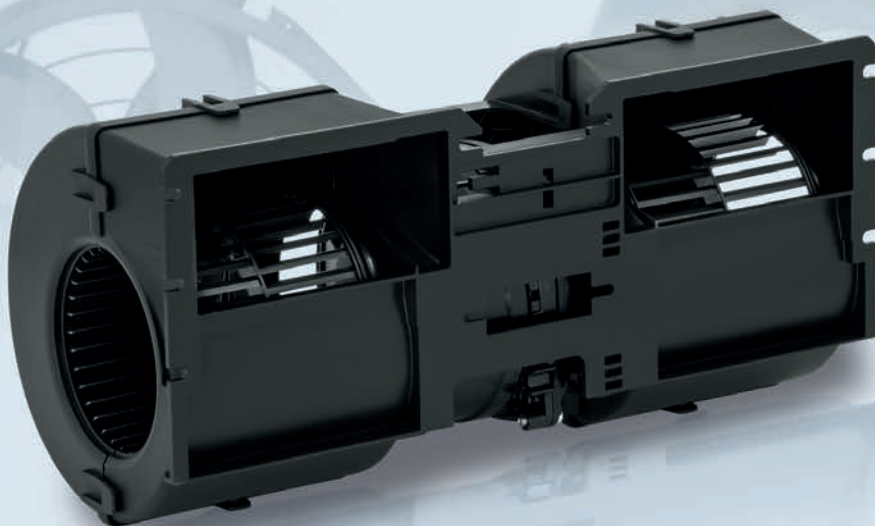


Automotive BL-DC Fans for Commercial Vehicles

Edition 2016-08

ebmpapst

The engineer's choice



Automotive BL-DC Fans for Commercial Vehicles

Our automotive products BL-DC axial fans and BL-DC dual centrifugal fans with housing are ground breakers in the field of commercial vehicle air conditioning.

They not only meet the increased demands for comfort, e.g. in buses but also work wear-free for over 40.000 operating hours as they are brushless.

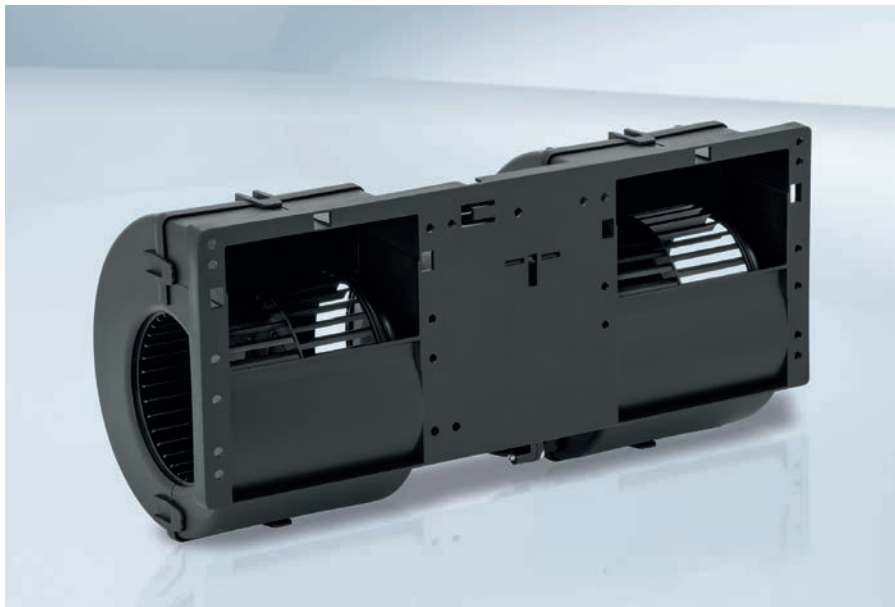
No additional maintenance, no additional servicing.

This corresponds to the usual reliability expected from ebm-papst.

Data is subject to change without notice at ebm-papst discretion.

Benefits and characteristics at a glance

- over 40.000 operating hours
- variable speed control
- high efficiency
- low sound emission thanks to aerodynamically optimized impellers
- increased reliability due to the electronics' high integration density
- can be retrofitted into existing systems
- compliance with the most stringent EMC requirements
- configurable control curve
- optimized voltage independence
- extended temperature range
- long-life ball bearings



EC dual centrifugal blower: for top performance in minimal installation space; easy to regulate and extremely quiet.

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About ebm-papst

As a leader in technologies for ventilation and drive engineering, ebm-papst is in demand as an engineering partner in many sectors. 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 our entire product range is 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 incomparable 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.

Proximity to our customers.

ebm-papst owns 57 sales offices worldwide, of which 47 are subsidiaries with an extensive network of sales representatives and distributors. 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, ISO/TS 16949-2 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 sporting, cultural activities 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-papst's success takes off with the new 68 motor.
- 1972** The first ebm-papst 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.



Ideas for changing technology in commercial vehicles

Climate comfort in a commercial vehicle is anything but a question of convenience. Both the transportation of people in buses and coaches, as well truck journeys which are as stress and fatigue-free as possible, place high demands on vehicle technology; predominantly air conditioning, ventilation, and heating.

For many years, major bus manufacturers have been installing air conditioners with brushless and wear-free centrifugal blowers and axial fans from ebm-papst. In the mean time, these products are also now widely used in the air conditioning and ventilation systems for the cabs in trucks, tractors and construction machinery, as well as in transport refrigeration systems.

A number of air conditioning manufacturers rely on our experience and outstanding expertise in the core competencies of engine development, aerodynamics, and electronics.



Counteracting high demands with new technologies:

In modern commercial vehicles, EC technology has now become standard. Our new EC axial fans and EC dual centrifugal fans with second generation housing set a precedent in global commercial vehicle air conditioning. Our EC fans have even been able to demonstrate their clear superiority in hot countries and tropical regions, where they have also proven their worth.

But it is not just in the field of air conditioning products where customers are relying on ebm-papst products: EC fans are increasingly being used for cooling heat exchangers in the engine compartment of vehicles.

Fans and blowers:

for commercial vehicle air conditioning and cooling of individual components.



However, ebm-papst has even more to offer:

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

In comparison:

In brush motors from various manufacturers, the commutator assumes the role of current distribution to the coils. The commutator consists of copper fins embedded in an insulating compound. Mechanical springs push the integrated carbon brushes to the commutator. These two rubbing mechanical components are the weak spot of conventional DC motors. After around 5,000 operating hours, the carbon brushes are run down and the commutator is worn. As a result, the entire blower must be replaced. In addition, it is only possible to regulate speed via external electronics.

The brushless DC motors from ebm-papst are completely different. Here, an electronic controller directly integrated in the motor has the task of distributing current. No brushes means no wearing parts. This increases the service life of these motors to more than 40,000 hours. The user not only saves money in terms of replacement parts and repair costs, he also avoids unproductive downtimes and a possible loss of image.



EC motors are energy efficient, because the integrated electronics with variable speed control only draw the energy actually required from the on-board network. In the commercial vehicle sector, it is also crucial that fans withstand constantly changing environmental influences. Standard products would only provide unsatisfactory results here. For this reason, automotive products from ebm-papst are also reliably protected against load dumping, reverse polarity, shock and vibration, as well as damage from moisture and dirt penetration across a wide temperature range.



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

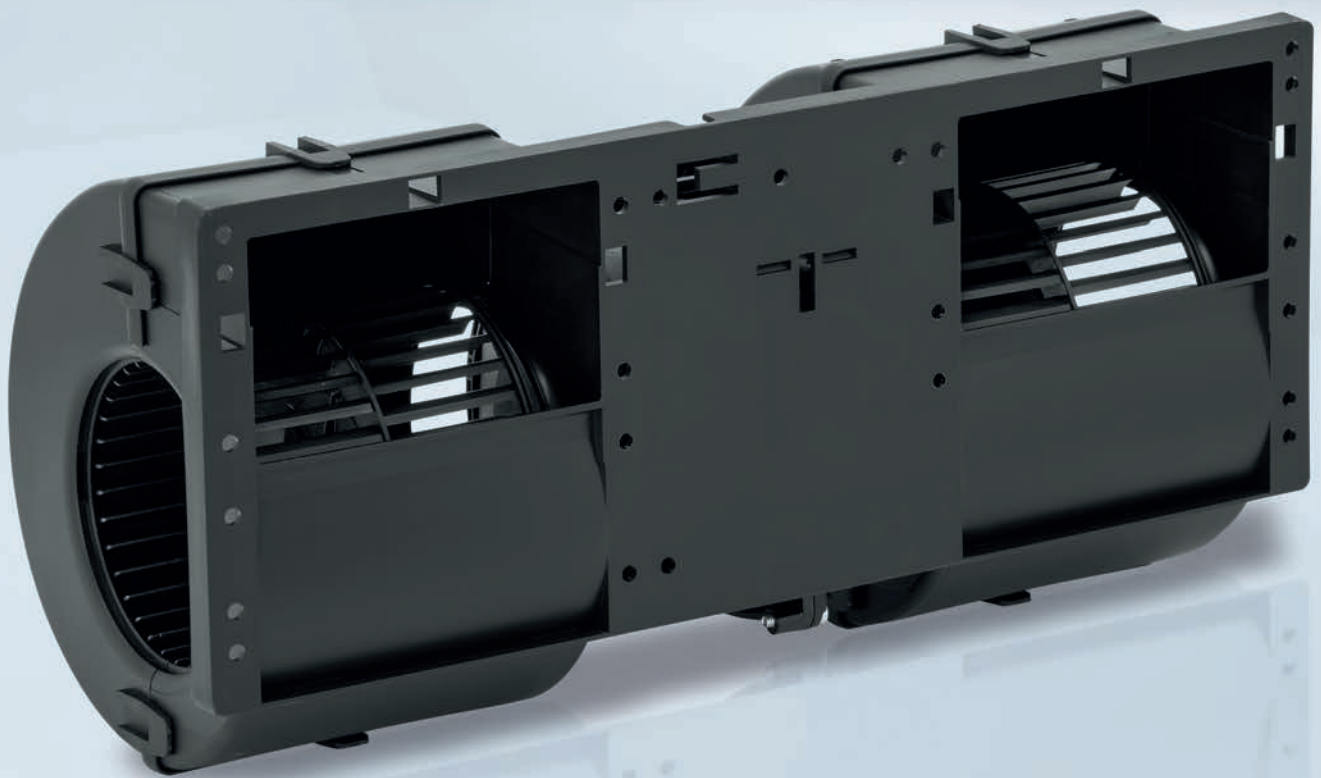
Apart from the considerably longer service life, our intelligent EC fans provide advanced control and regulation possibilities. The functionality of the fans can be checked via a diagnostic output at any time. Furthermore, these display excellent electromagnetic compatibility traits and operate extremely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





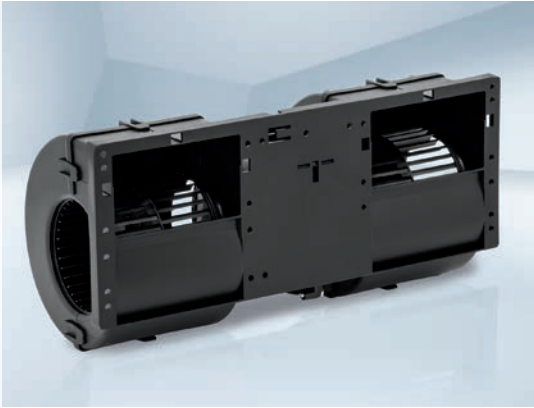
EC dual centrifugal fans with housing

with brushless DC motor "Premium"



EC dual centrifugal fan

with housing, for automotive applications, Ø 097

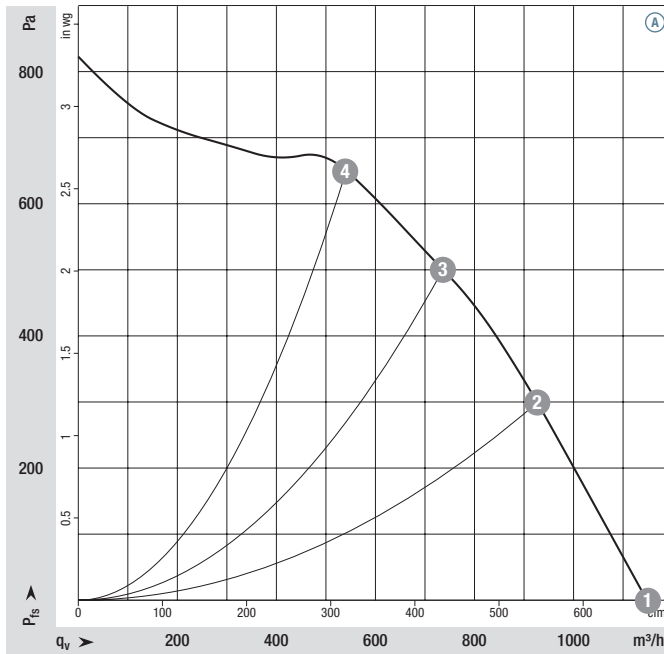


- **Material:** Housing: PP plastic, black (according to UL 94 HB)
Blades: PA plastic (according to UL 94 HB)
- **Degree of protection:** IP 24 KM
- **Insulation class:** "B" according to EN 60335-1
- **Installation position:** Any
- **Mode:** Continuous operation (S1)
- **Mounting:** Maintenance-free ball bearings on both sides
- **Motor protection:** Thermal overload protection, reverse polarity and locked-rotor protection, load dump protection, undervoltage detection
- **EMC regulations:** VDE 0879-2
- **Approvals:** EAC; E1 in preparation

Nominal data		Curve	Nominal voltage	Nominal voltage range	Air flow	Speed	Input power	Input current	Min. back pressure	Sound power level	Perm. ambient temp.	Weight	Techn. features and connection diagram
Type	Motor	VDC	VDC	m ³ /h	rpm	W	A	Pa	dB(A)	°C	kg		
K3G 097-AF22 -02⁽¹⁾	M3G 084-BF	Ⓐ	26	16-32	1150	3500	325	12,5	0	81	-40..+85 ⁽²⁾	2,0	P. 79 / D)

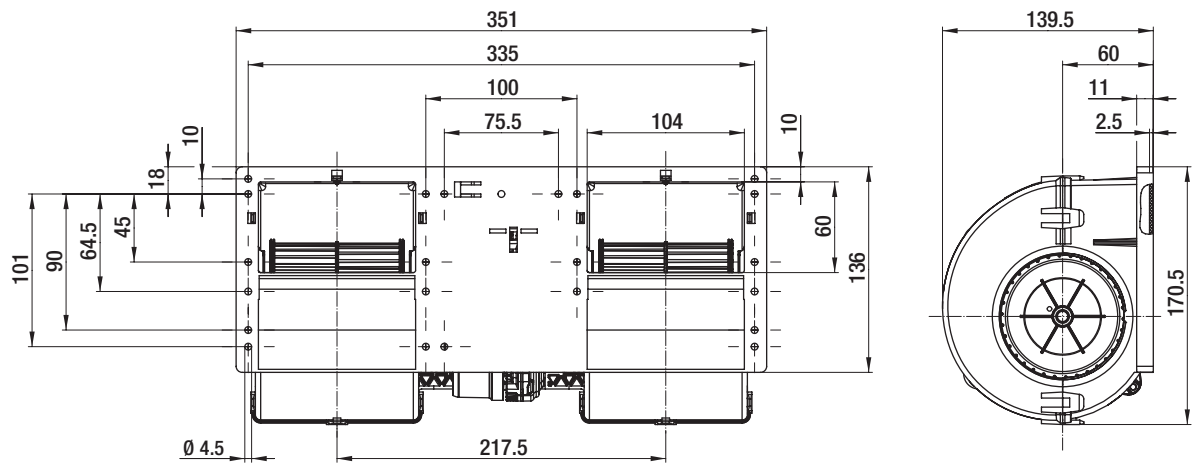
Subject to change (1) 24-volt version (2) above +70 °C with power derating

Curves:



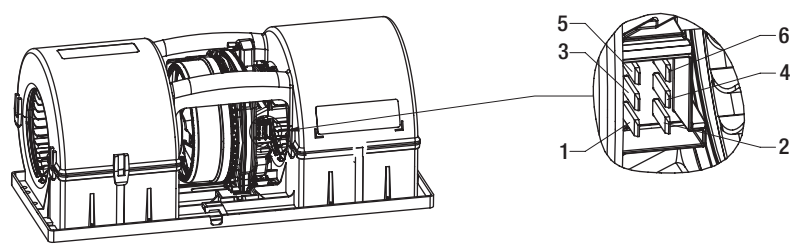
	n rpm	P _{ed} W	I A	L _{wA} dB(A)
Ⓐ 1	3500	325	12,50	81
Ⓐ 2	4025	293	11,25	79
Ⓐ 3	4495	272	10,45	78
Ⓐ 4	4930	250	9,59	80

Air performance measured according to: ISO 5801, installation category A, in 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. See Page 86 ff for detailed information.



Connector detail

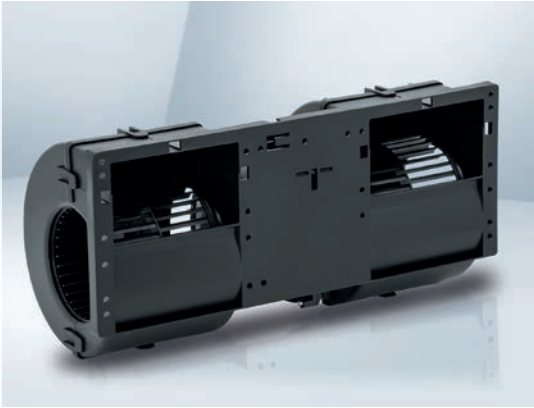
- 1 = UN
- 2 = GND
- 3 = PWM/LIN
- 4 = INV LIN
- 5 = ABSENK
- 6 = diagnostic output



Tyco Junior Power Timer 929505-2, 6-pole, coded.
 Mating connector Tyco 929504-2 (not included in scope of delivery).
 Cable (460 mm) with mating connector, part no. 02001-4-1021 (not included in scope of delivery).

EC dual centrifugal fan

with housing, for automotive applications, Ø 097

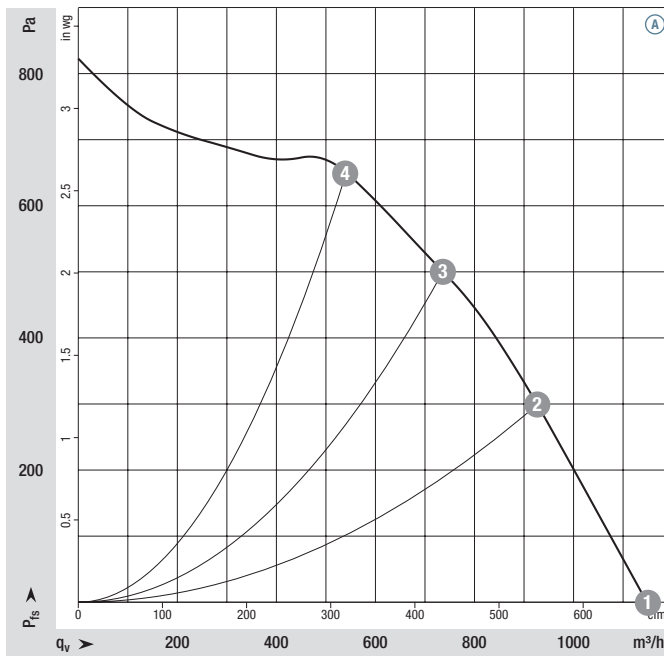


- **Material:** Housing: PP plastic, black (according to UL 94 HB)
Blades: PA plastic (according to UL 94 HB)
- **Degree of protection:** Motor: IP 24 KM, electronics: IP 66 / 69 K
- **Insulation class:** "B" according to EN 60335-1
- **Installation position:** Any
- **Mode:** Continuous operation (S1)
- **Mounting:** Maintenance-free ball bearings on both sides
- **Motor protection:** Thermal overload protection, reverse polarity and locked-rotor protection, load dump protection, undervoltage detection
- **EMC regulations:** VDE 0879-2
- **Qualified in accordance with:** DIN ISO 16750
- **Approvals:** EAC; E1 in preparation

Nominal data		Curve	Nominal voltage	Nominal voltage range	Air flow	Speed	Input power	Input current	Min. back pressure	Sound power level	Perm. ambient temp.	Weight	Techn. features and connection diagram
Type	Motor	VDC	VDC	m ³ /h	rpm	W	A	Pa	dB(A)	°C	kg		
K3G 097-AF22 -07 ⁽¹⁾	M3G 084-BF	Ⓐ	26	16-32	1150	3500	325	12,5	0	81	-40..+85 ⁽²⁾	2,0	P. 79 / D)

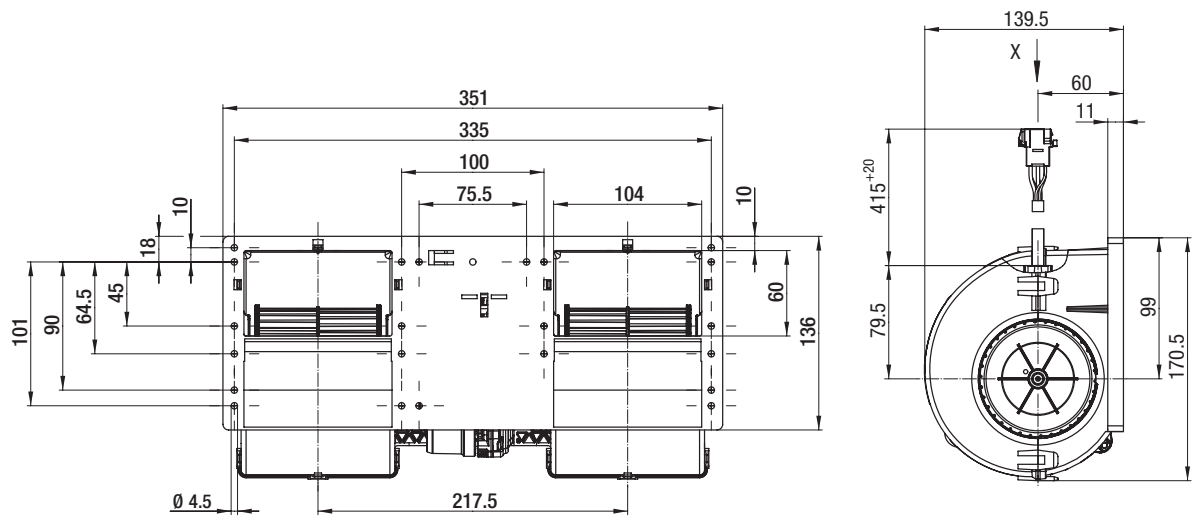
Subject to change (1) 24-volt version (2) above +70 °C with power derating This Typee is also available with a sealed plug.

Curves:



	n rpm	P _{ed} W	I A	L _{wA} dB(A)
Ⓐ 1	3500	325	12,50	81
Ⓐ 2	4025	293	11,25	79
Ⓐ 3	4495	272	10,45	78
Ⓐ 4	4930	250	9,59	80

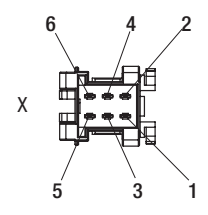
Air performance measured according to: ISO 5801, installation category A, in ebm-papst scroll housing without contact protection. Intake-side sound level: L_{wA} according to ISO 13347, L_{pA} measured at 1 m distance from fan axis. The values given are only applicable under the specified measuring conditions 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. See Page 86 ff for detailed information.



Cable with plug (Plug is not sealed by the customer)

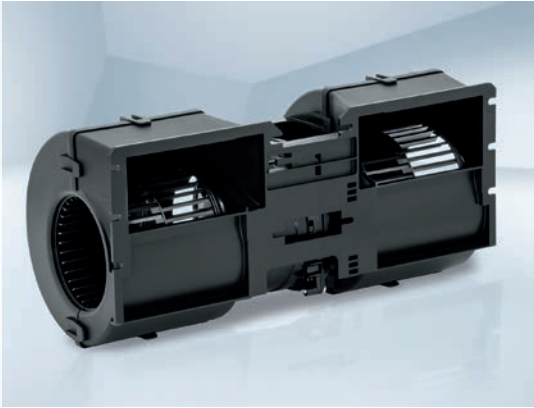
- 1 = +UB black
- 2 = GND brown
- 3 = PWM/LIN yellow
- 4 = INVLIN orange
- 5 = ABSENK blue
- 6 = diagnostic output white

Tyco Junior Power Timer 929505-2, 6-pole, coded.
 Mating connector Tyco 929504-2 (not included in scope of delivery).



EC dual centrifugal fan

with housing, for automotive applications, Ø 97

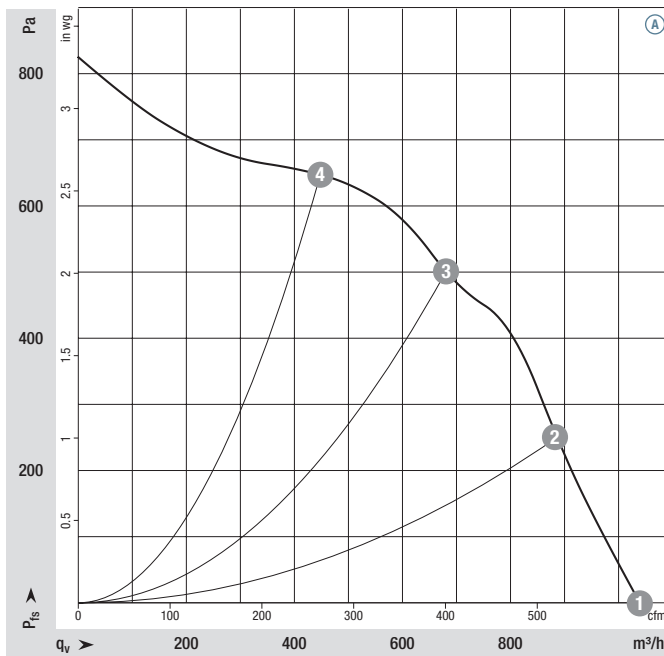


- **Material:** Housing: PP plastic, black (according to UL 94 HB)
Blades: PA plastic (according to UL 94 HB)
- **Degree of protection:** IP 24 KM
- **Insulation class:** "B" according to EN 60335-1
- **Installation position:** Any
- **Mode:** Continuous operation (S1)
- **Mounting:** Maintenance-free ball bearings on both sides
- **Motor protection:** Thermal overload protection, reverse polarity and locked-rotor protection, load dump protection, undervoltage detection
- **EMC regulations:** VDE 0879-2
- **Approvals:** EAC; E1 in preparation

Nominal data		Curve	Nominal voltage	Nominal voltage range	Air flow	Speed	Input power	Input current	Min. back pressure	Sound power level	Perm. ambient temp.	Weight	Techn. features and connection diagram
Type	Motor	VDC	VDC	m ³ /h	rpm	W	A	Pa	dB(A)	°C	kg		
K3G 097-BF22 -02 ⁽¹⁾	M3G 084-BF	Ⓐ 26	16-32	1040	3700	300	11,7	0	80	-40..+85 ⁽²⁾	2,0	P. 79 / D)	

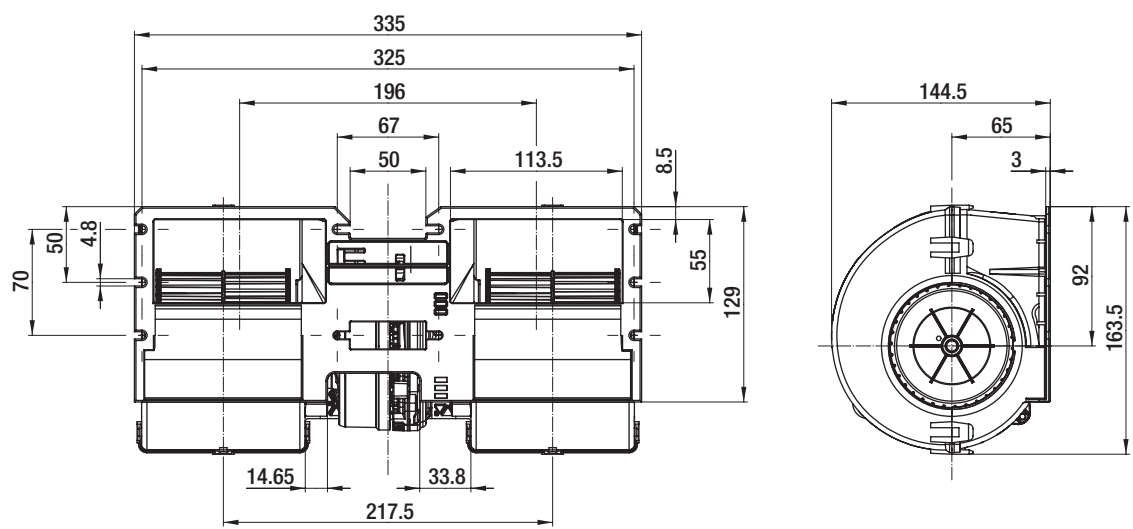
Subject to change (1) 24-volt version (2) above +70 °C with power derating

Curves:



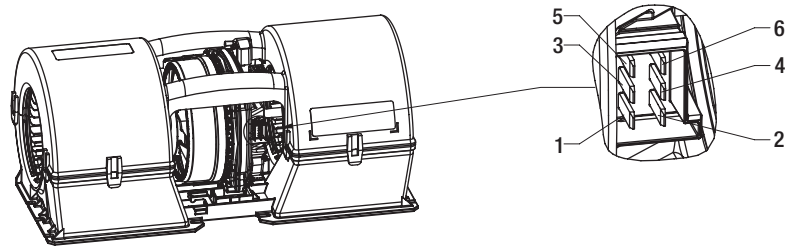
	n rpm	P _{ed} W	I A	L _{wA} dB(A)
Ⓐ 1	3700	300	11,70	80
Ⓐ 2	4060	284	10,91	78
Ⓐ 3	4580	263	10,10	78
Ⓐ 4	4980	217	8,35	80

Air performance measured according to: ISO 5801, installation category A, in 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. See Page 86 ff for detailed information.



Connector detail

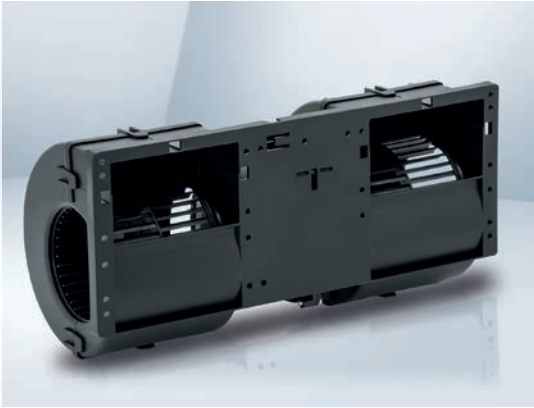
- 1 = UN
- 2 = GND
- 3 = PWM/LIN
- 4 = INVLIN
- 5 = ABSSENK
- 6 = diagnostic output



Tyco Junior Power Timer 929505-2, 6-pole, coded.
 Mating connector Tyco 929504-2 (not included in scope of delivery).
 Cable (460 mm) with mating connector, part no. 02001-4-1021 (not included in scope of delivery).

EC dual centrifugal fan

with housing, for automotive applications, Ø 097



- **Material:** Housing: PA plastic, black (according to UL 94 V0)
Blades: PA plastic, black (according to UL 94 V0)
- **Degree of protection:** Motor: IP 24 KM, electronics: IP 66 / 69 K
- **Insulation class:** "B"
- **Installation position:** Any
- **Mode:** Continuous operation (S1)
- **Mounting:** Maintenance-free ball bearings on both sides
- **Motor protection:** Thermal overload protection, reverse polarity and locked-rotor protection, load dump protection, undervoltage detection
- **EMC regulations:** VDE 0879-2
- **Approvals:** EAC; E1 in preparation

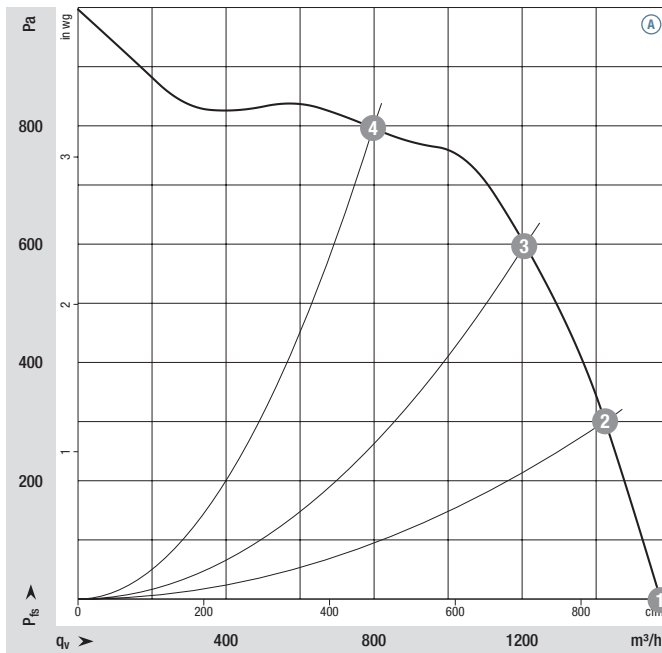
Nominal data

Type	Motor	Curve	Nominal voltage VDC	Nominal voltage range VDC	Air flow m ³ /h	Speed rpm	Input power W	Input current A	Min. back pressure Pa	Sound power level dB(A)	Perm. ambient temp. °C	Weight kg	Techn. features and connection diagram
K3G 097-AS82 -82 ⁽¹⁾	M3G 084-BF	Ⓐ	26	16-32	1574	4680	740	28,0	0	88	-40..+60	2,0	P. 83 / Q)

Subject to change

(1) 24-volt version

Curves:



	n rpm	P _{ed} W	I A	L _{wA} dB(A)
Ⓐ 1	4680	740	28,0	88
Ⓐ 2	5025	740	28,0	87
Ⓐ 3	5380	659	25,3	85
Ⓐ 4	5500	441	16,9	84

Air performance measured according to: ISO 5801, installation category A, in 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. See Page 86 ff for detailed information.

EC dual centrifugal fan

with housing, for automotive applications, Ø 097



- **Material:** Housing: PP plastic, black (according to UL 94 HB)
Blades: PA plastic (according to UL 94 HB)
- **Degree of protection:** IP 24 KM (without connectors)
- **Insulation class:** "B" according to EN 60335-1
- **Installation position:** Any
- **Mode:** Continuous operation (S1)
- **Mounting:** Maintenance-free ball bearings on both sides
- **Motor protection:** Thermal overload protection, reverse polarity and locked-rotor protection, load dump protection, undervoltage detection
- **EMC regulations:** VDE 0879-2

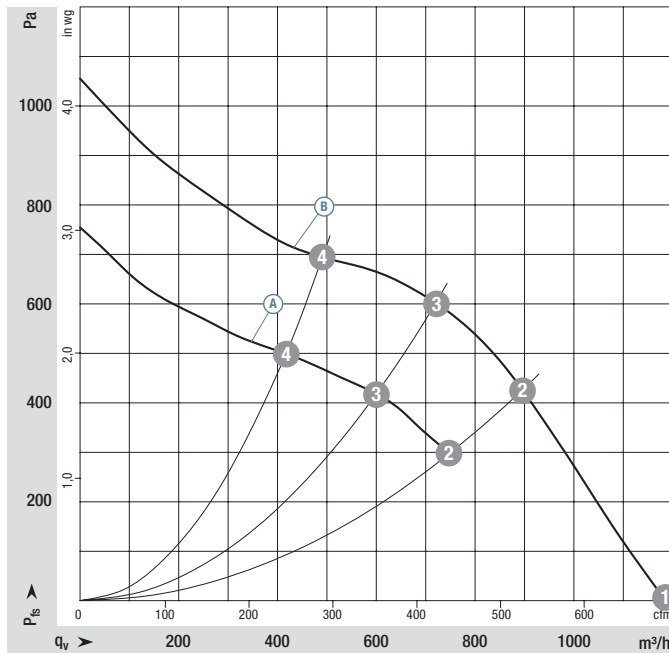
Nominal data		Curve	Nominal voltage	Nominal voltage range	Air flow	Speed	Input power	Input current	Min. back pressure	Sound power level	Perm. ambient temp.	Weight	Connection diagram
Type	Motor	VDC	VDC	m ³ /h	rpm	W	A	Pa	dB(A)	°C	kg		
K3G 097-AK32 -42⁽¹⁾	M3G 074-BF	Ⓐ	13	9-15	750	3630	195	15,0	300	70	-40..+85 ⁽²⁾	2,3	P. 74 / A)
K3G 097-AK36 -55⁽¹⁾	M3G 074-BF	Ⓑ	13	9-15	1180	3740	385	29,5	0	76	-40..+85 ⁽²⁾	2,6	P. 74 / A)

Subject to change

(1) 12-volt version

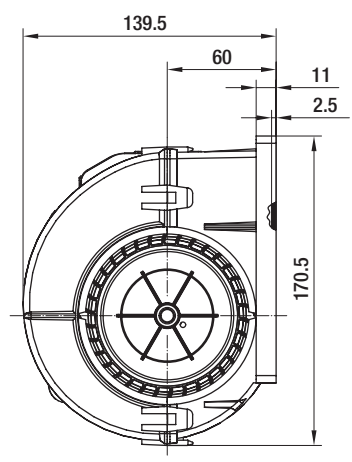
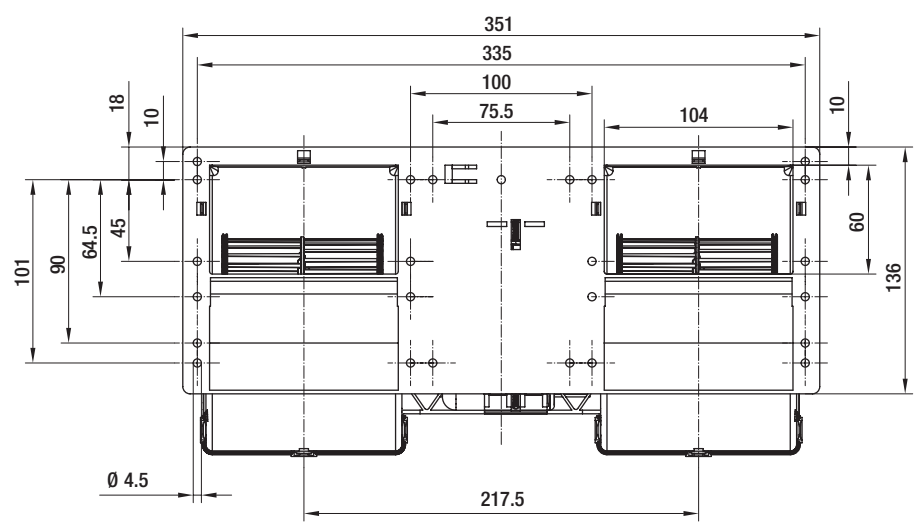
(2) wide open, not recommended for continuous operation at 85°C

Curves:

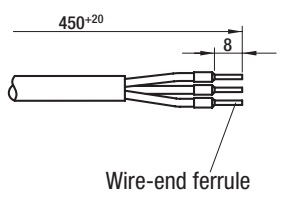


	n rpm	P _{ed} W	I A	L _{wA} dB(A)
Ⓐ ①	---	---	---	---
Ⓐ ②	3630	195	15,0	70
Ⓐ ③	3875	177	13,5	71
Ⓐ ④	4135	143	11,0	72
Ⓑ ①	3740	385	29,5	76
Ⓑ ②	4400	344	26,4	75
Ⓑ ③	4775	309	23,8	76
Ⓑ ④	4970	234	18,0	77

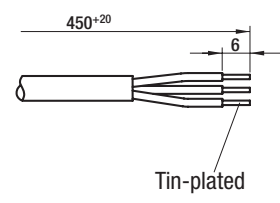
Air performance measured according to: ISO 5801, installation category A, in ebmpapst scroll housing without contact protection. Intake-side sound level: L_{wA} according to ISO 13347, L_{pA} measured at 1 m distance from fan axis. The values given are only applicable under the specified measuring conditions 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. See Page 86 ff for detailed information.



Cable detail:
(K3G097-AK32-42)
 UN black
 PWM/LIN yellow
 GND brown



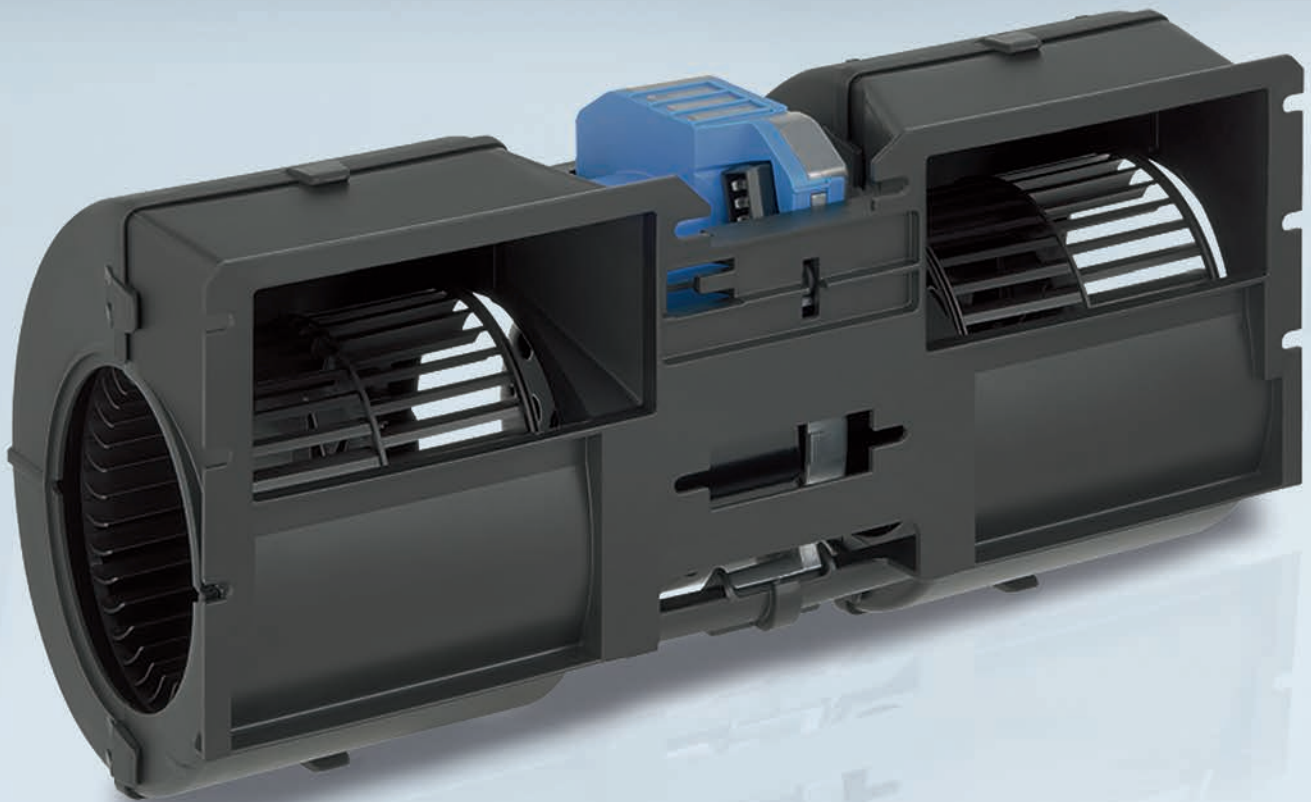
Cable detail:
(K3G097-AK36-55)
 UN black
 PWM/LIN yellow
 GND brown





EC dual centrifugal fans with housing

with brushless DC motor "Basic"



EC dual centrifugal fan

with housing, for automotive applications, Ø 097

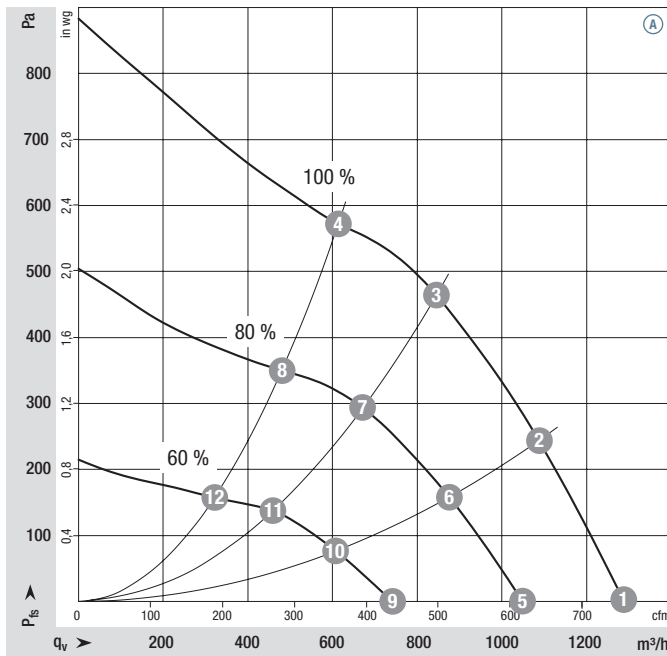


- **Material:** Housing: PP plastic, black (according to UL 94 HB)
Blades: PA plastic (according to UL 94 HB)
- **Degree of protection:** IP 24 KM (without connectors)
- **Insulation class:** "B" according to EN 60335-1
- **Installation position:** Any
- **Mode:** Continuous operation (S1)
- **Mounting:** Maintenance-free ball bearings on both sides
- **Motor protection:** Thermal overload protection, reverse polarity and locked-rotor protection, load dump protection, undervoltage detection
- **EMC regulations:** VDE 0879-2
- **Approvals:** EAC, E1

Nominal data		Curve	Nominal voltage	Nominal voltage range	Air flow	Speed	Input power	Input current	Min. back pressure	Sound power level	Perm. ambient temp.	Weight	Connection diagram
Type	Motor	VDC	VDC	m ³ /h	rpm	W	A	Pa	dB(A)	°C	kg		
K3G 097-AK34 -65 ⁽¹⁾	M3G 074-CF	Ⓐ 26	16-32	1290	3830	394	15,2	0	79	-40..+85 ⁽²⁾	2,0	P. 74 / F)	

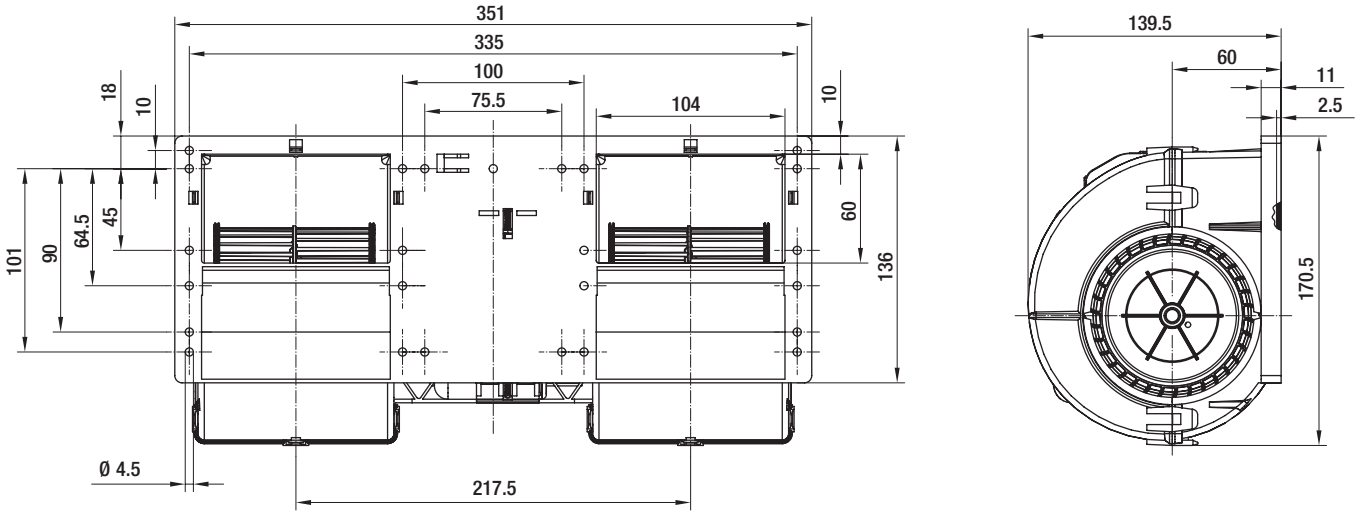
Subject to change (1) 24-volt version (2) wide open, not recommended for continuous operation at 85°C

Curves:



	n rpm	P _{ed} W	I A	L _{wA} dB(A)
Ⓐ 1	3830	394	15,2	79
Ⓐ 2	4100	347	13,3	76
Ⓐ 3	4380	285	10,9	75
Ⓐ 4	4630	238	9,1	75
Ⓐ 5	3150	215	8,3	75
Ⓐ 6	3330	185	7,1	72
Ⓐ 7	3510	149	5,7	70
Ⓐ 8	3660	120	4,6	69
Ⓐ 9	2240	79	3,1	66
Ⓐ 10	2340	67	2,6	66
Ⓐ 11	2430	53	2,0	61
Ⓐ 12	2460	43	1,7	60

Air performance measured according to: ISO 5801, installation category A, in ebmpapst 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. See Page 86 ff for detailed information.

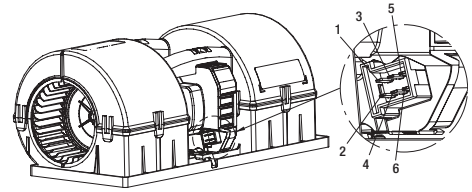


Speed setting

Pin	5	4	3	
60%	H	NC	NC	
80%	NC	H	NC	NC = not used
100%	NC	NC	H	H = UN (26 V)

- Connector detail**
- 1 = + UB
 - 2 = GND
 - 3 = PWM/LIN, 100% speed
 - 4 = 80% speed
 - 5 = 60% speed
 - 6 = NC (not used)

Tyco Junior Power Timer 929505-2, 6-pole, coded.
 Mating connector Tyco 929504-2 (not included in scope of delivery).
 Cable (460 mm) with mating connector, part no. 02001-4-1021 (not included in scope of delivery).



EC dual centrifugal fan

with housing, for automotive applications, Ø 97



- **Material:** Housing: PP plastic, black (according to UL 94 HB)
Blades: PA plastic (according to UL 94 HB)
- **Degree of protection:** IP 24 KM (without connectors)
- **Insulation class:** "B" according to EN 60335-1
- **Installation position:** Any
- **Mode:** Continuous operation (S1)
- **Mounting:** Maintenance-free ball bearings on both sides
- **Motor protection:** Thermal overload protection, reverse polarity and locked-rotor protection, load dump protection, undervoltage detection
- **EMC regulations:** VDE 0879-2
- **Approvals:** EAC, E1

Nominal data

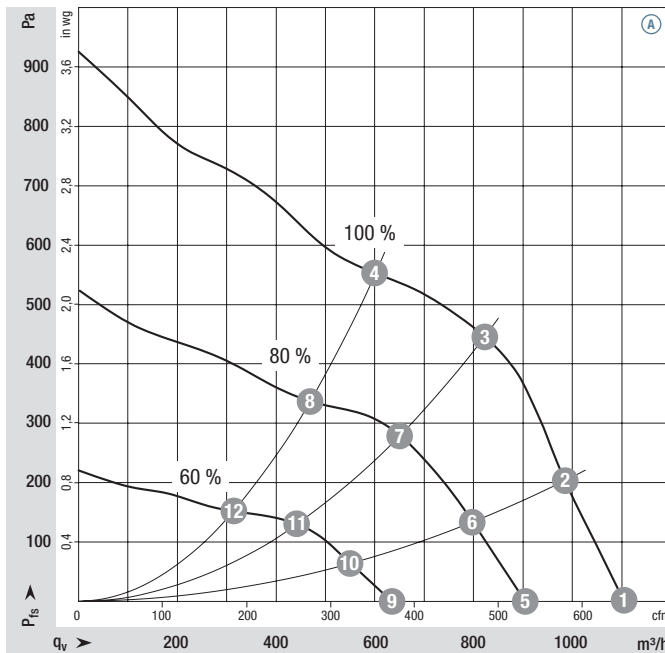
Type	Motor	Curve	Nominal voltage VDC	Nominal voltage range VDC	Air flow m ³ /h	Speed rpm	Input power W	Input current A	Min. back pressure Pa	Sound power level dB(A)	Perm. ambient temp. °C	Weight kg	Connection diagram
K3G 097-BK34 -65 ⁽¹⁾	M3G 074-CF	Ⓐ	26	16-32	1110	4040	344	13,3	0	77	-40..+85 ⁽²⁾	2,0	P. 74 / F)

Subject to change

(1) 24-volt version

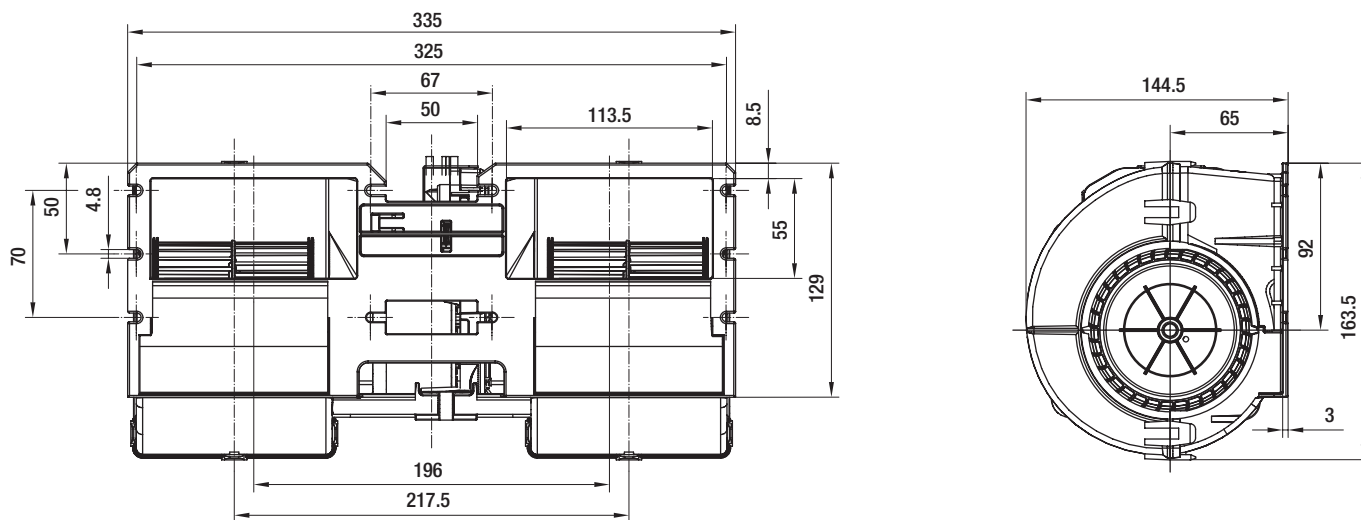
(2) wide open, not recommended for continuous operation at 85°C

Curves:



	n rpm	P _{ed} W	I A	L _{wA} dB(A)
Ⓐ 1	4040	344	13,3	77
Ⓐ 2	4210	325	12,5	76
Ⓐ 3	4380	279	10,6	75
Ⓐ 4	4630	242	9,2	75
Ⓐ 5	3310	186	7,2	73
Ⓐ 6	3390	171	6,6	71
Ⓐ 7	3520	145	5,5	70
Ⓐ 8	3650	121	4,6	69
Ⓐ 9	2330	67	2,6	64
Ⓐ 10	2360	62	2,4	62
Ⓐ 11	2410	53	2,0	61
Ⓐ 12	2480	42	1,6	60

Air performance measured according to: ISO 5801, installation category A, in ebmpapst 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. See Page 86 ff for detailed information.



Speed setting

Pin	5	4	3	
60%	H	NC	NC	
80%	NC	H	NC	NC = not used
100%	NC	NC	H	H = UN (26 V)

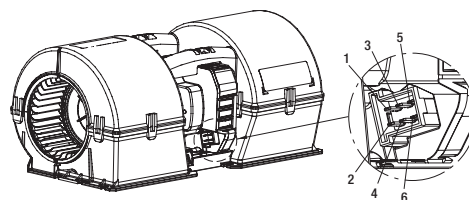
Connector detail

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

Tyco Junior Power Timer 929505-2, 6-pole, coded.

Mating connector Tyco 929504-2 (not included in scope of delivery).

Cable (460 mm) with mating connector, part no. 02001-4-1021 (not included in scope of delivery).





EC axial fans

with brushless DC motor "Premium & Power"



EC axial fan

for automotive applications, Ø 250



- **Material:** Housing: PA plastic, black (according to UL 94 HB)
Blades: PP plastic, black (according to UL 94 HB)
- **Airflow direction:** "V"
- **Direction of rotation:** Clockwise viewed toward rotor
- **Degree of protection:** Motor: IP 24 KM, electronics: IP 6K9K
- **Insulation class:** "B"
- **Installation position:** Any
- **Mode:** Continuous operation (S1)
- **Mounting:** Maintenance-free ball bearings
- **Motor protection:** Thermal overload protection, reverse polarity and locked-rotor protection, load dump protection, undervoltage detection
- **EMC regulations:** VDE 0879-2
- **Qualified in accordance with:** DIN ISO 16750
- **Approvals:** E1 in preparation

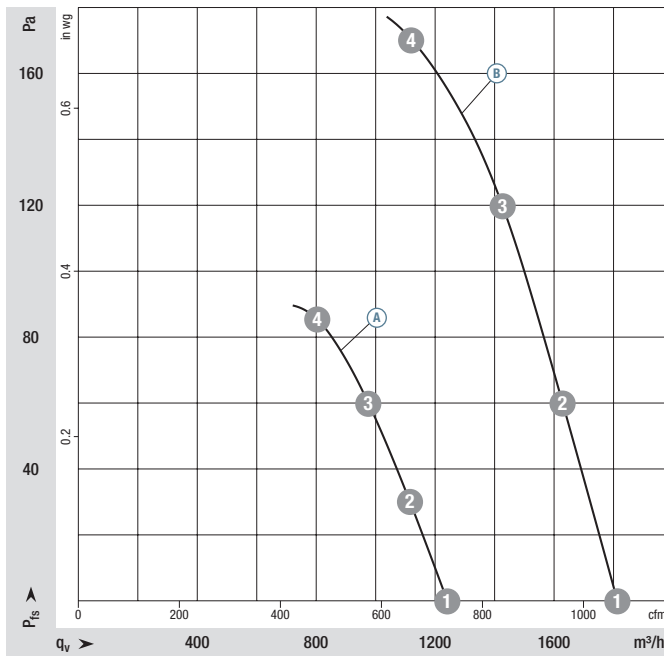
Nominal data		Curve	Nominal voltage	Nominal voltage range	Air flow	Speed	Input power	Input current	Max. back pressure	Sound power level	Perm. ambient temp.	Weight	Techn. features and connection diagram
Type	Motor	VDC	VDC	m ³ /h	rpm	W	A	Pa	dB(A)	°C	kg		
W3G 250-EC24 -01 ⁽¹⁾	M3G 074-BA	Ⓐ	26	16-32	1240	2050	38	1,45	85	67	-40..+85	1,3	P. 84 / S)
W3G 250-EC28 -11 ⁽¹⁾	M3G 074-BA	Ⓑ	26	16-32	1815	3000	115	4,40	170	76	-40..+85 ⁽²⁾	1,3	P. 84 / S)

Subject to change

(1) 24-volt version

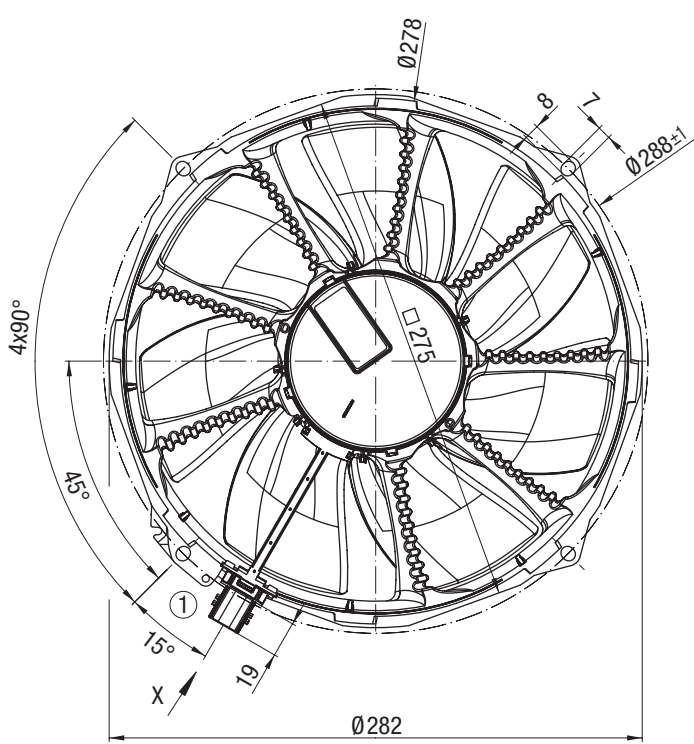
(2) above +70 °C with power derating

Curves:

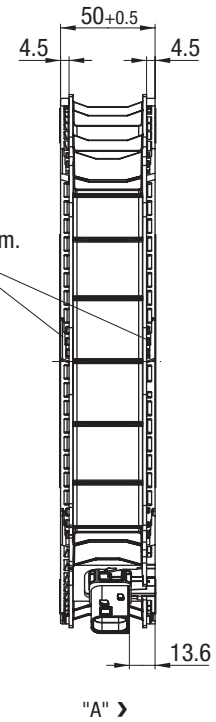
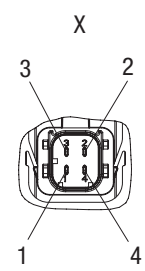


	n rpm	P _{ed} W	I A	L _{WA} dB(A)
Ⓐ ①	2050	38	1,45	67
Ⓐ ②	2050	42	1,61	66
Ⓐ ③	1990	45	1,72	66
Ⓐ ④	1965	47	1,80	66
Ⓑ ①	3000	115	4,40	76
Ⓑ ②	2915	124	4,80	75
Ⓑ ③	2835	130	5,14	75
Ⓑ ④	2765	130	5,17	75

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. See Page 86 ff for detailed information.



Bayonet fastener (both sides) for metal or plastic with a thickness of 1,5 / 2,0 oder 2,5 mm. A detailed drawing of the recess required for the bayonet fastener can be obtained from ebm-papst.



Mating connector on customer circuit:
 Housing: TE, 4-polig 1-1418390-1
 Plug contacts: TE 1-968855-1 (4x)
 Seal: TE 828904-1 (4x)

Detail X
 4-pole connector, pluggable with cable from accessories (not included in scope of delivery)
 1 = PWM/LIN
 2 = diagnostic output
 3 = + UB
 4 = GND

EC axial fan

for automotive applications, Ø 280

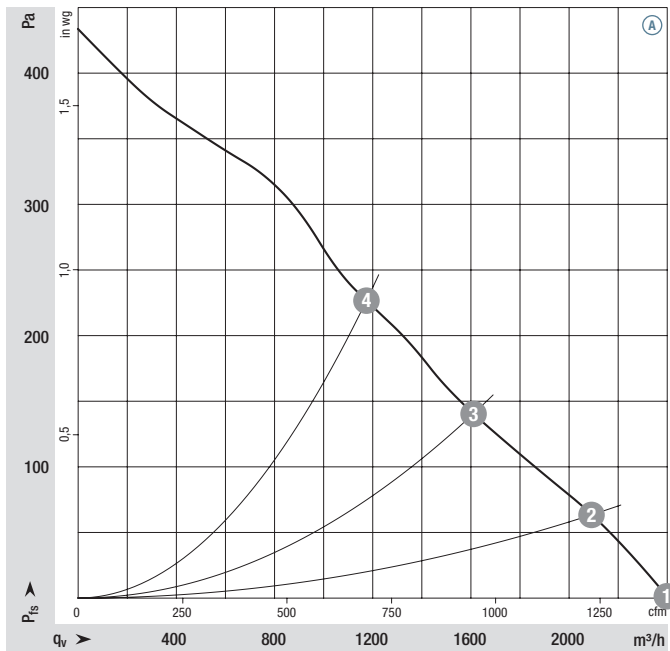


- **Material:** Housing: PP plastic, black (according to UL 94 HB)
Blades: PBT plastic, black (according to UL 94 HB)
- **Airflow direction:** "V" (intake over the rotor)
- **Direction of rotation:** Clockwise viewed toward rotor
- **Degree of protection:** IP 24 KM
- **Insulation class:** "B" according to EN 60335-1
- **Installation position:** Any
- **Mode:** Continuous operation (S1)
- **Mounting:** Maintenance-free ball bearings
- **Motor protection:** Thermal overload protection, reverse polarity and locked-rotor protection, load dump protection, undervoltage detection
- **EMC regulations:** VDE 0879-2
- **Approvals:** EAC, E1

Nominal data		Curve	Nominal voltage	Nominal voltage range	Air flow	Speed	Input power	Input current	Max. back pressure	Sound power level	Perm. ambient temp.	Weight	Connection diagram
Type	Motor	VDC	VDC	m ³ /h	rpm	W	A	Pa	dB(A)	°C	kg		
W3G 280-EQ20 -43 ⁽¹⁾	M3G 074-CF	Ⓐ	26	16-32	2400	3100	200	7,5	---	79	-40..+85 ⁽²⁾	2,4	P. 75 / H)

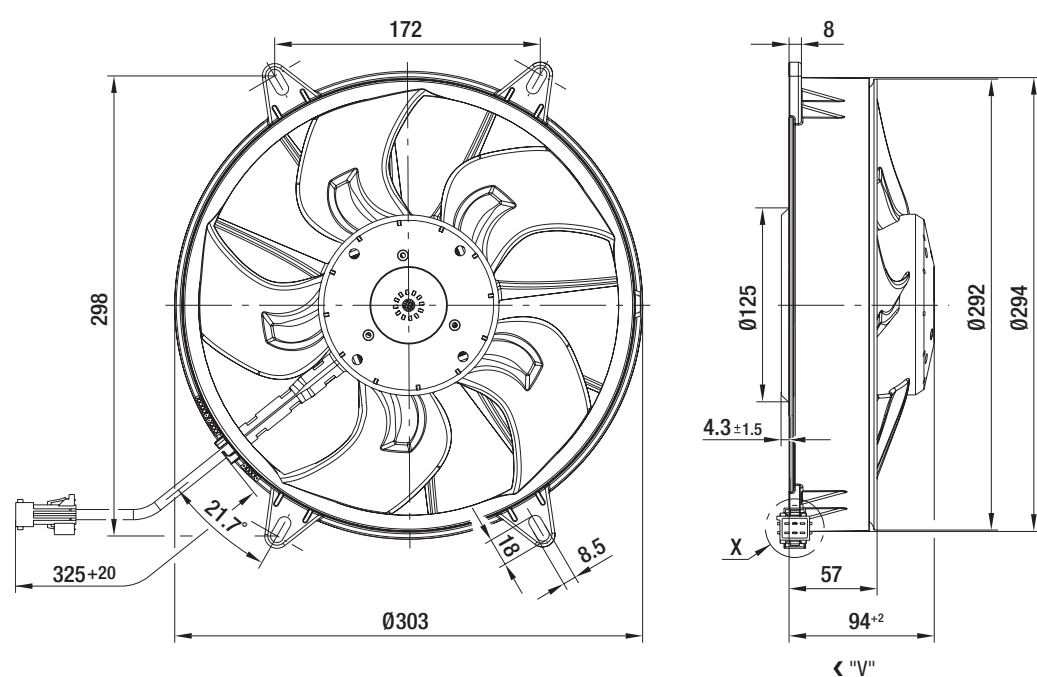
Subject to change (1) 24-volt version (2) at maximum back pressure, not recommended for continuous operation at 85°C

Curves:



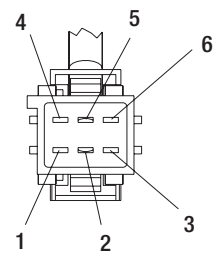
	n rpm	P _{ed} W	I A	L _{wA} dB(A)
Ⓐ 1	3100	200	7,5	79
Ⓐ 2	3085	197	7,6	79
Ⓐ 3	3090	192	7,3	81
Ⓐ 4	3105	213	8,2	83

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. See Page 86 ff for detailed information.



Mating connector on customer circuit:

- Housing: Tyco 1-967241-1
- Plug contacts:
 - 2.5 mm Tyco 929938-1 (2x)
 - 0.75 mm Tyco 929930-3 (4x)
- Seal: 828905-1 (2x)
828904-1 (4x)



Detail X

- 1 = UN black
 - 2 = GND brown
 - 3 = PWM/LIN yellow
 - 4 = INVLIN orange
 - 5 = ABSENK blue
 - 6 = diagnostic output white
- 6-pole coded Tyco Junior Power Timer;
Cable (460 mm) with mating connector
Part number 02002-4-1021 (not included in scope of delivery)

EC axial fan

for automotive applications, Ø 300

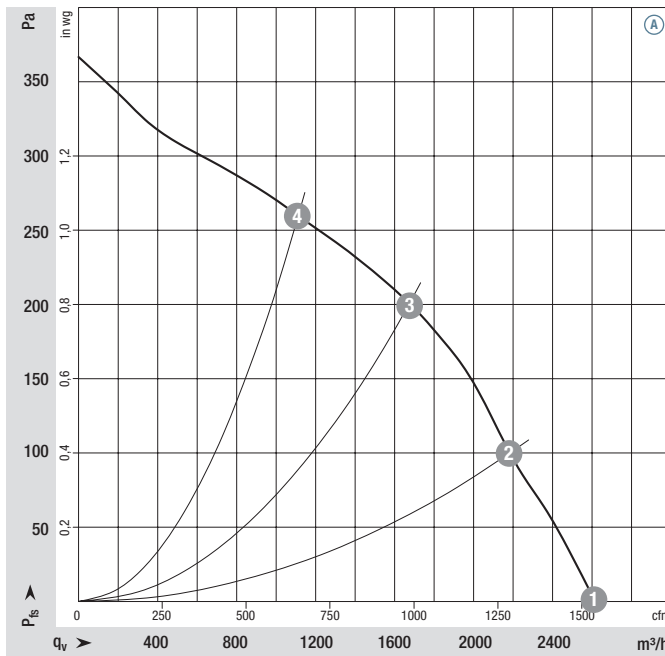


- **Material:** Housing: PA plastic, black (according to UL 94 HB)
Blades: PA plastic, black (according to UL 94 HB)
- **Airflow direction:** "V" (intake over the rotor)
- **Direction of rotation:** Clockwise viewed toward rotor
- **Degree of protection:** Motor: IP 24 KM, electronics: IP 66 / 69 K
- **Insulation class:** "B" according to EN 60335-1
- **Installation position:** Any
- **Mode:** Continuous operation (S1)
- **Mounting:** Maintenance-free ball bearings
- **Motor protection:** Thermal overload protection, reverse polarity and locked-rotor protection, load dump protection, undervoltage detection
- **EMC regulations:** VDE 0879-2
- **Qualified in accordance with:** DIN ISO 16750
- **Approvals:** EAC, E1

Nominal data		Curve	Nominal voltage	Nominal voltage range	Air flow	Speed	Input power	Input current	Max. back pressure	Sound power level	Perm. ambient temp.	Weight	Techn. features and connection diagram
Type	Motor	VDC	VDC	m ³ /h	rpm	W	A	Pa	dB(A)	°C	kg		
W3G 300-BV12 -41 ⁽¹⁾	M3G 084-BF	Ⓐ 13	9-16	2610	3200	220	16,7	---	83	-40..+105 ⁽²⁾	2,0	P. 77 / K)	

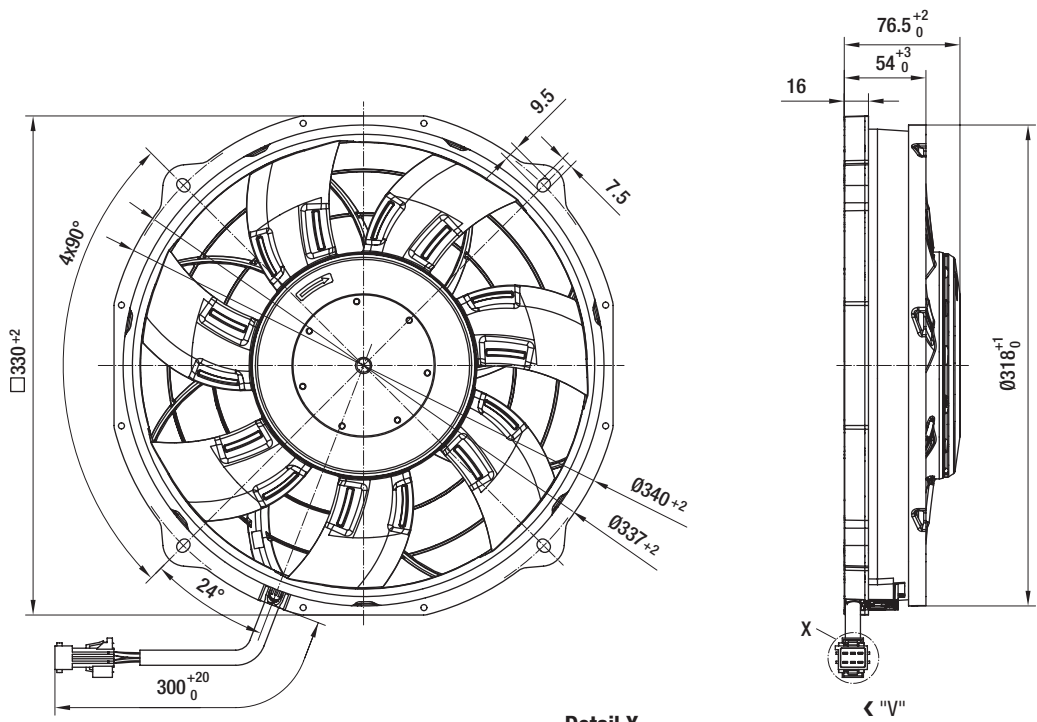
Subject to change (1) 12-volt version (2) above +85 °C with power derating

Curves:



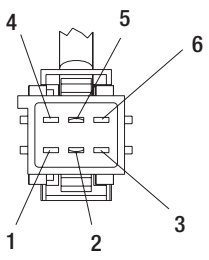
	n rpm	P _{ed} W	I A	L _{wA} dB(A)
Ⓐ 1	3200	220	16,7	83
Ⓐ 2	3140	235	18,1	82
Ⓐ 3	2960	247	18,9	80
Ⓐ 4	2840	248	19,0	82

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. See Page 86 ff for detailed information.



Mating connector on customer circuit:

- Housing: Tyco 1-967241-1
- Plug contacts:
 - 2.5 mm Tyco 929938-1 (2x)
 - 0.75 mm Tyco 929930-3 (4x)
- Seal: 828905-1 (2x)
828904-1 (4x)



Detail X

- 1 = +UB black
 - 2 = GND brown
 - 3 = PWM/LIN* yellow *optional LIN-BUS
 - 4 = NC (not used)
 - 5 = ABSENK blue
 - 6 = diagnostic output white
- 6-pole coded Tyco Junior Power Timer;
Cable (460 mm) with mating connector
Part number 02002-4-1021 (not included in scope of delivery)

EC axial fan

for automotive applications, Ø 300

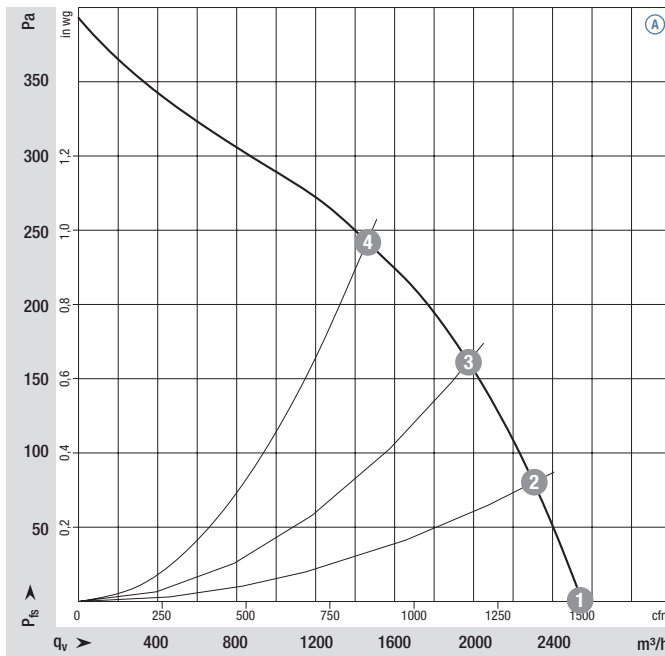


- **Material:** Housing: PA plastic, black (according to UL 94 HB)
Blades: PA plastic, black (according to UL 94 HB)
- **Airflow direction:** "V" (intake over the rotor)
- **Direction of rotation:** Clockwise viewed toward rotor
- **Degree of protection:** Motor: IP 24 KM, electronics: IP 66 / 69 K
- **Insulation class:** "B" according to EN 60335-1
- **Installation position:** Any
- **Mode:** Continuous operation (S1)
- **Mounting:** Maintenance-free ball bearings
- **Motor protection:** Thermal overload protection, reverse polarity and locked-rotor protection, load dump protection, undervoltage detection
- **EMC regulations:** VDE 0879-2
- **Qualified in accordance with:** DIN ISO 16750
- **Approvals:** EAC, E1

Nominal data		Curve	Nominal voltage	Nominal voltage range	Air flow	Speed	Input power	Input current	Max. back pressure	Sound power level	Perm. ambient temp.	Weight	Techn. features and connection diagram
Type	Motor	VDC	VDC	m ³ /h	rpm	W	A	Pa	dB(A)	°C	kg		
W3G 300-BS24 -01 ⁽¹⁾	M3G 084-BF	Ⓐ 26	16-32	2570	3160	205	7,90	---	82	-40..+110 ⁽²⁾	2,0	P. 79 / D)	

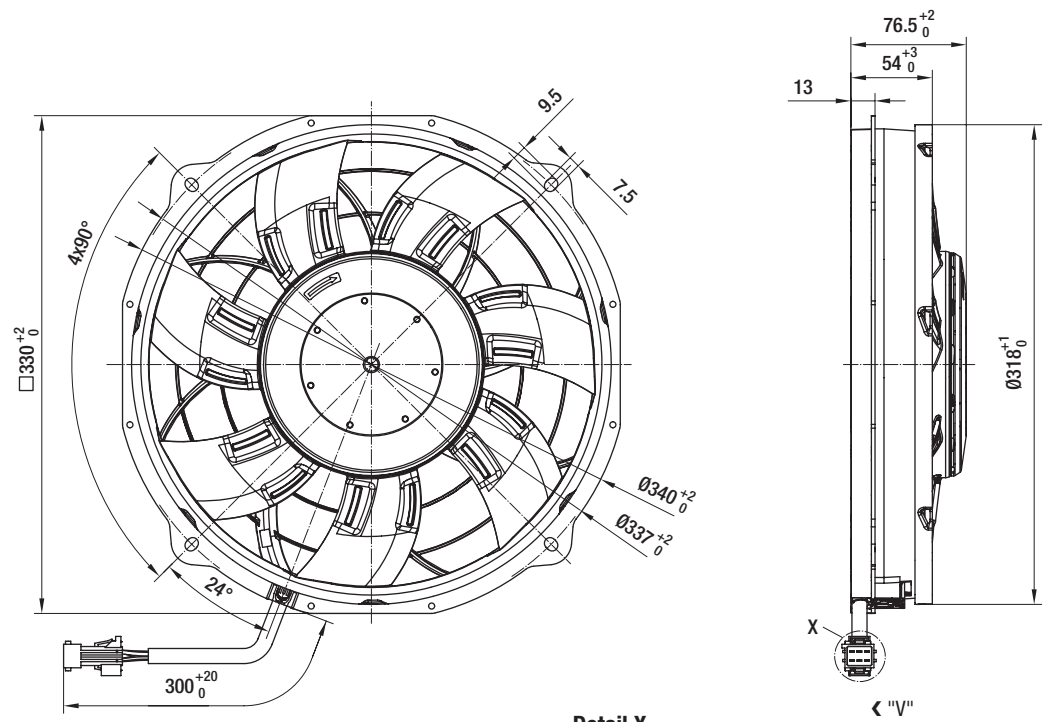
Subject to change (1) 24-volt version (2) above +95 °C with power derating

Curves:



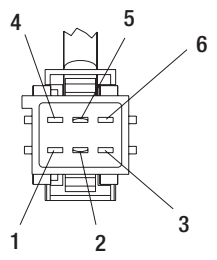
	n rpm	P _{ed} W	I A	L _{wA} dB(A)
Ⓐ 1	3160	205	7,90	82
Ⓐ 2	3150	216	7,30	82
Ⓐ 3	3085	240	9,20	81
Ⓐ 4	2965	244	9,40	80

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. See Page 86 ff for detailed information.



Mating connector on customer circuit:

- Housing: Tyco 1-967241-1
- Plug contacts:
- 2.5 mm Tyco 929938-1 (2x)
- 0.75 mm Tyco 929930-3 (4x)
- Seal: 828905-1 (2x)
- 828904-1 (4x)



Detail X

- 1 = +UB black
 - 2 = GND brown
 - 3 = PWM/LIN* yellow
 - 4 = INVLIN orange
 - 5 = ABSENK blue
 - 6 = diagnostic output white
- *optional LIN-BUS
- 6-pole coded Tyco Junior Power Timer;
Cable (460 mm) with mating connector
Part number 02002-4-1021 (not included in scope of delivery)

EC axial fan

for automotive applications, Ø 300

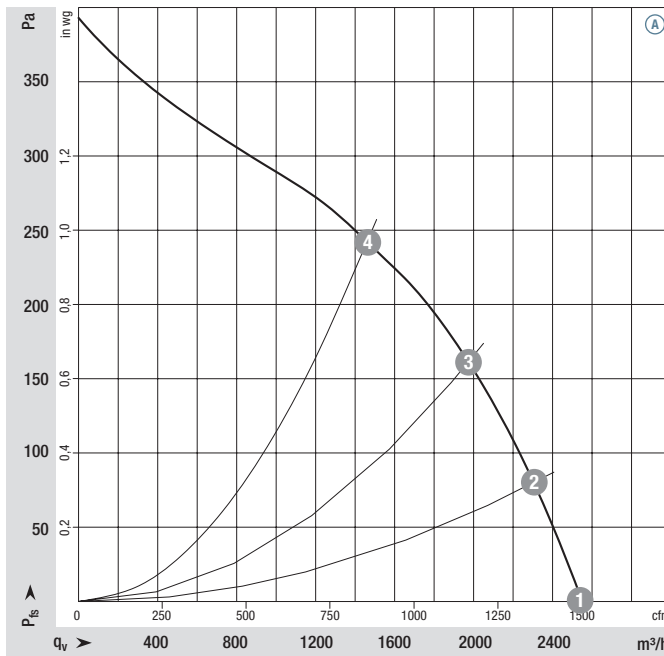


- **Material:** Housing: PA plastic, black (according to UL 94 HB)
Blades: PA plastic, black (according to UL 94 HB)
- **Airflow direction:** "V" (intake over the rotor)
- **Direction of rotation:** Clockwise viewed toward rotor
- **Degree of protection:** Motor: IP 24 KM, electronics: IP 66 / 69 K
- **Insulation class:** "B" according to EN 60335-1
- **Installation position:** Any
- **Mode:** Continuous operation (S1)
- **Mounting:** Maintenance-free ball bearings
- **Motor protection:** Thermal overload protection, reverse polarity and locked-rotor protection, load dump protection, undervoltage detection
- **EMC regulations:** VDE 0879-2
- **Qualified in accordance with:** DIN ISO 16750
- **Approvals:** EAC, E1

Nominal data		Curve	Nominal voltage	Nominal voltage range	Air flow	Speed	Input power	Input current	Max. back pressure	Sound power level	Perm. ambient temp.	Weight	Techn. features and connection diagram
Type	Motor	VDC	VDC	m ³ /h	rpm	W	A	Pa	dB(A)	°C	kg		
W3G 300-BV24 -01 ⁽¹⁾	M3G 084-BF	Ⓐ 26	16-32	2570	3160	205	7,90	---	82	-40..+110 ⁽²⁾	2,0	P. 79 / D)	

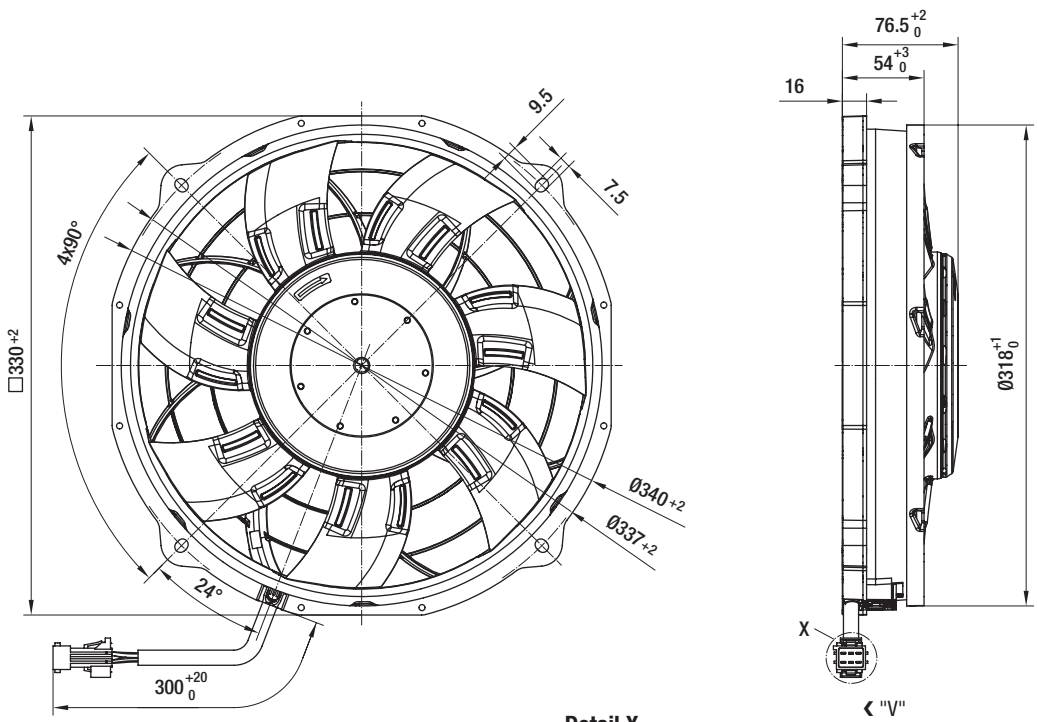
Subject to change (1) 24-volt version (2) above +95 °C with power derating

Curves:



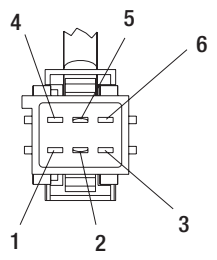
	n rpm	P _{ed} W	I A	L _{wA} dB(A)
Ⓐ 1	3160	205	7,90	82
Ⓐ 2	3150	216	7,30	82
Ⓐ 3	3085	240	9,20	81
Ⓐ 4	2965	244	9,40	80

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. See Page 86 ff for detailed information.



Mating connector on customer circuit:

- Housing: Tyco 1-967241-1
- Plug contacts:
- 2.5 mm Tyco 929938-1 (2x)
- 0.75 mm Tyco 929930-3 (4x)
- Seal: 828905-1 (2x)
- 828904-1 (4x)



Detail X

- 1 = +UB black
 - 2 = GND brown
 - 3 = PWM/LIN* yellow
 - 4 = INVLIN orange
 - 5 = ABSENK blue
 - 6 = diagnostic output white
- *optional LIN-BUS
- 6-pole coded Tyco Junior Power Timer;
Cable (460 mm) with mating connector
Part number 02002-4-1021 (not included in scope of delivery)

EC axial fan

for automotive applications, Ø 300

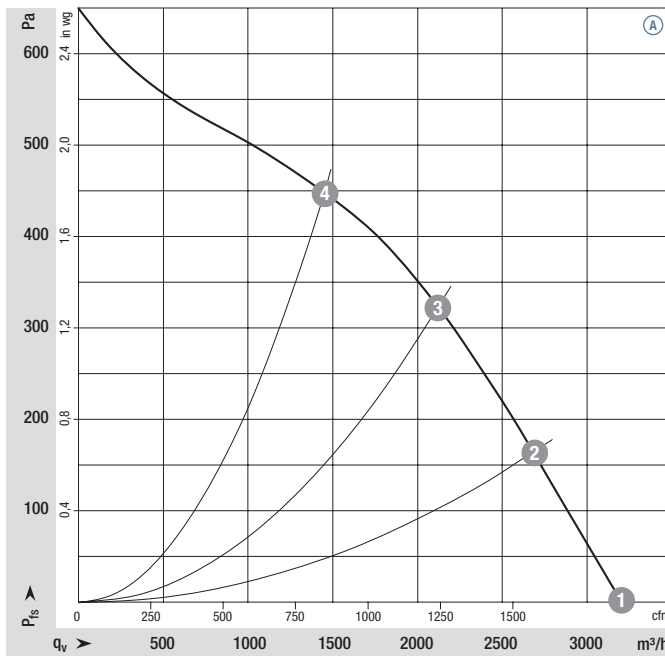


- **Material:** Housing: PA plastic, black (according to UL 94 HB)
Blades: PA plastic, black (according to UL 94 HB)
- **Airflow direction:** "V" (intake over the rotor)
- **Direction of rotation:** Clockwise viewed toward rotor
- **Degree of protection:** Motor: IP 24 KM, electronics: IP 66 / 69 K
- **Insulation class:** "B" according to EN 60335-1
- **Installation position:** Any
- **Mode:** Continuous operation (S1)
- **Mounting:** Maintenance-free ball bearings
- **Motor protection:** Thermal overload protection, reverse polarity and locked-rotor protection, load dump protection, undervoltage detection
- **EMC regulations:** VDE 0879-2
- **Qualified in accordance with:** DIN ISO 16750
- **Approvals:** EAC, E1

Nominal data		Curve	Nominal voltage	Nominal voltage range	Air flow	Speed	Input power	Input current	Max. back pressure	Sound power level	Perm. ambient temp.	Weight	Techn. features and connection diagram
Type	Motor	VDC	VDC	m ³ /h	rpm	W	A	Pa	dB(A)	°C	kg		
W3G 300-BV25 -21 ⁽¹⁾	M3G 084-BF	Ⓐ 26	16-32	3225	3940	380	14,6	---	87	-40..+110 ⁽²⁾	2,0	P. 79 / D)	

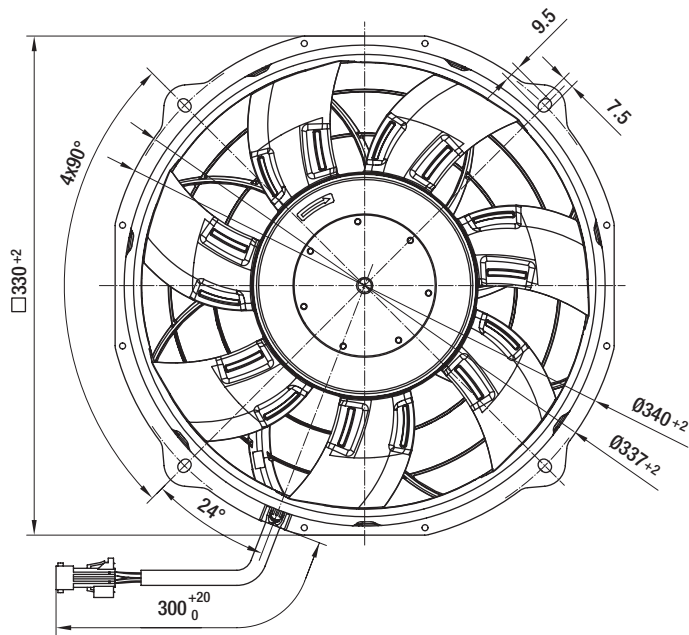
Subject to change (1) 24-volt version (2) above +85 °C with power derating

Curves:



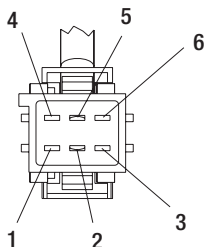
	n rpm	P _{ed} W	I A	L _{wA} dB(A)
Ⓐ 1	3940	380	14,6	87
Ⓐ 2	3815	408	15,7	87
Ⓐ 3	3715	462	17,7	85
Ⓐ 4	3630	495	19,0	88

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. See Page 86 ff for detailed information.



Mating connector on customer circuit:

- Housing: Tyco 1-967241-1
- Plug contacts:
- 2.5 mm Tyco 929938-1 (2x)
- 0.75 mm Tyco 929930-3 (4x)
- Seal: 828905-1 (2x)
- 828904-1 (4x)



Detail X

- 1 = +UB black
 - 2 = GND brown
 - 3 = PWM/LIN* yellow
 - 4 = INVLIN orange
 - 5 = ABSENK blue
 - 6 = diagnostic output white
- *optional LIN-BUS
- 6-pole coded Tyco Junior Power Timer;
 Cable (460 mm) with mating connector
 Part number 02002-4-1021 (not included in scope of delivery)

EC axial fan

for automotive applications, Ø 300

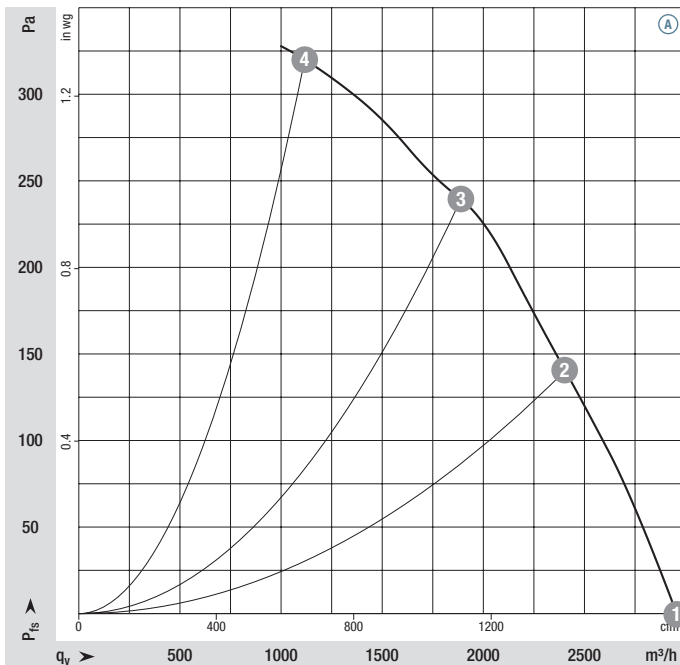


- **Material:** Housing: PA plastic, black (according to UL 94 HB)
Blades: PA plastic, black (according to UL 94 HB)
- **Airflow direction:** "A" (intake over the stator)
- **Direction of rotation:** Clockwise viewed toward rotor
- **Degree of protection:** Motor: IP 24 KM, electronics: IP 66 / 69 K
- **Insulation class:** "B" according to EN 60335-1
- **Installation position:** Any
- **Mode:** Continuous operation (S1)
- **Mounting:** Maintenance-free ball bearings
- **Motor protection:** Thermal overload protection, reverse polarity and locked-rotor protection, load dump protection, undervoltage detection
- **EMC regulations:** VDE 0879-2
- **Qualified in accordance with:** DIN ISO 16750
- **Approvals:** EAC; E1 in preparation

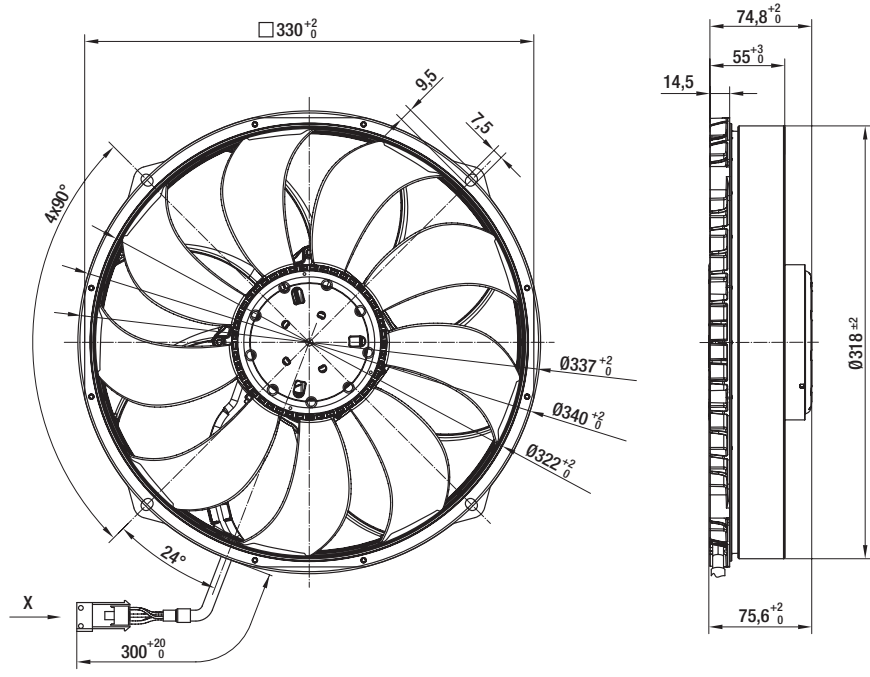
Nominal data		Curve	Nominal voltage	Nominal voltage range	Air flow	Speed	Input power	Input current	Max. back pressure	Sound power level	Perm. ambient temp.	Weight	Techn. features and connection diagram
Type	Motor	VDC	VDC	m ³ /h	rpm	W	A	Pa	dB(A)	°C	kg		
W3G 300-PW24 -01 ⁽¹⁾	M3G 084-BF	Ⓐ	26	16-32	2955	3000	200	7,7	320	86	-40..+105 ⁽²⁾	2,0	P. 79 / D)

Subject to change (1) 24-volt version (2) above +85 °C with power derating

Curves:



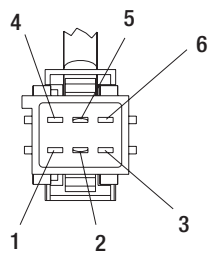
Air performance measured according to: ISO 5801, installation category A, without contact protection. Intake-side sound level: L_{wA} according to ISO 13347, L_{pA} measured at 1 m distance from fan axis. The values given are only applicable under the specified measuring conditions and may differ depending on the installation conditions. In the event of deviation from the standard configuration, the parameters must be checked in installed condition. See Page 86 ff for detailed information.



"A" >

Mating connector on customer circuit:

- Housing: Tyco 1-967241-1
- Plug contacts:
 - 2.5 mm Tyco 929938-1 (2x)
 - 0.75 mm Tyco 929930-3 (4x)
- Seal:
 - 828905-1 (2x)
 - 828904-1 (4x)



Detail X

- 1 = +UB black
 - 2 = GND brown
 - 3 = PWM/LIN* yellow
 - 4 = INVLIN orange
 - 5 = ABSENK blue
 - 6 = diagnostic output white
- 6-pole coded Tyco Junior Power Timer;
 Cable (460 mm) with mating connector
 Part number 02002-4-1021 (not included in scope of delivery)
- *optional LIN-BUS

EC axial fan

for automotive applications, Ø 385



- **Material:** Housing: PA plastic, black (according to UL 94 HB)
Blades: PA plastic, black (according to UL 94 HB)
- **Airflow direction:** "V" (intake over the rotor)
- **Direction of rotation:** Clockwise viewed toward rotor
- **Degree of protection:** Motor: IP 24 KM, electronics: IP 66 / 69 K
- **Insulation class:** "B" according to EN 60335-1
- **Installation position:** Any
- **Mode:** Continuous operation (S1)
- **Mounting:** Maintenance-free ball bearings
- **Motor protection:** Thermal overload protection, reverse polarity and locked-rotor protection, load dump protection, undervoltage detection
- **EMC regulations:** VDE 0879-2
- **Qualified in accordance with:** DIN ISO 16750
- **Approvals:** EAC, E1

Nominal data

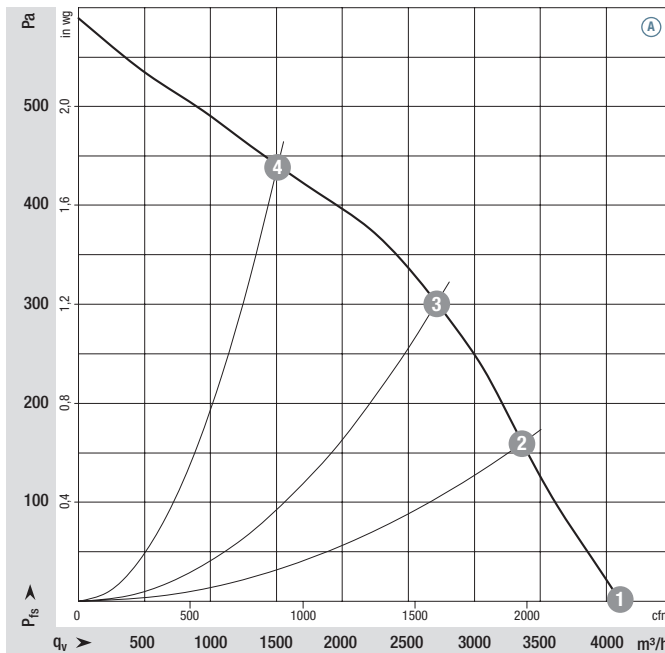
Type	Motor	Curve	Nominal voltage VDC	Nominal voltage range VDC	Air flow m ³ /h	Speed rpm	Input power W	Input current A	Max. back pressure Pa	Sound power level dB(A)	Perm. ambient temp. °C	Weight kg	Techn. features and connection diagram
W3G 385-CT53 -61 ⁽¹⁾	M3G 084-CF	Ⓐ	13	9-16	4110	3100	445	34,0	---	89	-40..+105 ⁽²⁾	3,1	P. 78 / L

Subject to change

(1) 12-volt version

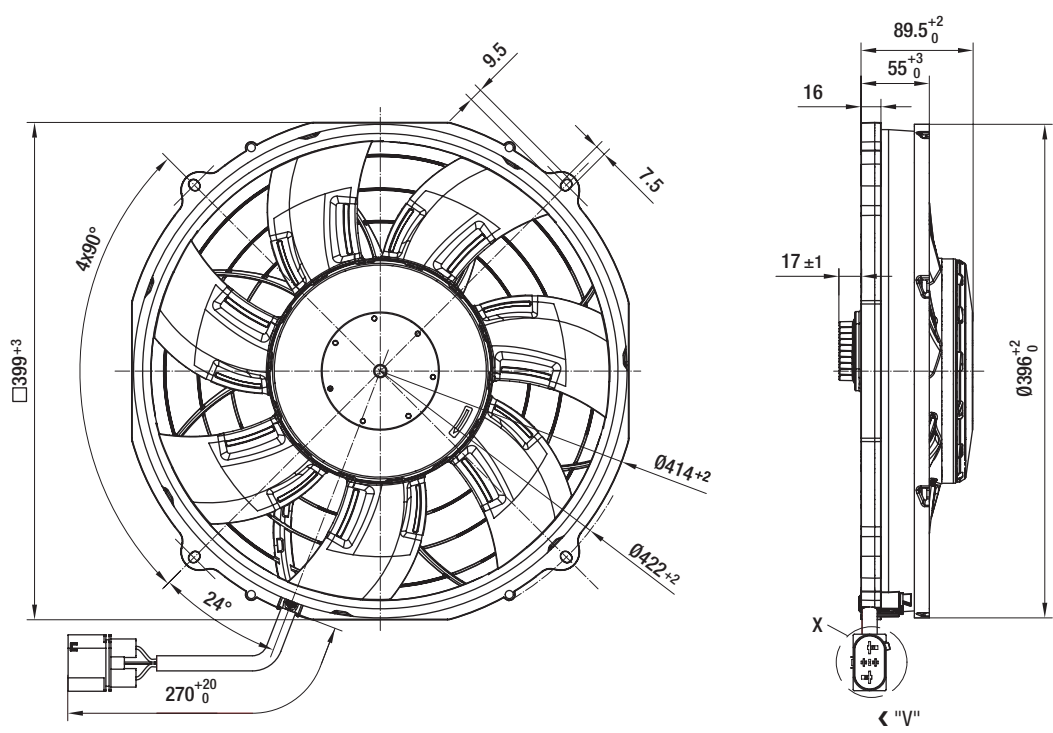
(2) above +70 °C with power derating

Curves:



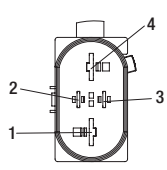
	n rpm	P _{ed} W	I A	L _{wA} dB(A)
Ⓐ 1	3100	445	34,0	89
Ⓐ 2	3000	487	37,6	89
Ⓐ 3	2930	544	41,9	87
Ⓐ 4	2815	590	45,6	89

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. See Page 86 ff for detailed information.



Mating connector on customer circuit:

- Housing: DELPHI 13873952
- Plug contacts: 9.5 mm DELPHI 10780235
- 4.8 mm DELPHI 10811289
- Seal: DELPHI 15327788
- DELPHI 10788269



Detail X

- 1 = +UB black
- 2 = diagnostic output white
- 3 = PWM/LIN* yellow *optional LIN-BUS
- 4 = GND brown

EC axial fan

for automotive applications, Ø 385

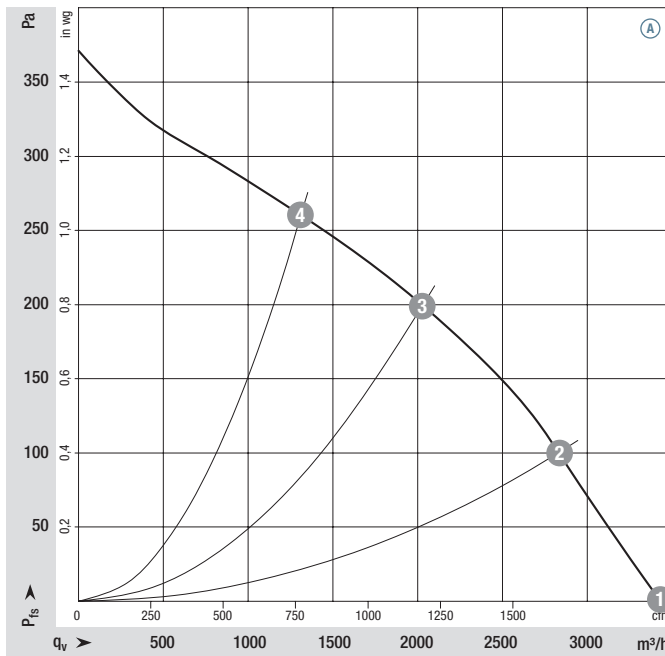


- **Material:** Housing: PA plastic, black (according to UL 94 HB)
Blades: PA plastic, black (according to UL 94 HB)
- **Airflow direction:** "V" (intake over the rotor)
- **Direction of rotation:** Clockwise viewed toward rotor
- **Degree of protection:** Motor: IP 24 KM, electronics: IP 66 / 69 K
- **Insulation class:** "B" according to EN 60335-1
- **Installation position:** Any
- **Mode:** Continuous operation (S1)
- **Mounting:** Maintenance-free ball bearings
- **Motor protection:** Thermal overload protection, reverse polarity and locked-rotor protection, load dump protection, undervoltage detection
- **EMC regulations:** VDE 0879-2
- **Qualified in accordance with:** DIN ISO 16750
- **Approvals:** EAC, E1

Nominal data		Curve	Nominal voltage	Nominal voltage range	Air flow	Speed	Input power	Input current	Max. back pressure	Sound power level	Perm. ambient temp.	Weight	Techn. features and connection diagram
Type	Motor	VDC	VDC	m ³ /h	rpm	W	A	Pa	dB(A)	°C	kg		
W3G 385-BV44 -01 ⁽¹⁾	M3G 084-BF	Ⓐ 26	16-32	3425	2600	260	10,0	---	84	-40..+110 ⁽²⁾	2,7	P. 79 / D)	

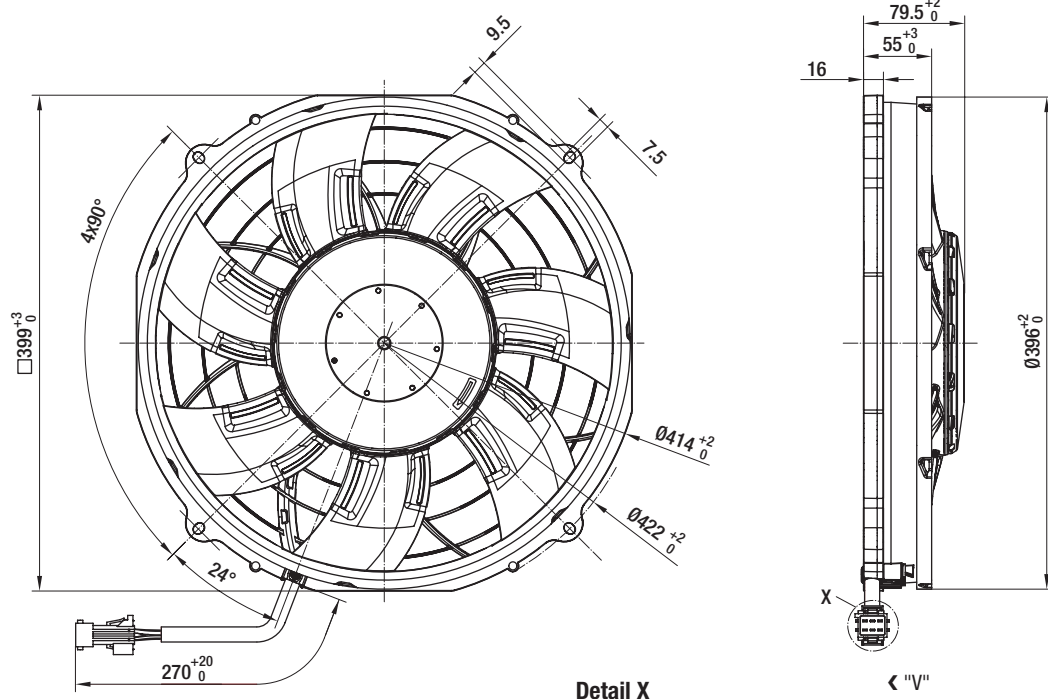
Subject to change (1) 24-volt version (2) above +95 °C with power derating

Curves:



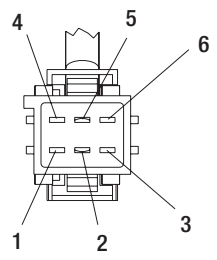
	n rpm	P _{ed} W	I A	L _{wA} dB(A)
Ⓐ 1	2600	260	10,0	84
Ⓐ 2	2505	272	10,5	83
Ⓐ 3	2325	273	10,5	81
Ⓐ 4	2215	274	10,5	82

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. See Page 86 ff for detailed information.



Mating connector on customer circuit:

- Housing: Tyco 1-967241-1
- Plug contacts:
 - 2.5 mm Tyco 929938-1 (2x)
 - 0.75 mm Tyco 929930-3 (4x)
- Seal:
 - 828905-1 (2x)
 - 828904-1 (4x)



Detail X

- 1 = +UB black
 - 2 = GND brown
 - 3 = PWM/LIN* yellow
 - 4 = INVLIN orange
 - 5 = ABSENK blue
 - 6 = diagnostic output white
- *optional LIN-BUS
- 6-pole coded Tyco Junior Power Timer;
 Cable (460 mm) with mating connector
 Part number 02002-4-1021 (not included in scope of delivery)

EC axial fan

for automotive applications, Ø 385

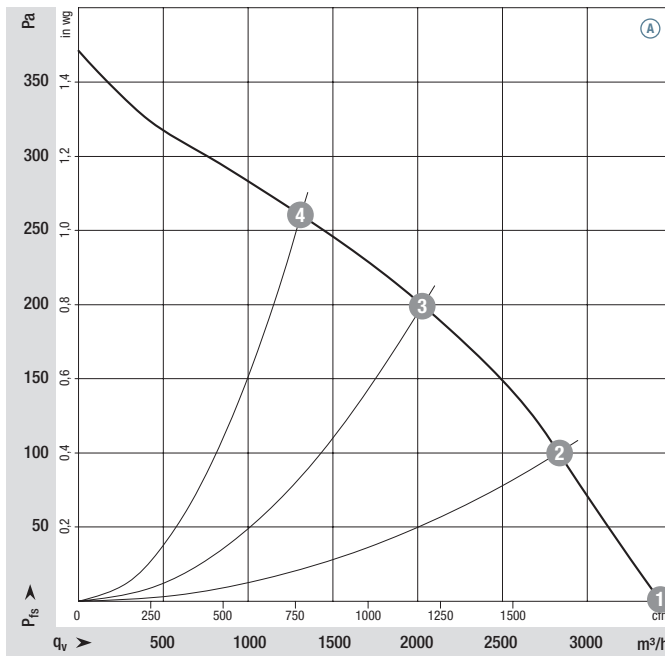


- **Material:** Housing: PA plastic, black (according to UL 94 HB)
Blades: PA plastic, black (according to UL 94 HB)
- **Airflow direction:** "V" (intake over the rotor)
- **Direction of rotation:** Clockwise viewed toward rotor
- **Degree of protection:** Motor: IP 24 KM, electronics: IP 66 / 69 K
- **Insulation class:** "B" according to EN 60335-1
- **Installation position:** Any
- **Mode:** Continuous operation (S1)
- **Mounting:** Maintenance-free ball bearings
- **Motor protection:** Thermal overload protection, reverse polarity and locked-rotor protection, load dump protection, undervoltage detection
- **EMC regulations:** VDE 0879-2
- **Qualified in accordance with:** DIN ISO 16750
- **Approvals:** EAC, E1

Nominal data		Curve	Nominal voltage	Nominal voltage range	Air flow	Speed	Input power	Input current	Max. back pressure	Sound power level	Perm. ambient temp.	Weight	Techn. features and connection diagram
Type	Motor	VDC	VDC	m ³ /h	rpm	W	A	Pa	dB(A)	°C	kg		
W3G 385-BS44 -01⁽¹⁾	M3G 084-BF	Ⓐ 26	16-32	3425	2600	260	10,0	---	84	-40..+110 ⁽²⁾	2,7	P. 79 / D)	

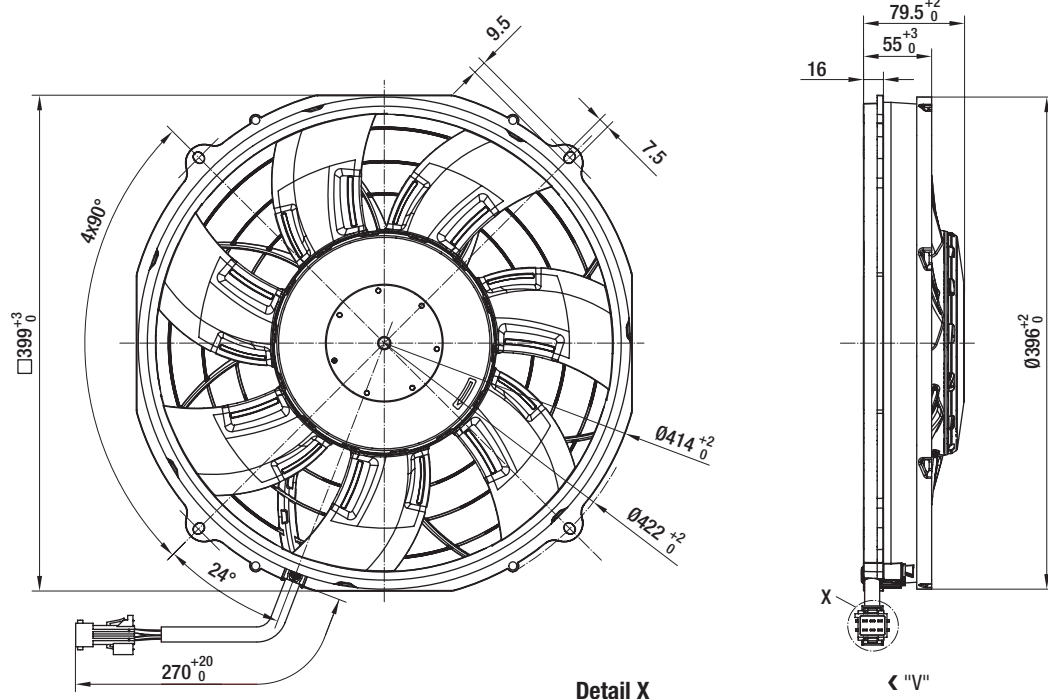
Subject to change (1) 24-volt version (2) above +95 °C with power derating

Curves:



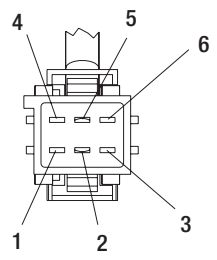
	n rpm	P _{ed} W	I A	L _{wA} dB(A)
Ⓐ 1	2600	260	10,0	84
Ⓐ 2	2505	272	10,5	83
Ⓐ 3	2325	273	10,5	81
Ⓐ 4	2215	274	10,5	82

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. See Page 86 ff for detailed information.



Mating connector on customer circuit:

- Housing: Tyco 1-967241-1
- Plug contacts:
 - 2.5 mm Tyco 929938-1 (2x)
 - 0.75 mm Tyco 929930-3 (4x)
- Seal: 828905-1 (2x)
828904-1 (4x)



Detail X

- 1 = +UB black
 - 2 = GND brown
 - 3 = PWM/LIN* yellow
 - 4 = INVLIN orange
 - 5 = ABSENK blue
 - 6 = diagnostic output white
- *optional LIN-BUS
- 6-pole coded Tyco Junior Power Timer;
Cable (460 mm) with mating connector
Part number 02002-4-1021 (not included in scope of delivery)

EC axial fan

for automotive applications, Ø 385



- **Material:** Housing: PA plastic, black (according to UL 94 HB)
Blades: PA plastic, black (according to UL 94 HB)
- **Airflow direction:** "V" (intake over the rotor)
- **Direction of rotation:** Clockwise viewed toward rotor
- **Degree of protection:** Motor: IP 24 KM, electronics: IP 66 / 69 K
- **Insulation class:** "B" according to EN 60335-1
- **Installation position:** Any
- **Mode:** Continuous operation (S1)
- **Mounting:** Maintenance-free ball bearings
- **Motor protection:** Thermal overload protection, reverse polarity and locked-rotor protection, load dump protection, undervoltage detection
- **EMC regulations:** VDE 0879-2
- **Qualified in accordance with:** DIN ISO 16750
- **Approvals:** EAC, E1

Nominal data

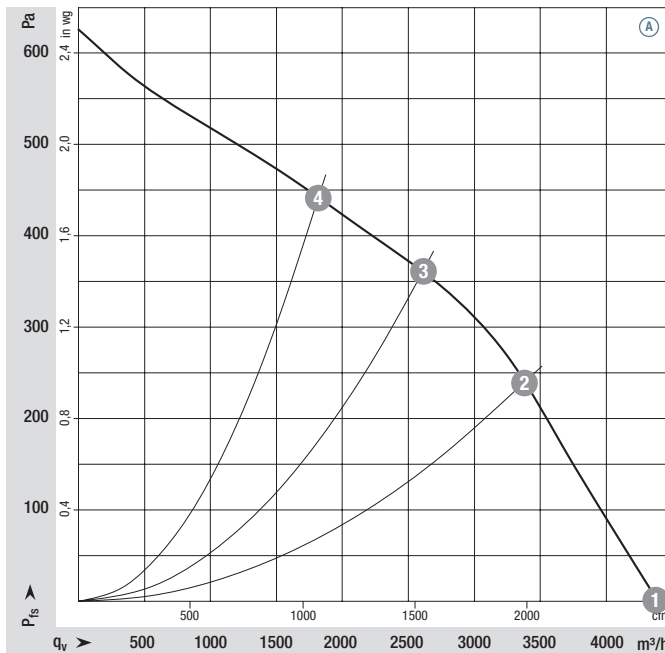
Type	Motor	Curve	Nominal voltage VDC	Nominal voltage range VDC	Air flow m ³ /h	Speed rpm	Input power W	Input current A	Max. back pressure Pa	Sound power level dB(A)	Perm. ambient temp. °C	Weight kg	Techn. features and connection diagram
W3G 385-CT65 -21 ⁽¹⁾	M3G 084-CF	Ⓐ	26	16-32	4375	3300	525	20,0	---	90	-40..+110 ⁽²⁾	3,1	P. 78 / L

Subject to change

(1) 24-volt version

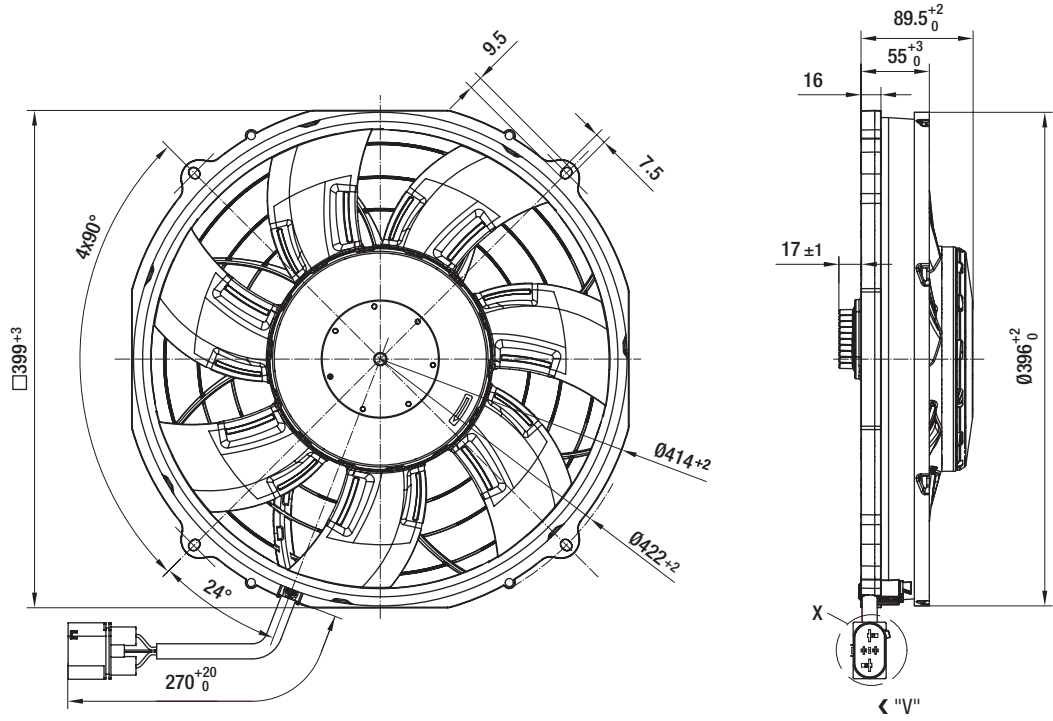
(2) above +85 °C with power derating

Curves:

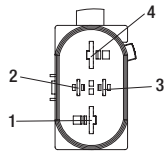


	n rpm	P _{ed} W	I A	L _{wA} dB(A)
Ⓐ 1	3300	525	20,0	90
Ⓐ 2	3180	615	23,7	89
Ⓐ 3	3050	610	23,5	88
Ⓐ 4	2920	610	23,6	88

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. See Page 86 ff for detailed information.



Mating connector on customer circuit:
 Housing: DELPHI 13873952
 Plug contacts: 9.5 mm DELPHI 10780235
 4.8 mm DELPHI 10811289
 Seal: DELPHI 15327788
 DELPHI 10788269



Detail X
 1 = +UB black
 2 = diagnostic output white
 3 = PWM/LIN* yellow *optional LIN-BUS
 4 = GND brown



EC axial fans

with brushless DC motor "Basic"



EC axial fan

for automotive applications, Ø 300

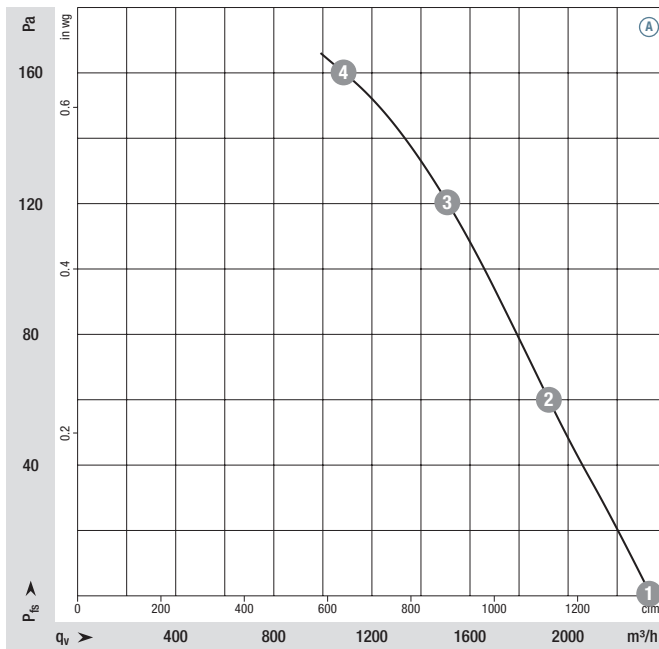


- **Material:** Housing: PP plastic, black (according to UL 94 HB)
Blades: PP plastic, black (according to UL 94 HB)
- **Airflow direction:** "V" (intake over the rotor)
- **Direction of rotation:** Clockwise viewed toward rotor
- **Degree of protection:** Motor: IP 24 KM, electronics: IP 66 / 69 K
- **Insulation class:** "B" according to EN 60335-1
- **Installation position:** Any
- **Mode:** Continuous operation (S1)
- **Mounting:** Maintenance-free ball bearings
- **Motor protection:** Locked-rotor protection
- **Approvals:** E1 in preparation

Nominal data		Curve	Nominal voltage	Nominal voltage range	Air flow	Speed	Input power	Input current	Max. back pressure	Sound power level	Perm. ambient temp.	Weight	Techn. features and connection diagram
Type	Motor	VDC	VDC	m ³ /h	rpm	W	A	Pa	dB(A)	°C	kg		
W1G 300-EC12 -20 ⁽¹⁾	M1G 074-CF	Ⓐ	13	9-18	2340	2500	145	11,0	160	76	-40..+85 ⁽²⁾	2,6	P. 85 / U)

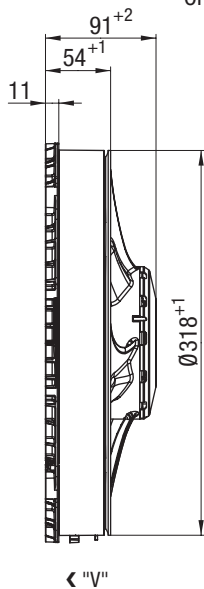
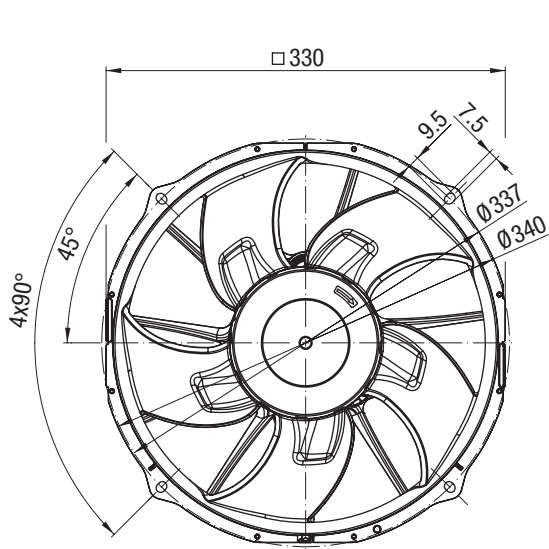
Subject to change (1) 12-volt version (2) above +70 °C with power derating

Curves:

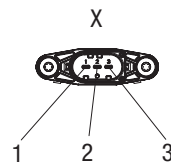
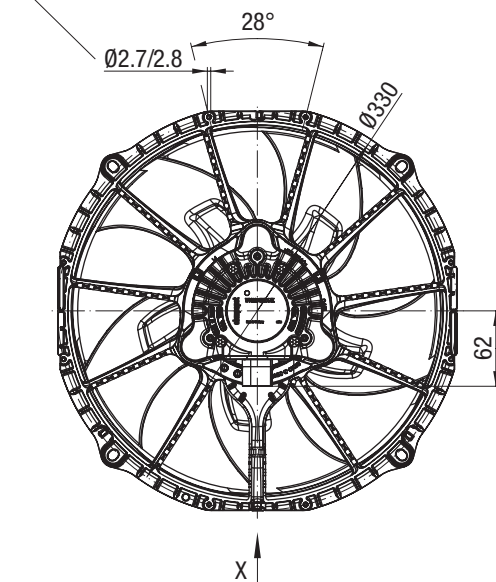


	n rpm	P _{ed} W	I A	L _{wA} dB(A)
Ⓐ 1	2500	145	11,0	76
Ⓐ 2	2455	145	11,0	78
Ⓐ 3	2415	145	11,0	79
Ⓐ 4	2365	142	10,9	80

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. See Page 86 ff for detailed information.



On both sides for screws for fastening plastics, Ø 3.5 mm



Detail X
 1 = + UB
 2 = 0-10 V
 3 = GND

Mating connector on customer circuit:

Housing: TE MCP 2.8, 3-pole 1-1718627-1

Plug contacts: 2x 1-968857-1

1x 1-968855-1

Seal: 2x 828905-1

1x 828904-1

Cable with mating connector not included in scope of delivery.

EC axial fan

for automotive applications, Ø 300

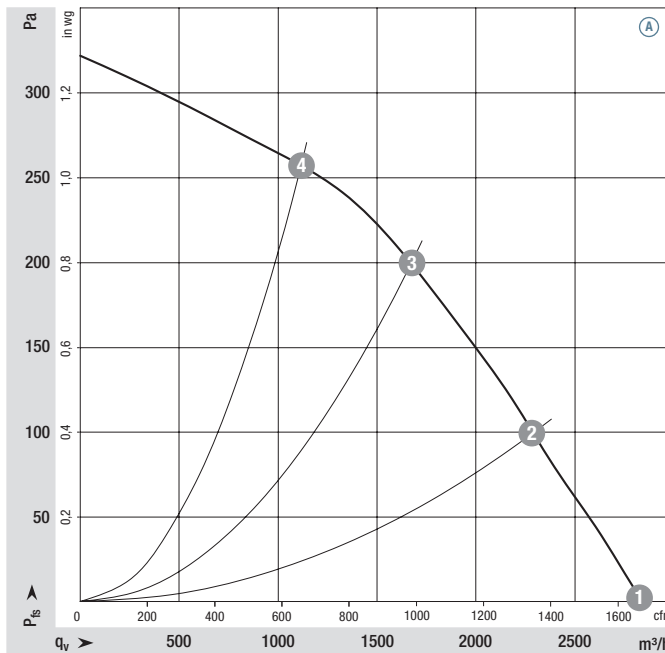


- **Material:** Housing: PP plastic, black (according to UL 94 HB)
Blades: PA plastic, black (according to UL 94 HB)
- **Airflow direction:** "V" (intake over the rotor)
- **Direction of rotation:** Clockwise viewed toward rotor
- **Degree of protection:** Motor: IP 24 KM, electronics: IP 66 / 69 K
- **Insulation class:** "B" according to EN 60335-1
- **Installation position:** Any
- **Mode:** Continuous operation (S1)
- **Mounting:** Maintenance-free ball bearings
- **Motor protection:** Locked-rotor protection
- **Approvals:** E1 in preparation

Nominal data		Curve	Nominal voltage	Nominal voltage range	Air flow	Speed	Input power	Input current	Max. back pressure	Sound power level	Perm. ambient temp.	Weight	Techn. features and connection diagram
Type	Motor	VDC	VDC	m ³ /h	rpm	W	A	Pa	dB(A)	°C	kg		
W1G 300-EC24 -01 ⁽¹⁾	M1G 074-CF	Ⓐ 26	18-32	2840	3100	250	9,60	---	81	-40..+85 ⁽²⁾	2,6	P. 80 / M)	

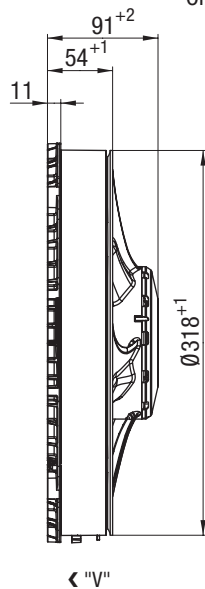
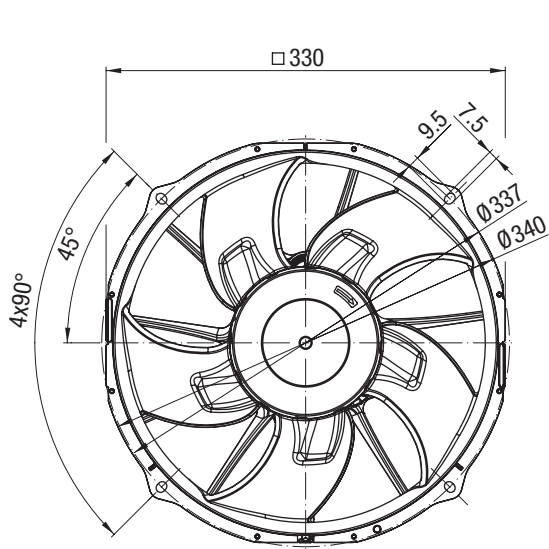
Subject to change (1) 24-volt version (2) above +70 °C with power derating

Curves:

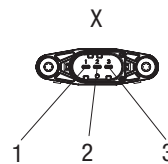
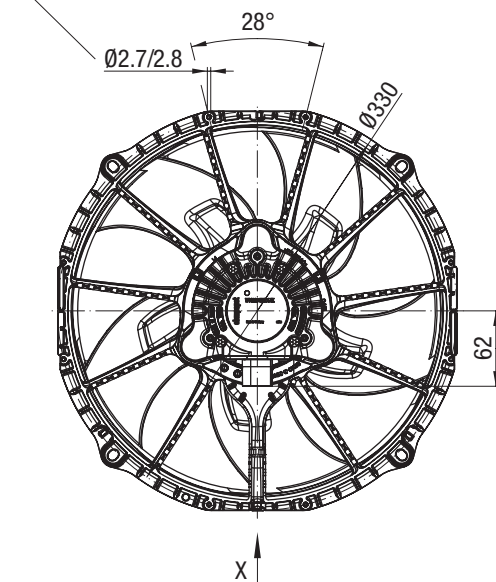


	n rpm	P _{ed} W	I A	L _{wA} dB(A)
Ⓐ 1	3100	250	9,60	81
Ⓐ 2	2985	247	9,47	83
Ⓐ 3	2945	246	9,45	83
Ⓐ 4	2800	242	9,29	83

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. See Page 86 ff for detailed information.



On both sides for screws for fastening plastics, Ø 3.5 mm



Detail X
 1 = + UB
 2 = 0-10 V
 3 = GND

Mating connector on customer circuit:

Housing: TE MCP 2.8, 3-pole 1-1718627-1

Plug contacts: 2x 1-968857-1

1x 1-968855-1

Seal: 2x 828905-1

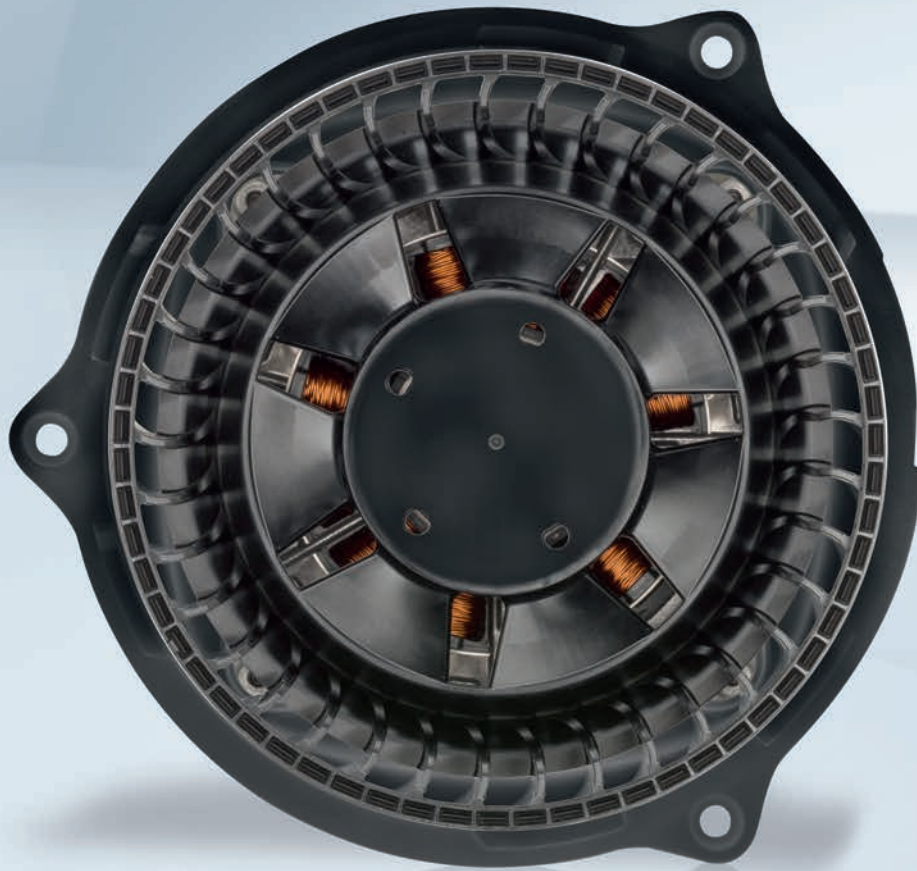
1x 828904-1

Cable with mating connector not included in scope of delivery.



EC centrifugal fans

forward-curved, single inlet



EC centrifugal fan

forward curved, single inlet, for automotive applications

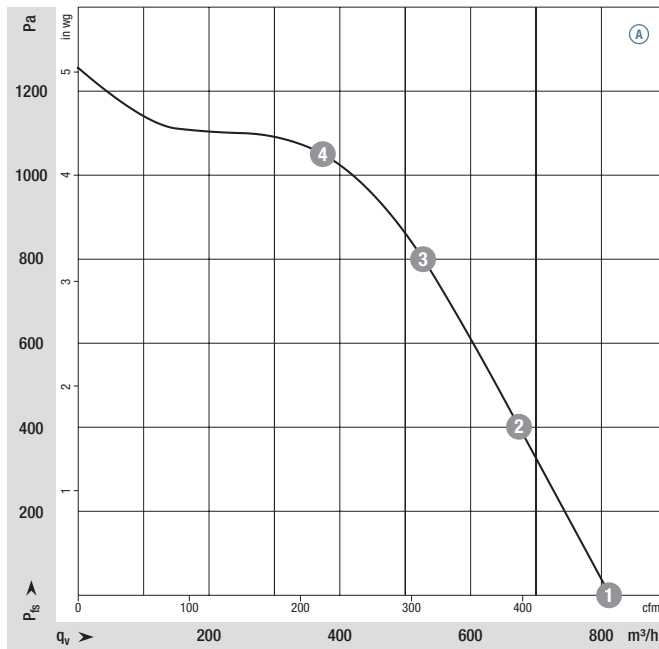


- **Material:** Cover: PP plastic
Impeller: PA plastic
- **Direction of rotation:** Clockwise viewed toward rotor
- **Degree of protection:** Motor: IP 24 KM, electronics: IP 6K9K
- **Insulation class:** "B"
- **Installation position:** Any
- **Condensation drainage holes:** None, open rotor
- **Mode:** Continuous operation (S1)
- **Mounting:** Maintenance-free ball bearings
- **Motor protection:** Locked-rotor protection
- **Approvals:** E1 in preparation

Nominal data		Curve	Nominal voltage	Nominal voltage range	Air flow	Speed	Input power	Input current	Max. back pressure	Sound power level	Perm. ambient temp.	Weight	Techn. features and connection diagram
Type	Motor	VDC	VDC	m ³ /h	rpm	W	A	Pa	dB(A)	°C	kg		
R3G 146-EC50 -01 ⁽¹⁾	M3G 084-BF	Ⓐ 26	16-32	815	2750	280	10,8	0	79	-40..+85 ⁽²⁾	1,5	P. 84 / S)	

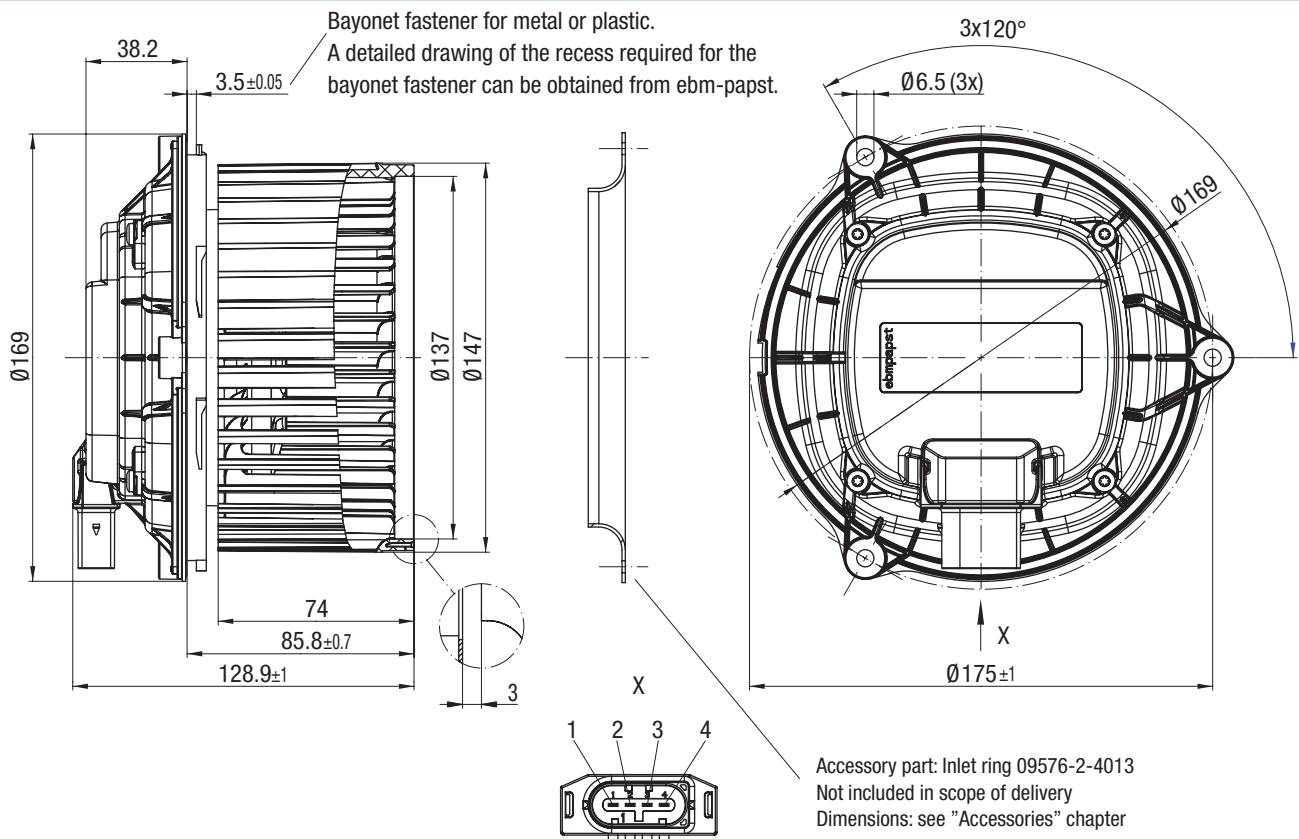
Subject to change (1) 24-volt version (2) above +75 °C with power derating

Curves:



	n rpm	P _{ed} W	I A	L _{wA} dB(A)
Ⓐ 1	2750	280	10,8	79
Ⓐ 2	3245	280	10,8	78
Ⓐ 3	3815	280	10,8	78
Ⓐ 4	4225	245	9,55	79

Air performance measured according to: ISO 5801, installation category A, in 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. See Page 86 ff for detailed information.

**Mating connector on customer circuit:**

Housing: TE MCP 2.8, 4-pole 1-1718628-1

Plug contacts: 2x 1-968857-1

2x 1-968855-1

Seal: 2x 828905-1

2x 828904-1

Cable with mating connector not included in scope of delivery.

Detail X4-pole connector, pluggable with cable from accessories
(not included in scope of delivery)

1 = diagnostic output

2 = PWM

3 = + UB

4 = GND



EC centrifugal fans - RadiCal

backward curved, with brushless DC motor



EC centrifugal fan - RadiCal

backward curved, for automotive applications, Ø 220

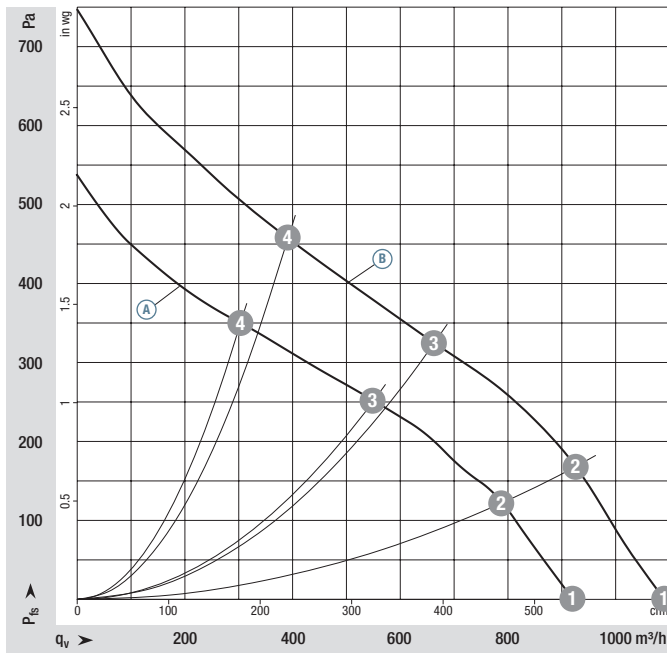


- **Material:** Impeller: Glass-fiber reinforced PA plastic (according to UL 94 V0)
Rotor: Galvanized
Electronics housing: Die-cast aluminum, painted black
- **Number of blades:** 7
- **Direction of rotation:** Clockwise viewed toward rotor
- **Degree of protection:** Motor: IP 24 KM, electronics: IP 66 / 69 K
- **Insulation class:** "B"
- **Installation position:** Shaft horizontal or rotor on bottom, rotor on top on request
- **Condensation drainage holes:** Rotor side
- **Mode:** Continuous operation (S1)
- **Mounting:** Maintenance-free ball bearings
- **Motor protection:** Reverse polarity and locked-rotor protection
- **Approvals:** EAC

Nominal data		Curve	Nominal voltage	Nominal voltage range	Air flow	Speed	Input power	Input current	Sound power level	Perm. ambient temp.	Weight	Techn. features and connection diagram
Type	Motor	VDC	VDC	m ³ /h	rpm	W	A	dB(A)	°C	kg		
R1G 220-RD04 -03	M1G 074-BF	Ⓐ	12	8-16	920	2720	87	8,4	74	-40..+60	1,5	P. 82 / N)
R1G 220-RD87 -03	M1G 074-BF	Ⓑ	24	16-28	1090	3130	120	6,5	78	-40..+60	1,5	P. 82 / N)

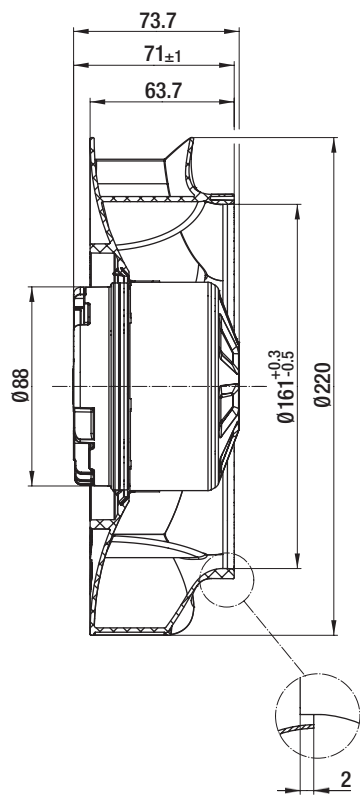
Subject to change

Curves:

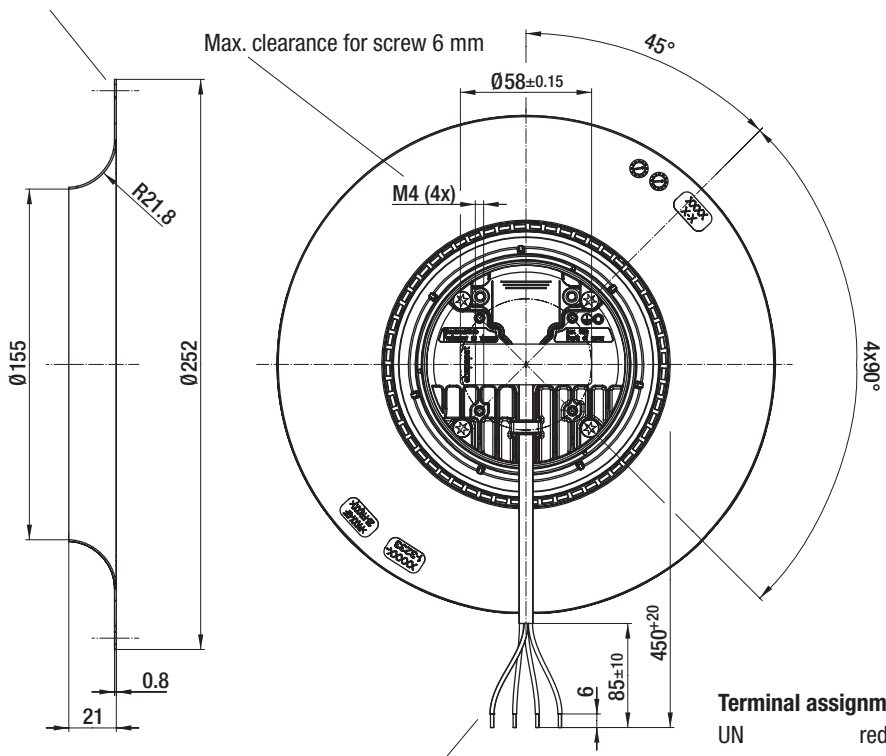


	n rpm	P _{ed} W	I A	L _{WA} dB(A)
Ⓐ ①	2720	87	8,40	74
Ⓐ ②	2645	87	8,53	71
Ⓐ ③	2580	91	8,98	66
Ⓐ ④	2675	87	8,44	69
Ⓑ ①	3130	120	6,50	78
Ⓑ ②	3065	124	6,69	75
Ⓑ ③	2965	125	6,93	70
Ⓑ ④	3060	123	6,69	73

Air performance measured according to: ISO 5801, installation category A, in 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. See Page 86 ff for detailed information.



Accessory part:
inlet ring 09609-2-4013,
not included in scope of delivery.



Cable:
FLRYW 4x 0.75 mm², 4x crimped splices

Terminal assignment

UN	red
PWM/LIN	yellow
DUE	white
GND	blue

EC centrifugal fan - RadiCal

backward curved, for automotive applications, Ø 250

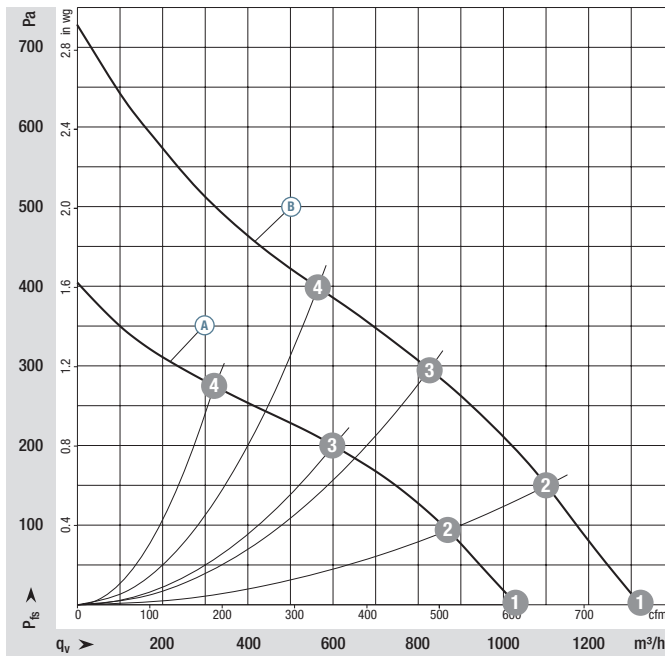


- **Material:** Impeller: Glass-fiber reinforced PA plastic (according to UL 94 V0)
Rotor: Galvanized
Electronics housing: Die-cast aluminum, painted black
- **Number of blades:** 7
- **Direction of rotation:** Clockwise viewed toward rotor
- **Degree of protection:** Motor: IP 24 KM, electronics: IP 66 / 69 K
- **Insulation class:** "B"
- **Installation position:** Shaft horizontal or rotor on bottom, rotor on top on request
- **Condensation drainage holes:** Rotor side
- **Mode:** Continuous operation (S1)
- **Mounting:** Maintenance-free ball bearings
- **Motor protection:** Reverse polarity and locked-rotor protection
- **Approvals:** EAC

Nominal data		Curve	Nominal voltage	Nominal voltage range	Air flow	Speed	Input power	Input current	Sound power level	Perm. ambient temp.	Weight	Techn. features and connection diagram
Type	Motor	VDC	VDC	m ³ /h	rpm	W	A	dB(A)	°C	kg		
R1G 250-RC67 -03	M1G 074-CF	Ⓐ	12	8-16	1030	2000	65	6,4	71	-40..+70	1,5	P. 82 / N)
R1G 250-RC75 -03	M1G 074-CF	Ⓑ	24	16-28	1325	2550	130	7,1	76	-40..+60	1,5	P. 82 / N)

Subject to change

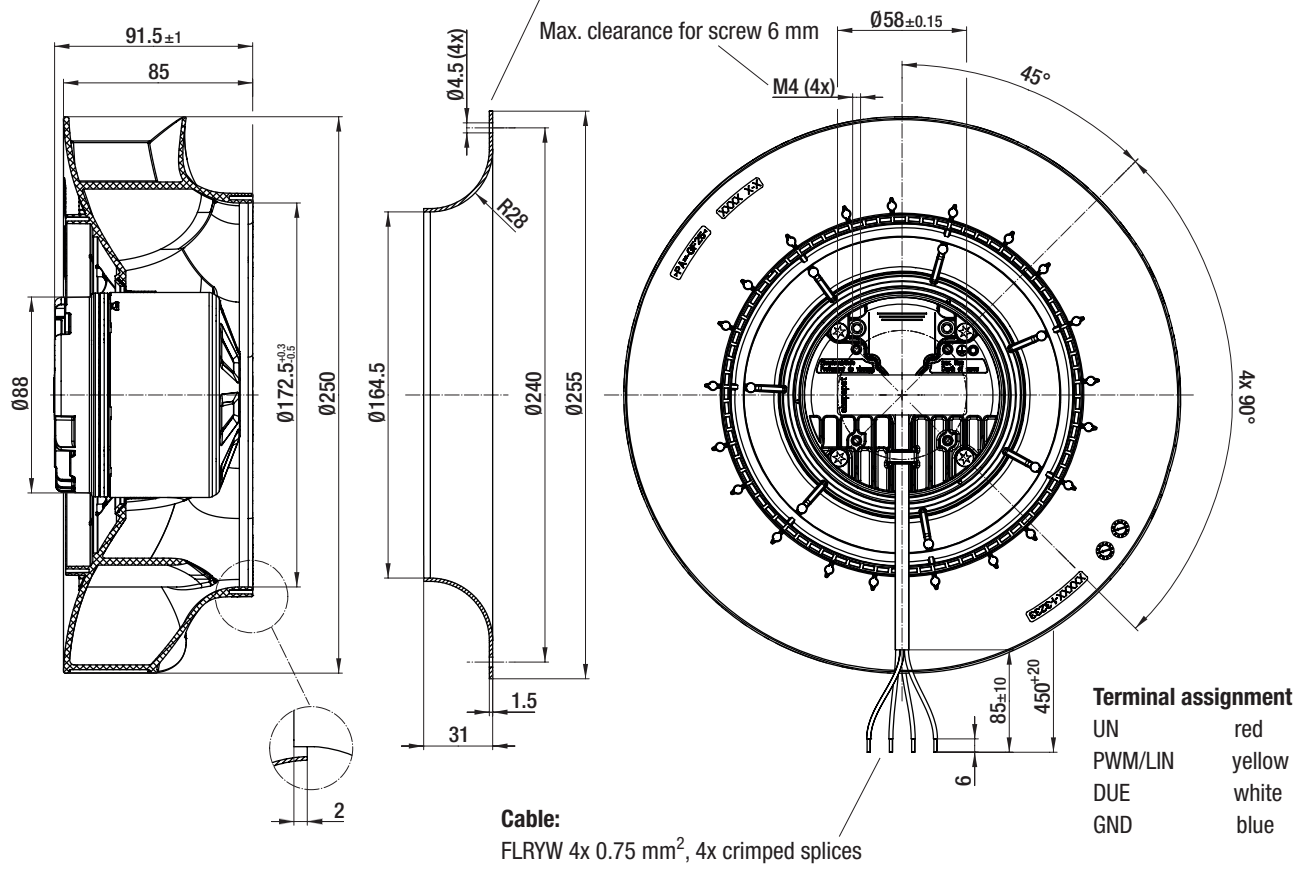
Curves:



	n rpm	P _{ed} W	I A	L _{WA} dB(A)
Ⓐ ①	2000	65	6,40	71
Ⓐ ②	1935	69	6,85	66
Ⓐ ③	1900	71	7,14	62
Ⓐ ④	1975	67	6,60	65
Ⓑ ①	2550	130	7,10	76
Ⓑ ②	2445	131	7,45	72
Ⓑ ③	2370	134	7,73	69
Ⓑ ④	2410	132	7,59	70

Air performance measured according to: ISO 5801, installation category A, in 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. See Page 86 ff for detailed information.

Accessory part:
inlet ring 96359-2-4013
not included in scope of delivery.



EC centrifugal fan - RadiCal

backward curved, for automotive applications, Ø 280

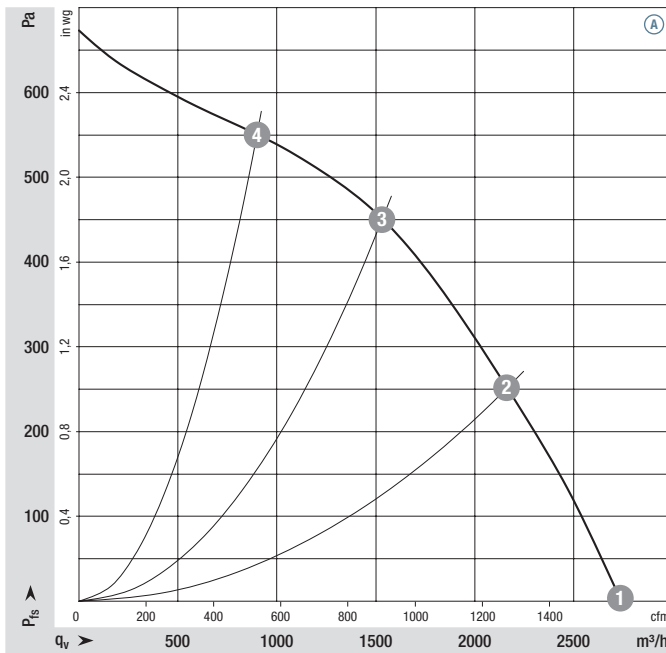


- **Material:** Impeller: Glass-fiber reinforced PA plastic (according to UL 94 V0, EN 45545-2 / HL3)
Rotor: Painted black
Electronics housing: Die-cast aluminum, painted black
- **Number of blades:** 5
- **Direction of rotation:** Clockwise viewed toward rotor
- **Degree of protection:** Motor: IP 24 KM, electronics: IP 66 / 69 K
- **Insulation class:** "B"
- **Installation position:** Any
- **Condensation drainage holes:** Rotor side
- **Mode:** Continuous operation (S1)
- **Mounting:** Maintenance-free ball bearings

Nominal data		Curve	Nominal voltage	Nominal voltage range	Air flow	Speed	Input power	Input current	Sound power level	Perm. ambient temp.	Weight	Techn. features and connection diagram
Type	Motor	VDC	VDC	m ³ /h	rpm	W	A	dB(A)	°C	kg		
R3G 280-RU26 -81 ⁽¹⁾	M3G 084-CF	Ⓐ	26	16-32	2740	2350	252	10,5	80	-40..+60	3,0	P. 81 / P)

Subject to change (1) 24-volt version (also available as a 12-volt version)

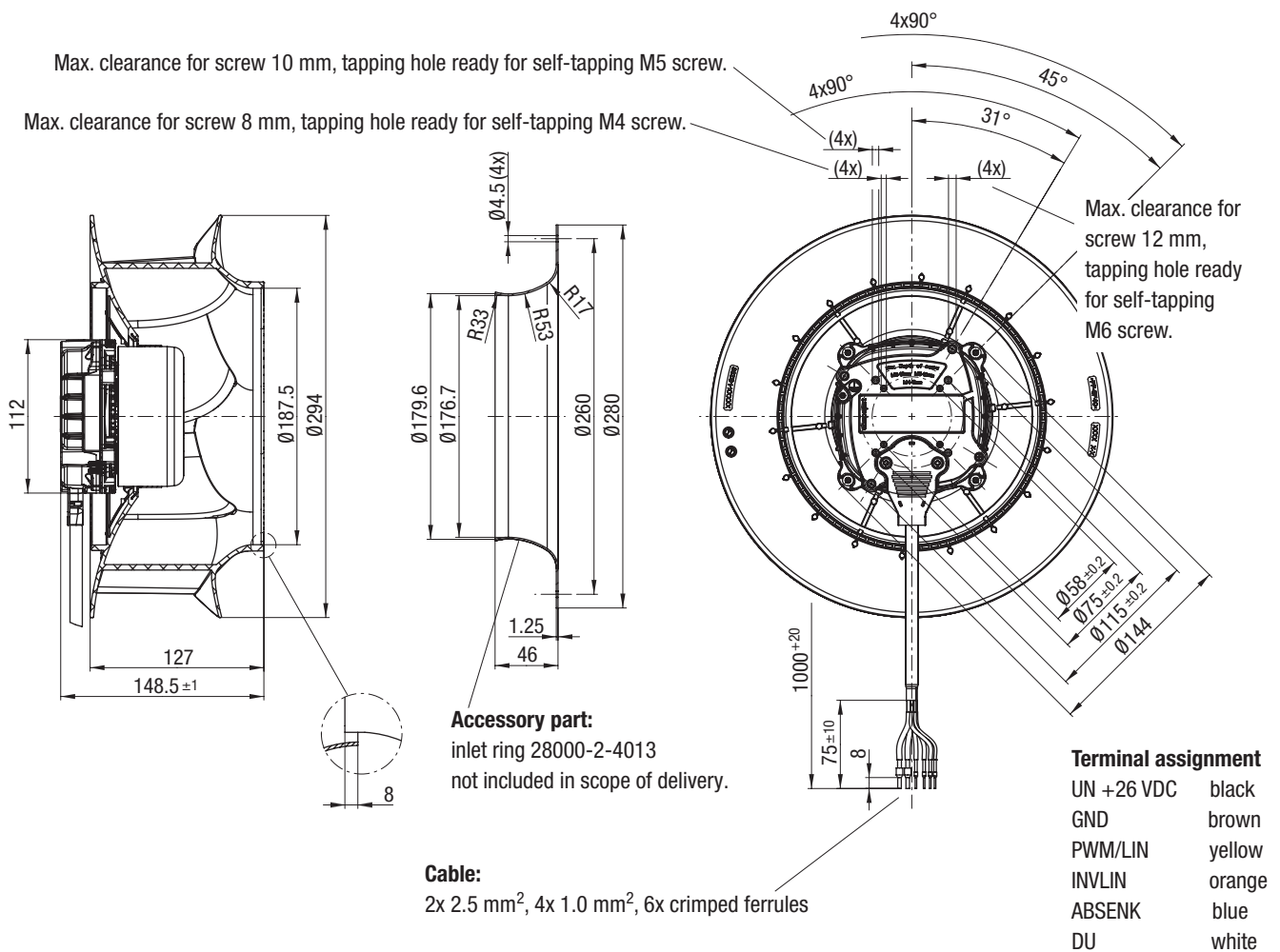
Curves:



	n rpm	P _{ed} W	I A	L _{wA} dB(A)
Ⓐ 1	2350	252	10,5	80
Ⓐ 2	2280	298	12,4	75
Ⓐ 3	2265	309	12,9	73
Ⓐ 4	2305	278	11,6	74

Air performance measured according to: ISO 5801, installation category A, in 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. See Page 86 ff for detailed information.

- **Technical features:** See connection diagram P. 81
- **Cable exit:** To the side
- **Protection class:** III
- **Approvals:** EAC, E1



EC centrifugal fan - RadiCal

backward curved, for automotive applications, Ø 280

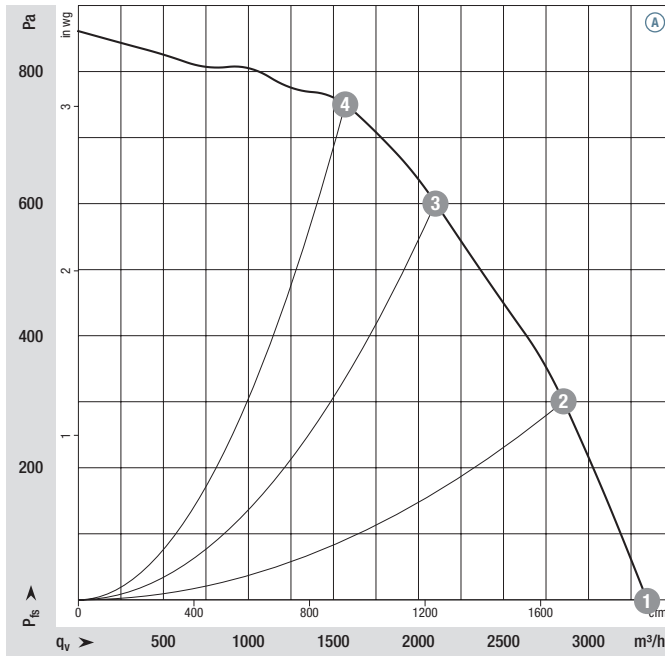


- **Material:** Impeller: Glass-fiber reinforced PA plastic (according to UL 94 V0, EN 45545-2 / HL3)
Rotor: Painted black
Electronics housing: Die-cast aluminum, painted black
- **Number of blades:** 5
- **Direction of rotation:** Clockwise viewed toward rotor
- **Degree of protection:** Motor: IP 24 KM, electronics: IP 66 / 69 K
- **Insulation class:** "B"
- **Installation position:** Any
- **Condensation drainage holes:** Rotor side
- **Mode:** Continuous operation (S1)
- **Mounting:** Maintenance-free ball bearings

Nominal data		Curve	Nominal voltage	Nominal voltage range	Air flow	Speed	Input power	Input current	Sound power level	Perm. ambient temp.	Weight	Techn. features and connection diagram
Type	Motor	VDC	VDC	m ³ /h	rpm	W	A	dB(A)	°C	kg		
R3G 280-RU65 -82	M3G 084-CF	Ⓐ	24	16-32	3345	2830	460	19,0	85	-40..+60	3,0	P. 76 / S)

Subject to change

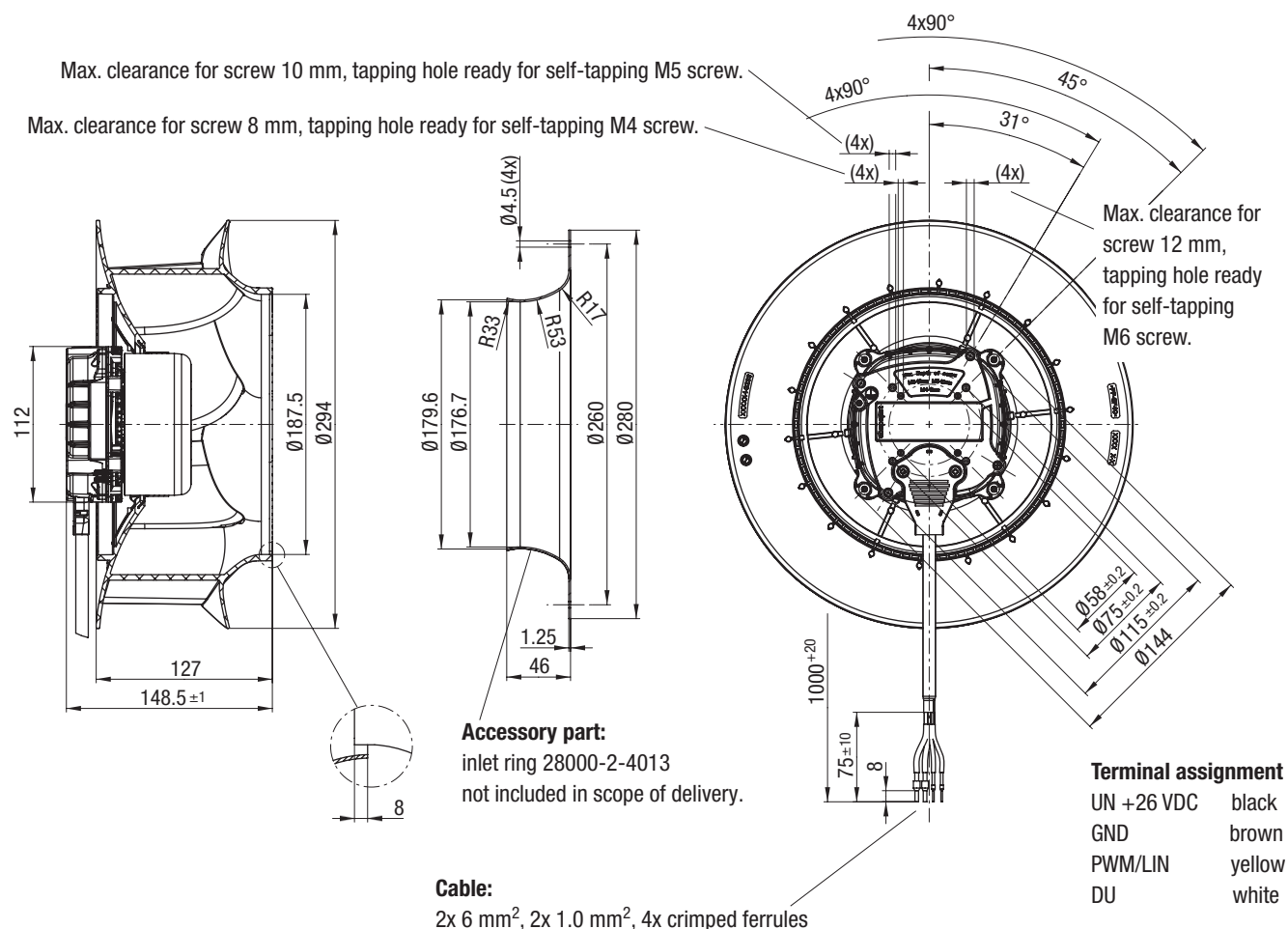
Curves:



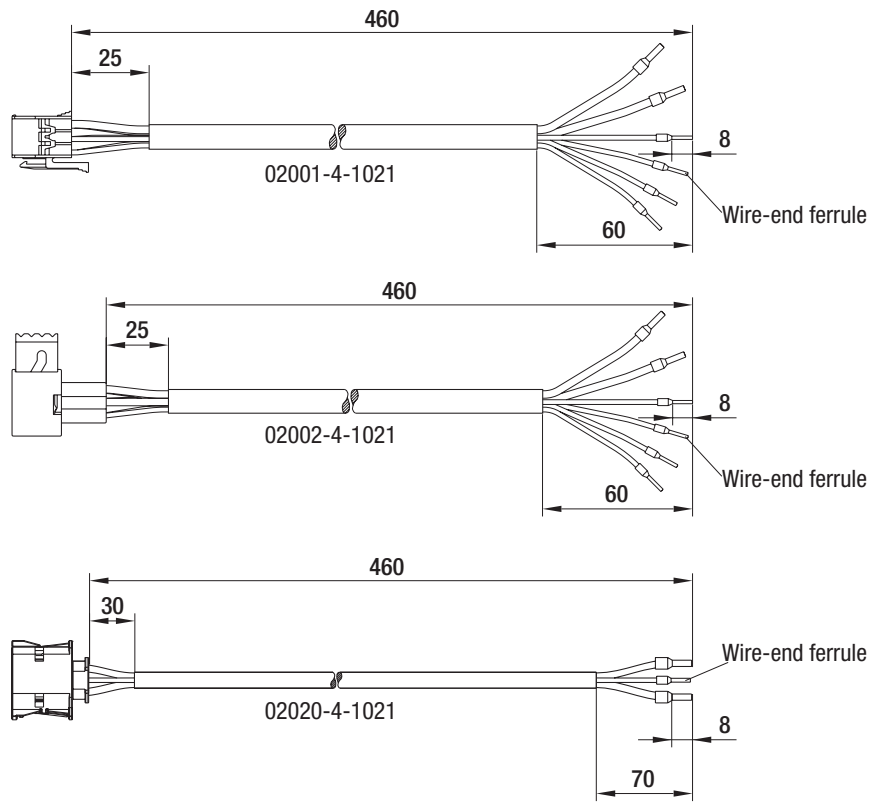
	n rpm	P _{ed} W	I A	L _{wA} dB(A)
Ⓐ 1	2830	460	19,00	85
Ⓐ 2	2830	595	24,69	81
Ⓐ 3	2815	651	27,09	77
Ⓐ 4	2845	631	26,19	77

Air performance measured according to: ISO 5801, installation category A, in 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. See Page 86 ff for detailed information.

- **Technical features:** See connection diagram P. 76
- **Cable exit:** To the side
- **Protection class:** III
- **Approvals:** EAC, E1 in preparation



Cables

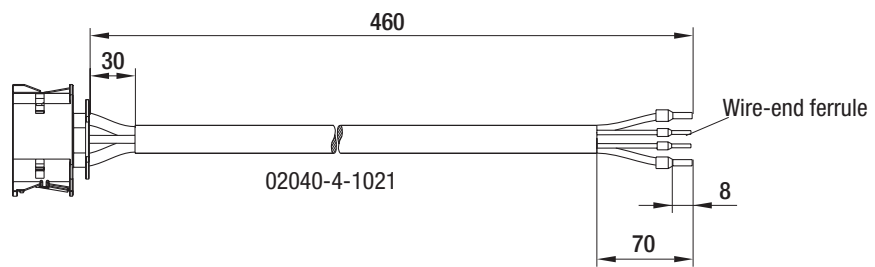
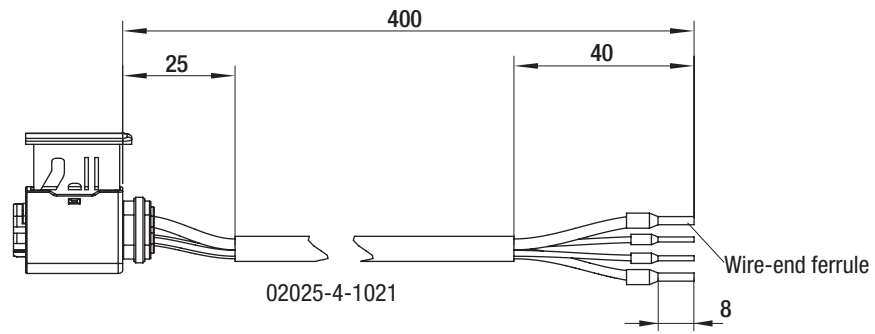


Cables

Part number	Application
02001-4-1021	EC dual centrifugal fan with housing
02002-4-1021	EC axial fan
02020-4-1021	W1G 300-EC

Subject to change

Cables

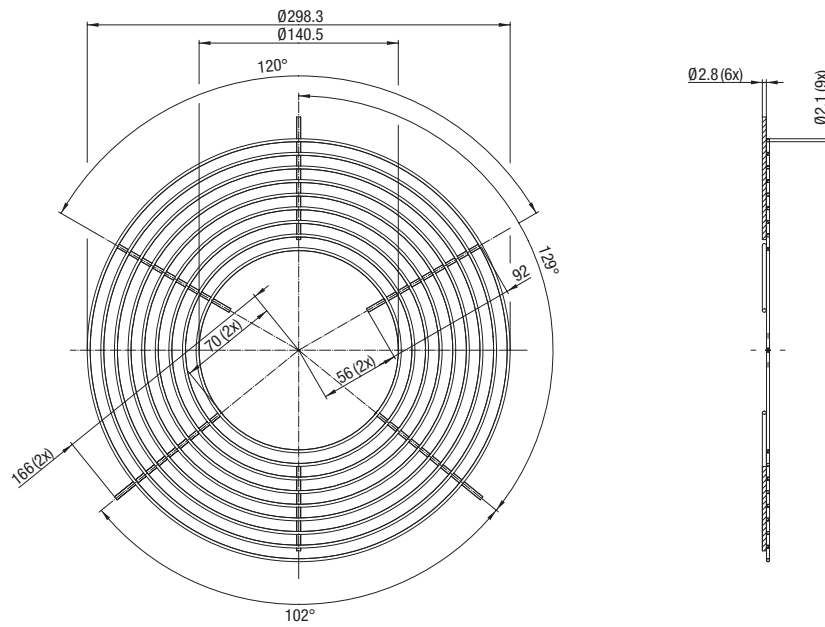


Cables

Part number	Application
02025-4-1021	W3G 250-EC
02040-4-1021	R3G 146-EC

Subject to change

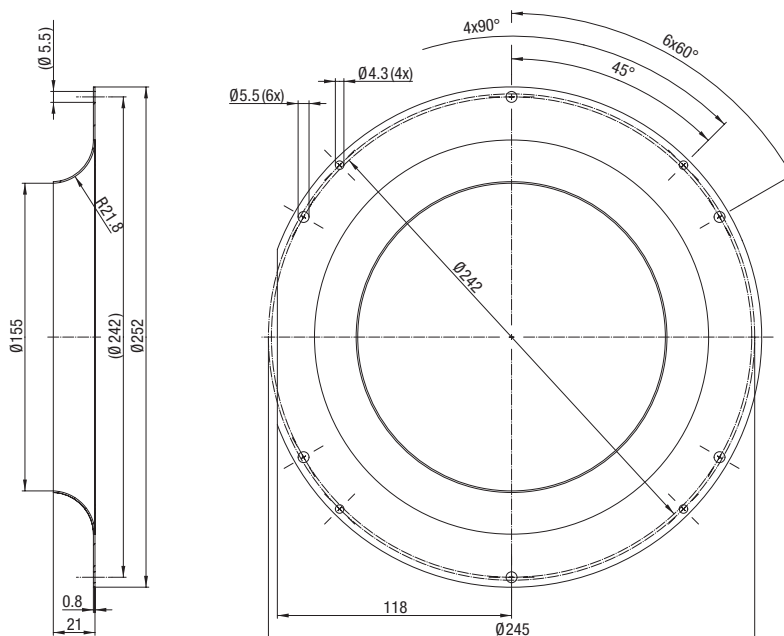
Accessories



Guard grille

Part number	Application
18600-2-4039	W1G 300-EC

Subject to change

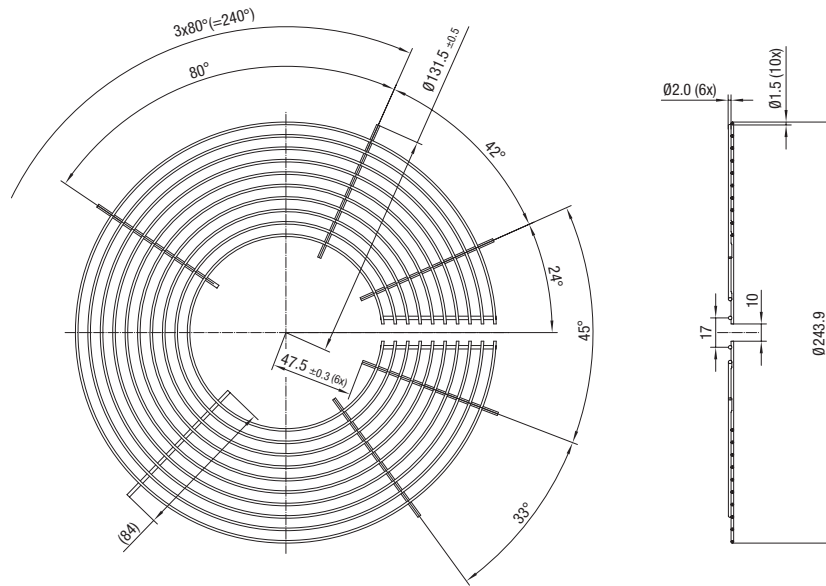


Inlet ring*

Part number	Application
09609-2-4013	R1G 220-RD87-02

Subject to change

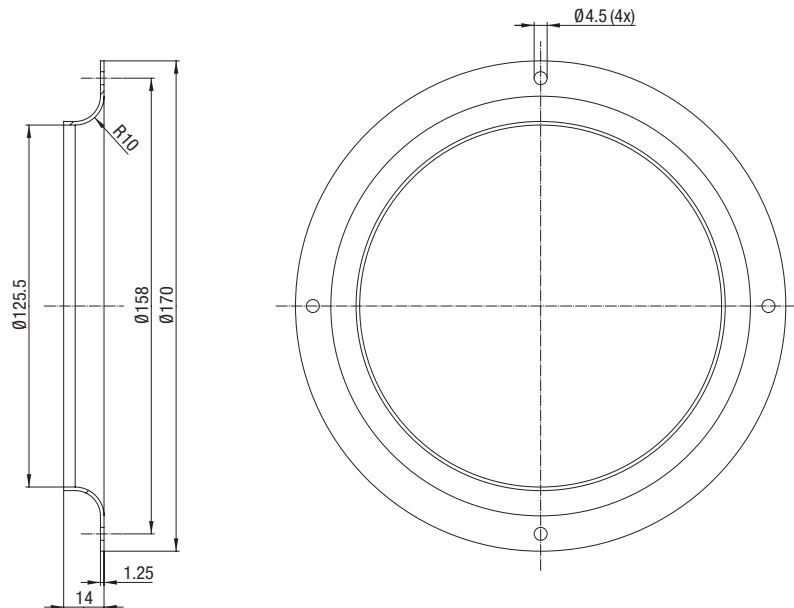
*The inlet rings for the R1G 250 and R1G 280 are pictured fully dimensioned on the respective product pages.



Guard grille

Part number	Application
18605-2-4039	W3G 250-EC

Subject to change



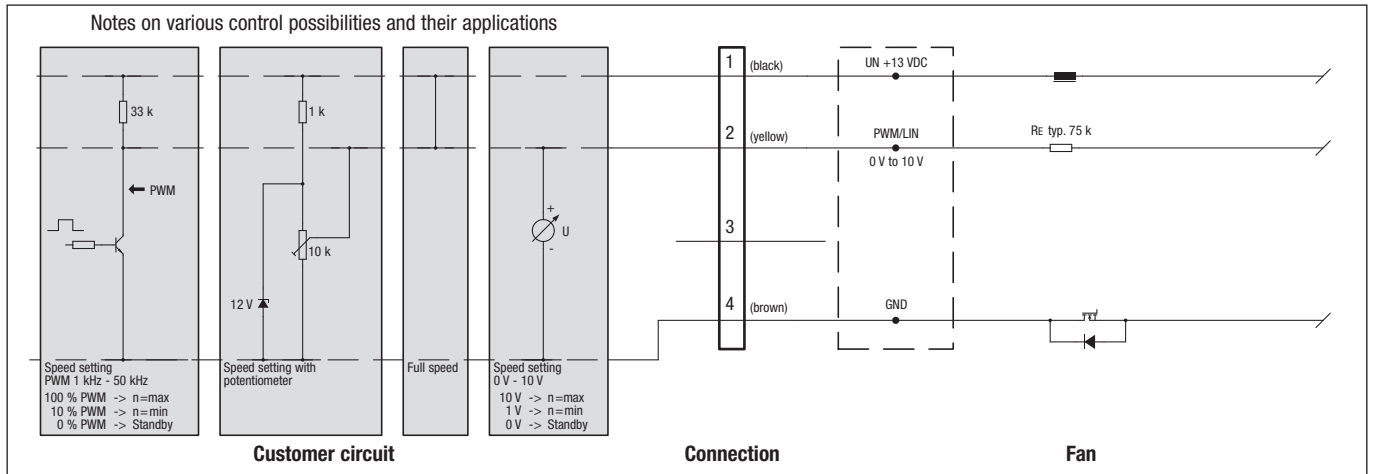
Inlet ring

Part number	Application
09576-2-4013	R3G 146-EC50-01

Subject to change

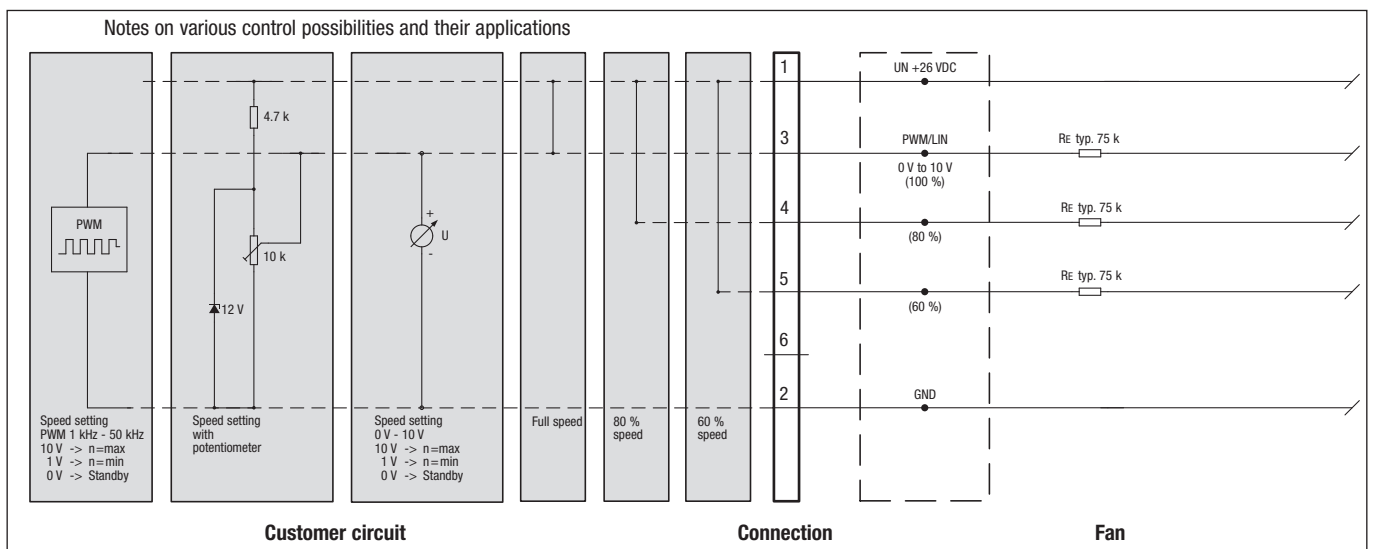
Connection diagram: A)

13 VDC (EC dual centrifugal fan with housing "Premium")



Connection diagram: F)

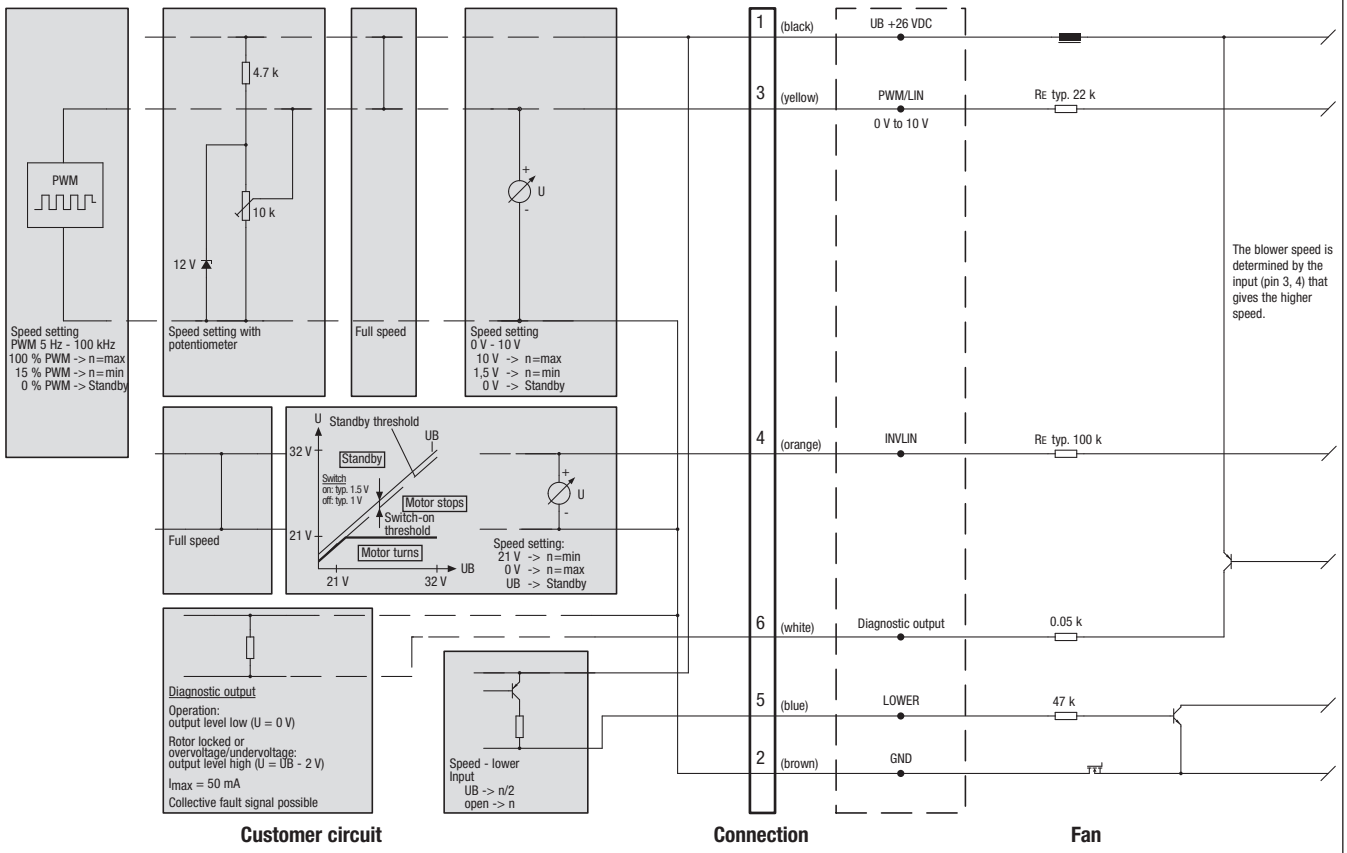
26 VDC (EC dual centrifugal fan with housing "Basic")



Connection diagram: H)

26 VDC (EC axial fan "Premium")

Notes on various control possibilities and their applications

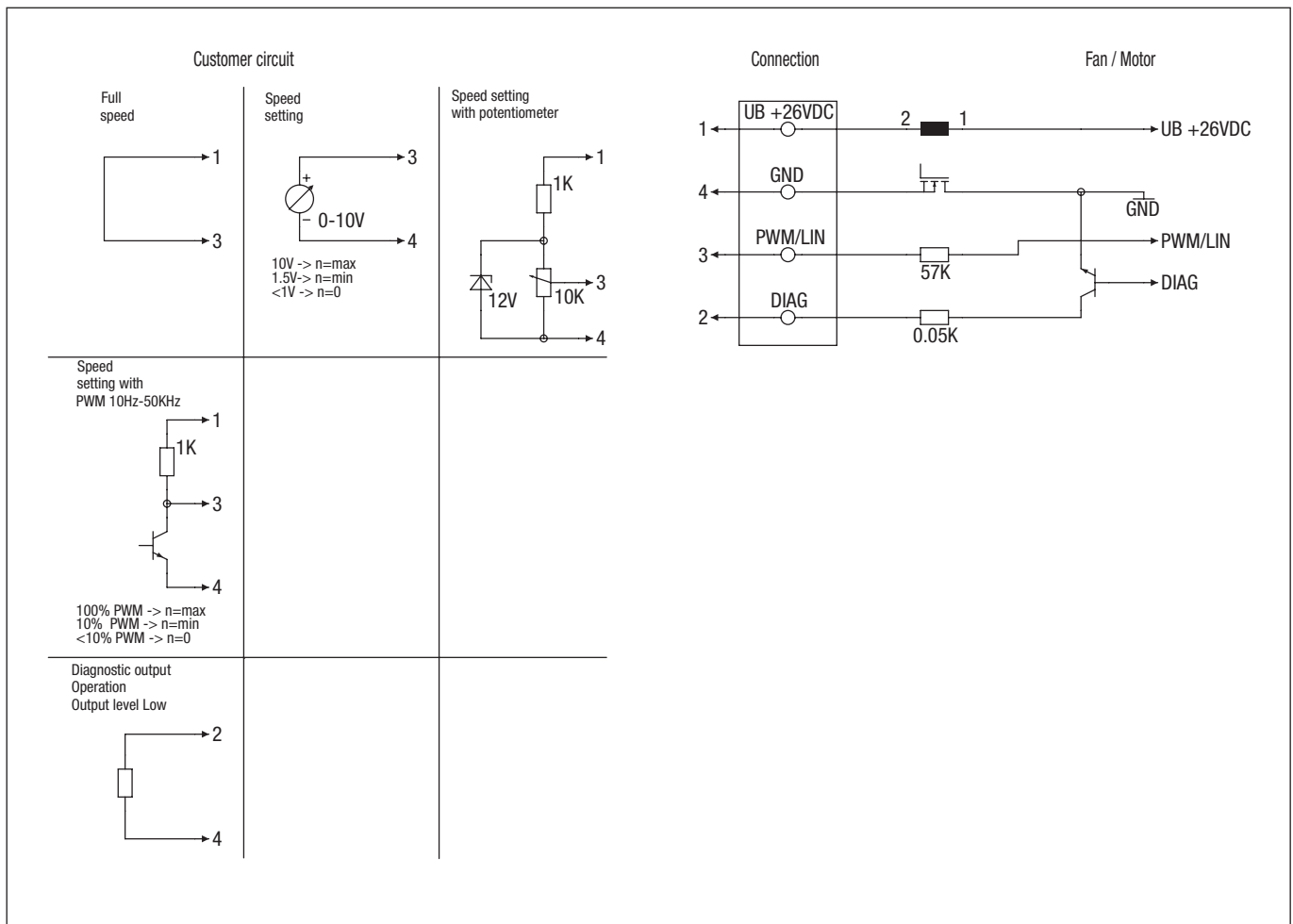


Connection diagram: S)

26 VDC (R3G 280-RU65-82)

Technical features:

- Control input 0-10 VDC / PWM
- Fault output (high-side switch max. 30 mA)
- Undervoltage detection
- Temperature derating
- Soft start / reverse polarity and locked-rotor protection
- Thermal overload protection for electronics
- Motor current limitation
- Overvoltage detection
- Load dump (58 V)



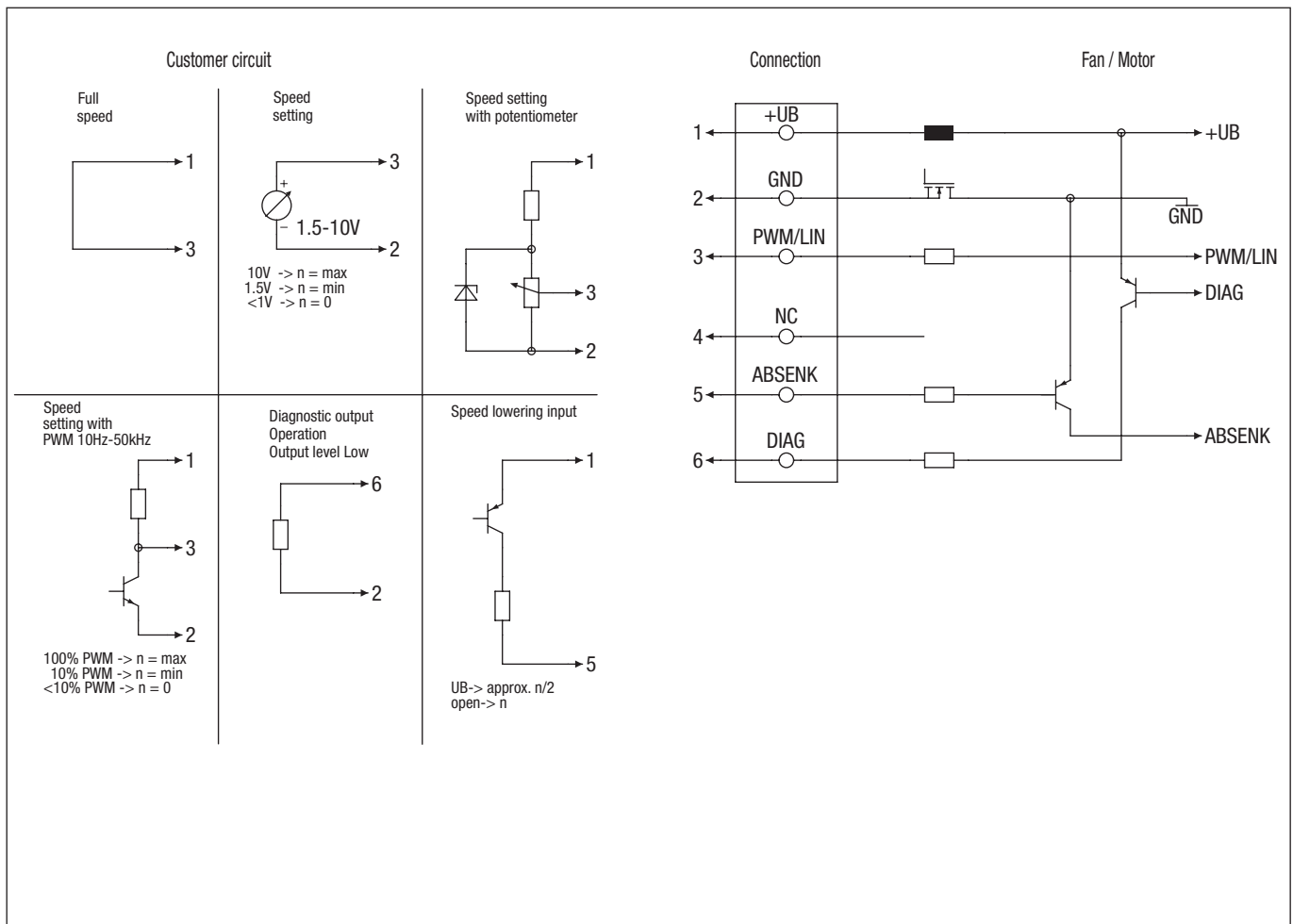
Connection	Designation	Color	Assignment/function
1	UB +26 VDC	black	Power supply 26 VDC
2	DIAG	white	Diagnostic output
3	PWM/LIN	yellow	Analog voltage control input 0-10 V or PWM
4	GND	brown	Power supply GND, reference ground

Connection diagram: K)

13 VDC (EC axial fan "Premium")

Technical features:

- Control input 0-10 VDC / PWM
- Lowering input
- Fault output (high-side switch max. 30 mA)
- Undervoltage detection
- Power limiter
- Reverse polarity and locked-rotor protection
- Soft start
- Thermal overload protection for electronics
- Motor current limitation
- Overvoltage detection
- Temperature derating
- Load dump (58 V)



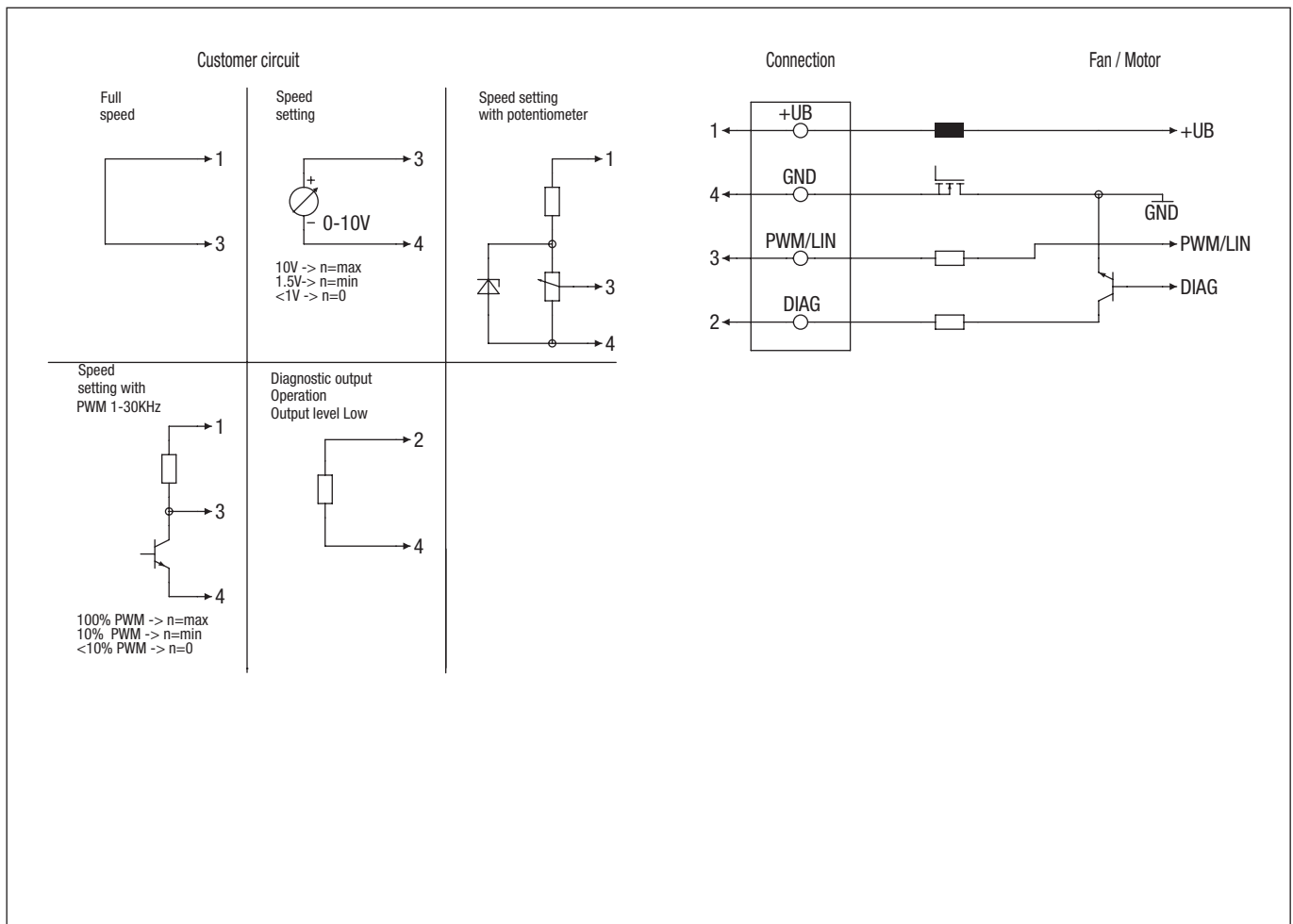
Connection	Designation	Color	Assignment/function
1	+UB	black	Power supply
2	GND	brown	Power supply GND, reference ground
3	PWM/LIN	yellow	Analog voltage control input 0-10 V or PWM
4	NC	orange	Not used / no function
5	ABSENK	blue	Lowering input
6	DIAG	white	Diagnostic output - Operation: Output level low (U = 0 V) - Rotor blocked or overvoltage/undervoltage Output level high (U = UB - 2 V) - I _{max} = 50 mA - Collective fault signal possible

Connection diagram: L)

13/26 VDC (EC axial fan "Power")

Technical features:

- Control input 0-10 VDC / PWM
- Fault output (high-side switch max. 30 mA)
- Undervoltage detection
- Temperature derating / power limiter
- Soft start / reverse polarity and locked-rotor protection
- Thermal overload protection for electronics
- Motor current limitation
- Overvoltage detection
- Load dump (58 V)



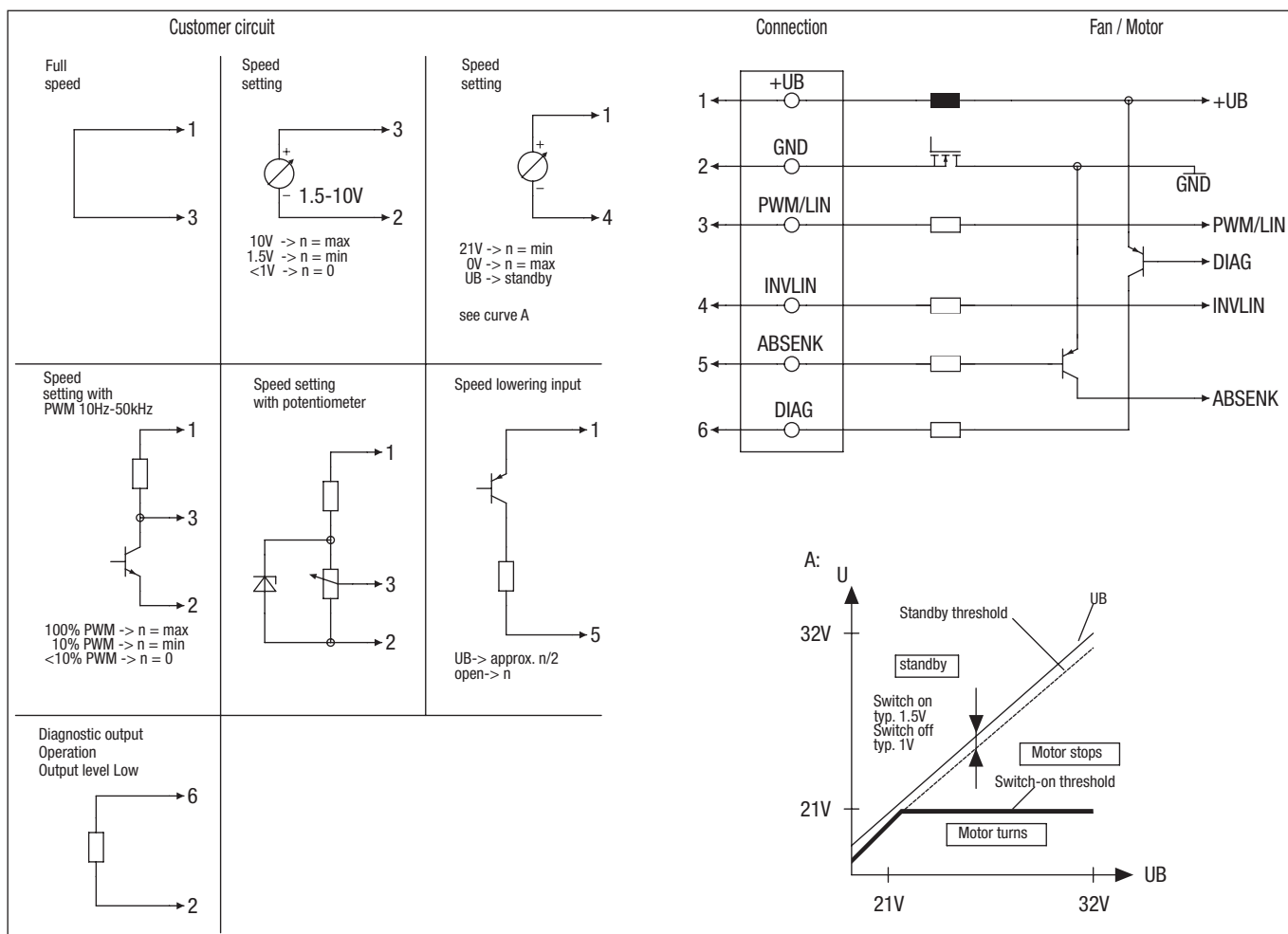
Connection	Designation	Color	Assignment/function
1	+UB	black	Power supply
2	DIAG	white	Diagnostic output - Operation: Output level low (U = 0 V) - Rotor blocked or overvoltage/undervoltage Output level high (U = UB - 2 V) - I _{max} = 50 mA - Collective fault signal possible
3	PWM/LIN	yellow	Analog voltage control input 0-10 V or PWM
4	GND	brown	Power supply GND, reference ground

Connection diagram: D)

26 VDC (EC axial fan "Premium & Power")

Technical features:

- Control input 0-10 VDC / PWM
- Lowering input
- INVLIN (inverse linear control input)
- Fault output (high-side switch max. 30 mA)
- Undervoltage detection
- Power limiter
- Reverse polarity and locked-rotor protection
- Soft start
- Thermal overload protection for electronics
- Motor current limitation
- Overvoltage detection
- Temperature derating
- Load dump (58 V)



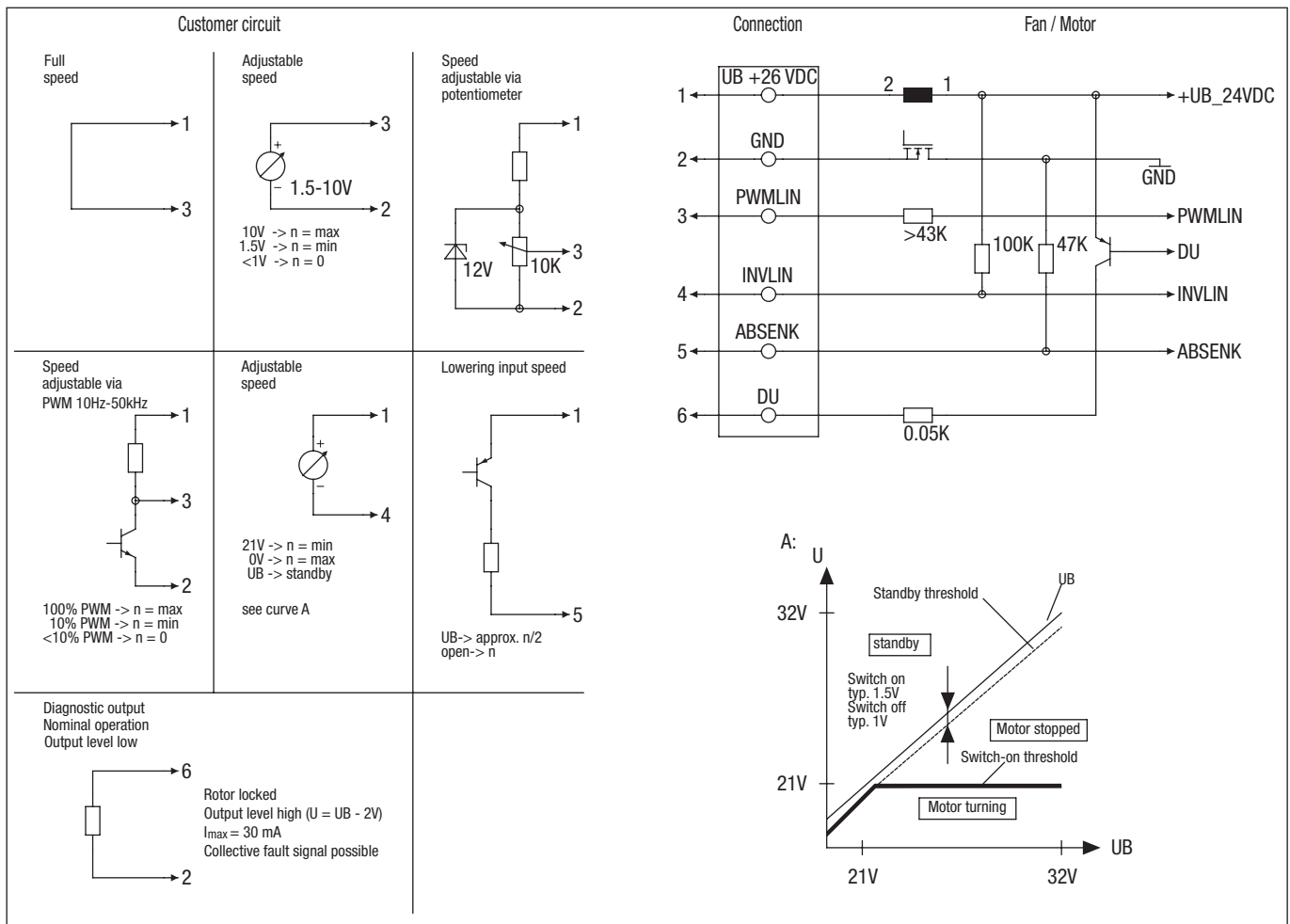
Connection	Designation	Color	Assignment/function
1	+UB	black	Power supply
2	GND	brown	Power supply GND, reference ground
3	PWM/LIN	yellow	Analog voltage control input 0-10 V or PWM
4	INVLIN	orange	Control input, inverse linear
5	ABSENK	blue	Lowering input
6	DIAG	white	Diagnostic output - Operation: Output level low ($U = 0\text{ V}$) - Rotor blocked or overvoltage/undervoltage Output level high ($U = UB - 2\text{ V}$) - $I_{max} = 50\text{ mA}$ - Collective fault signal possible

Connection diagram: P)

26 VDC (R3G 280-RU26-81)

Technical features:

- Control input 0-10 VDC / PWM
- Lowering input
- INVLIN (inverse linear control input)
- Fault output (high-side switch max. 30 mA)
- Undervoltage detection
- Power limiter
- Reverse polarity and locked-rotor protection
- Soft start
- Thermal overload protection for electronics
- Motor current limitation
- Overvoltage detection
- Temperature derating
- Load dump (58 V)



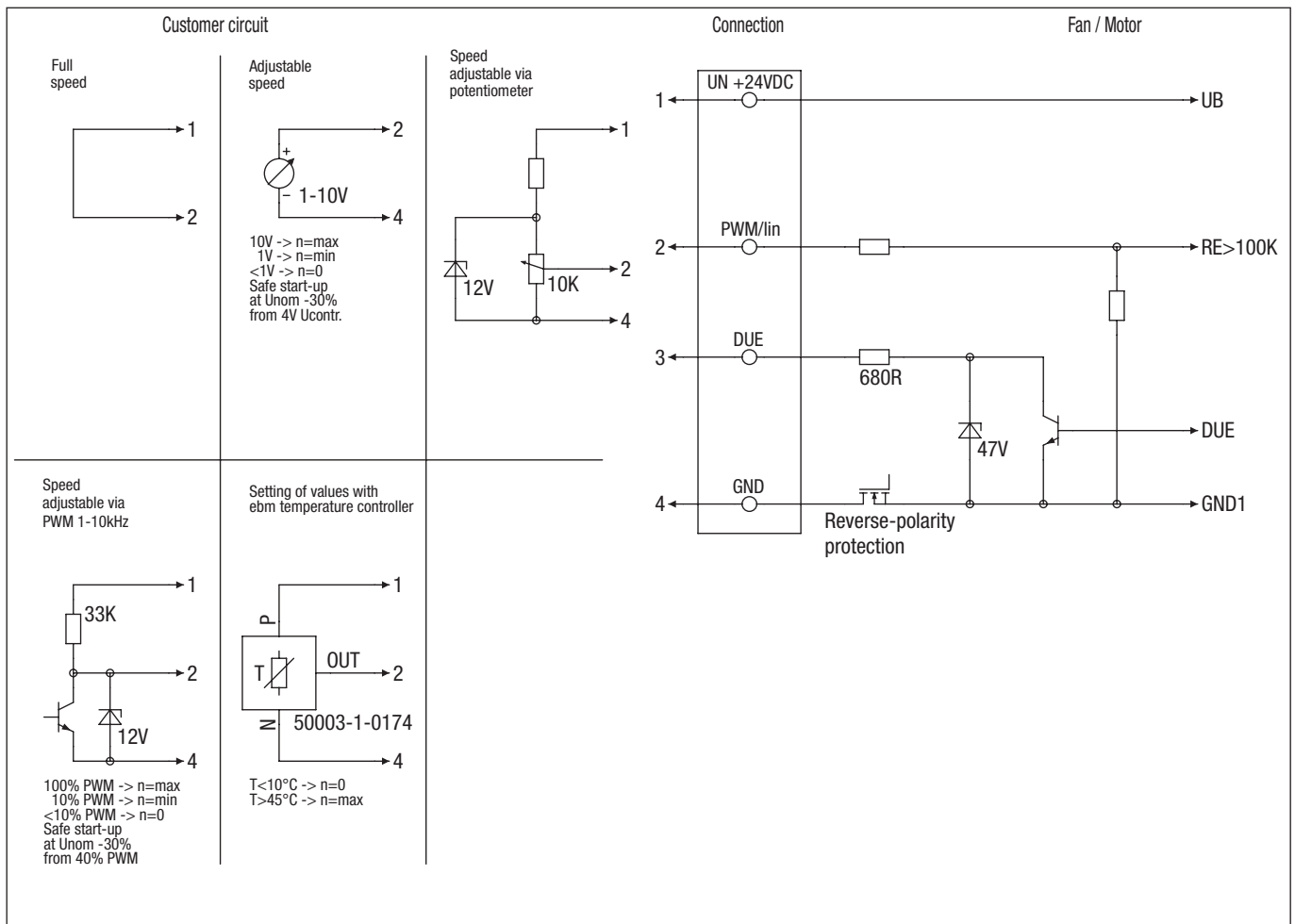
Connection	Designation	Color	Assignment/function
1	UB +26 VDC	black	Power supply 26 VDC
2	GND	brown	Power supply GND, reference ground
3	PWM/LIN	yellow	Analog voltage control input 0-10 V or PWM
4	INVLIN	orange	Control input, inverse linear
5	ABSENK	blue	Lowering input
6	DU	white	Diagnostic output

Connection diagram: N)

12/24 VDC (R1G 220/250)

Technical features:

- Control input 0-10 VDC / PWM
- Tach output
- Reverse polarity and locked-rotor protection
- Soft start
- Motor current limitation
- Temperature derating



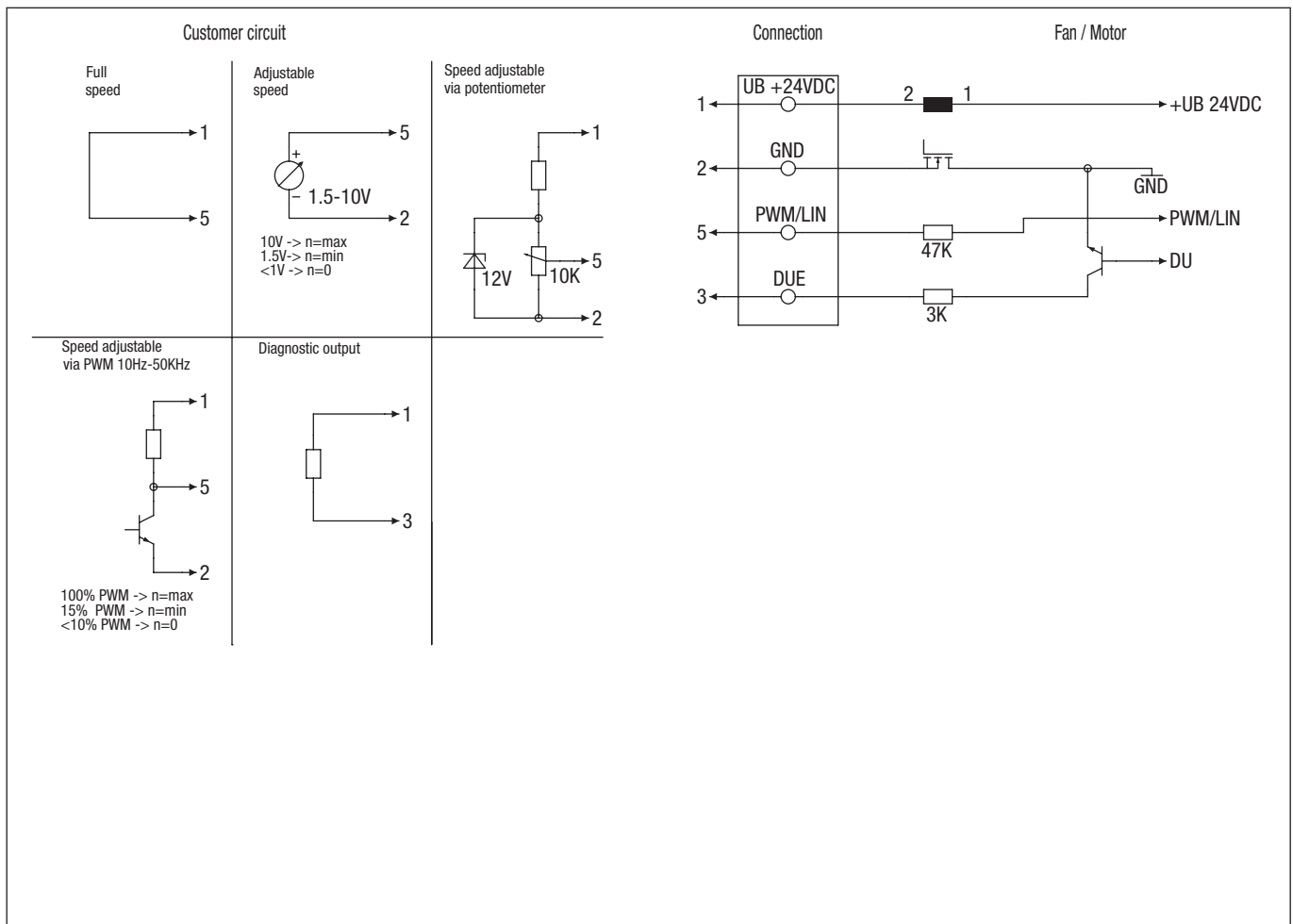
Connection	Designation	Color	Assignment/function
1	UN	red	Power supply 24 VDC, maximum ripple 3.5 %
2	PWM/LIN	yellow	Control input Re > 100 K
3	DUE	white	Tach output, 3 pulses per revolution, Isink max. = 10 mA
4	GND	blue	Reference ground

Connection diagram: Q)

26 VDC (K3G 097-AS82-82)

Technical features:

- Control input 0-10 VDC / PWM
- Undervoltage detection
- Power limiter
- Soft start
- Thermal overload protection for electronics
- Motor current limitation
- Overvoltage detection
- Load dump (58 V)



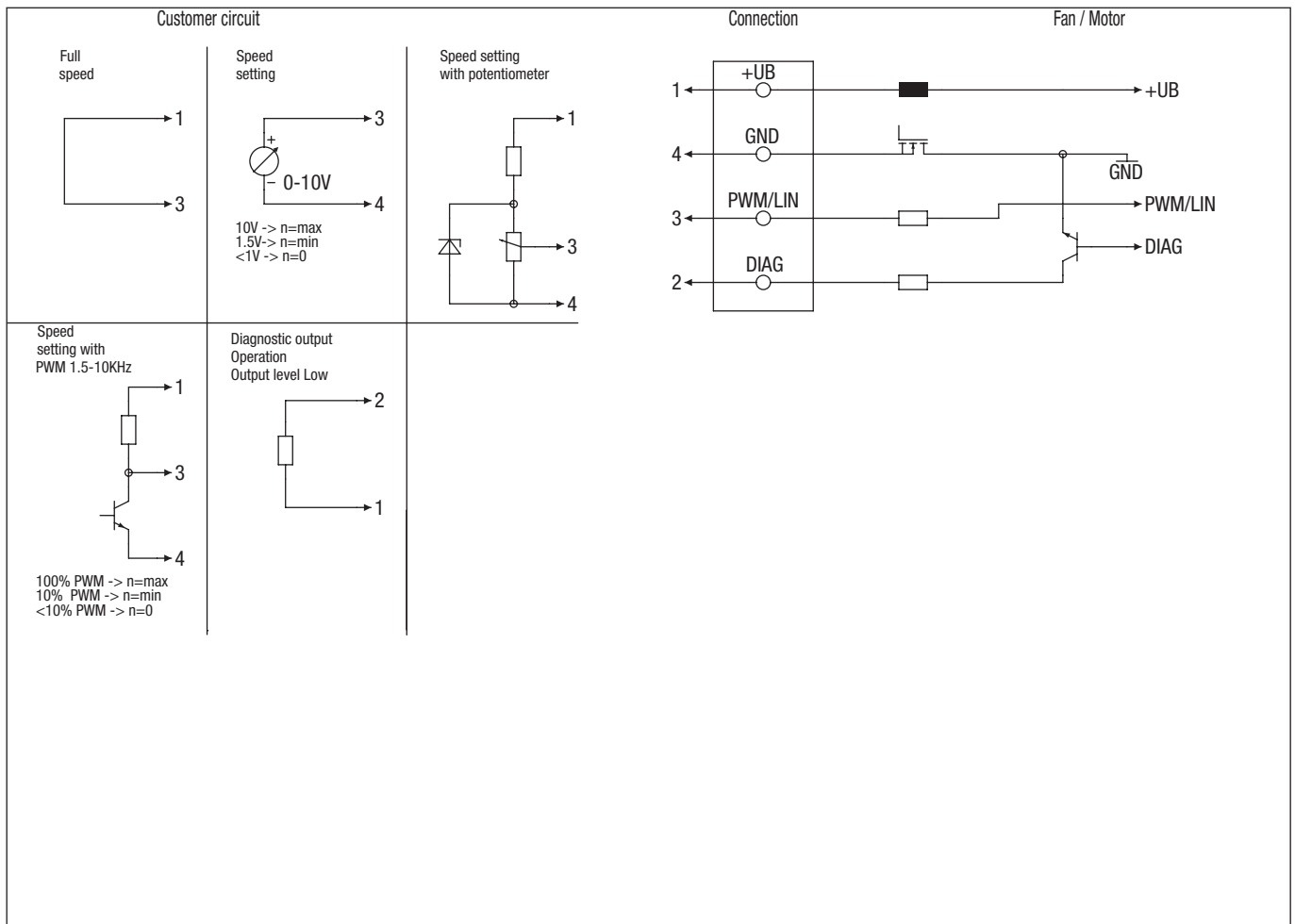
Connection	Designation	Color	Assignment/function
1	+ UB 24 VDC	black	Power supply 24 VDC, voltage range see nameplate
2	- UB 0 VDC	brown	Power supply GND, reference ground
5	PWM/LIN	yellow	Analog voltage control input 0-10 V or PWM
3	DUE	white	Fan OK: high, fan error: low, Isink max = 10 mA

Connection diagram: S)

26 VDC (W3G 250-EC / R3G 146-EC)

Technical features:

- Control input 0-10 VDC / PWM
- Fault output (low-side switch max. 30 mA)
- Undervoltage detection
- Temperature derating / power limiter
- Soft start / reverse polarity and locked-rotor protection
- Thermal overload protection for electronics
- Motor current limitation
- Overvoltage detection
- Load dump (58 V)



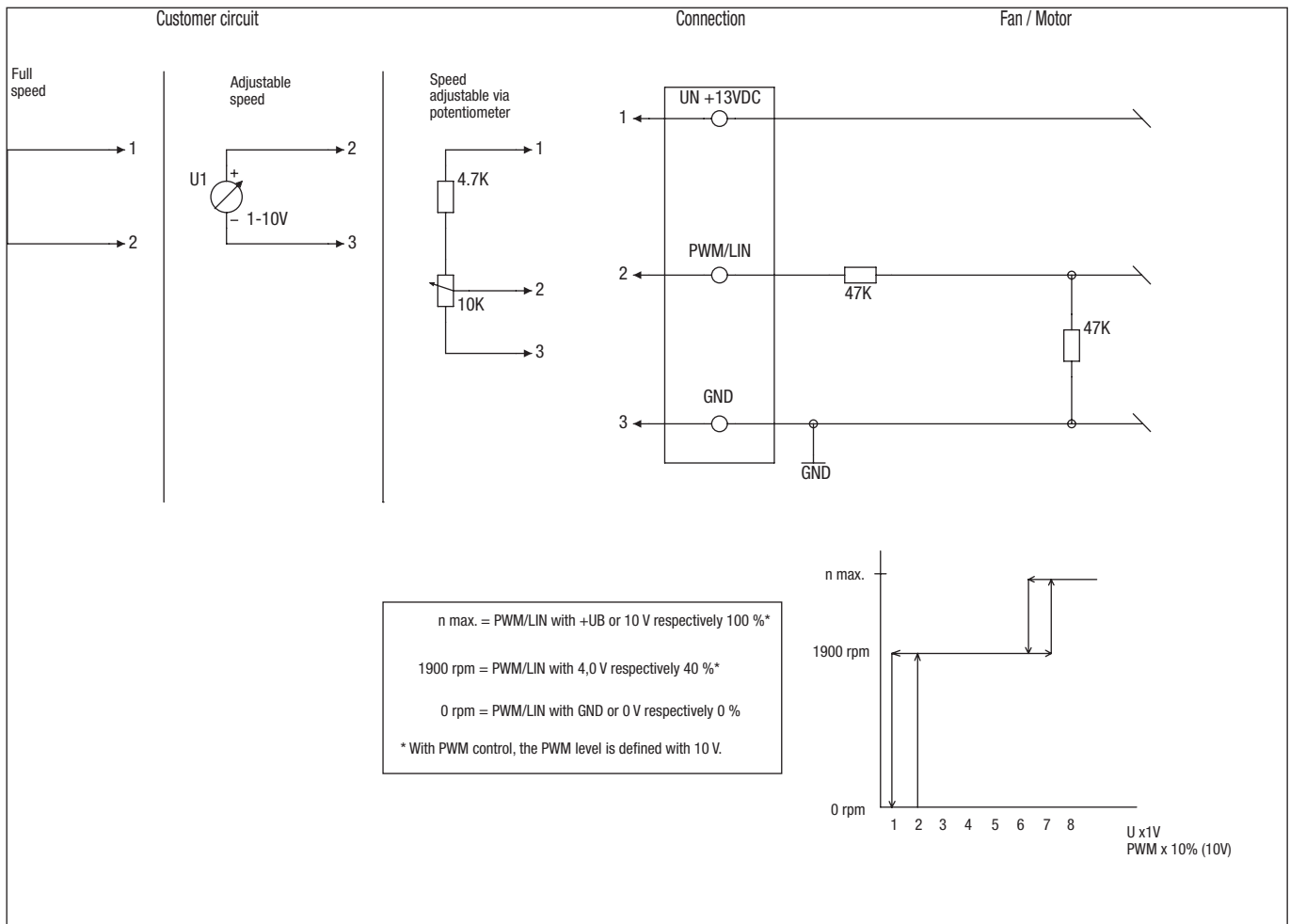
Connection	Designation	Color	Assignment/function
1	+UB	black	Power supply
2	DIAG	white	Diagnostic output - Operation: Output level low - Rotor blocked or overvoltage/undervoltage Output level high - I _{max} = 10 mA
3	PWM/LIN	yellow	Analog voltage control input 0-10 V or PWM
4	GND	brown	Power supply GND, reference ground

Connection diagram: U)

13 VDC (W1G 300-EC12-20)

Technical features:

- Control input 0-10 VDC / PWM
- Locked-rotor protection
- Soft start
- Thermal overload protection for electronics
- Motor current limitation
- Temperature derating



Connection	Designation	Assignment/function
1	UB +13 VDC	Power supply 13 VDC, maximum ripple 3.5 %
2	PWM/LIN	Analog voltage control input 0-10 V or PWM
3	GND	Reference ground

Technical parameters and scope

High standards for all ebm-papst products

At ebm-papst we are always looking to improve our products to be able to offer customers just what they need for their particular requirements. Careful monitoring of the market enables us to constantly incorporate enhancements into our products. As shown by the technical parameters listed below, you can always be sure of finding the right solution from ebm-papst for whatever application you may have in mind.

General performance parameters

Any deviations from the technical data and technical parameters described here are given in the product-specific data sheet.

Degree of protection

The degree 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 installation position is specified in the product-specific data sheets.

Condensation drainage holes

Information on condensation drainage 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 is primarily governed by the thermal load on the bearings.

For the majority of our products we use maintenance-free ball bearings which can be installed in any installation position.

As a rough guide (depending on the general conditions), the ball bearings have a life expectancy L10 of approx. 40,000 hours of operation at an ambient temperature of 40 °C.

We will gladly provide you with a life expectancy calculation based on your specific usage conditions.

Motor protection/thermal protection

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

The following protection methods are provided depending on the type of motor and area of application:

- Thermal overload protector, in-circuit
- PTC/NTC with electronic diagnostics
- Current limitation via electronics



Mechanical strain/performance parameters

All ebm-papst products are subjected to comprehensive testing in conformity with the normative specifications and also incorporating the extensive experience of ebm-papst.

Vibration testing

Vibration testing is performed as follows:

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

Shock load

Shock load testing is performed as follows:

- Shock load according to DIN IEC 68 Part 2-27

Balancing grade

Balancing grade testing is performed as follows:

- Residual imbalance according to DIN ISO 1940
- Standard balancing quality level G 6.3

Should your particular application require a higher level of balancing, please contact us and specify the details in your order.

Chemical and physical strain/performance parameters

Please consult your ebm-papst contact for any questions regarding chemical and physical strain.

Areas of use, industries & applications

Our products are used in a variety of industries and for numerous applications:

Ventilation, air conditioning and refrigeration technology, clean room technology, automotive and railway engineering, medical and laboratory technology, electronics, computer and office systems, telecommunications, household appliances, heating systems, machinery and installations, drive engineering.

Our products are not intended for use in the aerospace industry!

Legal and normative specifications

The products described in this catalog are developed and manufactured in accordance with the standards applying to the particular product and, if known, in accordance with the conditions of the particular area 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.

Compliance with EMC standards has to be assessed on the final product, as EMC properties may change under different installation conditions.

Approvals

Please contact us if you require a specific Typee of approval (e1, UL, etc.) for your ebm-papst product.

Most of our products can be supplied with the applicable approval. Information on existing approvals is provided in the product-specific data sheets.

Air performance measurements

All air performance measurements are conducted on intake-side chamber test rigs conforming to the requirements of ISO 5801 and DIN 24163. The fans under test are attached to the measuring chamber with free air intake and exhaust (installation category A) and operated at nominal voltage, with alternating current also at nominal frequency, without any additional attachments such as a guard grille.

As required by the standards, the air performance curves shown are referenced to an air density of 1,15 kg/m³.

Technical parameters and scope



Air and sound measurement conditions

Measurements on ebm-papst products are taken under the following conditions:

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

Sound measurements

All sound measurements are taken in anechoic rooms with reverberant floor. ebm-papst acoustic test chambers meet the requirements of accuracy class 1 as per DIN EN ISO 3745. For sound measurement, the fans being tested are positioned in a reverberant wall and operated at nominal voltage, with alternating current also at nominal frequency, without any additional attachments such as a guard grille.

Sound pressure and sound power level

All acoustic values are determined in accordance with ISO 13347, DIN 45635 and ISO 3744/3745 as per accuracy class 2 and given in A-rated form.

For measurement of the sound pressure level L_p the microphone is located on the intake side of the fan being tested, generally at a distance of 1 m on the fan axis.

For measurement of 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 measured sound power level can be roughly calculated from the sound pressure level by adding 7 dB.

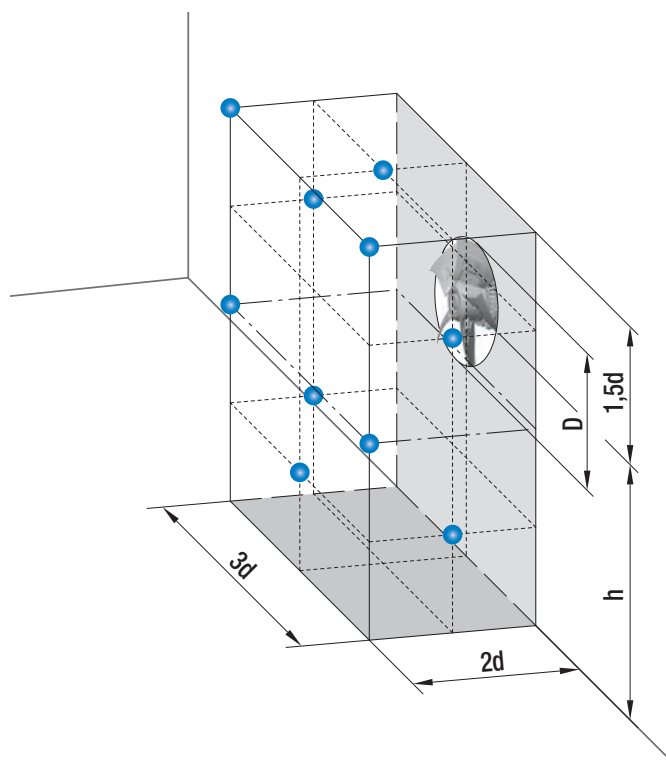
Measurement set-up according to ISO 13347-3 and DIN 45635-38:

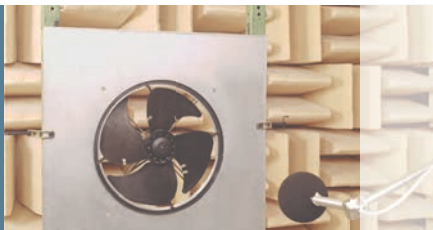
- 10 measuring points

$d \geq D$

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

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

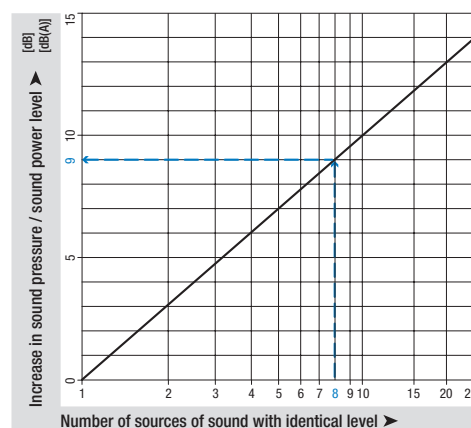




Cumulative level of several sound sources with the same level

The addition of 2 sound sources with the same level produces a level increase of approx. 3 dB. The noise characteristics of several identical fans can be predicted on the basis of the sound values specified in the data sheet. This is shown in the adjacent graph.

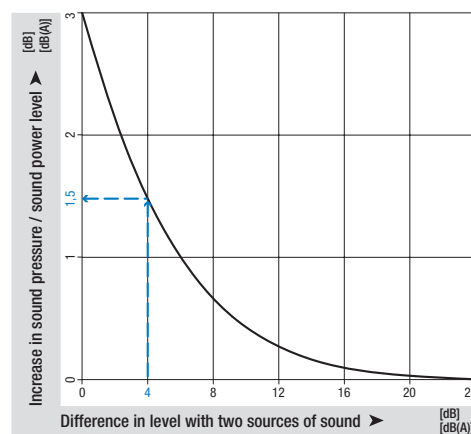
Example: There are 8 axial fans A3G800 on a condenser. According to the data sheet, the sound pressure level of one fan is 75 dB(A). The level increase determined from the graph is 9 dB. This means that a total level of 84 dB(A) is to be expected for the installation.



Cumulative level of two sound sources with different levels

The noise characteristics of two different fans can be predicted on the basis of the sound values specified in the data sheet. This is shown in the adjacent graph.

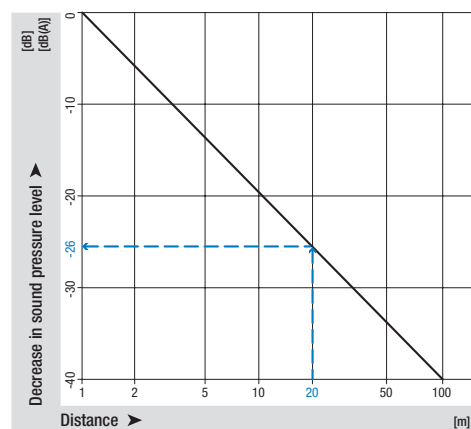
Example: In a ventilation unit, there is one axial fan A3G800 with a sound pressure level of 75 dB(A) at the point of operation and one axial fan A3G710 with 71 dB(A). The difference in level is 4 dB. The level increase of approx. 1.5 dB can now be read off the graph. This means that a total level of 76.5 dB(A) is to be expected for the unit.



Distance laws

The sound power level is not governed by the distance from the noise source. By contrast, the sound pressure level decreases with increasing distance from the sound source. The adjacent graph shows the decrease in level under far field conditions. Far field conditions apply if there is a considerable distance between the microphone and the fan in relation to the fan diameter and the wavelength under consideration. On account of the complexity of the topic, literature should be consulted for more detailed information on far fields. The level in the far field decreases by 6 dB each time the distance is doubled. Different relationships apply in the near field of the fan and the level may decrease to a far lesser extent. The following example only applies to far field conditions and may vary considerably as a result of installation effects:

For an axial fan A3G300, a sound pressure level of 65 dB(A) was measured at a distance of 1 m. From the adjacent graph, this would yield a reduction of 26 dB at a distance of 20 m, i.e. a sound pressure level of 39 dB(A).



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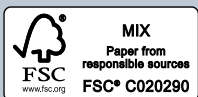
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