

# Automotive brushless DC fans

## Climate control for commercial vehicles

Version 2012-09



The engineer's choice

**ebmpapst**

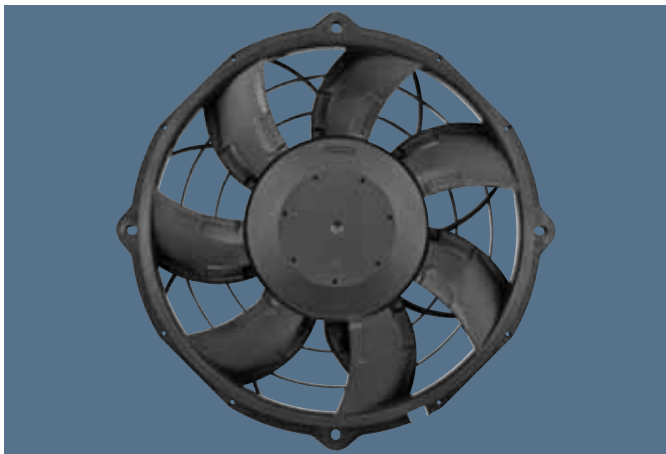
# Automotive brushless DC fans

**Our automotive brushless DC (BL-DC) axial fans and BL-DC dual centrifugal blowers set the trend in commercial vehicle climate control. They not only fulfil today's increased expectations for comfort, for example in buses, they also work without wear – because they are brushless – for over 40,000 hours. No extra maintenance, no additional service required. That is the reliability you expect from ebm-papst.**

## **Advantages and characteristics in a glance**

- Over 40,000 operating hours
- Continuous speed control
- High efficiency
- Low noise emission due to aerodynamically optimised impellers
- Increased reliability due to high integration density of the electronics
- Can be retrofitted to existing systems
- Meet the highest EMC requirements
- Control characteristic can be parameterised
- Optimised voltage independence
- Extended temperature range
- Durable ball bearings

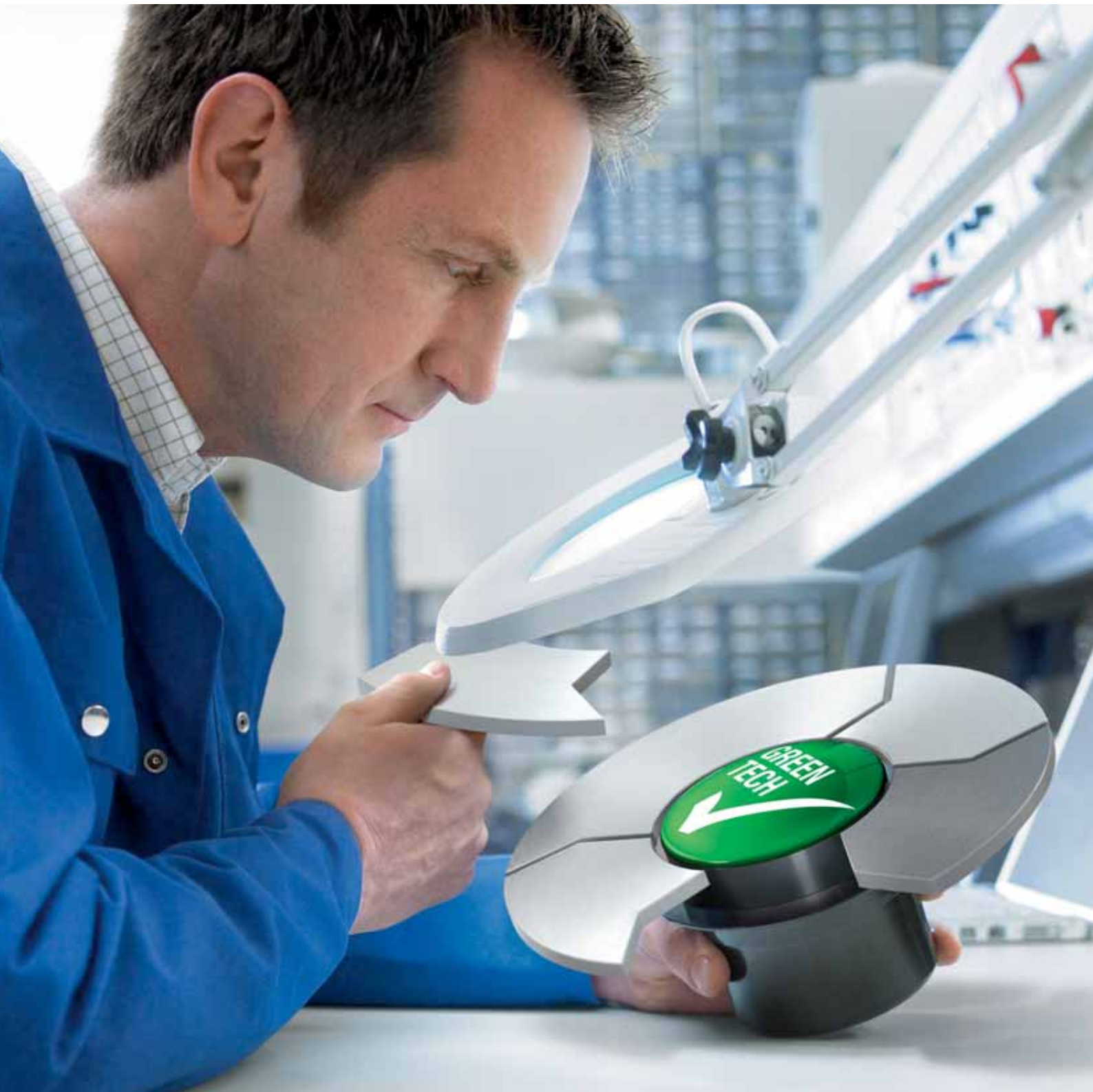
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# Sustainability is at the Centre of Our Thoughts and Actions. Out of Conviction!

*Eco-friendliness and sustainability have always been at the core of our thoughts and actions. For decades, we have worked according to the simple but strict creed of our co-founder Gerhard Sturm: "Each new product we develop has to be better than the last one in terms of economy and ecology." GreenTech is the ultimate expression of our corporate philosophy.*





**GreenTech is pro-active development.**

Even in the design phase, the materials and processes we use are optimised for the greatest possible eco-friendliness, energy balance and – wherever possible – recyclability. We continually improve the material and performance of our products, as well as the flow and noise characteristics. At the same time, we significantly reduce energy consumption. Close cooperation with universities and scientific institutes and the professorship we endow in the area of power engineering and regenerative energies allows us to profit from the latest research findings in these fields – and at the same time ensure highly qualified young academics.

**GreenTech is ecofriendly production.**

GreenTech also stands for maximum energy efficiency in our production processes. There, the intelligent use of industrial waste heat and ground-water cooling, photovoltaics and, of course, our own cooling and ventilation technology are of the utmost importance. Our most modern plant, for instance, consumes 91% less energy than currently specified and required. In this way, our products contribute to protecting the environment, from their origin to their recyclable packaging.

**GreenTech is acknowledged and certified.**

Every step in our chain of production meets the stringent standards of environmental specialists and the public. The 2008 Environmental Prize of Baden-Wuerttemberg, the Green Award 2009, the Energy Efficiency Award 2009 of the dena – to give just a few examples – testify to this. The environmental advantage gained in the performance of the products developed from our GreenTech philosophy can also be measured in the fulfilment of the most stringent energy and environmental standards. In many instances, our products are already well below the thresholds energy legislation will impose a few years from now – several times over.

**Our customers profit from this every day.**

The heart of GreenTech is future-oriented EC technology from ebmpapst. The EC technology at the core of our most efficient motors and fans allows efficiency of up to 90%, saves energy at a very high level, significantly extends service life and makes our products maintenance-free. These values pay off not only for the environment, but every cent also pays off for the user! All ebmpapst products – even those for which GreenTech EC technology does not (yet) make sense from an application viewpoint – feature the greatest possible connection of economy and ecology.



# Ideas for technological change in commercial vehicles



*EC dual centrifugal blowers:  
for maximum performance  
with the smallest installa-  
tion space; easy to control  
and extremely quiet.*

A comfortable environment in commercial vehicles is by no means just a matter of amenities. Both passenger transportation in buses and coaches along with trucking that is as free of stress and fatigue as possible place high demands on vehicle technology, particularly climate control, ventilation and air-conditioning.

For many years, renowned bus manufacturers have installed air-conditioning systems with brushless and wear-free centrifugal blowers and axial fans from ebm-papst. These products have also come to be used widely for climate control and ventilation of driver's cabs in trucks, tractors and construction equipment as well as in transport refrigeration systems.

A wide variety of climate control system manufacturers rely the experience and excellent skills of ebm-papst in our core competencies of motor development, aerodynamics and electronics.





*Fans and blowers:  
for commercial vehicle climate control  
and cooling of individual components..*

### Meeting high demands with new technology

In modern commercial vehicles, EC technology has now become the standard. Our new second-generation EC axial fans and EC dual centrifugal blowers set the trend in commercial vehicle climate control around the world. Our EC fans demonstrate their clear superiority even in hot climates and tropical regions, where they have also already proven their excellent performance.

But customers rely on ebm-papst products not only in the area of climate control. Increasingly, EC fans are also finding application in the cooling of heat exchangers in the engine compartment of vehicles.

### In comparison:

In commutator motors from other manufacturers, the commutator performs the task of distributing current to the coils. The commutator consists of copper segments embedded in an insulating compound. Mechanical springs press the integrated carbon brushes onto the commutator. The friction between these two mechanical components is the weak point of conventional DC motors. After a running time of approximately 5,000 hours, the carbon brushes and the commutator are worn out. As a result, the entire blower needs to be replaced. Furthermore, open loop speed control is possible only with external electronics.



This is not true of brushless DC motors from ebm-papst. An electronic control integrated directly into these motors assumes the task of current distribution. No brushes means no parts to wear out. This increases the operating time of these motors to more than 40,000 hours. As a result, the user not only saves on spare parts and repair costs, but also avoids unproductive downtimes and potential damage to reputation.

EC motors are energy-efficient, since the integrated electronics use continuous closed loop speed control to draw from the vehicle electrical system only the energy actually required. In commercial vehicle applications, it is also important that fans withstand environmental influences which are constantly fluctuating. Standard products would provide less than satisfactory results in these situations. Therefore, ebm-papst automotive products also feature reliable protection against load dump, reverse polarity, shock and vibration as well as damage from moisture and dirt in a wide temperature range. This requires exceptional effort when selecting materials and testing the products. We use extreme tests, which we have designed together with market-leading OEMs, based on real-world conditions (such as salt spray fog, vibration and temperature change tests) to ensure the performance of the fans.



In addition to the significantly longer service life, our intelligent EC fans guarantee extended open and closed loop control options. The function of the fans can be determined at any time via a diagnostic output. Moreover, they have an excellent electromagnetic compatibility and operate extremely quietly.

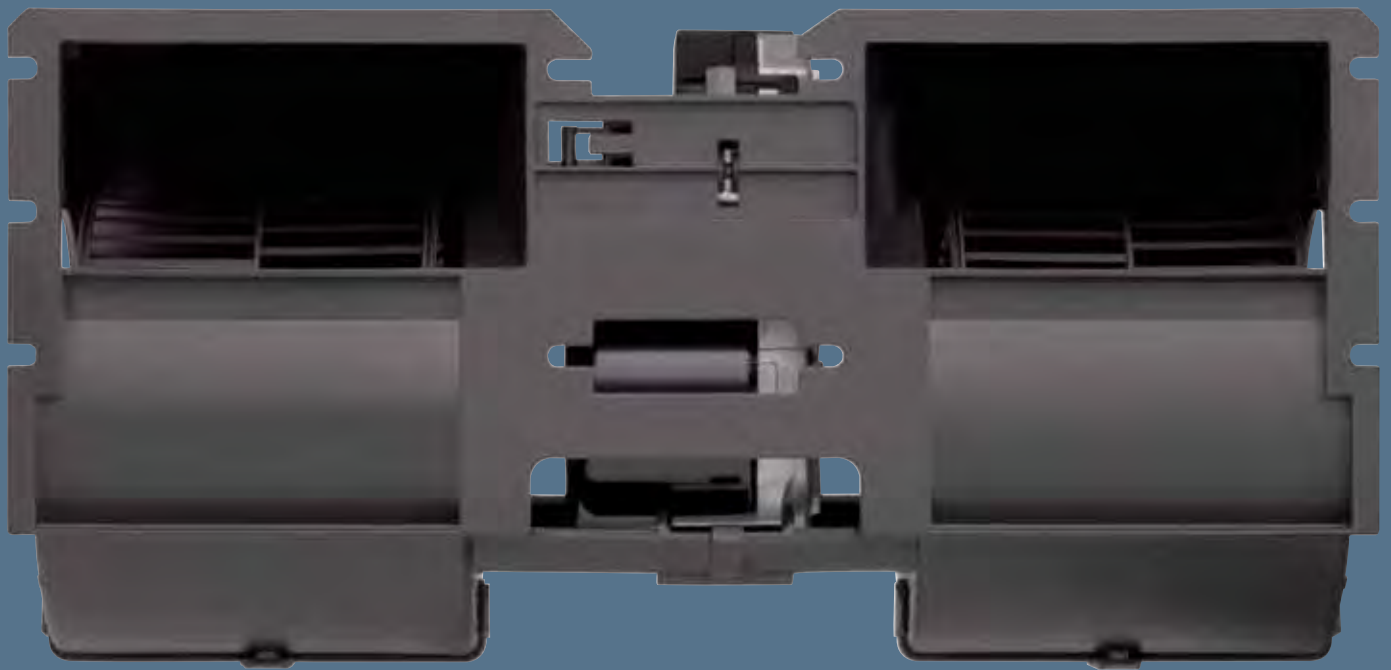
### But ebm-papst offers even more:

If you are ever unable to find a solution with our products, contact us. As a highly competent consultant and practically oriented implementer, we will certainly be able to identify a solution in your case using our in-depth knowledge gained from many applications.





# EC dual centrifugal blowers with brushless DC motor "Premium"



# EC dual centrifugal blowers

with brushless DC motor, Ø 097



- **Material:** Housing: PP plastic, coloured black (conforms to UL 94 HB)  
Impeller: PA plastic
- **Type of protection:** IP 24 KM (without plug)
- **Insulation class:** "B" in accordance with EN 60335-1
- **Mounting position:** Any
- **Mode of operation:** Continuous operation (S1)
- **Bearings:** Maintenance-free ball bearings on both sides
- **Motor protection:** Overtemperature protection, reverse polarity and locked-rotor protection, load dump protection, under-voltage detection
- **EMC requirements:** VDE 0879-2, interference suppression grade 5

## Nominal data

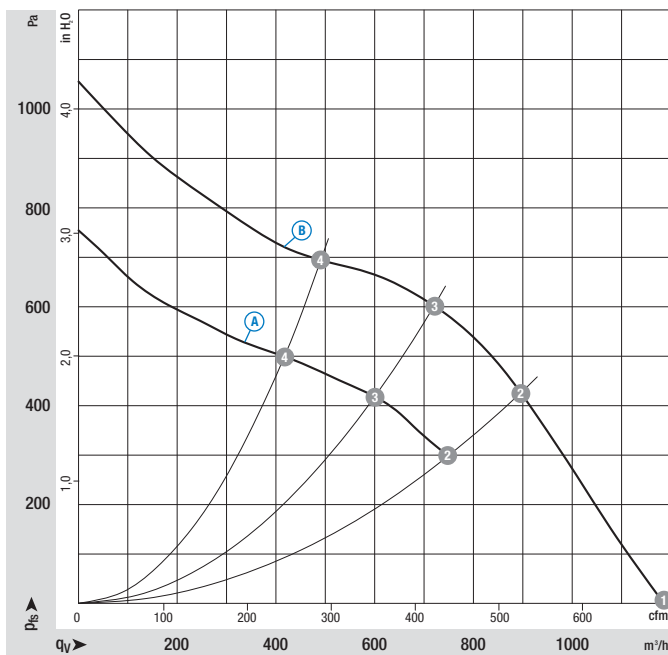
Type	Motor	Curve	Nominal voltage VDC	Nominal voltage range VDC	Flow rate m³/h	speed/rpm	Input power W	Current draw A	Min. back pressure Pa	Sound pressure level dB(A)	Perm. amb. temp. °C	Mass kg	Electr. connection
<b>K3G 097-AK32 -42<sup>(1)</sup></b>	M3G074-CF	(A)	13	9-15	750	3630	195	15,0	300	63	-40..+85 <sup>(2)</sup>	2,3	A
<b>K3G 097-AK36 -55<sup>(1)</sup></b>	M3G074-CF	(B)	13	9-15	1180	3740	385	29,5	0	69	-40..+85 <sup>(2)</sup>	2,6	A

subject to alterations

<sup>(1)</sup> 12-volt variant

<sup>(2)</sup> at free air not recommended for long-term operation at 85 °C

## Curves



Air performance measured as per: ISO 5801, Installation category A, in ebm-papst scroll housing

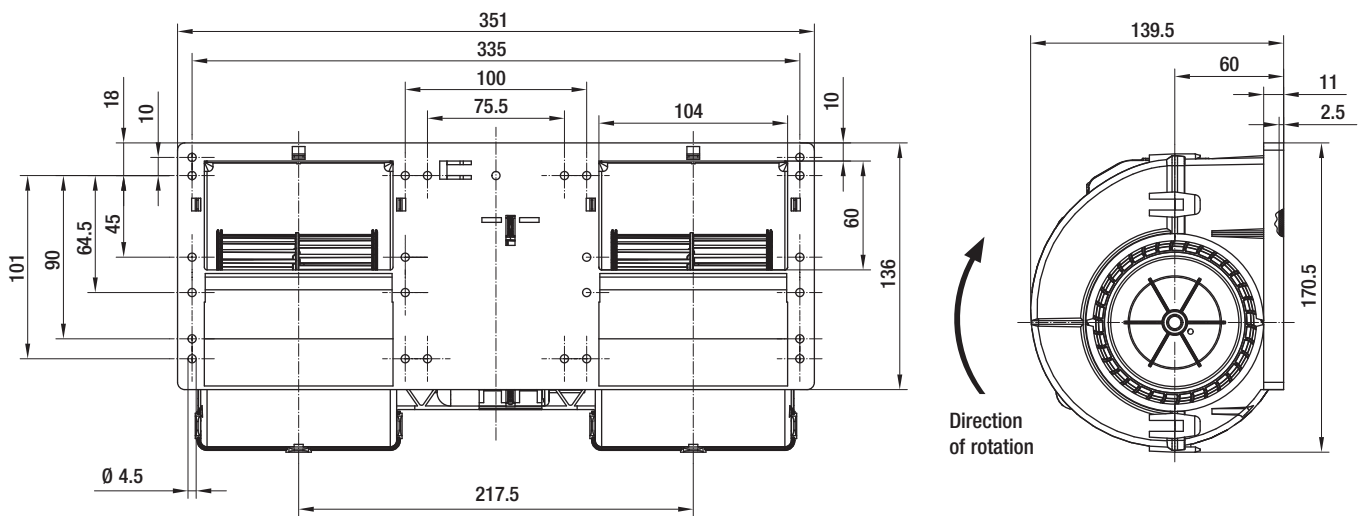
Suction-side noise levels: L<sub>pA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

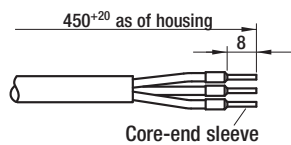
For detailed information see page 58 ff.

	n rpm	P <sub>ed</sub> W	I A	L <sub>pA</sub> dB(A)
(A) 1	---	---	---	---
(A) 2	3630	195	15,0	63
(A) 3	3875	177	13,5	64
(A) 4	4135	143	11,0	65
(B) 1	3740	385	29,5	69
(B) 2	4400	344	26,4	68
(B) 3	4775	309	23,8	69
(B) 4	4970	234	18,0	70



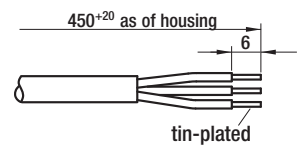
View lead connection (K3G097-AK32-42)

UN black  
 PWM/LIN yellow  
 GND brown



View lead connection (K3G097-AK36-55)

UN black  
 PWM/LIN yellow  
 GND brown



# EC dual centrifugal blowers

with brushless DC motor, Ø 097



- **Material:** Housing: PP plastic, coloured black (conforms to UL 94 HB)  
Impeller: PA plastic
- **Type of protection:** IP 24 KM (without plug)
- **Insulation class:** "B" in accordance with EN 60335-1
- **Mounting position:** Any
- **Mode of operation:** Continuous operation (S1)
- **Bearings:** Maintenance-free ball bearings on both sides
- **Motor protection:** Overtemperature protection, reverse polarity and locked-rotor protection, load dump protection, under-voltage detection
- **EMC requirements:** VDE 0879-2, interference suppression grade 3

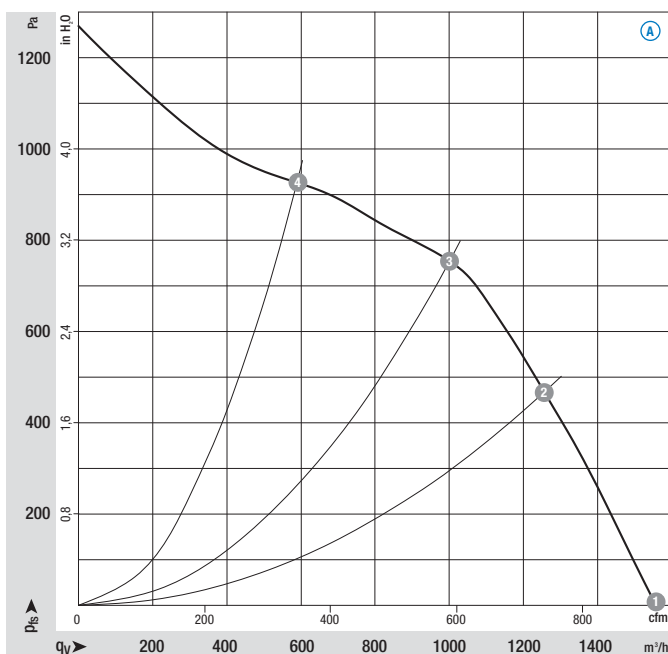
## Nominal data

Type	Motor	Curve	Nominal voltage VDC	Nominal voltage range VDC	Flow rate m³/h	speed/rpm	Input power W	Current draw A	Sound pressure level dB(A)	Perm. amb. temp. °C	Mass kg	Electr. connection
<b>K3G 097-AK68 -85<sup>(1)(2)</sup></b>	<b>M3G074-CF</b>	<b>(A)</b>	26	16-32	1560	4600	690	26,5	75	-40..+60 <sup>(3)</sup>	2,4	G

subject to alterations

<sup>(1)</sup> 24-volt variant <sup>(2)</sup> housing/impeller also available in V0 material <sup>(3)</sup> short-term operation at up to 85 °C possible

## Curves



Air performance measured as per: ISO 5801, Installation category A, in ebm-papst scroll housing

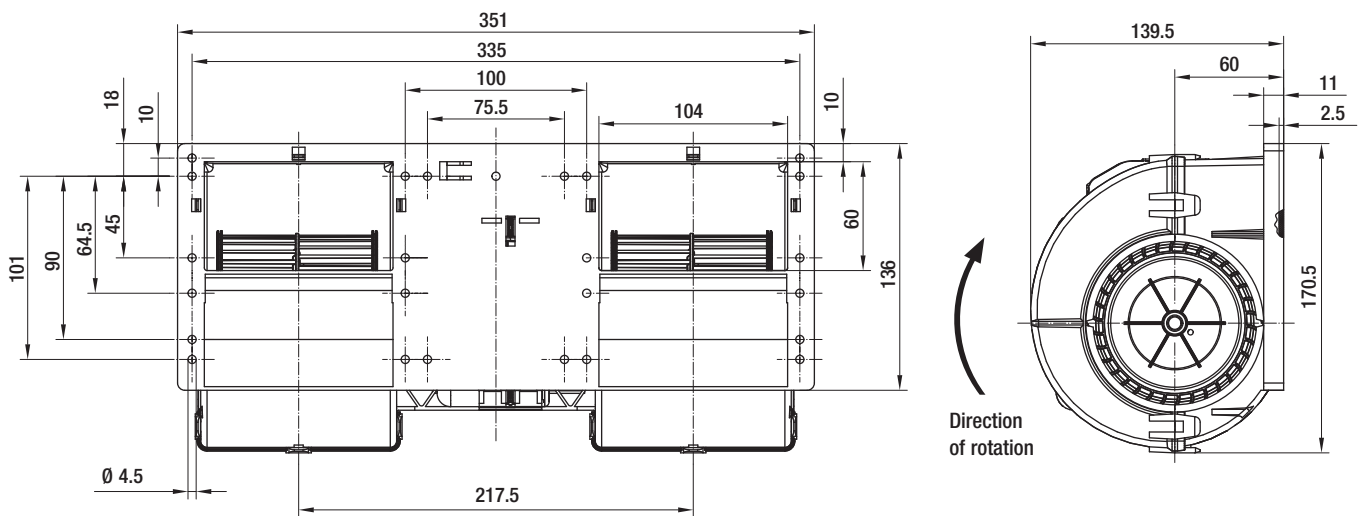
Suction-side noise levels: L<sub>pA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 58 ff.

	n rpm	P <sub>ed</sub> W	I A	L <sub>pA</sub> dB(A)
(A) 1	4600	690	26,5	75
(A) 2	5095	604	23,2	74
(A) 3	5435	526	20,2	74
(A) 4	5720	365	14,0	74

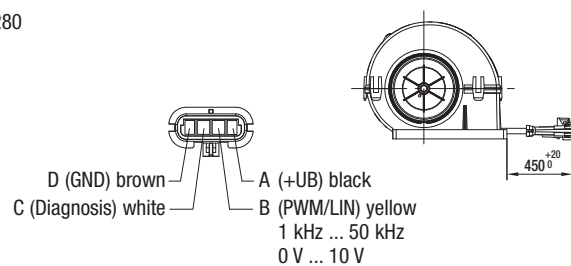


**View connector plug**

4-pole lead connection (450 mm) with plug Delphi Metri-Pack 280

**Socket on customer side:**

- Housing: Delphi 12129565
- Secondary lock: Delphi 15300016 (TPA lock)
- Terminals: Delphi 12077411  
Delphi 12077413
- Seals: Delphi 15324981  
Delphi 15324985





# EC dual centrifugal blowers

with brushless DC motor, Ø 097



- **Material:** Housing: PP plastic, coloured black (conforms to UL 94 HB)  
Impeller: PA plastic
- **Type of protection:** IP 24 KM, Electronics: IP 66 / 69 K
- **Insulation class:** "B" in accordance with EN 60335-1
- **Mounting position:** Any
- **Mode of operation:** Continuous operation (S1)
- **Bearings:** Maintenance-free ball bearings on both sides
- **Motor protection:** Overtemperature protection, reverse polarity and locked-rotor protection, load dump protection, under-voltage detection
- **EMC requirements:** VDE 0879-2, interference suppression grade 5

## Nominal data

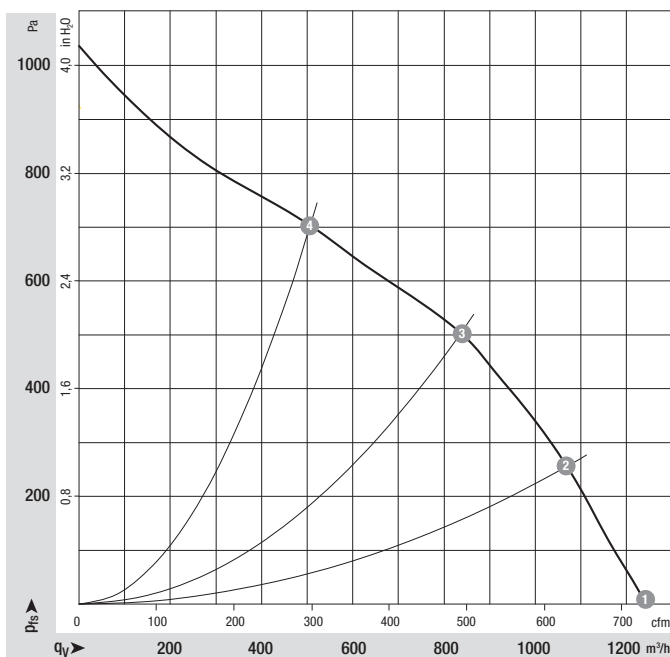
Type	Motor	Curve	Nominal voltage VDC	Nominal voltage range VDC	Flow rate m³/h	speed/rpm	Input power W	Current draw A	Min. back pressure Pa	Sound pressure level dB(A)	Perm. amb. temp. °C	Mass kg	Electr. connection
<b>K3G 097-AF24 -01<sup>(1)</sup></b>	<b>M3G084-BF</b>	<b>A</b>	26	16-32	1240	3730	390	15,0	0	70	-40..+85 <sup>(2)</sup>	2,0	D

subject to alterations

<sup>(1)</sup> 24-volt variant

<sup>(2)</sup> over + 70 °C with power derating

## Curves



Air performance measured as per: ISO 5801, Installation category A, in ebm-papst scroll housing

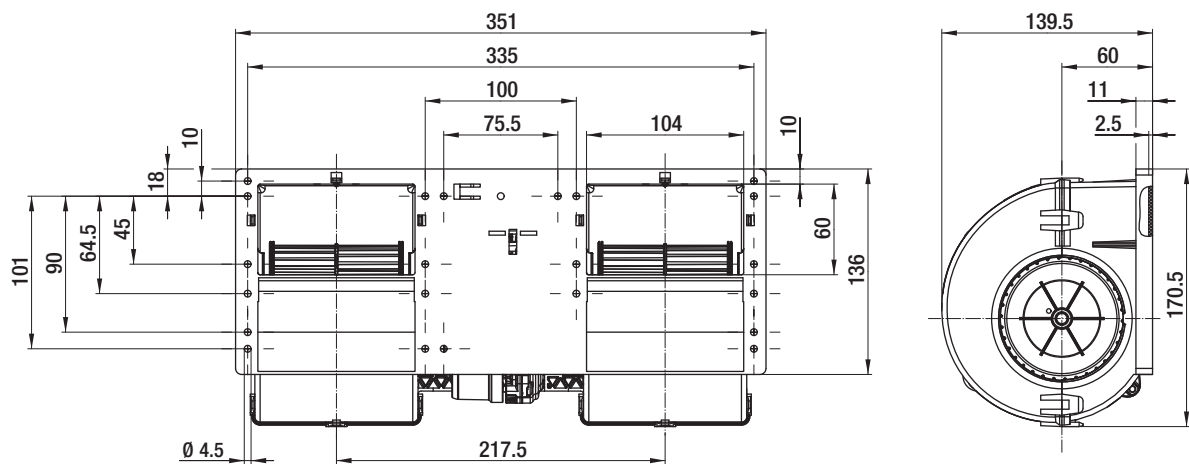
Suction-side noise levels: L<sub>pA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 58 ff.

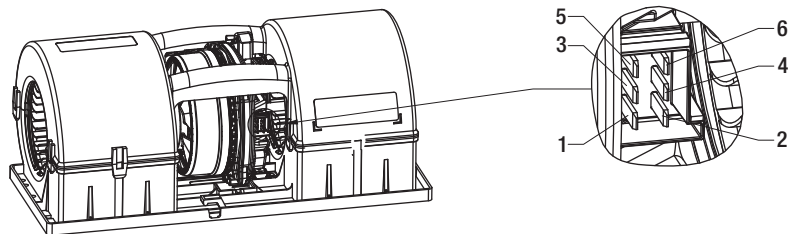
	n rpm	P <sub>ed</sub> W	I A	L <sub>pA</sub> dB(A)
<b>A 1</b>	3730	390	15,0	70
<b>A 2</b>	4125	363	13,9	69
<b>A 3</b>	4490	309	11,9	69
<b>A 4</b>	4985	245	9,4	70



**View connector plug**

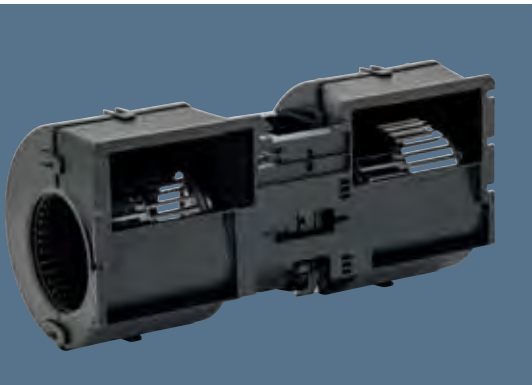
- |                       |        |
|-----------------------|--------|
| 1 = UN                | black  |
| 2 = GND               | brown  |
| 3 = PWM/LIN           | yellow |
| 4 = INVLIN            | orange |
| 5 = LOWER             | blue   |
| 6 = Diagnostic output | white  |

AMP Junior Power Timer, 6-pole, coded;  
 connection lead (460 mm) with mating plug  
 Part no. 02001-4-1021 (not included in delivery)



# EC dual centrifugal blowers

with brushless DC motor, Ø 097



- **Material:** Housing: PP plastic, coloured black (conforms to UL 94 HB)  
Impeller: PA plastic
- **Type of protection:** IP 24 KM, Electronics: IP 66 / 69 K
- **Insulation class:** "B" in accordance with EN 60335-1
- **Mounting position:** Any
- **Mode of operation:** Continuous operation (S1)
- **Bearings:** Maintenance-free ball bearings on both sides
- **Motor protection:** Overtemperature protection, reverse polarity and locked-rotor protection, load dump protection, under-voltage detection
- **EMC requirements:** VDE 0879-2, interference suppression grade 5

## Nominal data

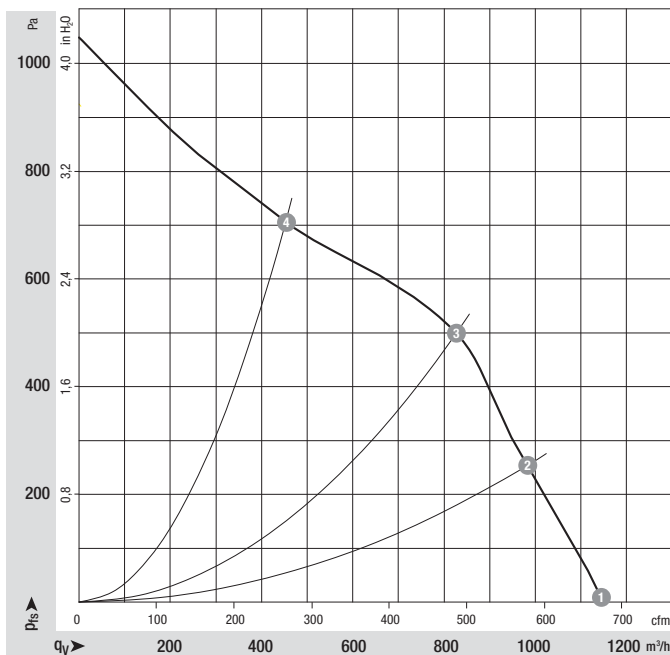
Type	Motor	Curve	Nominal voltage VDC	Nominal voltage range VDC	Flow rate m³/h	speed/rpm	Input power W	Current draw A	Min. back pressure Pa	Sound pressure level dB(A)	Perm. amb. temp. °C	Mass kg	Electr. connection
<b>K3G 097-BF24 -01<sup>(1)</sup></b>	<b>M3G084-BF</b>	<b>A</b>	26	16-32	1150	3960	375	14,4	0	70	-40..+85 <sup>(2)</sup>	2,0	D

subject to alterations

<sup>(1)</sup> 24-volt variant

<sup>(2)</sup> over + 70 °C with power derating

## Curves



Air performance measured as per: ISO 5801, Installation category A, in ebm-papst scroll housing

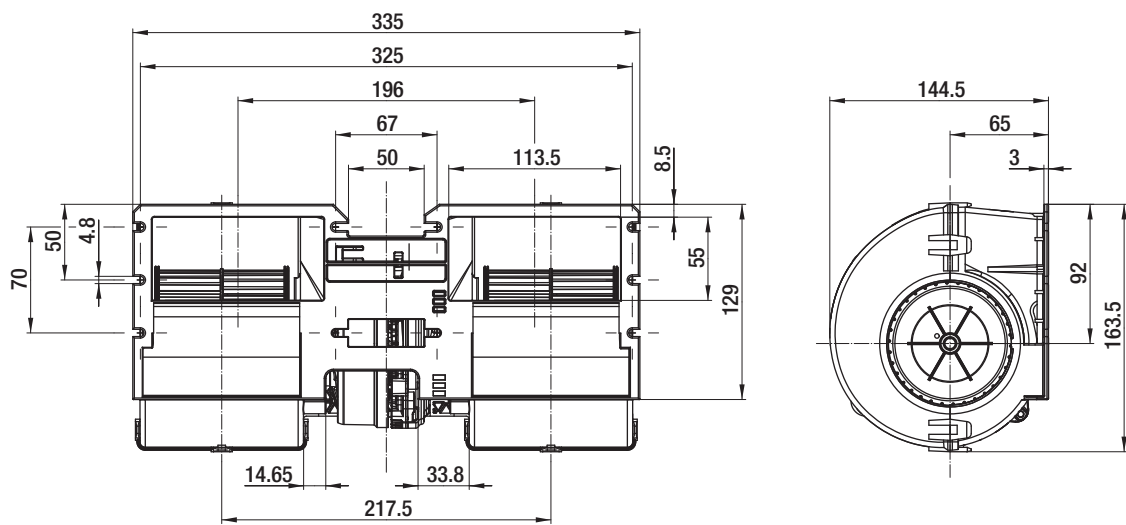
Suction-side noise levels: L<sub>pA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 58 ff.

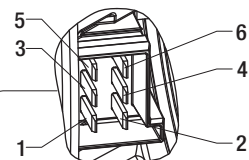
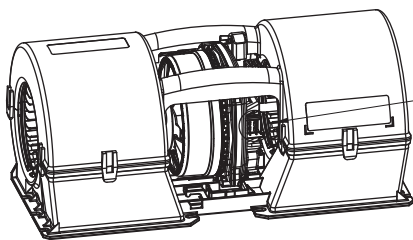
	n rpm	P <sub>ed</sub> W	I A	L <sub>pA</sub> dB(A)
<b>A 1</b>	3960	375	14,4	70
<b>A 2</b>	4265	345	13,3	69
<b>A 3</b>	4535	309	11,9	69
<b>A 4</b>	5090	223	8,6	71



**View connector plug**

- |                       |        |
|-----------------------|--------|
| 1 = UN                | black  |
| 2 = GND               | brown  |
| 3 = PWM/LIN           | yellow |
| 4 = INVLIN            | orange |
| 5 = LOWER             | blue   |
| 6 = Diagnostic output | white  |

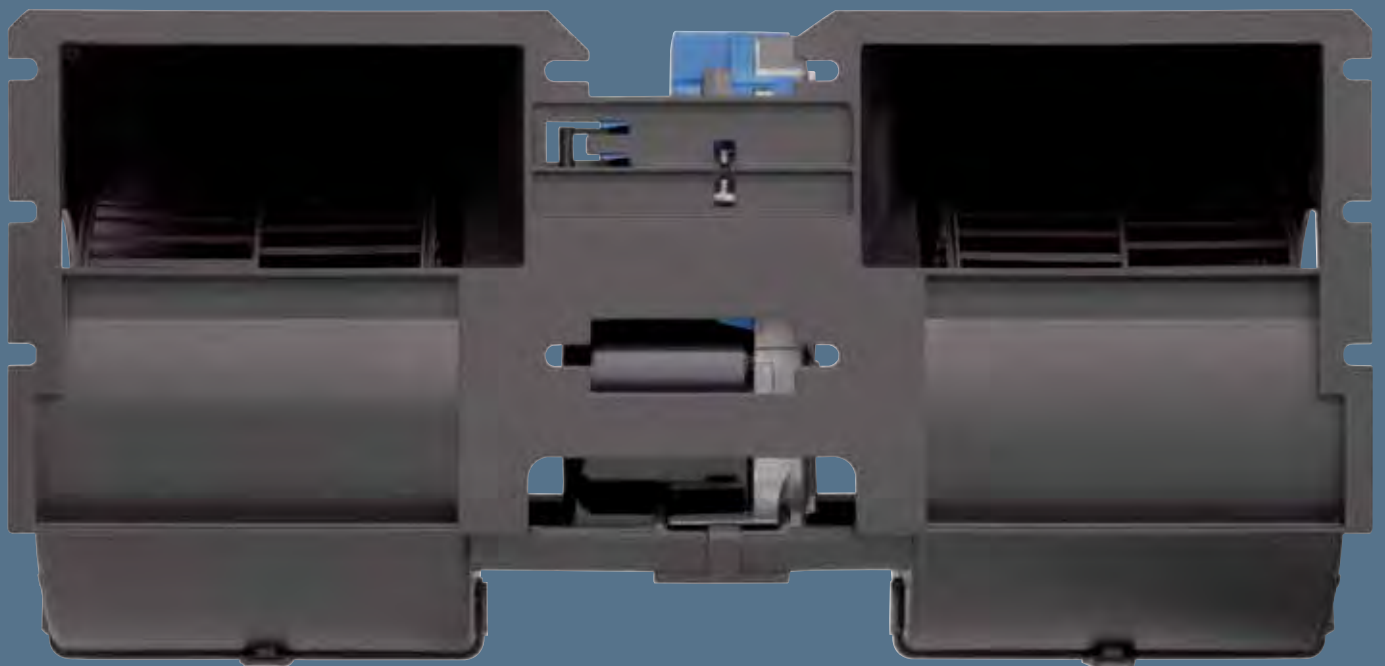
AMP Junior Power Timer, 6-pole, coded;  
 connection lead (460 mm) with mating plug  
 Part no. 02001-4-1021 (not included in delivery)







# EC dual centrifugal blowers with brushless DC motor „Basic“



# EC dual centrifugal blowers

with brushless DC motor, Ø 097



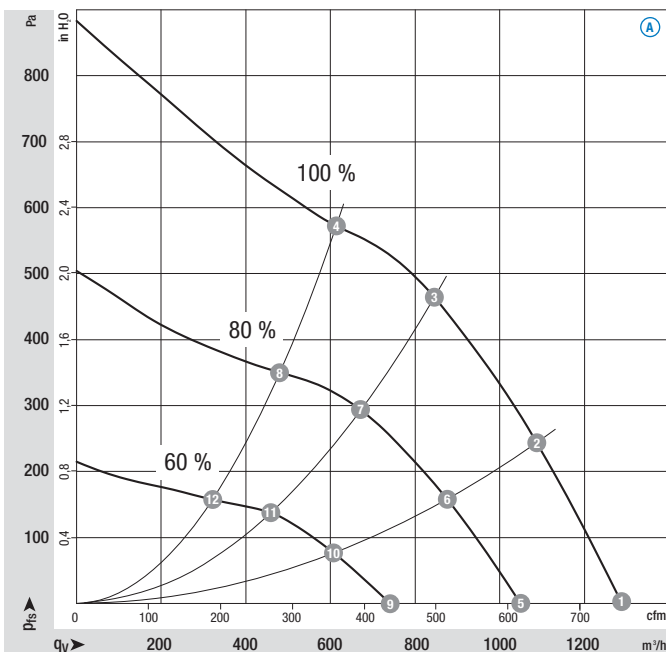
- **Material:** Housing: PP plastic, coloured black (conforms to UL 94 HB)  
Impeller: PA plastic
- **Type of protection:** IP 24 KM (without plug)
- **Insulation class:** "B" in accordance with EN 60335-1
- **Mounting position:** Any
- **Mode of operation:** Continuous operation (S1)
- **Bearings:** Maintenance-free ball bearings on both sides
- **Motor protection:** Overtemperature protection, locked-rotor protection, load dump protection, under-voltage detection
- **EMC requirements:** e1 approval in accordance with 2006/28/EC

Nominal data		Curve	Nominal voltage	Nominal voltage range	Flow rate	speed/rpm	Input power	Current draw	Sound pressure level	Perm. amb. temp.	Mass	Electr. connection
Type	Motor	VDC	VDC	m³/h	rpm	W	A	dB(A)	°C	kg	F	
<b>K3G 097-AK34 -65<sup>(1)</sup></b>	M3G074-CF	Ⓐ	26	16-32	1290	3830	394	15,2	72	-40..+85 <sup>(2)</sup>	2,0	F

subject to alterations

<sup>(1)</sup> 24-volt variant    <sup>(2)</sup> at free air not recommended for long-term operation at 85 °C

## Curves



Air performance measured as per: ISO 5801, Installation category A, in ebm-papst scroll housing

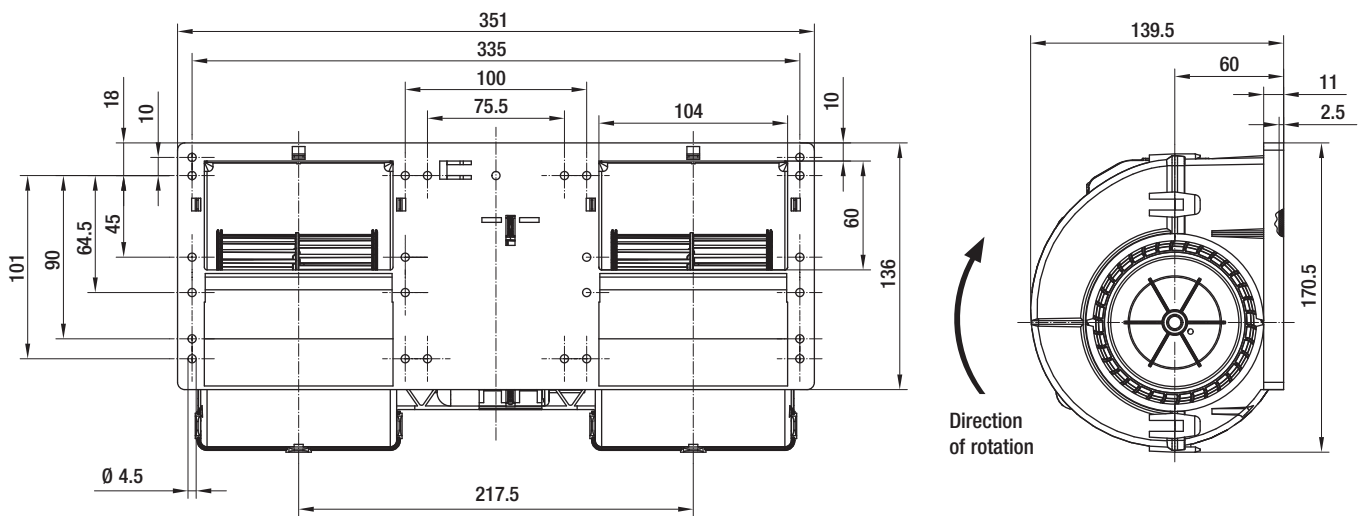
Suction-side noise levels: L<sub>pA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 58 ff.

	n rpm	P <sub>ed</sub> W	I A	L <sub>pA</sub> dB(A)
Ⓐ 1	3830	394	15,2	72
Ⓐ 2	4100	347	13,3	69
Ⓐ 3	4380	285	10,9	68
Ⓐ 4	4630	238	9,1	68
Ⓐ 5	3150	215	8,3	68
Ⓐ 6	3330	185	7,1	65
Ⓐ 7	3510	149	5,7	63
Ⓐ 8	3660	120	4,6	62
Ⓐ 9	2240	79	3,1	59
Ⓐ 10	2340	67	2,6	56
Ⓐ 11	2430	53	2,0	54
Ⓐ 12	4480	43	1,7	53



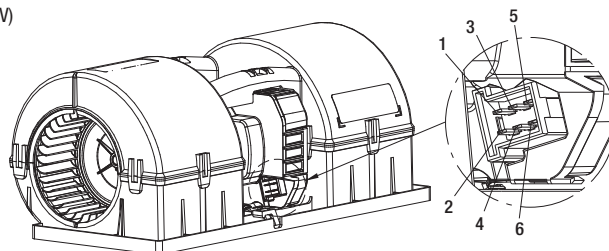
Speed setting

Pin	5	4	3	
60%	H	NC	NC	
80%	NC	H	NC	NC = not assigned
100%	NC	NC	H	H = $U_N$ (26 V)

**View connector plug**

- 1 = + UB
- 2 = GND
- 3 = PWM/LIN, 100 % Speed
- 4 = 80 % Speed
- 5 = 60 % Speed
- 6 = NC (not assigned)

AMP Junior Power Timer, 6-pole, coded; connection lead (460 mm) with mating plug; part no. 02001-4-1021 (not included in delivery)



# EC dual centrifugal blowers

with brushless DC motor, Ø 097



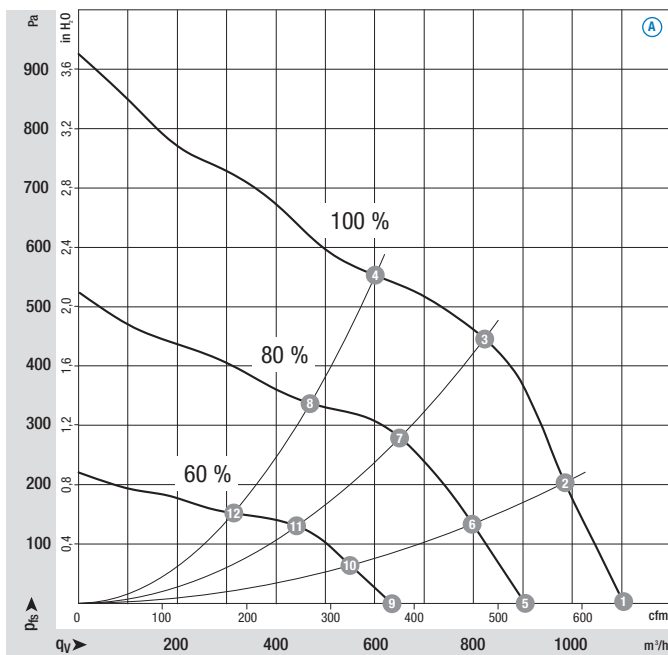
- **Material:** Housing: PP plastic, coloured black (conforms to UL 94 HB)  
Impeller: PA plastic
- **Type of protection:** IP 24 KM (without plug)
- **Insulation class:** "B" in accordance with EN 60335-1
- **Mounting position:** Any
- **Mode of operation:** Continuous operation (S1)
- **Bearings:** Maintenance-free ball bearings on both sides
- **Motor protection:** Overtemperature protection, locked-rotor protection, load dump protection, under-voltage detection
- **EMC requirements:** e1 approval in accordance with 2006/28/EC

Nominal data		Curve	Nominal voltage	Nominal voltage range	Flow rate	speed/rpm	Input power	Current draw	Sound pressure level	Perm. amb. temp.	Mass	Electr. connection
Type	Motor	VDC	VDC	m³/h	rpm	W	A	dB(A)	°C	kg	F	
<b>K3G 097-BK34 -65<sup>(1)</sup></b>	M3G074-CF	Ⓐ	26	16-32	1110	4040	344	13,3	70	-40..+85 <sup>(2)</sup>	2,0	F

subject to alterations

<sup>(1)</sup> 24-volt variant    <sup>(2)</sup> at free air not recommended for long-term operation at 85 °C

## Curves



Air performance measured as per: ISO 5801, Installation category A, in ebm-papst scroll housing

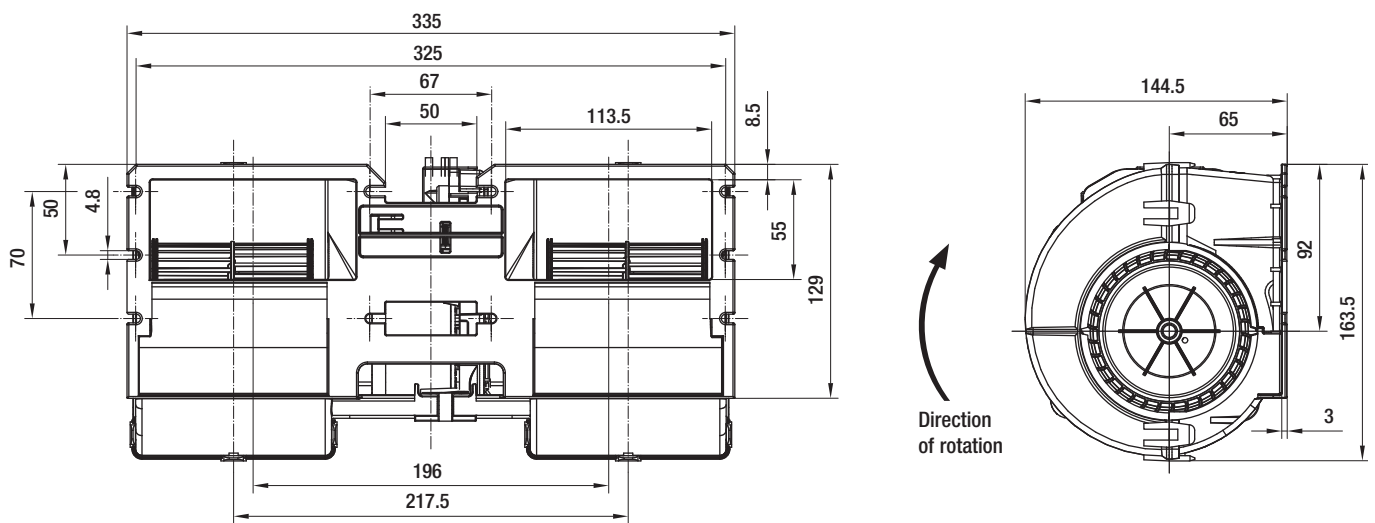
Suction-side noise levels: L<sub>pA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 58 ff.

	n rpm	P <sub>ed</sub> W	I A	L <sub>pA</sub> dB(A)
Ⓐ 1	4040	344	13,3	70
Ⓐ 2	4210	325	12,5	69
Ⓐ 3	4380	279	10,6	68
Ⓐ 4	4630	242	9,2	68
Ⓐ 5	3310	186	7,2	66
Ⓐ 6	3390	171	6,6	64
Ⓐ 7	3520	145	5,5	63
Ⓐ 8	3650	121	4,6	62
Ⓐ 9	2330	67	2,6	57
Ⓐ 10	2360	62	2,4	55
Ⓐ 11	2410	53	2,0	54
Ⓐ 12	2480	42	1,6	53



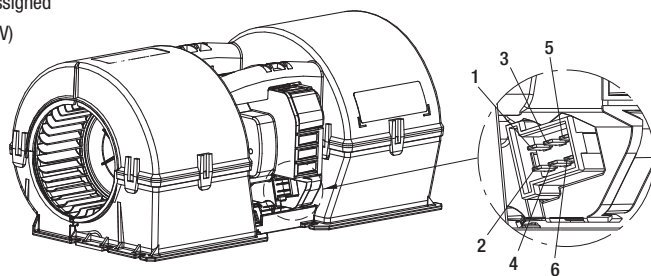
Speed setting

Pin	5	4	3	
60%	H	NC	NC	
80%	NC	H	NC	NC = not assigned
100%	NC	NC	H	H = $U_N$ (26 V)

View connector plug

- 1 = + UB
- 2 = GND
- 3 = PWM/LIN, 100 % Speed
- 4 = 80 % Speed
- 5 = 60 % Speed
- 6 = NC (not assigned)

AMP Junior Power Timer, 6-pole, coded; connection lead (460 mm) with mating plug; part no. 02001-4-1021 (not included in delivery)







EC axial fans with brushless DC motor „Premium“ and „Power“



# EC axial fans

with brushless DC motor, Ø 280

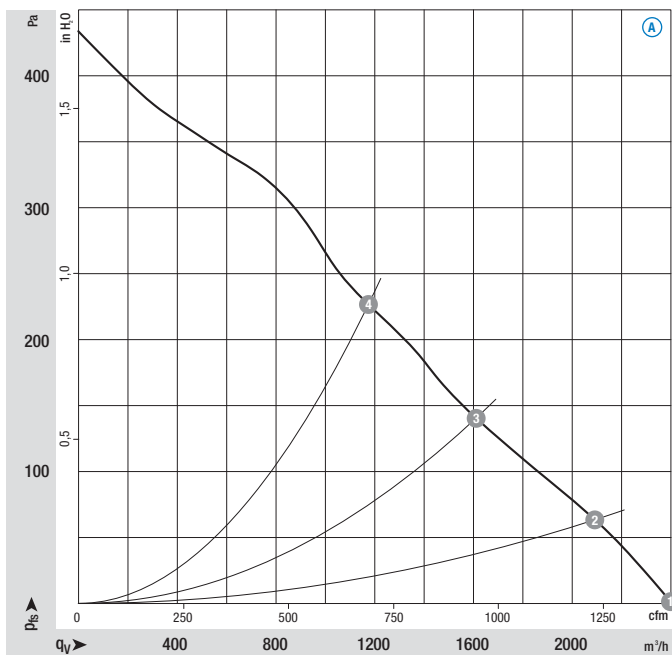


- **Material:** Wall ring: PP plastic, coloured black  
Impeller: PBT plastic, coloured black (conforms to UL 94 HB)
- **Direction of rotation:** Clockwise, seen on rotor
- **Direction of air flow:** "V", exhaust over struts
- **Type of protection:** IP 24 KM
- **Insulation class:** "B" in accordance with EN 60335-1
- **Mounting position:** Any
- **Mode of operation:** Continuous operation (S1)
- **Bearings:** Maintenance-free ball bearings
- **Motor protection:** Overtemperature protection, reverse polarity and locked-rotor protection, load dump protection, under-voltage detection
- **EMC requirements:** VDE 0879-2, interference suppression grade 5

Nominal data		Curve	Nominal voltage	Nominal voltage range	Flow rate	speed/rpm	Input power	Current draw	Sound pressure level	Perm. amb. temp.	Mass	Electr. connection
Type	Motor	VDC	VDC	m <sup>3</sup> /h	rpm	W	A	dB(A)	°C	kg		
<b>W3G280-EQ20 -43<sup>(1)</sup></b>	<b>M3G074-CF</b>	Ⓐ	26	16-32	2400	3100	200	7,5	72	-40..+85 <sup>(2)</sup>	2,4	D

subject to alterations (1) 24-volt variant (2) at free air not recommended for long-term operation at 85 °C

## Curves



Air performance measured as per: ISO 5801, Installation category A, without protection against accidental contact

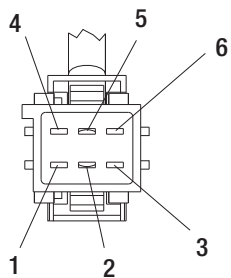
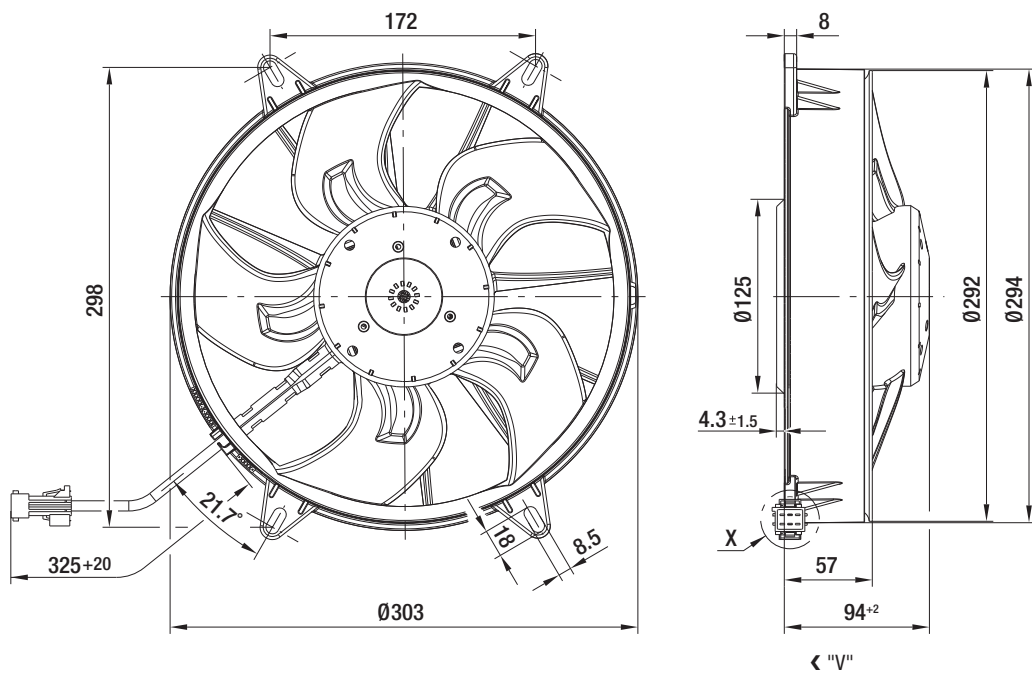
	n rpm	P <sub>ed</sub> W	I A	L <sub>pA</sub> dB(A)
Ⓐ 1	3100	200	7,5	72
Ⓐ 2	3085	197	7,6	72
Ⓐ 3	3090	192	7,3	74
Ⓐ 4	3105	213	8,2	76

Suction-side noise levels: L<sub>pA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 58 ff.



**View X**

- 1 = UN                    black
- 2 = GND                 brown
- 3 = PWM/LIN           yellow
- 4 = INVLIN             orange
- 5 = LOWER             blue
- 6 = Diagnostic output   white

AMP Junior Power Timer, 6-pole, coded;  
 connection lead (460 mm) with mating plug  
 Part no. 02002-4-1021 (not included in delivery)

# EC axial fans

with brushless DC motor, Ø 300



- **Material:** Wall ring: PA plastic, coloured black  
Impeller: PA plastic, coloured black (conforms to UL 94 HB)
- **Direction of rotation:** Clockwise, seen on rotor
- **Direction of air flow:** "V", exhaust over struts
- **Type of protection:** Motor: IP 24 KM, Electronics: IP 66 / 69 K
- **Insulation class:** "B" in accordance with EN 60335-1
- **Mounting position:** Any
- **Mode of operation:** Continuous operation (S1)
- **Bearings:** Maintenance-free ball bearings
- **Motor protection:** Overtemperature protection, reverse polarity and locked-rotor protection, load dump protection, under-voltage detection
- **EMC requirements:** VDE 0879-2, interference suppression grade 5
- **Qualified to:** DIN ISO 16750

## Nominal data

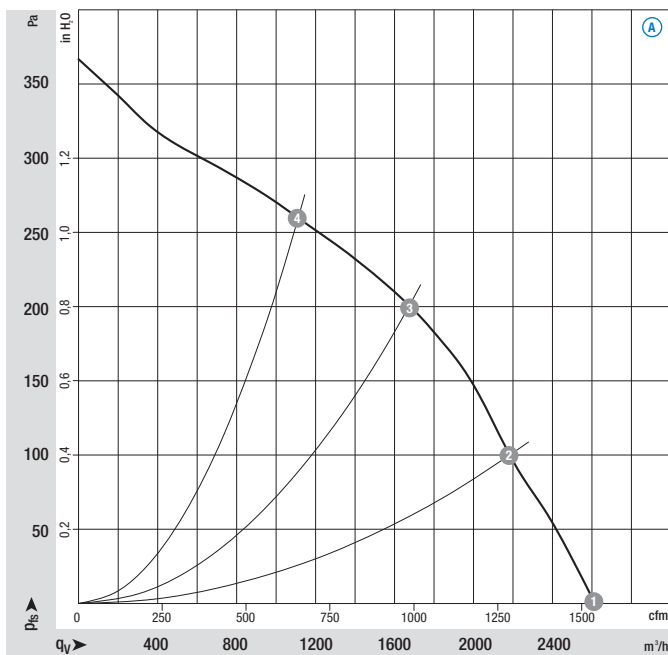
Type	Motor	Curve	Nominal voltage VDC	Nominal voltage range VDC	Flow rate m³/h	speed/rpm	Input power W	Current draw A	Sound pressure level dB(A)	Perm. amb. temp. °C	Mass kg	Electr. connection
<b>W3G300-BV12 -41</b> <sup>(1)</sup>	M3G084-BF	A	13	9-16	2610	3200	220	16,7	75	-40..+105 <sup>(2)</sup>	2,0	K

subject to alterations

<sup>(1)</sup> 12-volt variant

<sup>(2)</sup> over + 85 °C with power derating

## Curves



Air performance measured as per: ISO 5801, Installation category A, without protection against accidental contact

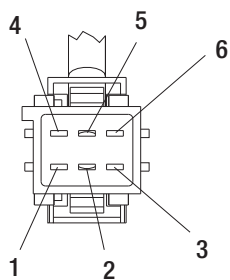
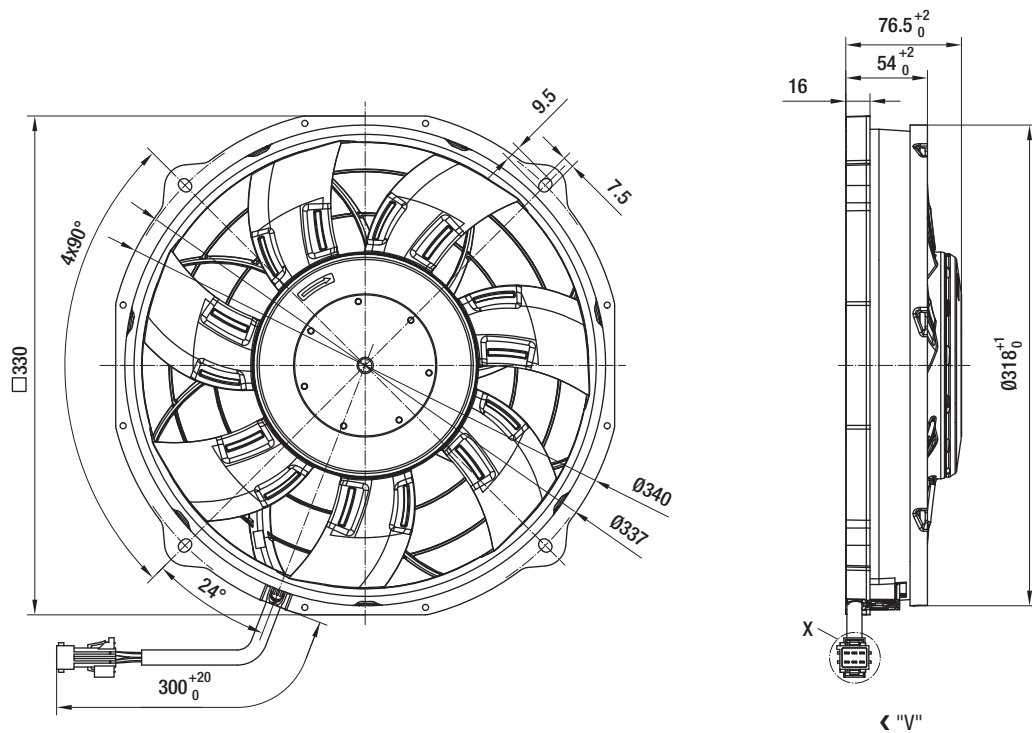
Curve	n rpm	P <sub>ed</sub> W	I A	L <sub>pA</sub> dB(A)
A 1	3200	220	16,7	75
A 2	3140	235	18,1	75
A 3	2960	247	18,9	73
A 4	2840	248	19,0	75

Suction-side noise levels: L<sub>pA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 58 ff.



**View X**

- 1 = + UB                    black
  - 2 = GND                    brown
  - 3 = PWM/LIN\*            yellow
  - 4 = NC                    (not assigned)
  - 5 = LOWER                blue
  - 6 = Diagnostic output   white
- AMP Junior Power Timer, 6-pole, coded;  
 connection lead (460 mm) with mating plug  
 Part no. 02002-4-1021 (not included in delivery)

\* optionally LIN-BUS

# EC axial fans

with brushless DC motor, Ø 300



- **Material:** Wall ring: PA plastic, coloured black  
Impeller: PA plastic, coloured black (conforms to UL 94 HB)
- **Direction of rotation:** Clockwise, seen on rotor
- **Direction of air flow:** "V", exhaust over struts
- **Type of protection:** Motor: IP 24 KM, Electronics: IP 66 / 69 K
- **Insulation class:** "B" in accordance with EN 60335-1
- **Mounting position:** Any
- **Mode of operation:** Continuous operation (S1)
- **Bearings:** Maintenance-free ball bearings
- **Motor protection:** Overtemperature protection, reverse polarity and locked-rotor protection, load dump protection, under-voltage detection
- **EMC requirements:** VDE 0879-2, interference suppression grade 5
- **Qualified to:** DIN ISO 16750

## Nominal data

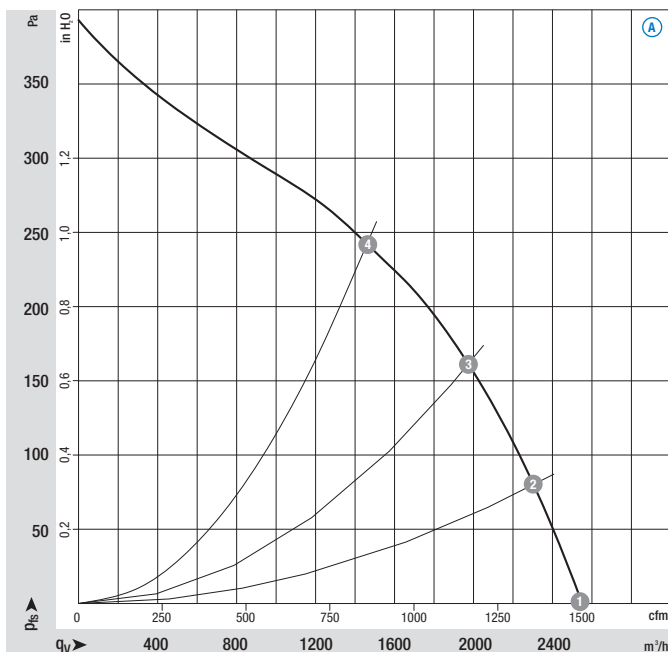
Type	Motor	Curve	Nominal voltage VDC	Nominal voltage range VDC	Flow rate m³/h	speed/rpm	Input power W	Current draw A	Sound pressure level dB(A)	Perm. amb. temp. °C	Mass kg	Electr. connection
<b>W3G300-BV24 -01</b> <sup>(1)</sup>	M3G084-BF	Ⓐ	26	16-32	2570	3160	205	7,90	74	-40..+110 <sup>(2)</sup>	2,0	H

subject to alterations

<sup>(1)</sup> 24-volt variant

<sup>(2)</sup> over + 95 °C with power derating

## Curves



Air performance measured as per: ISO 5801, Installation category A, without protection against accidental contact

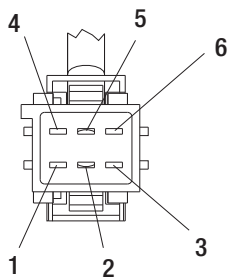
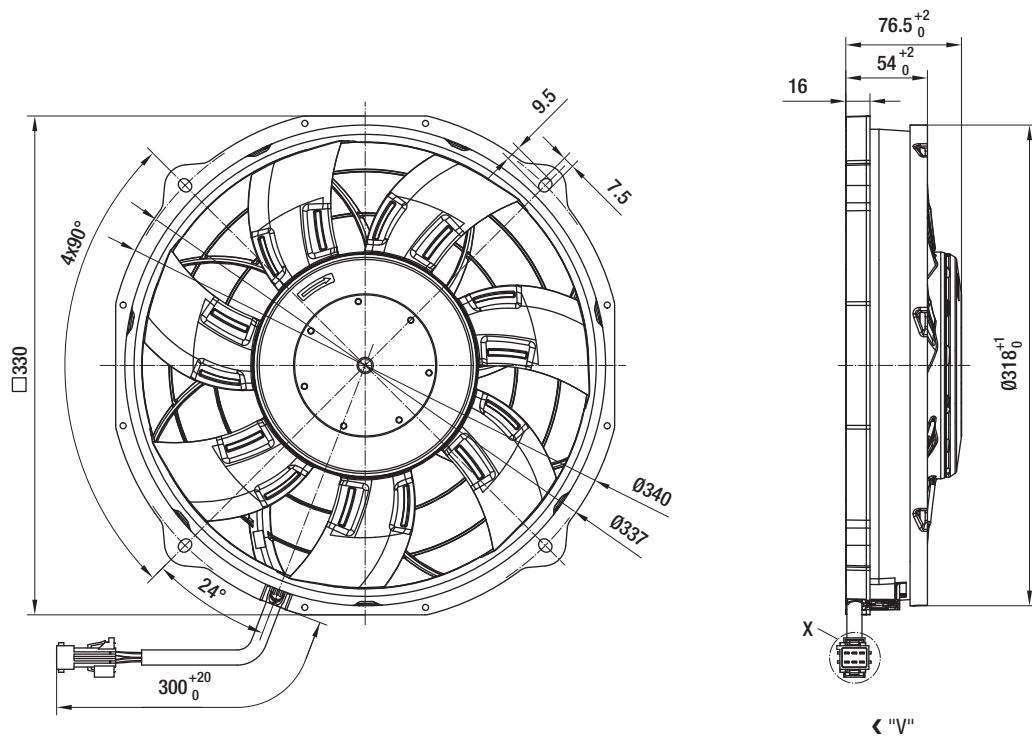
	n rpm	P <sub>ed</sub> W	I A	L <sub>pA</sub> dB(A)
Ⓐ 1	3160	205	7,90	74
Ⓐ 2	3150	216	8,30	73
Ⓐ 3	3085	240	9,20	73
Ⓐ 4	2965	244	9,40	73

Suction-side noise levels: L<sub>pA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 58 ff.



**View X**

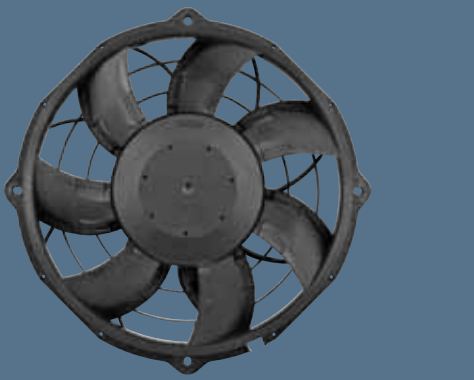
- 1 = + UB            black
  - 2 = GND            brown
  - 3 = PWM/LIN\*      yellow
  - 4 = INVLIN        orange
  - 5 = LOWER         blue
  - 6 = Diagnostic output white
- AMP Junior Power Timer, 6-pole, coded;  
 connection lead (460 mm) with mating plug  
 Part no. 02002-4-1021 (not included in delivery)

\* optionally LIN-BUS



# EC axial fans

with brushless DC motor, Ø 300



- **Material:** Wall ring: PA plastic, coloured black  
Impeller: PA plastic, coloured black (conforms to UL 94 HB)
- **Direction of rotation:** Clockwise, seen on rotor
- **Direction of air flow:** "V", exhaust over struts
- **Type of protection:** Motor: IP 24 KM, Electronics: IP 66 / 69 K
- **Insulation class:** "B" in accordance with EN 60335-1
- **Mounting position:** Any
- **Mode of operation:** Continuous operation (S1)
- **Bearings:** Maintenance-free ball bearings
- **Motor protection:** Overtemperature protection, reverse polarity and locked-rotor protection, load dump protection, under-voltage detection
- **EMC requirements:** VDE 0879-2, interference suppression grade 5
- **Qualified to:** DIN ISO 16750

## Nominal data

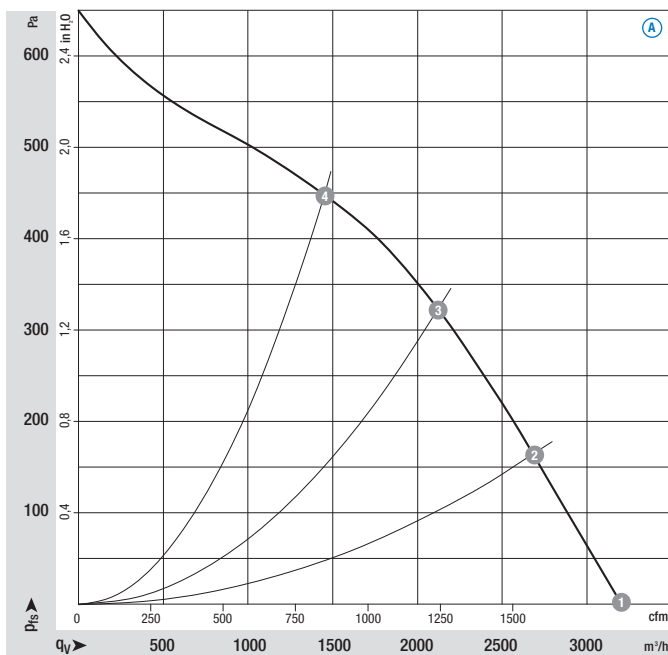
Type	Motor	Curve	Nominal voltage VDC	Nominal voltage range VDC	Flow rate m³/h	speed/rpm	Input power W	Current draw A	Sound pressure level dB(A)	Perm. amb. temp. °C	Mass kg	Electr. connection
<b>W3G300-BV25 -21<sup>(1)</sup></b>	<b>M3G084-BF</b>	<b>A</b>	26	16-32	3225	3940	380	14,6	79	-40..+110 <sup>(2)</sup>	2,0	H

subject to alterations

<sup>(1)</sup> 24-volt variant

<sup>(2)</sup> over + 85 °C with power derating

## Curves



Air performance measured as per: ISO 5801, Installation category A, without protection against accidental contact

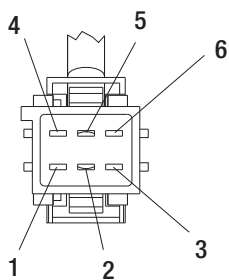
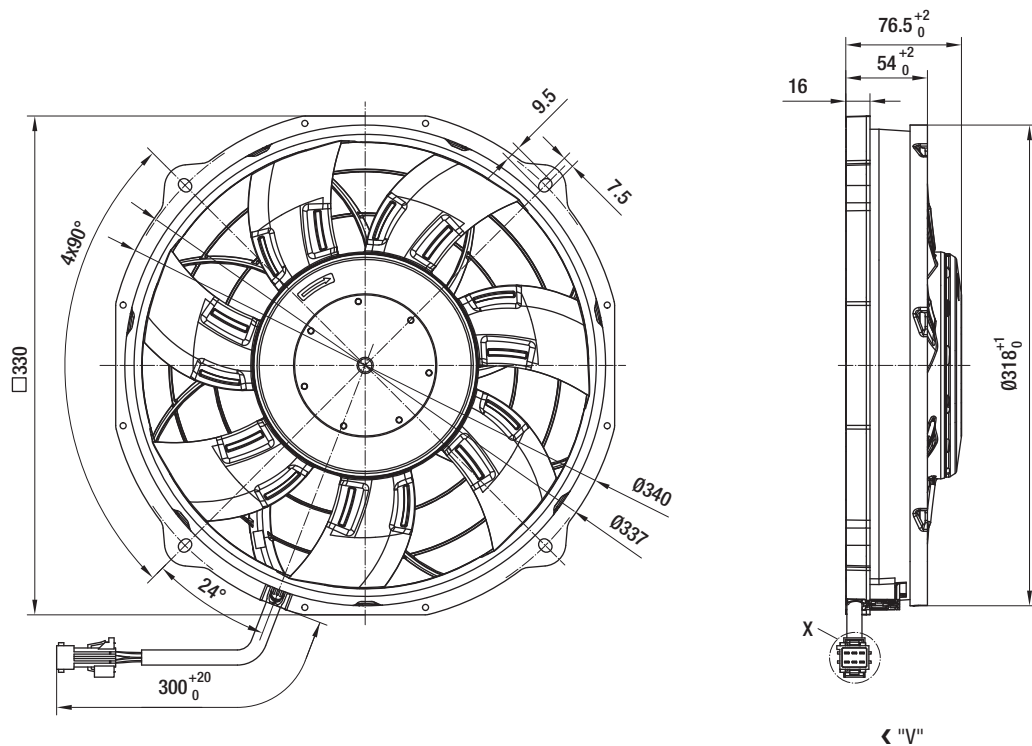
	n rpm	P <sub>ed</sub> W	I A	L <sub>pA</sub> dB(A)
<b>A 1</b>	3940	380	14,6	79
<b>A 2</b>	3815	408	15,7	79
<b>A 3</b>	3715	462	17,7	78
<b>A 4</b>	3630	495	19,0	81

Suction-side noise levels: L<sub>pA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 58 ff.



**View X**

- 1 = + UB            black
- 2 = GND            brown
- 3 = PWM/LIN\*      yellow
- 4 = INVLIN        orange
- 5 = LOWER        blue
- 6 = Diagnostic output white

AMP Junior Power Timer, 6-pole, coded;  
 connection lead (460 mm) with mating plug  
 Part no. 02002-4-1021 (not included in delivery)

\* optionally LIN-BUS

# EC axial fans

with brushless DC motor, Ø 300

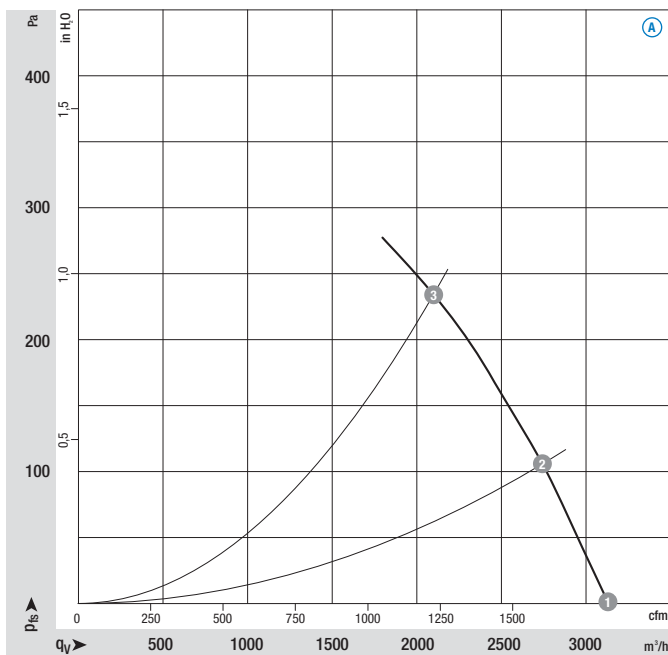


- **Material:** Wall ring: PP plastic, coloured black  
Impeller: PBT plastic, coloured black (conforms to UL 94 HB)
- **Direction of rotation:** Clockwise, seen on rotor
- **Direction of air flow:** "A", intake over struts
- **Type of protection:** IP 24 KM
- **Insulation class:** "B" in accordance with EN 60335-1
- **Mounting position:** Any
- **Mode of operation:** Continuous operation (S1)
- **Bearings:** Maintenance-free ball bearings
- **Motor protection:** Overtemperature protection, reverse polarity and locked-rotor protection, load dump protection, under-voltage detection
- **EMC requirements:** VDE 0879-2, interference suppression grade 5

Nominal data		Curve	Nominal voltage	Nominal voltage range	Flow rate	speed/rpm	Input power	Current draw	Sound pressure level	Max. back pressure	Perm. amb. temp.	Mass	Electr. connection
Type	Motor	VDC	VDC	m <sup>3</sup> /h	rpm	W	A	dB(A)	Pa	°C	kg		
<b>W3G300-ER38 -45<sup>(1)</sup></b>	M3G074-CF	Ⓐ	27,5	16-32	3135	3320	335	12,2	87	275	-40..+85 <sup>(2)</sup>	2,5	C

subject to alterations (1) 24-volt variant (2) at free air not recommended for long-term operation at 85 °C

## Curves



Air performance measured as per: ISO 5801, Installation category A, without protection against accidental contact

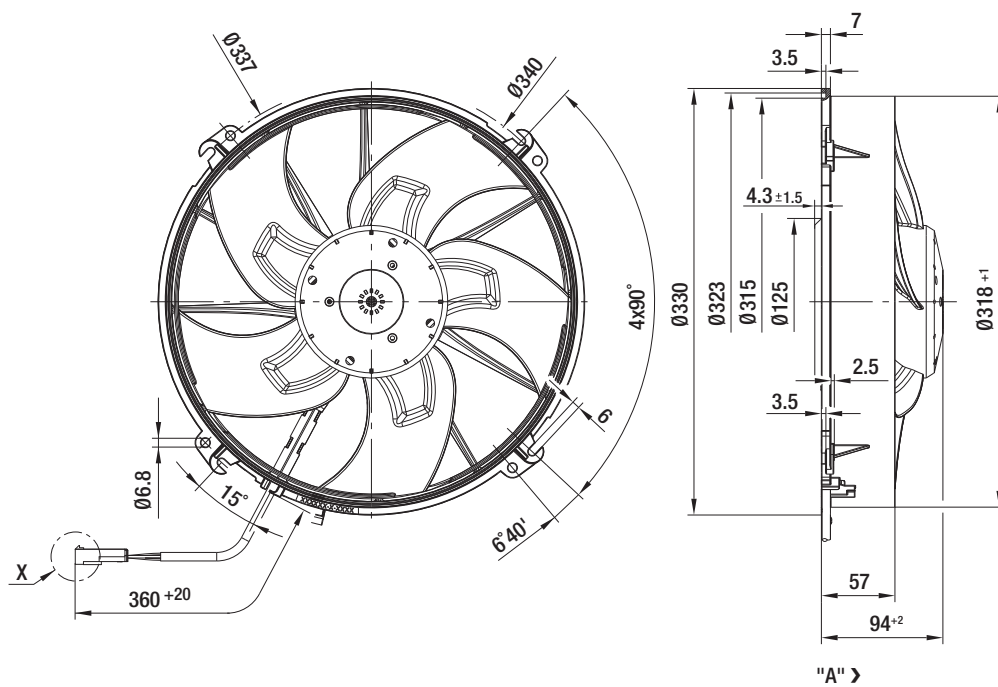
Suction-side noise levels: L<sub>pA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

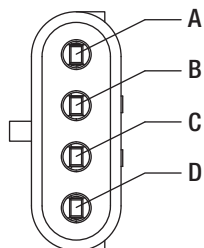
For detailed information see page 58 ff.

	n rpm	P <sub>ed</sub> W	I A	L <sub>pA</sub> dB(A)
Ⓐ 1	3320	335	12,2	87
Ⓐ 2	3295	354	12,8	85
Ⓐ 3	3255	367	13,3	86



**Bushing on customer side:**

- Housing: Packard 12015797
- Pins: Packard 12089188
- Packard 12124580
- Sealings: Packard 15324982
- Packard 15324983



- View X**
- A = UN
  - B = LIN
  - C = CGND
  - D = GND

- rde
- blue
- white
- black

# EC axial fans

with brushless DC motor, Ø 385

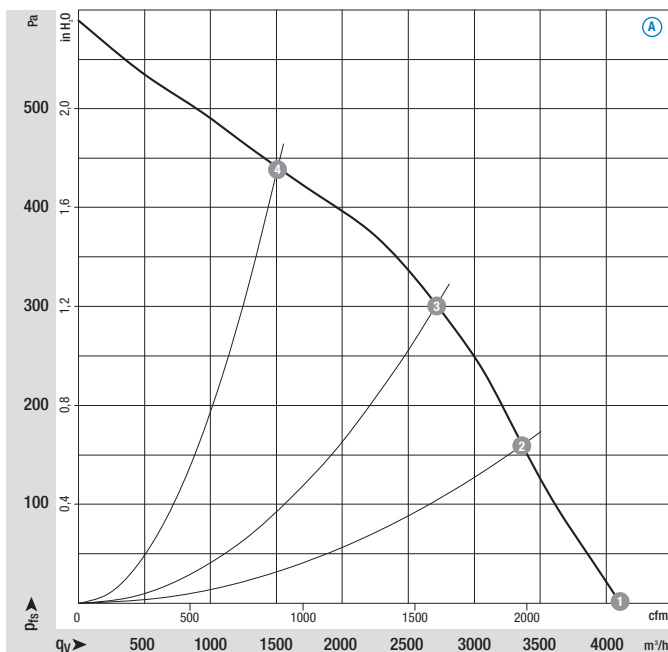


- **Material:** Wall ring: PA plastic, coloured black  
Impeller: PA plastic, coloured black (conforms to UL 94 HB)
- **Direction of rotation:** Clockwise, seen on rotor
- **Direction of air flow:** "V", exhaust over struts
- **Type of protection:** Motor: IP 24 KM, Electronics: IP 66 / 69 K
- **Insulation class:** "B" in accordance with EN 60335-1
- **Mounting position:** Any
- **Mode of operation:** Continuous operation (S1)
- **Bearings:** Maintenance-free ball bearings
- **Motor protection:** Overtemperature protection, locked-rotor protection, load dump protection, under-voltage detection
- **EMC requirements:** VDE 0879-2, interference suppression grade 5
- **Qualified to:** DIN ISO 16750

Nominal data		Curve	Nominal voltage	Nominal voltage range	Flow rate	speed/rpm	Input power	Current draw	Sound pressure level	Perm. amb. temp.	Mass	Electr. connection
Type	Motor	VDC	VDC	m³/h	rpm	W	A	dB(A)	°C	kg		
<b>W3G385-CT53 -61<sup>(1)</sup></b>	<b>M3G084-CF</b>	Ⓐ	13	9-16	4110	3100	445	34,0	81	-40..+105 <sup>(2)</sup>	3,3	L

subject to alterations (1) 12-volt variant (2) over + 70 °C with power derating

## Curves



Air performance measured as per: ISO 5801, Installation category A, without protection against accidental contact

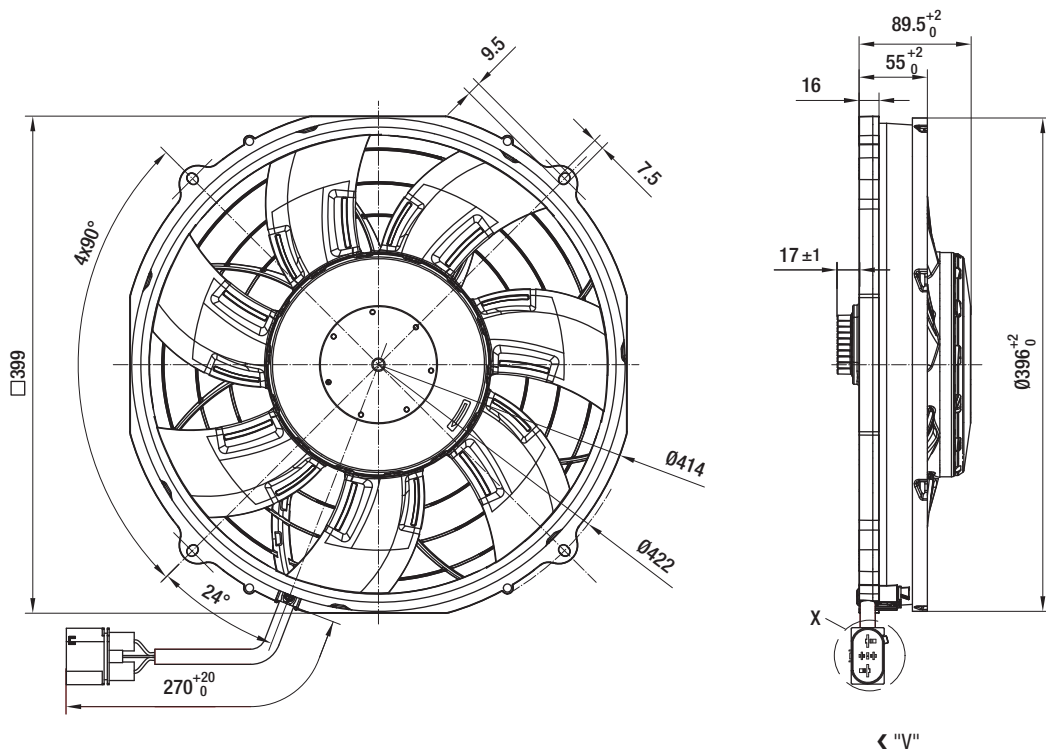
	n rpm	P <sub>ed</sub> W	I A	L <sub>pA</sub> dB(A)
Ⓐ 1	3100	445	34,0	81
Ⓐ 2	3000	487	37,6	80
Ⓐ 3	2930	544	41,9	78
Ⓐ 4	2815	590	45,6	81

Suction-side noise levels: L<sub>pA</sub> measured at 1 m distance to fan axis

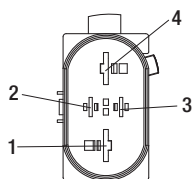
The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 58 ff.



**Bushing on customer side:**  
 Housing: FCI 30432101  
 Pins: 9,5 mm FCI 60070461  
 4,8 mm FCI 60040431  
 Sealings: FCI 60993301  
 FCI 60992607



**View X**  
 1 = + UB                    black  
 2 = Diagnostic output\*   white  
 3 = PWM/LIN                yellow  
 4 = GND                      brown

\* optionally LIN-BUS

← "V"

# EC axial fans

with brushless DC motor, Ø 385

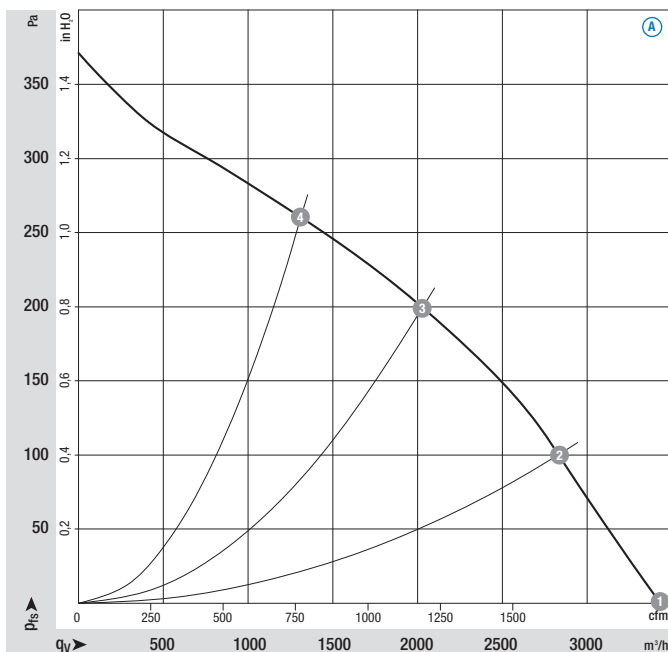


- **Material:** Wall ring: PA plastic, coloured black  
Impeller: PA plastic, coloured black (conforms to UL 94 HB)
- **Direction of rotation:** Clockwise, seen on rotor
- **Direction of air flow:** "V", exhaust over struts
- **Type of protection:** Motor: IP 24 KM, Electronics: IP 66 / 69 K
- **Insulation class:** "B" in accordance with EN 60335-1
- **Mounting position:** Any
- **Mode of operation:** Continuous operation (S1)
- **Bearings:** Maintenance-free ball bearings
- **Motor protection:** Overtemperature protection, reverse polarity and locked-rotor protection, load dump protection, under-voltage detection
- **EMC requirements:** VDE 0879-2, interference suppression grade 5
- **Qualified to:** DIN ISO 16750

Nominal data		Curve	Nominal voltage	Nominal voltage range	Flow rate	speed/rpm	Input power	Current draw	Sound pressure level	Perm. amb. temp.	Mass	Electr. connection
Type	Motor	VDC	VDC	m³/h	rpm	W	A	dB(A)	°C	kg		
<b>W3G385-BV44 -01</b> <sup>(1)</sup>	M3G084-BF	Ⓐ	26	16-32	3425	2600	260	10,0	76	-40..+110 <sup>(2)</sup>	2,7	H

subject to alterations (1) 24-volt variant (2) over + 95 °C with power derating

## Curves



Air performance measured as per: ISO 5801, Installation category A, without protection against accidental contact

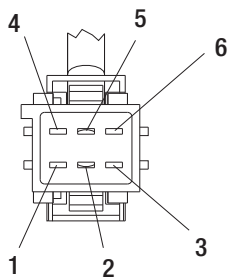
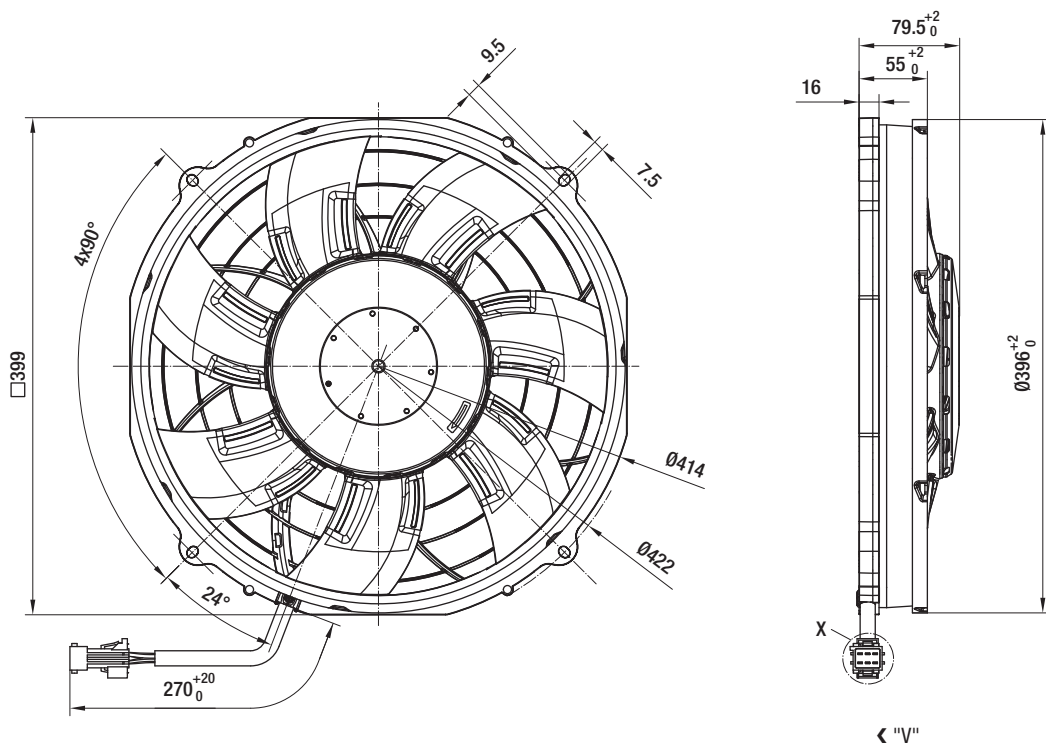
	n rpm	P <sub>ed</sub> W	I A	L <sub>pA</sub> dB(A)
Ⓐ 1	2600	260	10,0	76
Ⓐ 2	2505	272	10,5	74
Ⓐ 3	2325	273	10,5	73
Ⓐ 4	2215	274	10,5	74

Suction-side noise levels: L<sub>pA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 58 ff.



**View X**

- 1 = + UB            black
- 2 = GND            brown
- 3 = PWM/LIN\*      yellow
- 4 = INVLIN        orange
- 5 = LOWER         blue
- 6 = Diagnostic output   white

AMP Junior Power Timer, 6-pole, coded;  
 connection lead (460 mm) with mating plug  
 Part no. 02002-4-1021 (not included in delivery)

\* optionally LIN-BUS



# EC axial fans

with brushless DC motor, Ø 385

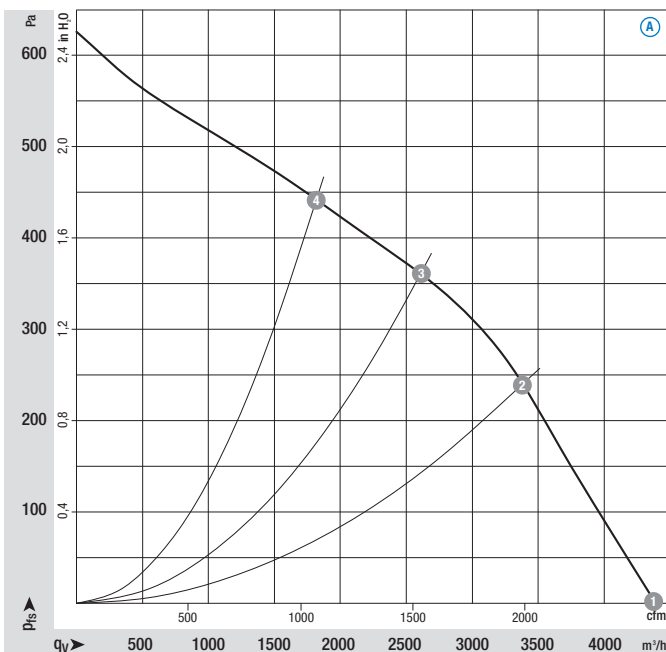


- **Material:** Wall ring: PA plastic, coloured black  
Impeller: PA plastic, coloured black (conforms to UL 94 HB)
- **Direction of rotation:** Clockwise, seen on rotor
- **Direction of air flow:** "V", exhaust over struts
- **Type of protection:** Motor: IP 24 KM, Electronics: IP 66 / 69 K
- **Insulation class:** "B" in accordance with EN 60335-1
- **Mounting position:** Any
- **Mode of operation:** Continuous operation (S1)
- **Bearings:** Maintenance-free ball bearings
- **Motor protection:** Overtemperature protection, locked-rotor protection, load dump protection, under-voltage detection
- **EMC requirements:** VDE 0879-2, interference suppression grade 5
- **Qualified to:** DIN ISO 16750

Nominal data		Curve	Nominal voltage	Nominal voltage range	Flow rate	speed/rpm	Input power	Current draw	Sound pressure level	Perm. amb. temp.	Mass	Electr. connection
Type	Motor	VDC	VDC	m³/h	rpm	W	A	dB(A)	°C	kg		
<b>W3G385-CT65 -21<sup>(1)</sup></b>	<b>M3G084-CF</b>	Ⓐ	26	16-32	4375	3300	525	20,0	83	-40..+110 <sup>(2)</sup>	3,1	L

subject to alterations (1) 24-volt variant (2) over + 85 °C with power derating

## Curves



Air performance measured as per: ISO 5801, Installation category A, without protection against accidental contact

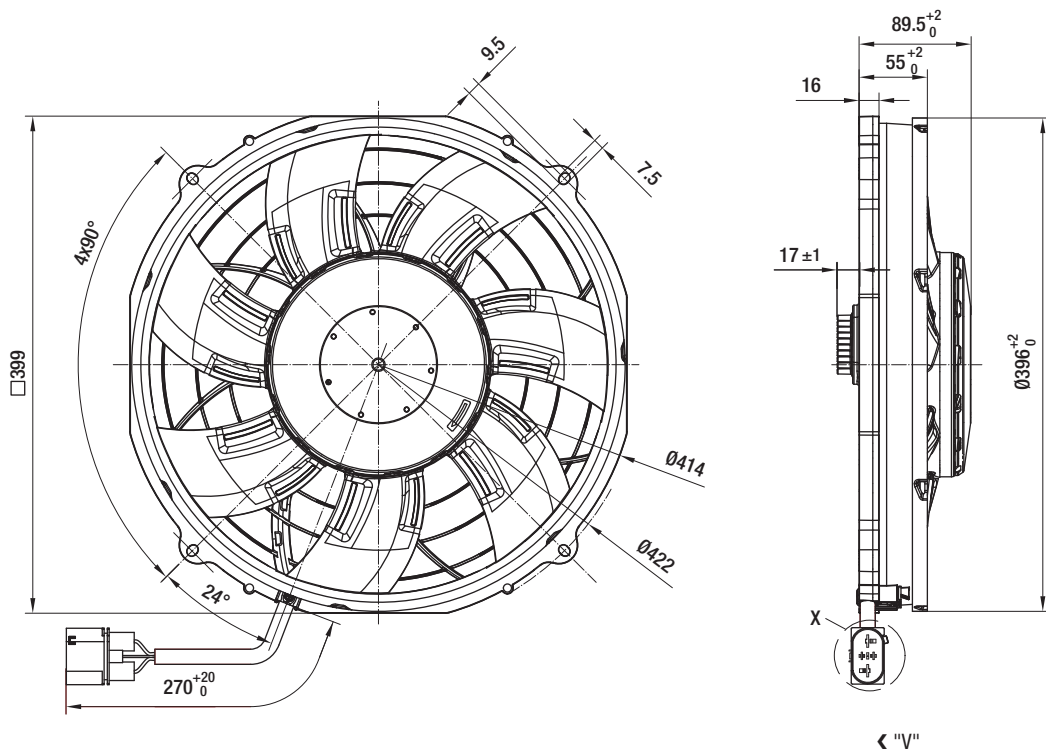
	n rpm	P <sub>ed</sub> W	I A	L <sub>pA</sub> dB(A)
Ⓐ 1	3300	525	20,0	83
Ⓐ 2	3180	615	23,7	81
Ⓐ 3	3050	610	23,5	80
Ⓐ 4	2920	610	23,6	80

Suction-side noise levels: L<sub>pA</sub> measured at 1 m distance to fan axis

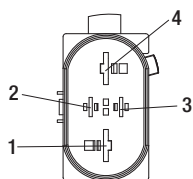
The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 58 ff.



**Bushing on customer side:**  
 Housing: FCI 30432101  
 Pins: 9,5 mm FCI 60070461  
 4,8 mm FCI 60040431  
 Sealings: FCI 60993301  
 FCI 60992607



**View X**  
 1 = + UB                    black  
 2 = Diagnostic output\*   white  
 3 = PWM/LIN                yellow  
 4 = GND                      brown

\* optionally LIN-BUS



EC centrifugal fans - RadiCal backward curved



# EC centrifugal fan RadiCal

backward curved, Ø 220



- **Material:** Impeller: Plastic PA 6.6 GV, coloured black  
Electronics housing: Die-cast aluminium, coated in black
- **Direction of rotation:** Clockwise, seen on rotor
- **Type of protection:** Motor: IP 24, Electronics: IP 66 / 69 K
- **Insulation class:** "B" in accordance with EN 60335-1
- **Mounting position/condensate discharges:**  
Rotor on bottom with condensate discharge holes is standard
- **Mode of operation:** Continuous operation (S1)
- **Bearings:** Maintenance-free ball bearings
- **Motor protection:** reverse polarity and locked-rotor protection
- **Technical features:** Control input 0-10 VDC / PWM, tach output
- **Mounting situation:** The parameters of the specific installation situation must be co-ordinated with ebm-papst!

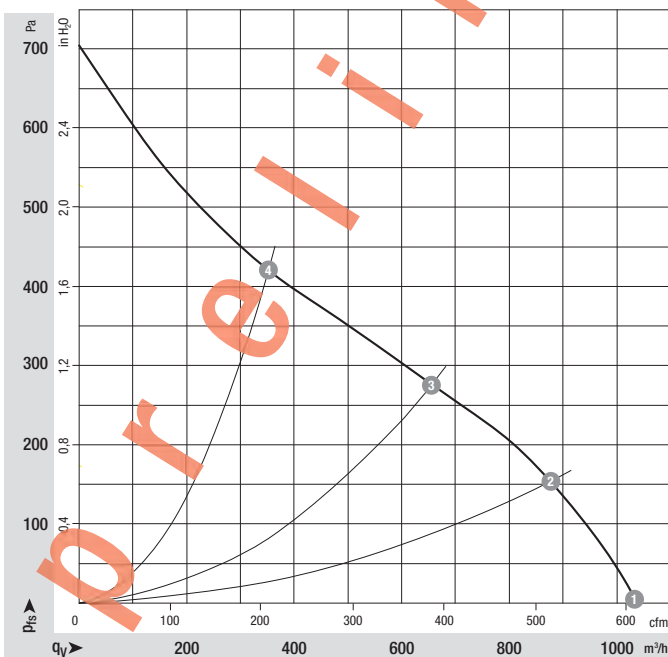
## Nominal data

Type	Motor	Curve	Nominal voltage VDC	Nominal voltage range VDC	Flow rate m³/h	speed/rpm	input power W	Current draw A	Sound pressure level dB(A)	Perm. amb. temp. °C	Mass kg	Electr. connection
R1G 220-RD02 -02 <sup>(1)</sup>	M1G074-BF	A	24	16-28	1030	2975	104	5,0	---	-40..+60	1,4	E

subject to alterations

<sup>(1)</sup> Also possible as 12-volt variant

## Curves



Air performance measured as per: ISO 5801, Installation category A, in ebm-papst full nozzle and without protection against accidental contact

	n rpm	P <sub>ed</sub> W	I A	L <sub>pA</sub> dB(A)
Ⓐ 1	2975	104	5,0	---
Ⓐ 2	2890	105	5,1	---
Ⓐ 3	2775	108	5,1	---
Ⓐ 4	2920	106	5,1	---

Suction-side noise levels: L<sub>pA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

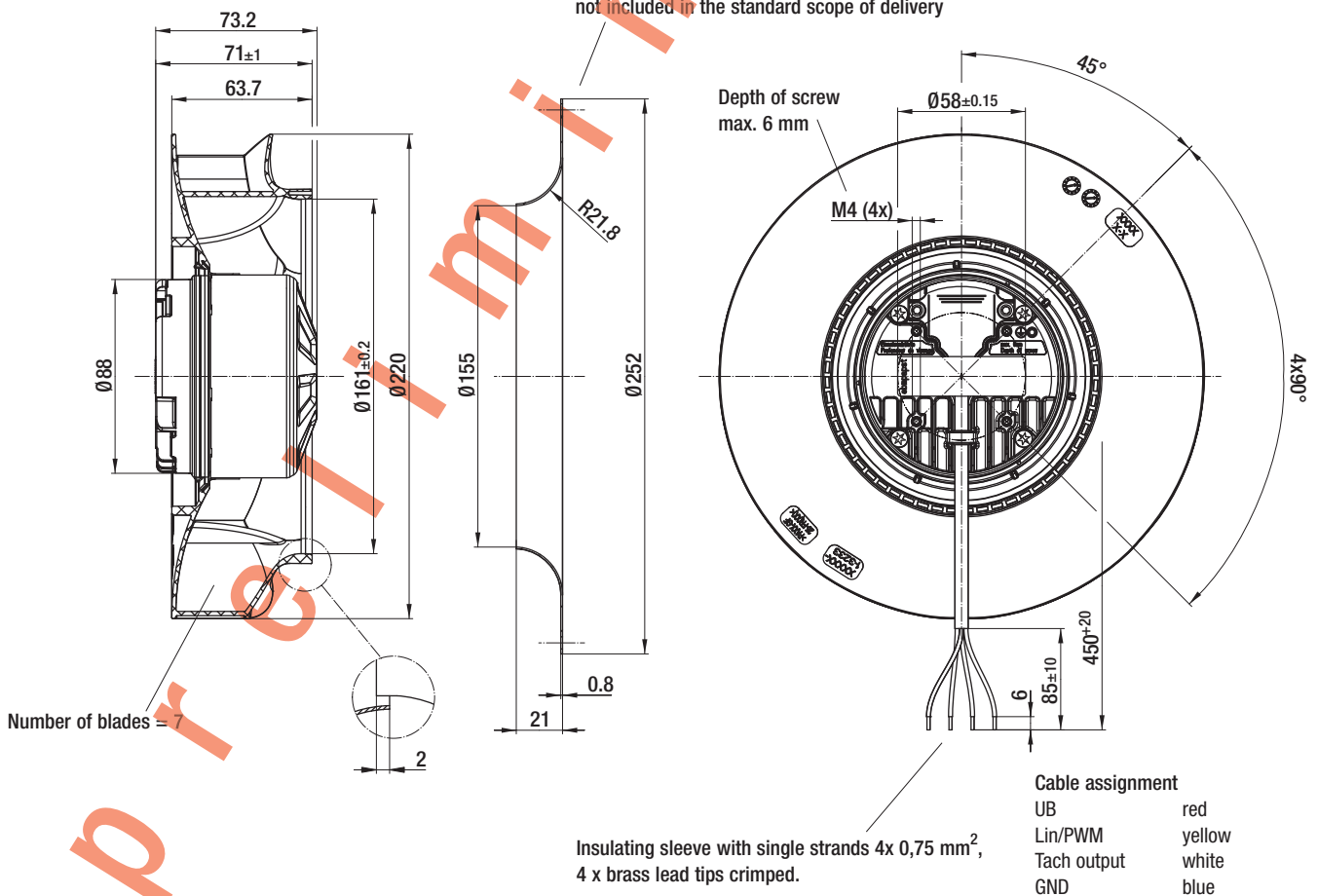
For detailed information see page 58 ff.

data



Type	Inlet nozzle
R1G 220-RD02 -02	09609-2-4013

Accessory part: Inlet nozzle  
not included in the standard scope of delivery



# EC centrifugal fan RadiCal

backward curved, Ø 250



- **Material:** Impeller: Plastic PA 6.6 GV, coloured black  
Electronics housing: Die-cast aluminium, coated in black
- **Direction of rotation:** Clockwise, seen on rotor
- **Type of protection:** Motor: IP 24, Electronics: IP 66 / 69 K
- **Insulation class:** "B" in accordance with EN 60335-1
- **Mounting position/condensate discharges:**  
Rotor on bottom with condensate discharge holes is standard
- **Mode of operation:** Continuous operation (S1)
- **Bearings:** Maintenance-free ball bearings
- **Motor protection:** reverse polarity and locked-rotor protection
- **Technical features:** Control input 0-10 VDC / PWM, tach output
- **Mounting situation:** The parameters of the specific installation situation must be co-ordinated with ebm-papst!

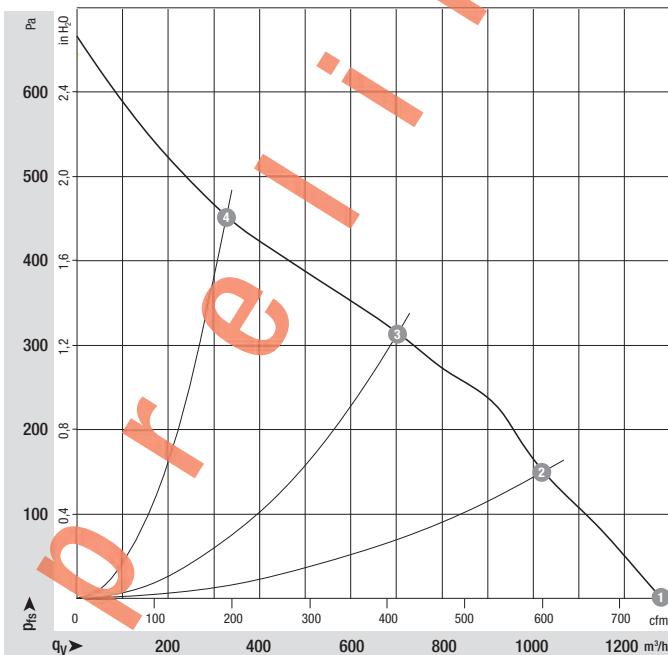
## Nominal data

Type	Motor	Curve	Nominal voltage VDC	Nominal voltage range VDC	Flow rate m³/h	speed/rpm	input power W	Current draw A	Sound pressure level dB(A)	Perm. amb. temp. °C	Mass kg	Electr. connection
R1G 250-RC69 -02 <sup>(1)</sup>	M1G074-CF	A	24	16-28	1280	2440	105	4,9	---	-40..+60	1,9	E

subject to alterations

<sup>(1)</sup> Also possible as 12-volt variant

## Curves



Air performance measured as per: ISO 5801, Installation category A, in ebm-papst full nozzle and without protection against accidental contact

	n rpm	P <sub>ed</sub> W	I A	L <sub>pA</sub> dB(A)
Ⓐ 1	2440	105	4,9	---
Ⓐ 2	2275	108	5,2	---
Ⓐ 3	2255	110	5,2	---
Ⓐ 4	2425	105	4,9	---

Suction-side noise levels: L<sub>pA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 58 ff.

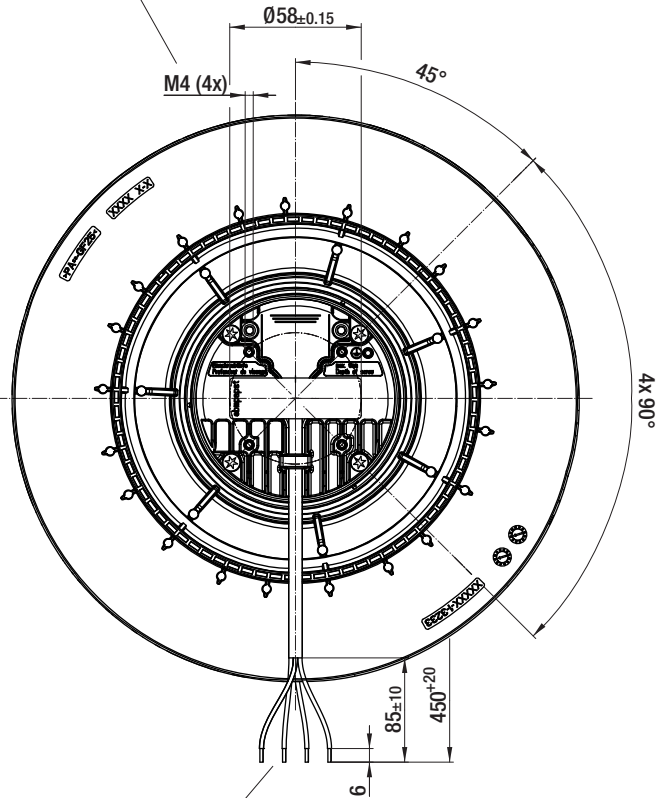
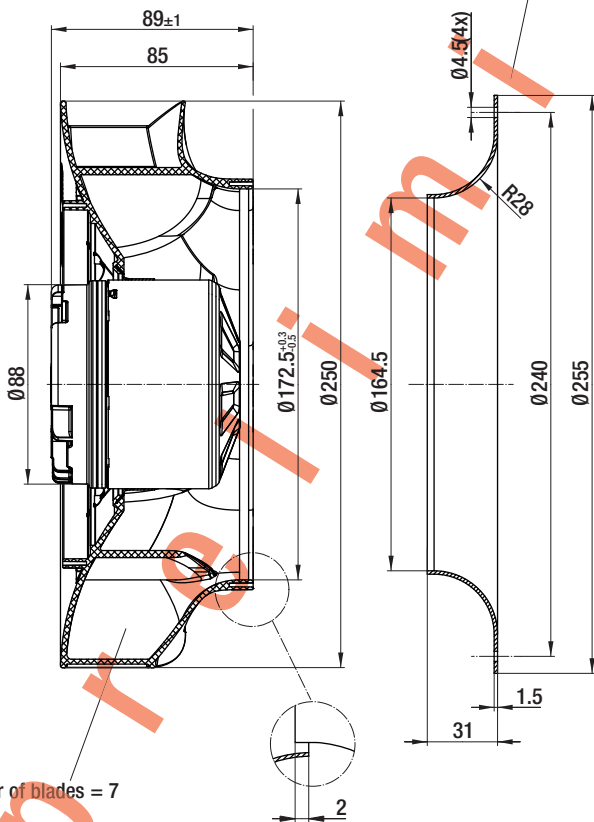
data



Type	Inlet nozzle
R1G 250-RC69 -02	96359-2-4013

Accessory part: Inlet nozzle  
not included in the standard scope of delivery

Depth of screw  
max. 6 mm



Number of blades = 7



Insulating sleeve with single strands 4x 0,75 mm<sup>2</sup>,  
4 x brass lead tips crimped.

Cable assignment	
UB	red
Lin/PWM	yellow
Tach output	white
GND	blue



# EC centrifugal fan RadiCal

backward curved, Ø 280



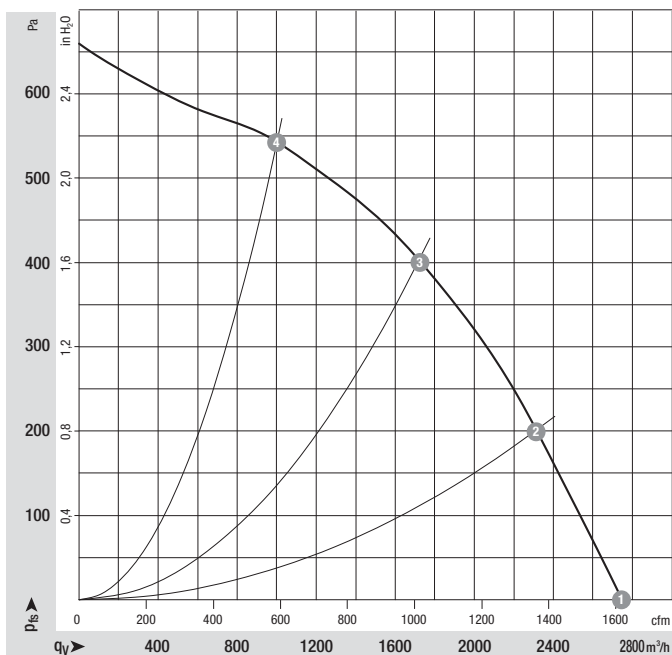
- **Material:** Impeller: Plastic PA, coloured black (conforms to UL 94 V0)  
Rotor: Coated in black  
Electronics housing: Die-cast aluminium, coated in black
- **Direction of rotation:** Clockwise, seen on rotor
- **Type of protection:** Motor: IP 24 KM, Electronics: IP 66 / 69 K
- **Insulation class:** "B" in accordance with EN 60335-1
- **Mounting position:** Any
- **Mode of operation:** Continuous operation (S1)
- **Bearings:** Maintenance-free ball bearings
- **Motor protection:** Overtemperature protection, reverse polarity and locked-rotor protection, load dump protection, under-voltage detection
- **Qualified to:** DIN ISO 16750

## Nominal data

Type	Motor	Curve	Nominal voltage VDC	Nominal voltage range VDC	Flow rate m³/h	speed/rpm	Input power W	Current draw A	Sound pressure level dB(A)	Perm. amb. temp. °C	Mass kg	Electr. connection
R3G 280-RU26 -81	M3G084-CF	Ⓐ	26	16-32	2750	2350	252	10,5	72	-40..+60	2,8	H

subject to alterations

## Curves



Air performance measured as per: ISO 5801, Installation category A, in ebm-papst full nozzle and without protection against accidental contact

Suction-side noise levels: L<sub>pA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 58 ff.

	n rpm	P <sub>ed</sub> W	I A	L <sub>pA</sub> dB(A)
Ⓐ 1	2350	252	10,5	72
Ⓐ 2	2300	300	12,5	68
Ⓐ 3	2265	328	13,7	68
Ⓐ 4	2315	298	12,4	69



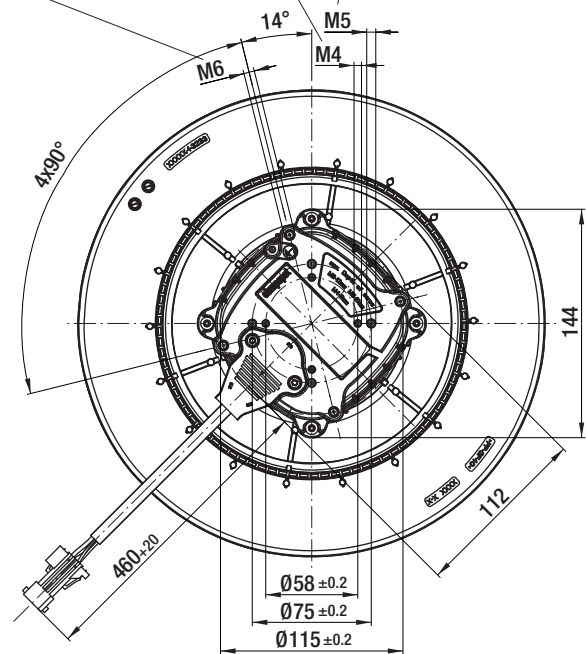
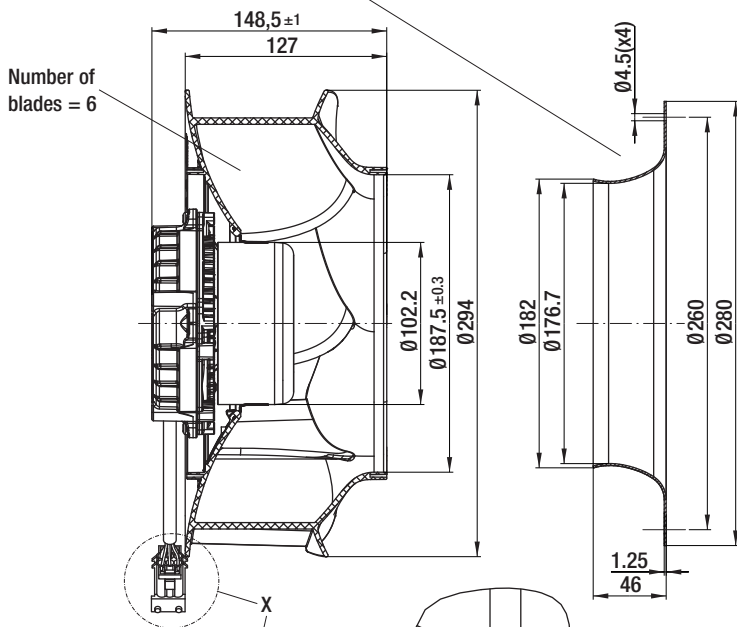
Type	Inlet nozzle
R3G 280-RU26 -81	28000-2-4013

Accessory part: Inlet nozzle  
not included in the standard scope of delivery

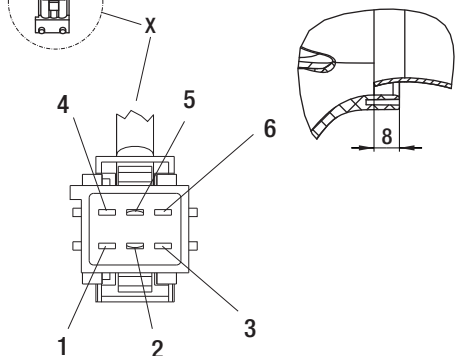
Depth of screw max. 12 mm  
(core removing hole prepared for self-tapping screw)

Depth of screw max. 8 mm  
(core removing hole prepared for self-tapping screw)

Depth of screw max. 10 mm  
(core removing hole prepared for self-tapping screw)



Number of blades = 6



**View X**

1 = + UB	black
2 = GND	brown
3 = PWM/LIN*	yellow
4 = INVLIN	orange
5 = LOWER	blue
6 = Diagnostic output	white

AMP Junior Power Timer, 6-pole, coded;  
connection lead (460 mm) with mating plug  
Part no. 02002-4-1021 (not included in delivery)

\* optionally LIN-BUS

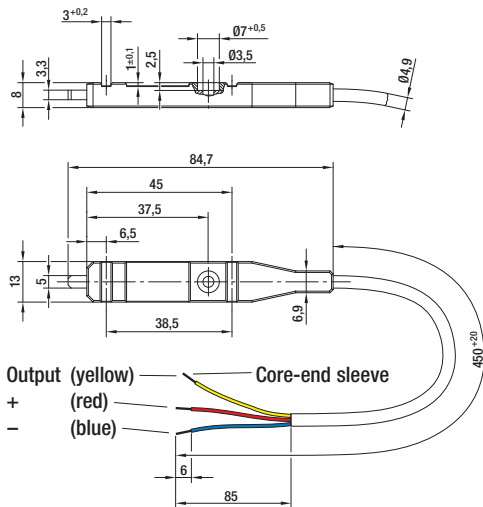
# Temperature control module

- Type of protection: IP42

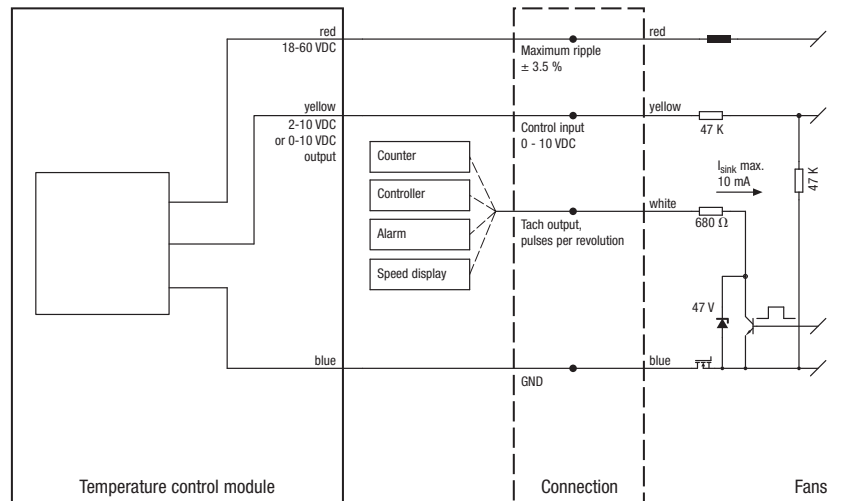


Nominal data	Nominal voltage	Current draw	Output voltage	Output current	Output impedance	Temperature control range	Mass
Part no.	VDC	mA	VDC	mA	k $\Omega$	$^{\circ}\text{C}$	kg
50002-1-0174	18-60	10	2-10	0,1	6,8	+30..+55	0,02
50003-1-0174	18-60	10	0-10	0,1	6,8	+10..+45	0,02

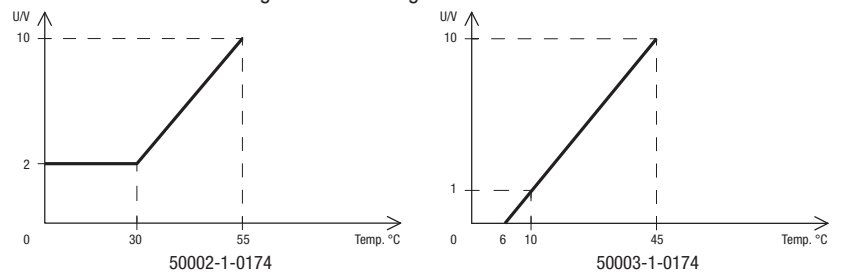
subject to alterations



## - Electr. connection:



## - Control function: Both designs have "cooling" as control function



Tolerance  $\pm 3$  K

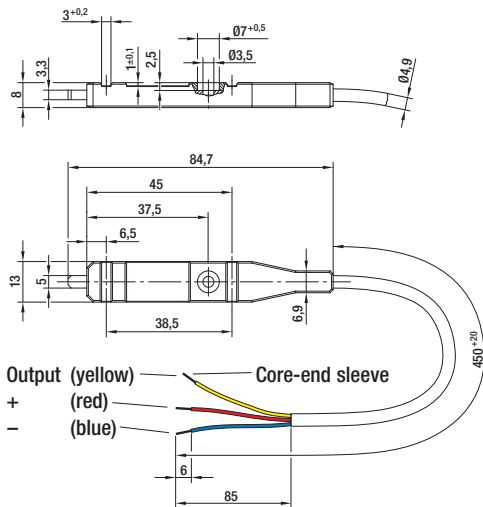
# Temperature sensor

- Type of protection: IP42

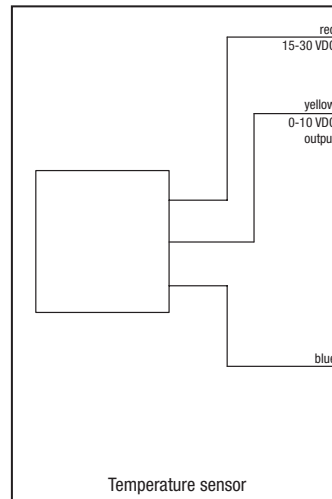


Nominal data	Nominal voltage	Current draw	Output voltage	Output current	Output impedance	Temperature measuring range	Mass
Part no.	VDC	mA	VDC	mA	k $\Omega$	$^{\circ}\text{C}$	kg
50005-1-0174	15-30	10	0-10	1,0	1,1	-20..+80	0,02

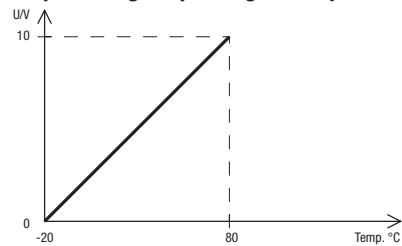
subject to alterations



- Electr. connection:

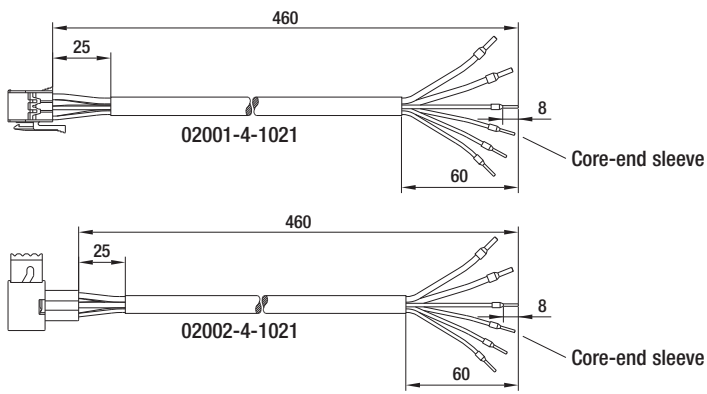


- Output voltage depending on temperature:



Tolerance  $\pm 3$  K

# Accessories



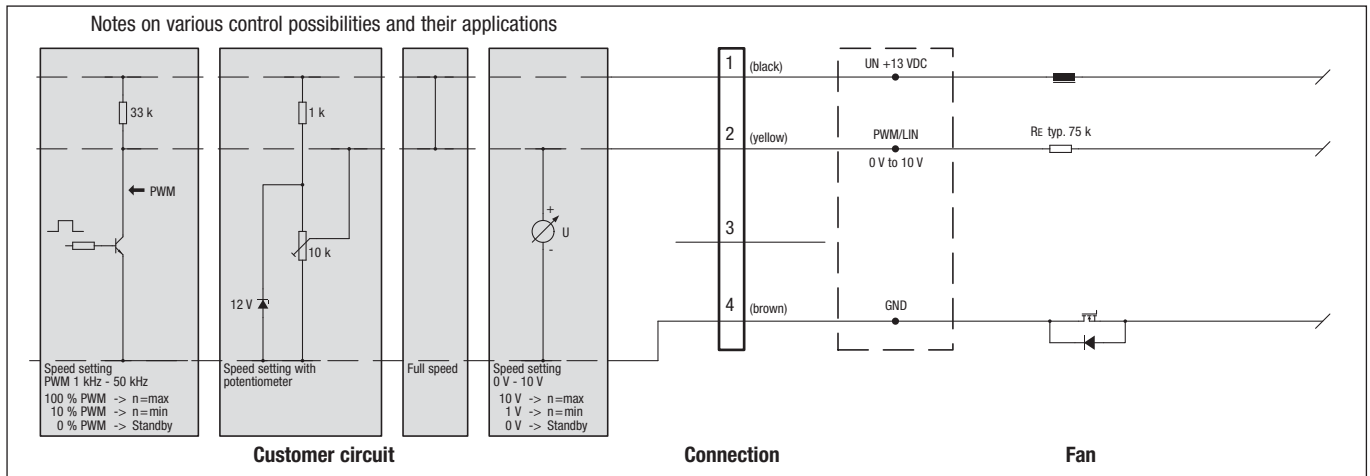
## Connection leads

Part no.	Application
02001-4-1021	EC dual centrifugal blower
02002-4-1021	EC axial fan

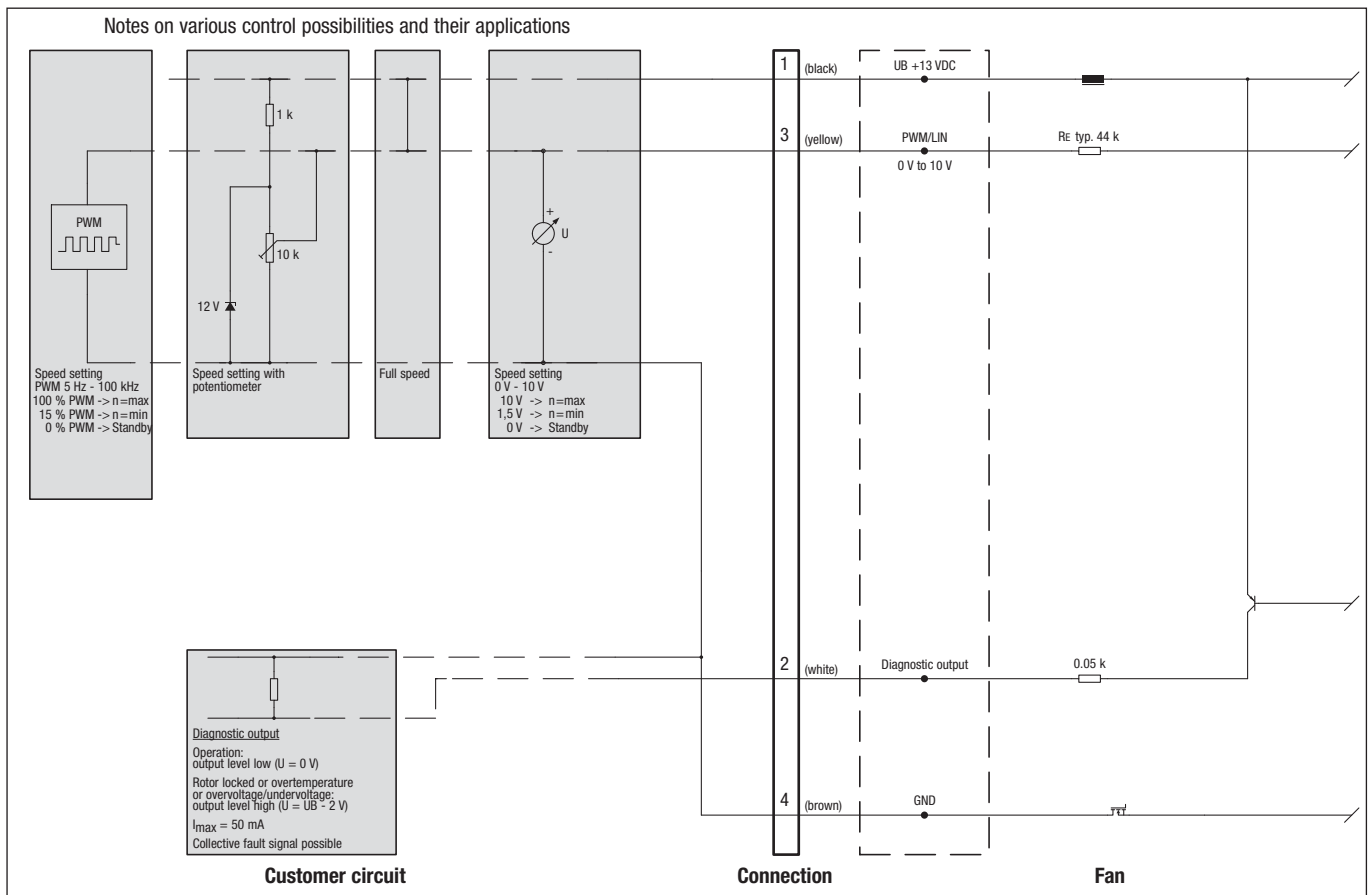
subject to alterations

# Electrical connections

## A) 13 VDC electrical connection (EC dual centrifugal blowers "Premium")

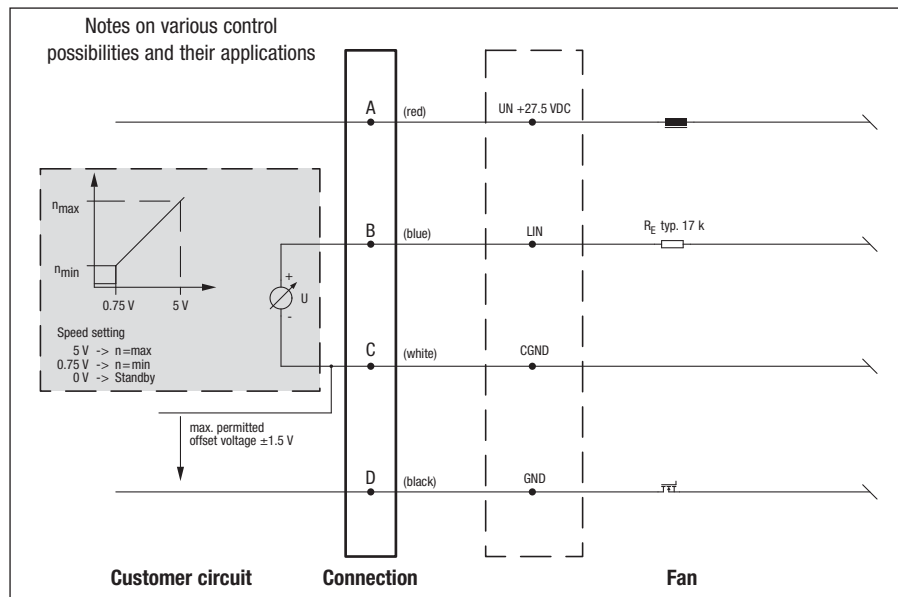


## L) 13 VDC electrical connection (EC axial fans „Power“)

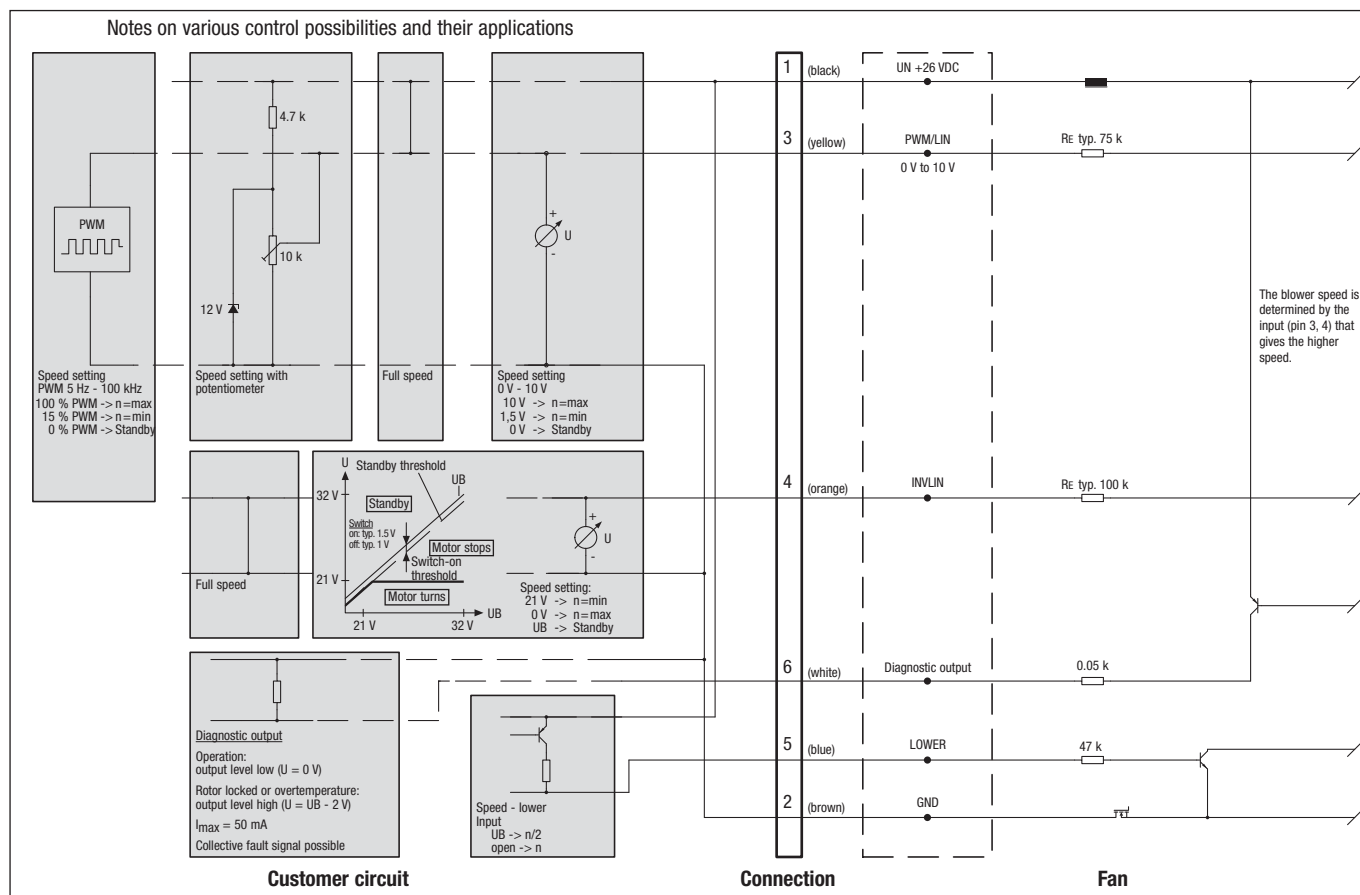


# Electrical connections

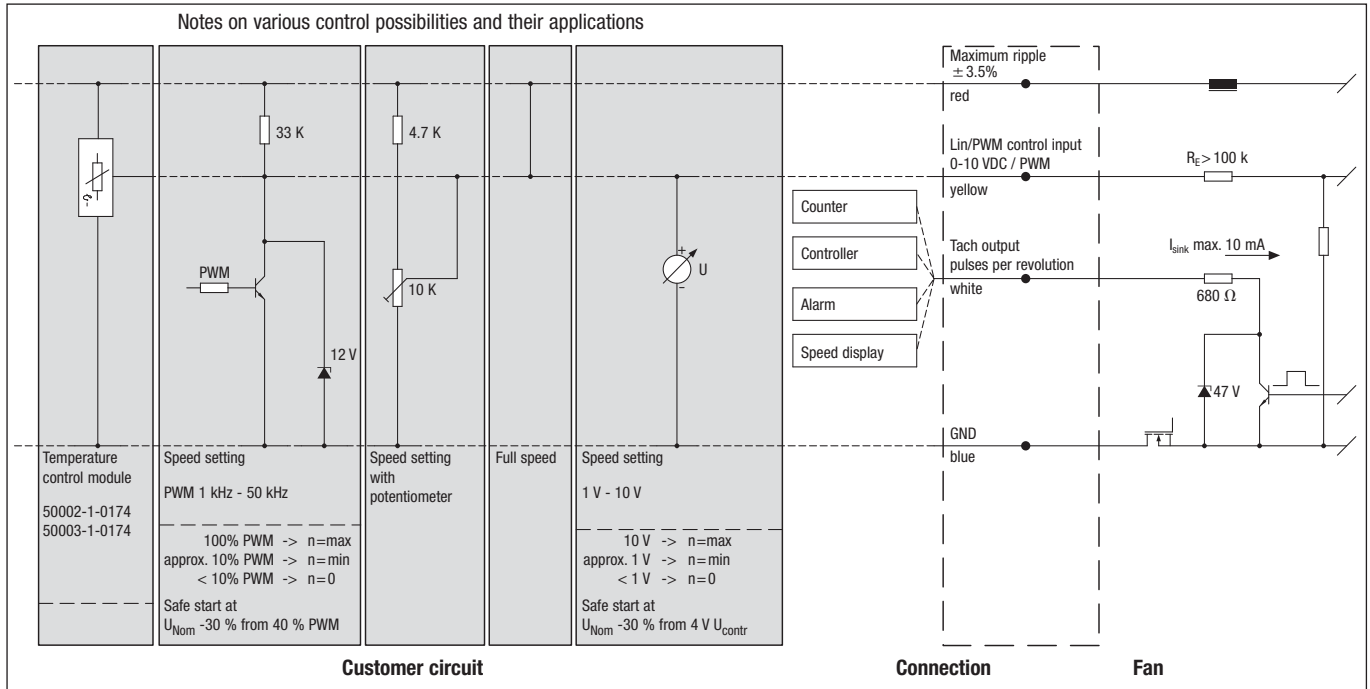
## C) 27.5 VDC electrical connection



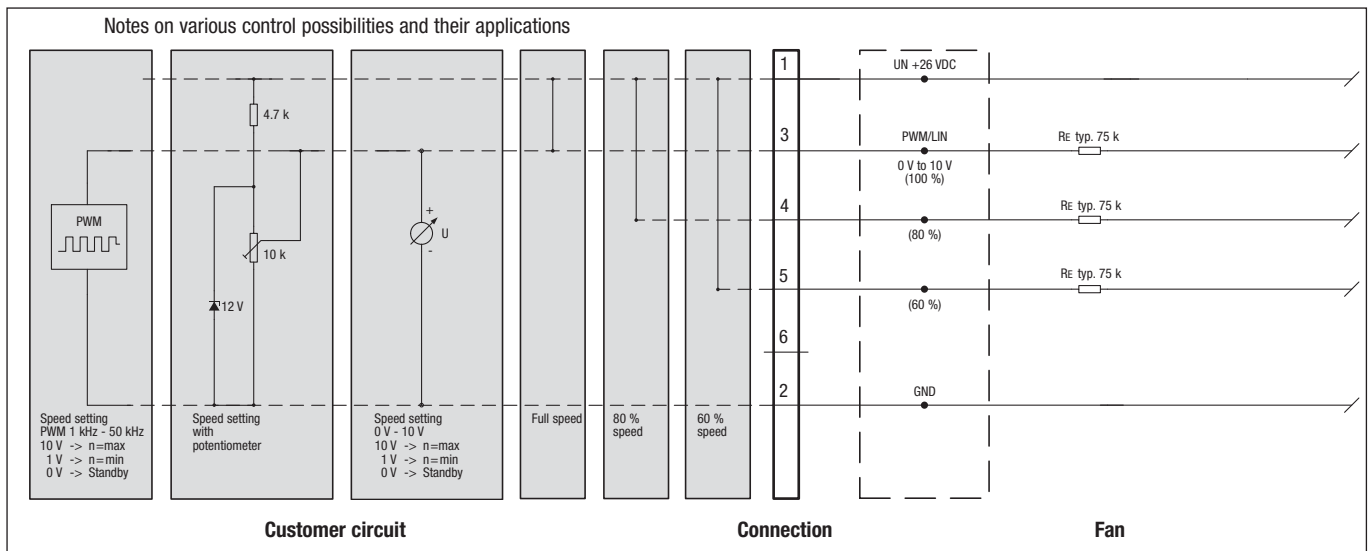
## D) 26 VDC electrical connection



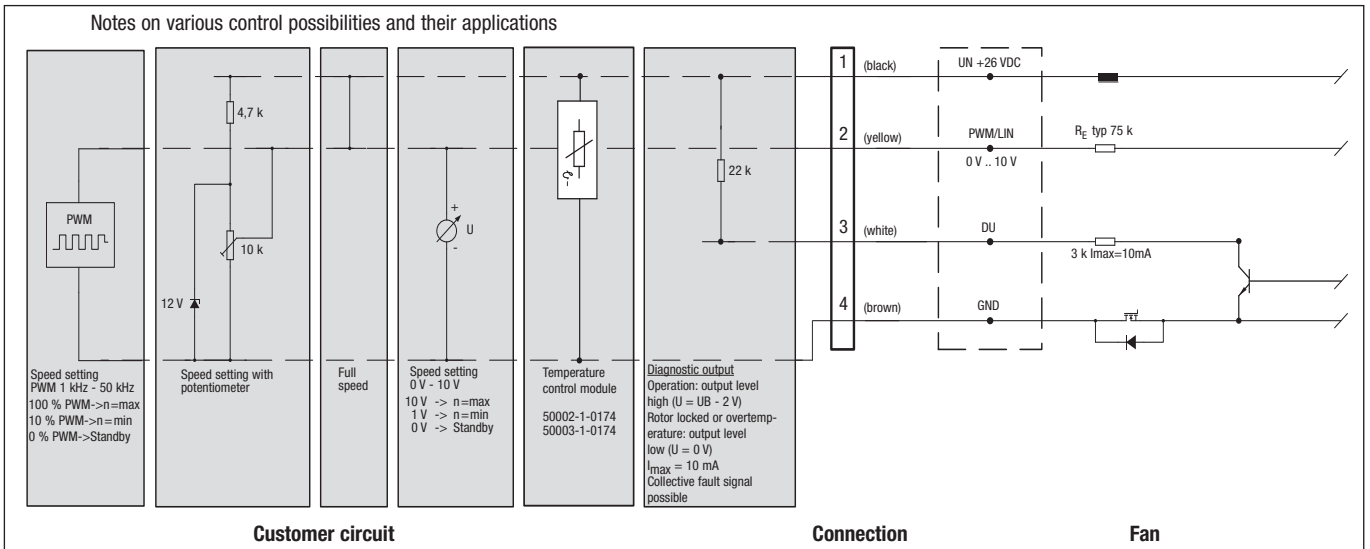
### E) 24 VDC electrical connection



### F) 26 VDC electrical connection (EC dual centrifugal blowers "Basic")



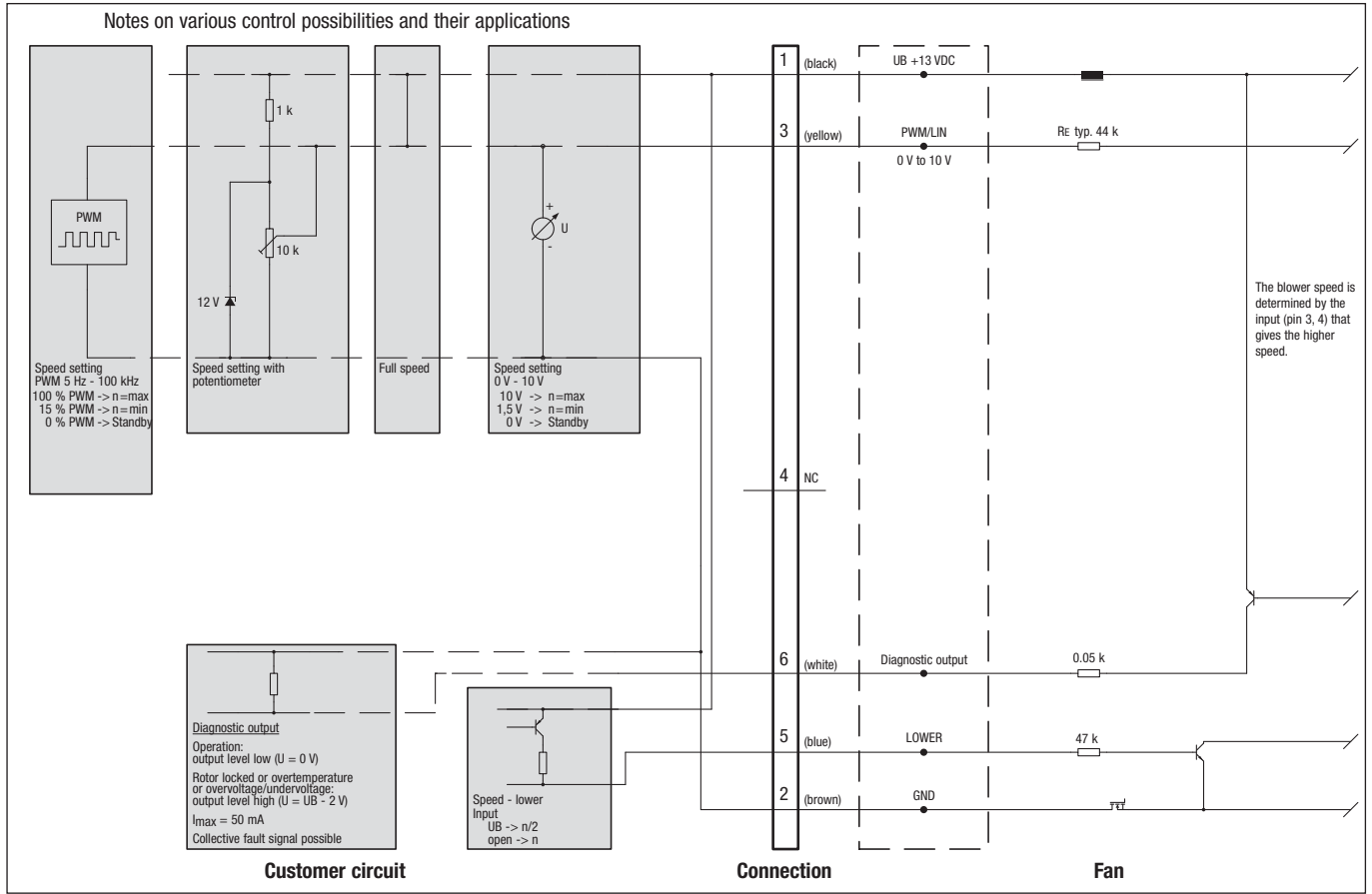
### G) 26 VDC electrical connection (EC dual centrifugal blowers „Premium/Power“)



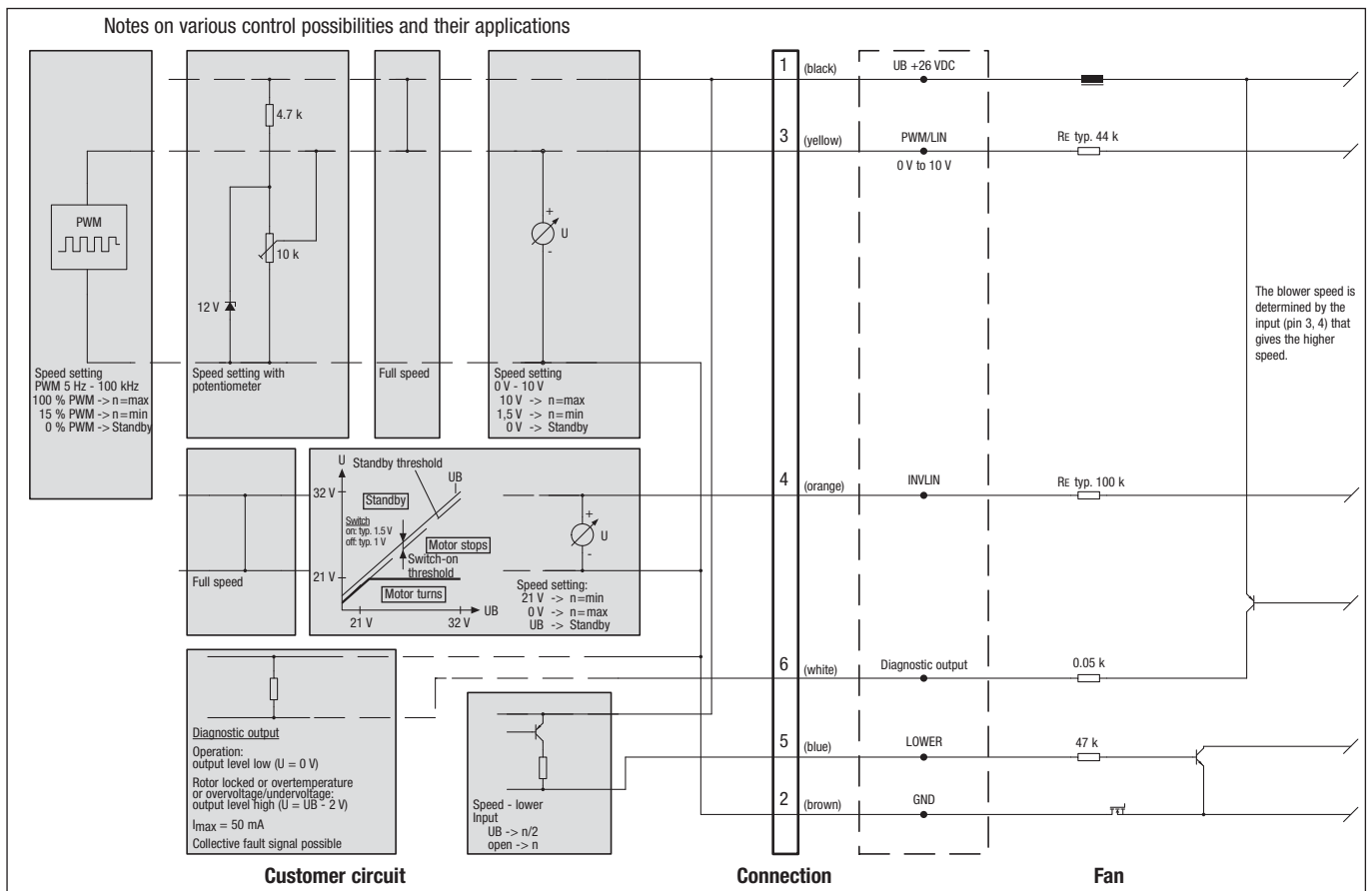


# Electrical connections

## K) 13 VDC electrical connection (EC axial fans „Premium“)



## H) 26 VDC electrical connection (EC axial fans „Premium/Power“)





# 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.

### Type 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.

### Mounting 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 on:

- The service life of the bearing system

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

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

The service life L10 of the ball bearings can be taken as approx. 40,000 operating hours at an ambient temperature of 40 °C, yet this estimate can vary according to the actual ambient conditions.

We will gladly provide you with a lifetime calculation taking into account your specific operating conditions.

## Motor protection / thermal protection

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

Depending on motor type and field of application, the following protective features are realised:

- Thermal overload protection (TOP), in-circuit
- PTC/NTC with electronic diagnostics
- Current limitation via electronics

*Left: Endurance test room  
Middle: Shock test  
Right: Chamber test rig*



### ■ 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.

#### **Vibration test**

Vibration tests are carried out in compliance with

- Vibration test in operation according to DIN IEC 68, parts 2-6
- Vibration test at standstill according to DIN IEC 68, parts 2-6

#### **Shock load**

Shock load tests are carried out in compliance with

- Shock load according to DIN IEC 68, parts 2-27

#### **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:

Ventilation, air-conditioning and refrigeration technology, clean room technology, automotive and rail technology, medical and laboratory technology, electronics, computer and office technology, telecommunications, household appliances, heating, machines and plants, drive engineering.

Our products are not designed for use in the aviation and aerospace 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 relevant product and, if known, the conditions governing the relevant fields of application.

#### **Standards**

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

#### **EMC**

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

Complying with the EMC standards has to be established on the final appliance, as different mounting situations can result in changed EMC properties.

#### **Approvals**

In case you require a specific approval for your ebm-papst automotive product (e1, UL, etc.) please let us know.

Most of our products can be supplied with the relevant approval.

Information on existing approvals is provided in the product-specific data sheets.

### ■ Air performance measurements

All air performance measurements are carried out on suction side and on chamber test beds conforming to the specifications as per ISO 5801 and DIN 24163. The fans under test are installed in the measuring chamber at free air intake and exhaust (installation category A) and are operated at nominal voltage, with AC also at nominal frequency, and without any additional components such as guard grilles.

As required by the standard, the air performance curves correspond to an air density of 1.2 kg/m<sup>3</sup>.

Room for precision noise measuring



### Measurement conditions for air and noise measurement

ebm-papst products are measured under the following conditions:

- Axial and diagonal fans in direction of rotation “V” in full nozzle and without guard grille
- 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 grille.

### Sound pressure level and sound level

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

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

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

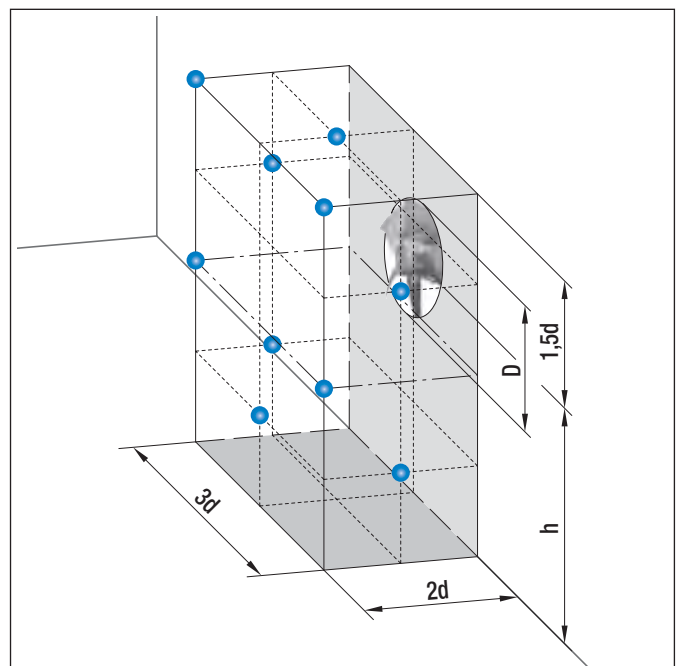
Measuring configuration as per ISO 13347-3 respectively DIN 45635-38:

- 10 measuring points

$$d \geq D$$

$$h = 1,5d \dots 4,5d$$

$$\text{Measurement area } S = 6d^2 + 7d(h + 1,5d)$$

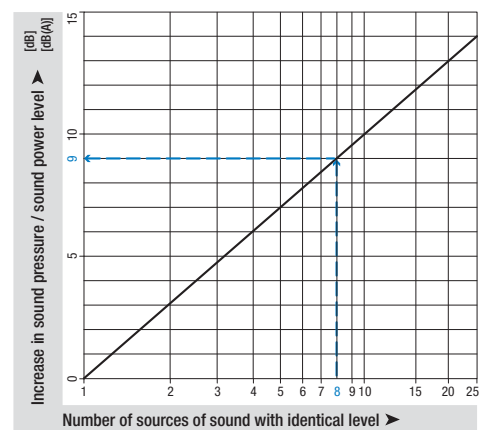


### Combined level of multiple same-level sound sources

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.

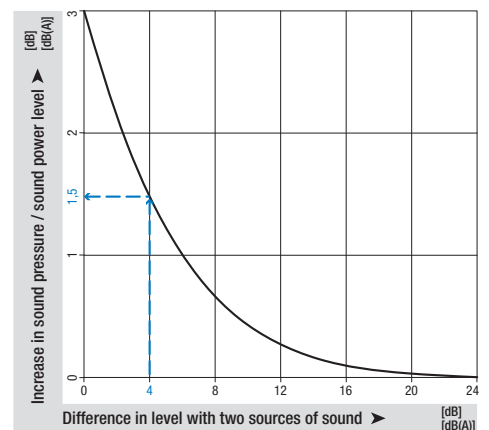
**Example:** 8 A3G800 axial fans are on a condenser. According to the data sheet, the sound pressure level of a fan is approximately 75 dB(A). The level increase measured from the diagram is 9 dB. Thus the overall sound level of the installation can be expected to be 84 dB(A).



### 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.

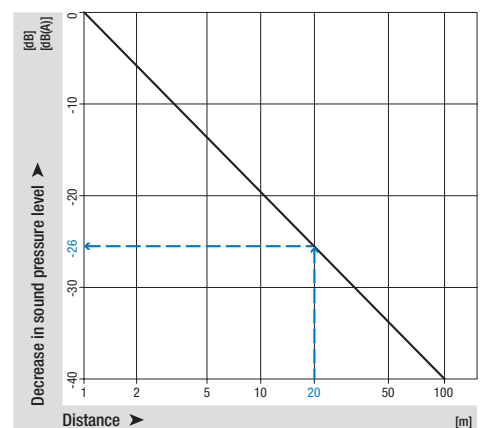
**Example:** There is an axial fan A3G800 with a sound pressure level of 75 dB(A) at the operating point and an axial fan A3G710 with 71 dB(A) in a ventilation unit. The level difference is 4 dB. The level increase can now be read in the diagram as approx. 1.5 dB. This means that the overall sound level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



-  fan agent
-  compact fan agent
-  motor specialist
-  motor agent

# ebm-papst in Germany

## Germany

### ebm-papst Muldingen GmbH & Co. KG

Bachmühle 2  
D-74673 Muldingen  
Phone +49 7938 81-0  
Fax +49 7938 81-110  
info1@de.ebmpapst.com

www.ebmpapst.com

### ebm-papst St. Georgen GmbH & Co. KG




Hermann-Papst-Straße 1  
D-78112 St. Georgen  
Phone +49 7724 81-0  
Fax +49 7724 81-1309  
info2@de.ebmpapst.com

www.ebmpapst.com

### ebm-papst Landshut GmbH

Hofmark-Aich-Straße 25  
D-84030 Landshut  
Phone +49 871 707-0  
Fax +49 871 707-465  
info3@de.ebmpapst.com

www.ebmpapst.com

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

 **Bielefeld**  
 Dipl.-Ing. (FH) Wolf-Jürgen Weber  
Niehausweg 13  
 D-33739 Bielefeld  
Phone +49 5206 91732-31  
Fax +49 5206 91732-35  
Wolf-Juergen.Weber@de.ebmpapst.com

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

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

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

 **Hamburg**  
 Ingenieurbüro Breuell GmbH  
Ing. Dirk Kahl  
 Elektroingenieur  
Grützmühlenweg 48  
D-22339 Hamburg  
Phone +49 40 538092-19  
Fax +49 40 538092-84  
Dirk.Kahl@de.ebmpapst.com

 **Heilbronn / Heidelberg**  
 Dipl.-Ing. Mark Gartner  
Gehrweg 12  
 D-74199 Unterheinriet  
Phone +49 7130 404569-1  
Fax +49 7130 404569-2  
Mark.Gartner@de.ebmpapst.com

 **Kassel**  
 Dipl.-Ing. (FH) Ralph Brück  
Hoherainstraße 3 b  
 D-35075 Gladenbach  
Phone +49 6462 4071-10  
Fax +49 6462 4071-11  
Ralph.Brueck@de.ebmpapst.com

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

 **Munich**  
 Dipl.-Wirt.-Ing. (FH) Jens Peter  
Landsbergerstraße 14  
 D-86932 Pürgen  
Phone +49 8196 99877-54  
Fax +49 8196 99877-55  
Jens.Peter@de.ebmpapst.com

 **Nuremberg**  
 Dipl.-Wirt.-Ing. (FH) Axel Resch  
Steinsfeldstraße 80  
 D-74626 Bretzfeld  
Phone +49 7946 94401-02  
Fax +49 7946 94401-03  
Axel.Resch@de.ebmpapst.com

 **Offenburg**  
 Dipl.-Ing. (FH) Ralf Braun  
Hubeneck 21  
 D-77704 Oberkirch  
Phone +49 7802 9822-52  
Fax +49 7802 9822-53  
Ralf.Braun@de.ebmpapst.com

 **Stuttgart**  
 Dipl.-Ing. (FH) Rudi Weinmann  
Hindenburgstraße 100/1  
 D-73207 Plochingen  
Phone +49 7153 9289-80  
Fax +49 7153 9289-81  
Rudi.Weinmann@de.ebmpapst.com

 **Ulm**  
 M.Sc. Reinhard Sommerreißer  
Am Silbermannpark 10  
 D-86161 Augsburg  
Phone +49 821 6610-7023  
Fax +49 821 6610-7024  
Reinhard.Sommerreisser@de.ebmpapst.com

## Distributors

 **Frankfurt**  
R.E.D. Handelsgesellschaft mbH  
Gutenbergstraße 3  
D-63110 Rodgau - Jügesheim  
Phone +49 6106 841-0  
Fax +49 6106 841-111  
info@red-elektromechanik.de  
www.red-elektromechanik.de

 **Hamburg**  
Breuell + Hilgenfeldt GmbH  
Grützmühlenweg 48  
D-22339 Hamburg  
Phone +49 40 538092-20  
Fax +49 40 538092-84  
info@breuell-hilgenfeldt.de

 **Munich**  
A. Schweiger GmbH  
Ohmstraße 1  
D-82054 Sauerlach  
Phone +49 8104 897-0  
Fax +49 8104 897-90  
info@schweiger-gmbh.de  
www.schweiger-gmbh.com




● **Express Service-Center** (1 to 5 pieces)

 **North**  
 Breuell + Hilgenfeldt GmbH  
Grützmühlenweg 48  
 D-22339 Hamburg  
Phone +49 40 538092-20  
Fax +49 40 538092-84  
ebmpapst@breuell-hilgenfeldt.de

 **South**  
 HDS Ventilatoren Vertriebs GmbH  
Glaswiesenstraße 1  
D-74677 Dörzbach  
Phone +49 7937 80355-20  
Fax +49 7937 80355-25  
info@hds-gmbh.net  
www.hds-gmbh.net

## Europe

 **Austria**  
 ebm-papst Motoren & Ventilatoren GmbH  
 Straubingstraße 17  
A-4030 Linz  
Phone +43 732 321150-0  
Fax +43 732 321150-20  
info@at.ebmpapst.com  
www.ebmpapst.at

 **Belarus**  
 ebm-papst Bel AgmbH  
 P.O. Box 117  
BY-220138 Minsk  
Phone +375 17 3851556  
Fax +375 17 3851556  
info@by.ebmpapst.com  
www.ebmpapst.by

 **Belgium**  
 ebm-papst Benelux B.V.  
 Sales office Belgium-Luxemburg  
Romeinsestraat 6/0101  
Research Park Haasrode  
B-3001 Heverlee-Leuven  
Phone +32 16 396-200  
Fax +32 16 396-220  
info@be.ebmpapst.com  
www.ebmpapst.be

 **Bulgaria**  
 ebm-papst Romania S.R.L.  
 Str. Tarnavei No. 20  
RO-500327 Brasov  
Phone +40 268 331859  
Fax +40 268 312805  
dudasludovic@xnet.ro

 **Croatia**  
 ebm-papst Industries Kft.  
 Ezred u. 2.  
H-1044 Budapest  
Phone +36 1 8722-190  
Fax +36 1 8722-194  
office@hu.ebmpapst.com

 **Czech Republic / Slovakia**  
 ebm-papst CZ s.r.o.  
 Kaštanová 34a  
CZ-620 00 Brno  
Phone +420 544 502-411  
Fax +420 547 232-622  
info@ebmpapst.cz  
www.ebmpapst.cz

 **Denmark**  
 ebm-papst Denmark ApS  
 Vallensbækvej 21  
DK-2605 Brøndby  
Phone +45 43 631111  
Fax +45 43 630505  
mail@dk.ebmpapst.com  
www.ebmpapst.dk

 **Estonia**  
 ebm-papst Oy, Eesti Filiaal  
 Kesk tee 13  
Aaviku küla, Jüri Tehnopark  
EST-75301 Rae Vald, Harjumaa  
Phone +372 65569-78  
Fax +372 65569-79  
www.ebmpapst.ee

 **Finland**  
 ebm-papst Oy  
 Puistotie 1  
FIN-02760 Espoo  
Phone +358 9 887022-0  
Fax +358 9 887022-13  
mailbox@ebmpapst.fi  
www.ebmpapst.fi

 **France**  
 ebm-papst sarl  
 ZI Nord - rue A. Mohler  
BP 62  
F-67212 Obernai Cedex  
Phone +33 820 326266  
Fax +33 3 88673883  
info@ebmpapst.fr  
www.ebmpapst.fr

 **Greece**  
 Helcoma  
 Th. Rotas & Co OE  
Davaki 65  
GR-17672 Kallithea-Attiki  
Phone +30 210 9513-705  
Fax +30 210 9513-490  
contact@helcoma.gr  
www.helcoma.gr

 **Hungary**  
 ebm-papst Industries Kft.  
 Ezred u. 2.  
H-1044 Budapest  
Phone +36 1 8722-190  
Fax +36 1 8722-194  
office@hu.ebmpapst.com

 **Iceland**  
 RJ Engineers  
 Stangarhyl 1a  
IS-110 Reykjavik  
Phone +354 567 8030  
Fax +354 567 8015  
rj@rj.is  
www.rj.is





 **Ireland**  
 ebm-papst UK Ltd.  
 Chelmsford Business Park  
GB-Chelmsford Essex CM2 5EZ  
Phone +44 1245 468555  
Fax +44 1245 466336  
sales@uk.ebmpapst.com  
www.ebmpapst.co.uk

 **AuBren Limited**  
 Portlaoise Business & Technology Park  
 Mountrath Road  
IRL-Portlaoise, Co. Laois  
Phone +353 57 8664343  
Fax +353 57 8664346  
sales@ie.aubren.com  
www.aubren.com

 **Italy**  
 ebm-papst Srl  
 Via Cornaggia 108  
I-22076 Mozzate (Co)  
Phone +39 0331 836201  
Fax +39 0331 821510  
info@it.ebmpapst.com  
www.ebmpapst.it

 **Macedonia**  
 ebm-papst Industries Kft.  
 Ezred u. 2.  
H-1044 Budapest  
Phone +36 1 8722-190  
Fax +36 1 8722-194  
office@hu.ebmpapst.com



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# ebm-papst in Europe


 **Netherlands**  
 ebm-papst Benelux B.V.  
 Engelseweg 127  
 NL-5705 AC Helmond  
 Phone +31 492 502-900  
 Fax +31 492 502-950  
 verkoop@nl.ebmpapst.com  
 www.ebmpapst.nl

 **Norway**  
 ebm-papst AS  
 P.B. 173 Holmlia  
 N-1203 Oslo  
 Phone +47 22 763340  
 Fax +47 22 619173  
 mailbox@ebmpapst.no  
 www.ebmpapst.no

 **Poland**  
 ebm-papst Polska Sp. z o.o.  
 ul. Annopol 4A  
 PL-03236 Warszawa  
 Phone +48 22 6757819  
 Fax +48 22 6769587  
 office@ebmpapst.pl  
 www.ebmpapst.pl

 **Portugal**  
 ebm-papst (Portugal), Lda.  
 Centro Empresarial de Alverca  
 Rua de Adarse, Vale D'Ervas  
 Corpo D / Fracção 3  
 P-2615-178 Alverca do Ribatejo  
 Phone +351 218 394 880  
 Fax +351 218 394 759  
 info@pt.ebmpapst.com  
 www.ebmpapst.pt

 **Romania**  
 ebm-papst Romania S.R.L.  
 Str. Tarnavei Nr. 20  
 RO-500327 Brasov  
 Phone +40 268 331859  
 Fax +40 268 312805  
 dadasludovic@xnet.ro

 **Russia**  
 ebm-papst Ural GmbH  
 Posadskaja-Strasse, 23(E), 3  
 RU-620102 Ekaterinburg  
 Phone +7 343 2338000  
 Fax +7 343 2337788  
 Konstantin.Molokov@ru.ebmpapst.com  
 www.ebmpapst.ur.ru

 ebm-papst Rus GmbH  
 proezd 4529, vladenie 5, stroenie 1  
 RU-141000 Mytistschi, Oblast Moskau  
 Phone +7 495 9807524  
 Fax +7 495 5140924  
 info@ebmpapst.ru  
 www.ebmpapst.ru




 **Serbia & Montenegro**  
 ebm-papst Industries Kft.  
 Ezred u. 2.  
 H-1044 Budapest  
 Phone +36 1 8722-190  
 Fax +36 1 8722-194  
 office@hu.ebmpapst.com

 **Spain**  
 ebm-papst Ibérica S.L.  
 Avda. del Sistema Solar, 29  
 E-28830 San Fernando de Henares (Madrid)  
 Phone +34 91 6780894  
 Fax +34 91 6781530  
 ventas@ebmpapst.es  
 www.ebmpapst.es

 **Sweden**  
 ebm-papst AB  
 Äggelundavägen 2  
 S-17562 Järfälla  
 Phone +46 10 4544400  
 Fax +46 8 362306  
 info@ebmpapst.se  
 www.ebmpapst.se

 **Switzerland**  
 ebm-papst AG  
 Rütisbergstrasse 1  
 CH-8156 Oberhasli  
 Phone +41 44 73220-70  
 Fax +41 44 73220-77  
 verkauf@ebmpapst.ch  
 www.ebmpapst.ch

 **Turkey**  
 Akantel Elektronik San. Tic. LTD. Sti.  
 Atatürk Organize Sanayi  
 Bölgesi 10007 SK. No.:6  
 TR-35620 Cigli-Izmir  
 Phone +90 232 3282090  
 Fax +90 232 3280270  
 akantel@akantel.com.tr  
 www.ebmpapst.com.tr

 **Ukraine**  
 ebm-papst Ukraine LLC  
 Lapse Boulevard, 4, Building 21  
 UA-03067 Kiev  
 Phone +38 044 2063091  
 Fax +38 044 2063091  
 mail@ebmpapst.ua  
 www.ebmpapst.ua

 **United Kingdom**  
 ebm-papst UK Ltd.  
 Chelmsford Business Park  
 GB-Chelmsford Essex CM2 5EZ  
 Phone +44 1245 468555  
 Fax +44 1245 466336  
 sales@uk.ebmpapst.com  
 www.ebmpapst.co.uk

 ebm-papst Automotive & Drives (UK) Ltd.  
 The Smithy  
 Fidlers Lane  
 GB-East Ilsley, Berkshire RG20 7LG  
 Phone +44 1635 2811-11  
 Fax +44 1635 2811-61  
 A&Dsales@uk.ebmpapst.com  
 www.ebmpapst-ad.com

# ebm-papst in America and Africa

## America



### Argentina



ebm-papst de Argentina S.A.  
Hernandarias 148 Lomas del Mirador  
Pcia. de Buenos Aires (1752)  
Phone +54 11 46576135  
Fax +54 11 46572092  
ventas@ar.ebmpapst.com  
www.ebmpapst.com.ar



### Brazil



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



### Canada



ebm-papst Canada Inc.  
1800 Ironstone Manor, Unit 2  
CDN-Pickering, Ontario, L1W3J9  
Phone +1 905 420-3533  
Fax +1 905 420-3772  
sales@ca.ebmpapst.com  
www.ebmpapst.ca



### Mexico



ebm Industrial S. de R.L. de C.V.  
Paseo de Tamarindos 400-A-5º Piso  
Col. Bosques de las Lomas  
MEX-Mexico 05120, D.F.  
Phone +52 55 3300-5144  
Fax +52 55 3300-5243  
sales@mx.ebmpapst.com  
www.ebmpapst.com.mx

## USA



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



ebm-papst Automotive & Drives, Inc.  
3200 Greenfield, Suite 255  
USA-Dearborn, MI 48120  
Phone +1 313 406-8080  
Fax +1 313 406-8081  
automotive@us.ebmpapst.com  
www.ebmpapst-automotive.us





## Africa



### South Africa



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

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# ebm-papst in Asia and Australia

## Asia

 **China**  
 ebm-papst Ventilator (Shanghai) Co., Ltd.  
 No. 418, Huajing Road  
 WaiGaoQiao Free Trade Zone  
 No. 2001, Yang Gao (N) Road  
 VRC-200131 Shanghai, P.R. of China  
 Phone +86 21 5046-0183  
 Fax +86 21 5046-1119  
 sales@cn.ebmpapst.com  
 www.ebmpapst.com.cn

 **Hong Kong**  
 ebm-papst Hong Kong Ltd.  
 Unit No. 13,9 / F  
 Technology Park, 18 On Lai Street  
 Siu Lek Yuen, Shatin N.T.  
 Hong Kong - P.R. of China  
 Phone +852 2145-8678  
 Fax +852 2145-7678  
 info@hk.ebmpapst.com

 **India**  
 ebm-papst India Pvt. Ltd.  
 26/3, G.N.T. Road, Erukkencherry  
 IND-Chennai-600118  
 Phone +91 44 25372556  
 Fax +91 44 25371149  
 sales@in.ebmpapst.com  
 www.ebmpapst.in

 **Indonesia**  
 ebm-papst Indonesia  
 Representative Office  
 German Centre, 4th Floor, Suite 4470  
 Jl. Kapt. Subijono Dj. Bumi Serpong Damai  
 RI-15321 Tangerang  
 Phone +62 21 5376250  
 Fax +62 21 5388305  
 salesdept@id.ebmpapst.com

 **Israel**  
 Polak Bros. Import Agencies Ltd.  
 9 Hamefalsim Street  
 IL-Kiryat Arie, Petach-Tikva 49514  
 Phone +972 3 9100300  
 Fax +972 3 5796679  
 polak@polak.co.il  
 www.polak.co.il

 **Japan**  
 ebm-papst Industries Japan K.K.  
 12th Floor, Benex S-3 Bldg.  
 3-20-8 Shinyokohama, Kohoku-ku  
 J-222-0033 Yokohama  
 Phone +81 45 47057-51  
 Fax +81 45 47057-52  
 info@jp.ebmpapst.com  
 www.ebmpapst.jp

 **Korea**  
 ebm-papst Korea Co. Ltd.  
 6F, Trutech Bldg.  
 B 6-2, Digital Media City (DMC)  
 Sangam-Dong, Mapo-Gu  
 ROK-Seoul 121-270  
 Phone +82 2 366213-24  
 Fax +82 2 366213-26  
 info@kr.ebmpapst.com  
 www.ebmpapst.co.kr

 **Malaysia**  
 ebm-papst Malaysia  
 Representative Office  
 Unit 12-2, Jalan USJ Sentral 3  
 Persiaran Subang, Selangor Darul Ehsan  
 MAL-47600 Subang Jaya  
 Phone +60 3 8024-1680  
 Fax +60 3 8024-8718  
 salesdept@my.ebmpapst.com

 **Singapore**  
 ebm-papst SEA Pte. Ltd.  
 No. 23 Ubi Road 4  
 #06-00 Olympia Industrial Building  
 SGP-Singapore 408620  
 Phone +65 65513789  
 Fax +65 68428439  
 salesdept@sg.ebmpapst.com

 **Taiwan**  
 ETECO Engineering & Trading Corp.  
 10F-I, No. 92, Teh-Wei Str.  
 RC-Tsow-Inn District, Kaohsiung  
 Phone +886 7 557-4268  
 Fax +886 7 557-2788  
 eteco@ms22.hinet.net  
 www.ebmpapst.com.tw

 **Thailand**  
 ebm-papst Thailand Co., Ltd.  
 99/9 Moo 2, Central Chaengwattana Tower  
 14th Floor, Room 1402  
 Chaengwattana Road Bangtarad, Pakkret  
 THA-11120 Nonthaburi  
 Phone +66 2 8353785-7  
 Fax +66 2 8353788  
 salesdept@th.ebmpapst.com

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

 **Vietnam**  
 ebm-papst Vietnam  
 Representative Office  
 Room #102, 25 Nguyen Van Thu Street  
 District 1  
 VN-Ho Chi Minh City  
 Phone +84 8 39104099  
 Fax +84 8 39103970  
 linh.nguyen@vn.ebmpapst.com

## Australia

---



### Australia

ebm-papst A&NZ Pty Ltd.



10 Oxford Road



AUS-Laverton North, Victoria, 3026

Phone +61 3 9360-6400

Fax +61 3 9360-6464

[sales@ebmpapst.com.au](mailto:sales@ebmpapst.com.au)

[www.ebmpapst.com.au](http://www.ebmpapst.com.au)



### New Zealand

ebm-papst A&NZ Pty Ltd.



102 Henderson Valley Road



NZ-Henderson, Auckland 1230

Phone +64 9 837-1884

Fax +64 9 837-1899

[sales@ebmpapst.com.au](mailto:sales@ebmpapst.com.au)

[www.ebmpapst.com.au](http://www.ebmpapst.com.au)