- RS485 MODBUS-RTU
- Maximum EEPROM write cycles 100.000
- Control interface with SELV potential
- Over-temperature protected electronics / Motor

<table>
<thead>
<tr>
<th>Wire</th>
<th>Designation</th>
<th>Colour</th>
<th>Assignment / function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PE</td>
<td>green/yellow</td>
<td>Protective earth</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>black</td>
<td>Power supply GND, voltage range see name plate</td>
</tr>
<tr>
<td></td>
<td>+</td>
<td>brown</td>
<td>Power supply, voltage range see name plate</td>
</tr>
<tr>
<td>2</td>
<td>COM</td>
<td>grey</td>
<td>Status relay, floating status contact, common connection,</td>
</tr>
<tr>
<td></td>
<td>NC</td>
<td>orange</td>
<td>Status relay, floating status contact, break for failure,,</td>
</tr>
<tr>
<td></td>
<td>0-10 V / PWM</td>
<td>yellow</td>
<td>Control input: R1 = 100 kΩ</td>
</tr>
<tr>
<td></td>
<td>RSB</td>
<td>brown</td>
<td>RS485 interface for MODBUS, RSB, SELV</td>
</tr>
<tr>
<td></td>
<td>RSA</td>
<td>white</td>
<td>RS485 interface for MODBUS, RSA, SELV</td>
</tr>
<tr>
<td></td>
<td>GND</td>
<td>blue</td>
<td>Signal ground for control interface, SELV</td>
</tr>
<tr>
<td></td>
<td>+10 V</td>
<td>red</td>
<td>Fixed voltage output 10 VDC, +10 V +/-3 %, max. 10 mA, short-circuit-proof,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>power supply for external devices (e.g. potentiometer), SELV</td>
</tr>
</tbody>
</table>
**Connection diagram: BA7)**

### Technical features
- Control input 0-10 VDC / PWM
- Motor current limiter
- Output 10 VDC, max. 10 mA
- Overvoltage detection
- Door relay
- RS485 MODBUS-RTU
- Control interface with SELV potential
- Integrated PID controller
- Maximum EEPROM
- write cycles 100,000
- Undervoltage/phase failure detection
- Locked-rotor protection
- Output limit / Run monitoring
- PFC (passive) / Soft start
- Over-temperature protected electronics / Motor
- Safely disconnected from the mains

### Connection diagram

<table>
<thead>
<tr>
<th>Wire</th>
<th>Designation</th>
<th>Colour</th>
<th>Assignment / function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 PE</td>
<td>green/yellow</td>
<td>Protective earth</td>
<td></td>
</tr>
<tr>
<td>L1</td>
<td>black</td>
<td>Power supply, Phase, 50/60 Hz</td>
<td></td>
</tr>
<tr>
<td>L2</td>
<td>blue</td>
<td>Power supply, Phase, 50/60 Hz</td>
<td></td>
</tr>
<tr>
<td>L3</td>
<td>brown</td>
<td>Power supply, Phase, 50/60 Hz</td>
<td></td>
</tr>
<tr>
<td>2 COM</td>
<td>grey</td>
<td>Status relay, floating status contact, common connection, contact rating 250 VAC / max. 2 A (AC1), min. 1 mA / 5 VDC, reinforced insulation on control interface side, basic insulation on supply side according to EN 50124-1</td>
<td></td>
</tr>
<tr>
<td>NC</td>
<td>orange</td>
<td>Status relay, floating status contact, break for failure, contact rating 250 VAC / max. 2 A (AC1), min. 1 mA / 5 VDC, reinforced insulation on control interface side, basic insulation on supply side according to EN 50124-1</td>
<td></td>
</tr>
</tbody>
</table>
| 0-10 V / PWM | yellow | Control input: $R_i = 100 \, \text{k}\Omega$
- 0-10 V (Typ. < 1 V -> n=0; 1,5 V -> n=min; > 10 V -> n=max)
- PWM (Amplitude 10 V; 1-50 kHz; Typ. < 5 % -> n=0; 15 % -> n=min; 100 % -> n=max) parametrisable curve, SELV |
| RSB  | brown       | RS485 interface for MODBUS, RSB, SELV |
| RSA  | white       | RS485 interface for MODBUS, RSA, SELV |
| GND  | blue        | Signal ground for control interface, SELV |
| +10 V | red | Fixed voltage output 10 VDC, +10 V +/- 3 %, max. 10 mA, short-circuit-proof, power supply for external devices (e.g. potentiometer), SELV |
Connection diagram: BA8)

**Technical features**
- Configurable inputs/outputs (I/O)
- RFID - ISO 15693 compatible
- Operation and alarm display with LED
- Integrated PID controller
- Reverse polarity and locked-rotor protection
- Motor current limiter / Alarm relay
- Soft start
- Undervoltage/phase failure detection
- Voltage output 3.3-24 VDC, Pmax = 800 mW
- RS 485 MODBUS-RTU / MODBUS V6
- Over-temperature protected electronics / Motor
- External 15-50 VDC input (parameterization)
- Control interface with SELV potential safely disconnected from supply

**Terminal | Connection | Assignment / function**
---|---|---
CON1 | L1, L2, L3 | Power supply, phase, voltage range see name plate, protection class 1
PE | PE | Protective earth
CON2 | RSA | RS485 interface for MODBUS, RSA, SELV
| RSB | RS485 interface for MODBUS, RSB, SELV
| GND | Signal ground for control interface, SELV
| IO1 | IN2: Digital input - positive logic (faktory setting :Enable) function parameterizable, SELV
- normal: Pin open or applied voltage < 1,5 VDC
- invers: applied voltage 3,5-50 VDC
| IO2 | IN1: Analog input 0-10 V 0-10 V, Ri=100 K, parameterizable as set value or measured value (factory setting: set value) parametrisable curve, SELV
| IO3 | OUT1: Analog output 0-10 V 0-10 V, max 5 mA, funktion parameterizable (factory setting: modulation level) max output frequency 300 Hz, SELV
| V out | Voltage output 3.3-24 VDC +/-5 %, Pmax=800 mW, voltage parameterizable (factory setting: 10 VDC) short-circuitproof, supply for external devices, SELV alternatively: 15-50VDC input for parameterization via Modbus without line voltage
| COM | Status relay, floating status contact, common connection, nominal voltage 250VAC; max 2A (AC1), min 10mA; reinforced insulation according to EN60335-1, EN61800-5-1, UL60730-1
| NC | Status relay, floating status contact, break for failure
**Connection diagram: BA9)**

**Technical features**
- external TOP, basic insulation

**Diagram**:  
![Diagram](image)

**Note**: Change of rotation direction by reversing two phases

<table>
<thead>
<tr>
<th></th>
<th>Delta connection</th>
<th>Star connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Δ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L1</td>
<td>black</td>
<td></td>
</tr>
<tr>
<td>L2</td>
<td>blue</td>
<td></td>
</tr>
<tr>
<td>L3</td>
<td>brown</td>
<td></td>
</tr>
<tr>
<td>U1</td>
<td>black</td>
<td></td>
</tr>
<tr>
<td>V1</td>
<td>blue</td>
<td></td>
</tr>
<tr>
<td>W1</td>
<td>brown</td>
<td></td>
</tr>
<tr>
<td>U2</td>
<td>green</td>
<td></td>
</tr>
<tr>
<td>V2</td>
<td>white</td>
<td></td>
</tr>
<tr>
<td>W2</td>
<td>yellow</td>
<td></td>
</tr>
<tr>
<td>TOP</td>
<td>2 x grey, contact rating 250 V AC</td>
<td></td>
</tr>
<tr>
<td>PE</td>
<td>green/yellow</td>
<td></td>
</tr>
</tbody>
</table>
Connection diagram: BA10)

Technical features
- Reverse polarity protection
- Control input 0-10 VDC / PWM / external temperature control module / resistance
- Locked-rotor protection (electrical restart)
- Tacho signal

<table>
<thead>
<tr>
<th>Wire</th>
<th>Designation</th>
<th>Colour</th>
<th>Assignment / function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+ UB</td>
<td>red</td>
<td>Power supply</td>
</tr>
<tr>
<td></td>
<td>GND</td>
<td>blue</td>
<td>Reference ground</td>
</tr>
<tr>
<td></td>
<td>CONTR</td>
<td>violett</td>
<td>Multioptions control input</td>
</tr>
<tr>
<td></td>
<td>Tacho</td>
<td>white</td>
<td>Tacho signal</td>
</tr>
</tbody>
</table>
Connection diagram: BA11)

Technical features
- Reverse polarity protection
- Control input 0-5 VDC / PWM
- Locked-rotor protection (electrical restart)

Wire | Designation | Colour | Assignment / function
--- | --- | --- | ---
1 | + UB | red | Power supply
1 | GND | blue | Reference ground
1 | PWM | violett | Control input
Technical parameters & scope

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.

Service life
The service life of ebm-papst automotive products depends:
– The service life of the bearing system
– The service life of the insulation system mainly depends on voltage level, temperature and ambient conditions, such as humidity and condensation.
– 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
Testing the balancing quality is carried out in compliance with
– Residual imbalance according to DIN ISO 1940
– Standard balancing quality level G 6.3
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 various industries and applications:
The products in this catalogue have been specifically configured for
use in the rail industry!

Legal and normative directives
The products described in this catalogue are designed, developed
and produced in keeping with the standards in place for the rele-
vant 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 estab-
lished 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-speci-
fic 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

- 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 ($L_{pA}$) 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 ($L_{wA}$), 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:

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

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>
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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.

\[
\text{d}_h = \text{hydraulic diameter} \\
\text{Formula: } \text{d}_h = 2 \times W \times H / (W + H) \\
W = \text{Width of the box} \\
H = \text{Height of the box} \\
D = \text{Outside diameter of the fan}
\]

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:

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

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

\[
\Delta p = q_v^2 : k^2
\]

\[k\] 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:

\[
L_{w2} - L_{w1} = 50 \, \text{dB} \cdot \log (n_2 : n_1)
\]

\(L_{w1}\) = Sound power level after speed change
\(L_{w2}\) = Sound power level before speed change
\(n_1\) = Changed speed
\(n_2\) = Initial speed
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