

# Compact Fans for AC and DC

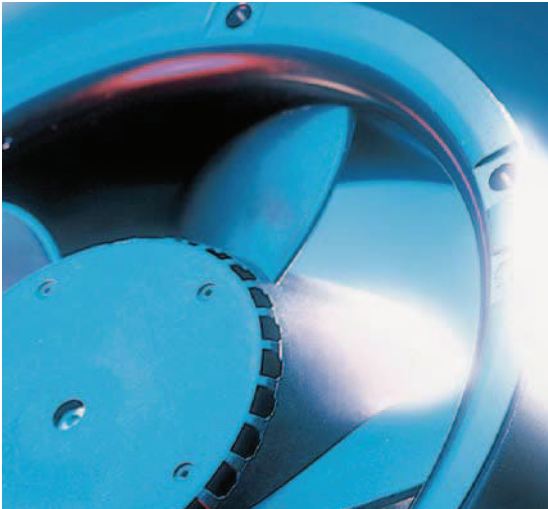
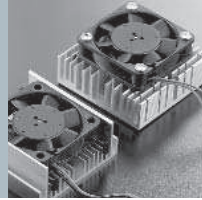
Catalogue 2007



**ebmpapst**

# Trendsetter in Fan Technology

*Uncompromising quality  
made by ebm-papst*



## Among the best.

Trendsetting with innovative technologies. Listening to customers' needs. Developing new ideas to meet requirements and realising them with pioneering spirit. This philosophy has made ebm-papst the technological leader in the world of fans.

A brand which has very few alternatives because every fan is a product of decades of application know-how gained from large-volume production and because we are in a position to produce highly efficient quality products. Our intelligent solutions for electronic cooling ensure that you are one step ahead of competitors thanks to innovative, reliable top quality technology which is cost-favorable and in line with market requirements. And if required, tailor-made right down to the last detail. In other words if you need fans which don't actually exist, contact us.

Insist on ebm-papst.



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## Company profile: ebm-papst

The entire scope of air and drive technology: This is the world of ebm-papst. Originating from the companies ebm, PAPST and mvl, all three rich in tradition, ebm-papst has at its disposal a unique range of products that makes us world market leader. We unite the strengths of three remarkable companies – each of them having worked hard to succeed in attaining a leading position in the most diverse fields and segments. More than 8.500 members of staff in Germany and throughout the world develop, produce and distribute our motors and fans. Striving for perfect solutions in applications in the different industries is what determines our daily work. Those who know us know the high standards we apply to our work and our creed: to be as close to our customers as possible and to be simply the best in terms of innovation and reli-



*Our location in St. Georgen*





*Left:  
Our headquarters in Mulfingen  
Right:  
Our location in Landshut*

For years, ebm, PAPST und mvl have been working together hand in hand. For the benefit of our customers, we use the synergy effect generated by our co-operation and the product ranges that complement each other so well. And so, in 2003, we moved even closer and documented this closeness in a joint public appearance and a joint name: ebm-papst.

#### **We remain the same – only better!!**

Though our outward appearance may have changed, our “inner” values remain the same. We still want you to enjoy being close to your established contacts, making their commitment and know-how help you succeed in your specific task. And, of course, we also want you to enjoy the same quality and selection of ebm, PAPST and mvl products: ebm-products are now available from ebm-papst Mulfingen papst-products are now available from ebm-papst St. Georgen mvl-are now available from ebm-papst Landshut.

#### **Passionately involved in R&D**

Our catalogues just list the results of our incessant efforts in R&D: products of highest quality and reliability. After all, it is our passion to constantly try something new and improve what we have. In doing so, we take advantage of the latest development methods and state-of-the-art technology and invest quite heavily in R&D facilities. Best of all, though: we rely on excellently trained and skilled engineers and technicians to be at your service in R&D and Sales & Distribution.

#### **Producing and assuring high-quality products and services**

This is our promise that knows no boundaries. Whether we manufacture in our national headquarters or in one of our 10 international production facilities – we insist on the same high level of quality! No cheap compromises when it comes to quality control! Our uncompromising QA extends through all process stages: from customer consulting engineering, selection of materials certified vendors, manufacturing of parts all the way through shipping. On top of this, our products have to pass the most rigorous test procedures under all realistic operating conditions: endurance test, salt spray test, vibration test, or in the room for precision noise measuring, just to mention a few. And the product gets approval for series pro-

duction only after all the desired characteristics have been determined to be just right.

Environmental protection is another priority with ebm-papst. This is why we have developed our product line in EC technology, which makes for very low power consumption, and why we take pride in our manufacturing philosophy. There is absolute focus on environmental care in production, recycling, waste and waste water disposal.

#### **Globally Domestic**

In order to be a specialist for customised solutions throughout the world, you need strong partners. Globally Domestic – i.e. being present all over the world and being a national company in each individual country – is how we have established ourselves with our successful subsidiaries in all important markets on this globe. And so you will always find ebm-papst close to home and knowing the demands of your very markets. Besides, our worldwide production alliance serves as a basis for competitive pricing. Our global services and logistic outlets, i.e. IT networking, are assuring short reaction times and just-in-time delivery.

All our efforts are documented in a comprehensive quality management system, both for products and services. Being certified as complying with the tough requirements of the international standards DIN EN ISO 9001, ISO/TS 16949 and DIN EN ISO 14001 is just one seal of approval we have got for our incessant strife to provide only the best quality products and services.

# The Ultimate: Quality in Detail

## Drive know-how

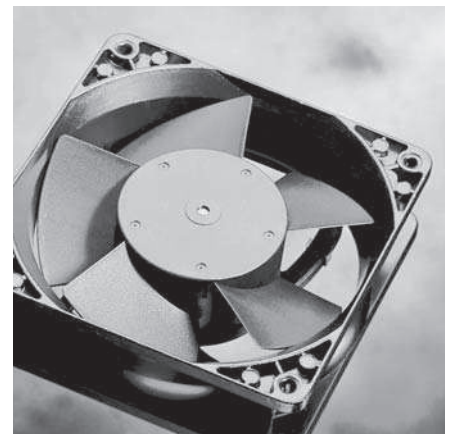
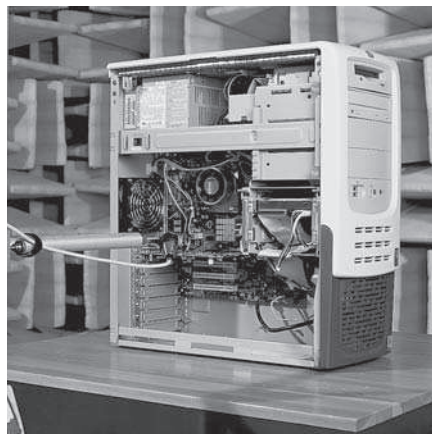
For the past 60 years all conceivable types and applications of drive technology have played an essential role at ebm-papst. A commitment that is the foundation for the development of optimum drive solutions – regardless of the type of fan and its usage. DC fans are generally equipped with electronically commutated motors; In order to save as much space as possible commutation electronic components are integrated in the hub of the fan. Our AC fans are mostly driven by shaded-pole or capacitor motors based on the external rotor principle. In the 3900 and 9900 range of particularly slim fans internal rotor motors are used.

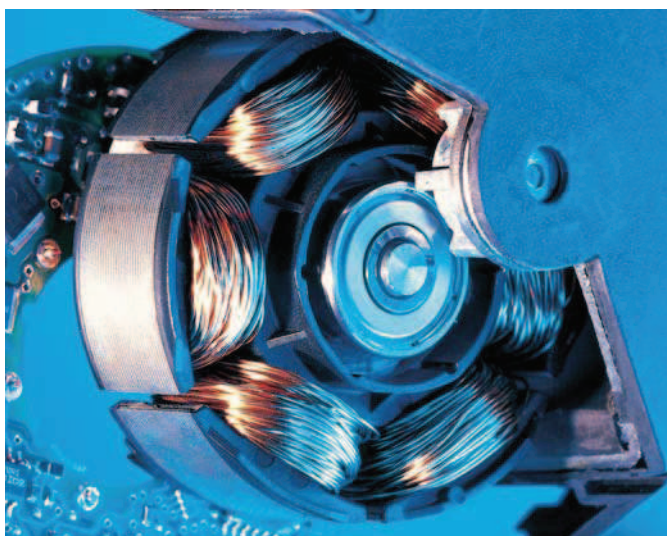
## Low noise performance

Our aerodynamically optimised design and high mechanical precision produce outstanding noise properties in series production. So-called “soft” commutation electronics of the DC fans ensure an excellent noise performance. By avoiding steep switching ramps when the individual coils are switched, this reduces the structure-borne noise from the motor. Computer-aided measurements performed in the most modern sound measuring chamber are conducted on each fan model from the very beginning.

## Long service life

The bearing system plays a vital role both, in the long life time and quietness of equipment fans. The SINTEC compact bearing provides most of the equipment fans with a proven bearing system. Constant low noise during the entire operating time and considerably lower shock sensitivity are the outstanding features of this bearing technology. Also, with regard to temperature endurance, Sintec compact bearings can be used without problems in most applications. Despite the slightly higher noise and shock sensitivity of ball bearings, this bearing technology should be given preference when exposed to extreme thermal and adverse application conditions (e.g. extreme environmental conditions, critical installation position, etc.). The service life data provided in this catalogue is based on extensive service life tests and mathematically / scientifically proven service life calculations. Our product descriptions are continuously updated with all relevant data obtained from long-term tests.





#### **Streamline: Aerodynamics**

With the aid of the most modern computer programs, we are able to optimise the fan impellers and the inner shape of the housing. Air output and available motor performance are exactly matched with the size of fan.

#### **Sturdy construction – in metal or plastic**

Fans of metal construction: Sturdy and indestructible. The housing is made of an aluminium alloy whereas the metal surfaces that are subject to corrosion are permanently protected by a black, impact- and abrasion resistant electrophoretic baked enamel. This particular version is highly recyclable. Fans with fibreglass reinforced plastic housing and impeller: Excellent stability and low weight distinguish this highly efficient fan concept. The metal housing and plastic impeller combine the advantages of both types of design.

#### **Product images**

The dimensioned drawings and product photos that appear in the catalog are for orientation purposes and may differ in some details from the actual product design.

#### **Safety all inclusive**

It goes without saying that all ebm-papst fans conform to the approval requirements of the VDE (Association of German Electrical Engineers) and the standards and regulations of UL and CSA. All fans conform to the European Standard EN 60335-1 or EN 60950 plus those of the UL (Underwriter Laboratories) and CSA (Canadian Standards Association). ebm-papst fans meet the highest requirements of electrical safety. Depending on the type, they are either impedance protected or equipped with a temperature safety switch, a scheme to prevent overload during locked rotor, alarm function or have speed monitoring and speed control.

#### **Quality in detail**

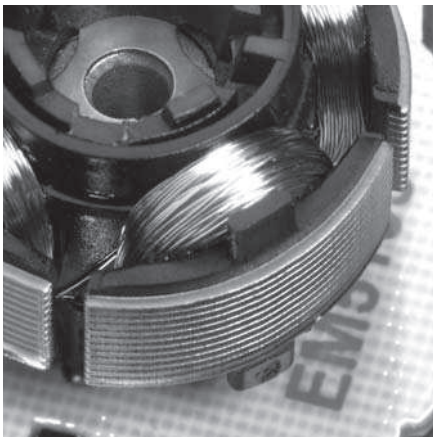
It is the seemingly trivial that makes the difference when a product is labelled 'made by ebm-papst': consistent maintenance of development and construction specifications; target-oriented design; and assured quality across the entire process chain are the reasons why running times of over 150,000 hours are not unusual. The no-compromise ebm-papst quality assurance spans over all process levels – from the choice of materials and the use of carefully selected, certified suppliers, from the production of parts up to final assembly. The sum of all these apparently minor details results in ventilation products with superior lifetimes and reliability.

#### **Product liability**

Motors and fans from ebm-papst are components; as such, their function is determined in the customer unit.

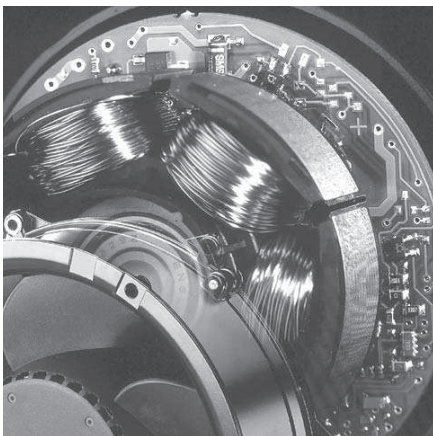


# Tailor-made to Meet Your Special Requirements



## Practice-oriented: Fans – specified and intelligent

ebm-papst has always developed customer-specific intelligent fans which meet the exact requirements of the application. We provide a wide range of standard fan types, in many sizes and designs; with intelligent motor features, monitoring and control functions as well as special constructions for use under extreme conditions. They are all based on the standard type fan which you will find in this catalogue. Special fan types for your application can be produced in economical batch sizes. Our expert engineers will assist you in selecting the right configuration.

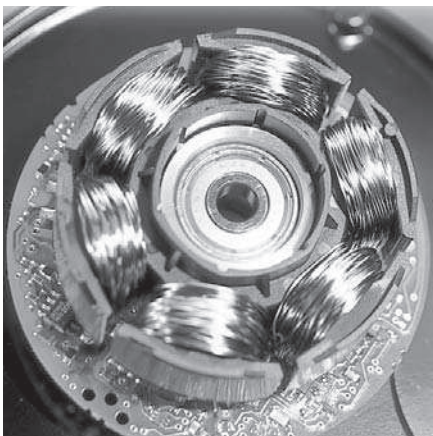


## Innovation at its best:

Vario-Pro® with “inside intelligence”. Its programmed intelligence thanks to customer-specific configured software modules makes the cooling of electronics even more economical and flexible. For example, temperature-dependent speed profiles are possible with a number of freely selectable interpolation points. External speed settings and a variety of combinable alarm and tachometer functions can also be programmed. The digital motor management achieves high precision of control functions.

## Higher protection class for every type of application

ebm-papst provides on request a variety of fan series which conform to the requirements of Protection Class IP 54: Their stator and all electrical components are fully encapsulated. Stainless steel ball bearings can be used for operation in particularly aggressive media and use under extreme environmental conditions, thus providing additional safety.



### **Virtually everything is possible**

Regardless of your cooling and ventilation tasks, we develop the right solution and what is more, the most economical one. Based on the fans listed in this catalogue, well over 4000 different versions are available.

### **Temperature-controlled fans**

Fans with temperature-controlled speed have particularly quiet cooling characteristics. Thanks to IC technology, they adapt their speed to the current cooling requirements which results in drastic reduction of noise in most operating modes. A temperature sensor provides the fan with thermal information: Either externally via a single lead or integrated into the hub of the fan.

### **Speed setting via interfaces**

With a wide range of DC fans with separate control input, ebm-papst provides an alternative to the NTC controlled types of fans. They are especially suitable for systems and units which already have standard interfaces for varying speed via internal switching and control circuits. Main applications are units which demand load-dependent individual speed profiles or systems with stand-by minimum cooling requirements and varied speed increase at varying power peaks.

### **“Electronic tachometer” thanks to sensor signal**

You wish to be informed about the current fan speed at all times? ebm-papst has fans with an integrated “electronic tachometer” which registers the actual value of the fan speed. Via an integrated sensor, the fan generates speed-dependent signals which can be directly utilised. Depending on the number of poles of the motor (2, 4 or 6 pole), 1, 2 or 3 pulses per revolution are generated.

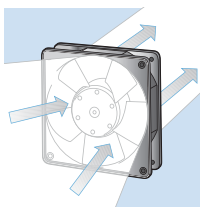
### **Alarm signal for more safety**

If your application requires monitored fan operation in addition to speed monitoring, ebm-papst also provides a multitude of varying alarm signals. Depending on the type of fan in question, the signal is either static, already evaluated or interface-compatible. The alarm signal output provides reliable long term monitoring and status signal when critical operating conditions evolve.

### **TURBOFAN**

The DC fans with the 3-phase EC motor technology for exact speed control and high power margin. The drive and control electronics of the TD motors is pre-wired and already integrated in the fans.

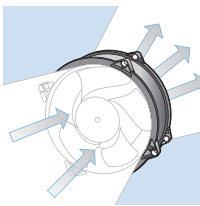
# Types of Fans and their Function



## **Axial fans: High flow rate at medium pressure**

The air flow in axial fans, whose blower wheel is similar to that of a propeller, is conducted to a great extent in parallel to the axis of rotation, in other words in the axial direction. Axial fans with free air delivery at zero static pressure have the lowest power input that rises with

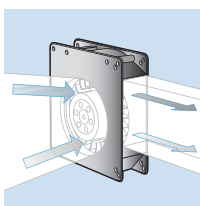
increasing counterpressure. Axial fans for the cooling of electronic equipment are mostly equipped with external housing and an electric motor integrated into the fan hub. This compact construction allows space-saving accommodation of all devices; the flange is equipped with mounting holes.



## **Diagonal fans: High flow rate at relatively high pressure**

At first glance diagonal fans only differ slightly from axial fans. Intake is axial whereas exhaust is diagonal. Due to the conical shape of the wheel and housing the air is pressurised

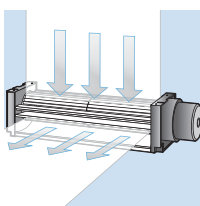
higher. In direct comparison with axial fans of the same size and comparable performance, these fans are distinguished by the lower operating noise.



## **Radial fans: Limited flow rate at high pressure**

Many of the cooling problems that occur can be optimally solved by axial and/or diagonal fans. If however, for example the required cooling air has to be conducted round an angle

of 90° or if high pressure is necessary, radial fans are more effective. For your application, ebm-papst offers not only complete radial fans but also motor/blower wheel combinations without external housing.



## **Cross flow blower: High flow rate at low pressure**

Cross flow blowers are used above all for large-surface air flow in appliances. The air flows through the blade roller twice in the radial direction: At the suction point from the

outside to the inside and at the exhaust point from the inside to the outside. Whirls form in the roller due to the vanes which guarantee a steady flow of air through the blower wheel.



## 1. Dissipated heat

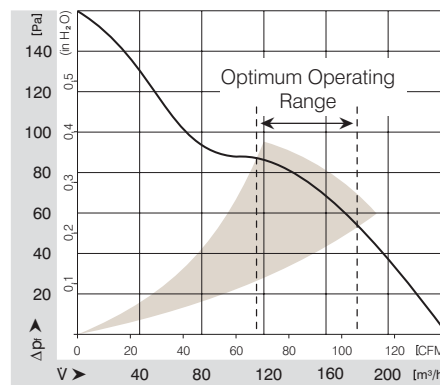
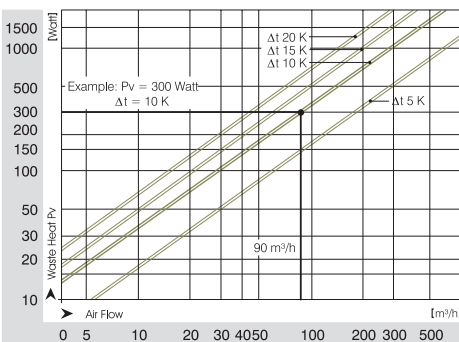
A large amount of the energy consumed by electrical and electronic devices is converted into heat. In selecting the correct fan, therefore, it is important to determine the dissipated heat that must be removed. The electrical power consumption of the unit to be cooled, often represents a suitable value for this purpose.

## 2. Permissible temperature rise

The air flow which the selected fan is required to generate, is determined by the dissipated heat and the permissible rise ( $\Delta T$ ) of the cooling air flow (from entry to exit of the device to be cooled). The max. allowable  $\Delta T$  depends greatly on the temperature sensitivity of the individual device components.  $\Delta T = 5K$  means e.g. that the average air flow leaving the device to be cooled may only be  $5^{\circ}C$  warmer than the ambient temperature (a large volume of air is required for this purpose). A lower air flow rate is sufficient if a higher temperature difference (e.g.  $\Delta T = 20K$ ), can be tolerated.

## 3. Required cooling air flow

- In the below diagram a horizontal line is drawn from the dissipated heat to intersect with the selected  $\Delta T$  line.



- Read down from this point to obtain the required value for the cooling air flow.

Diagram-formula:

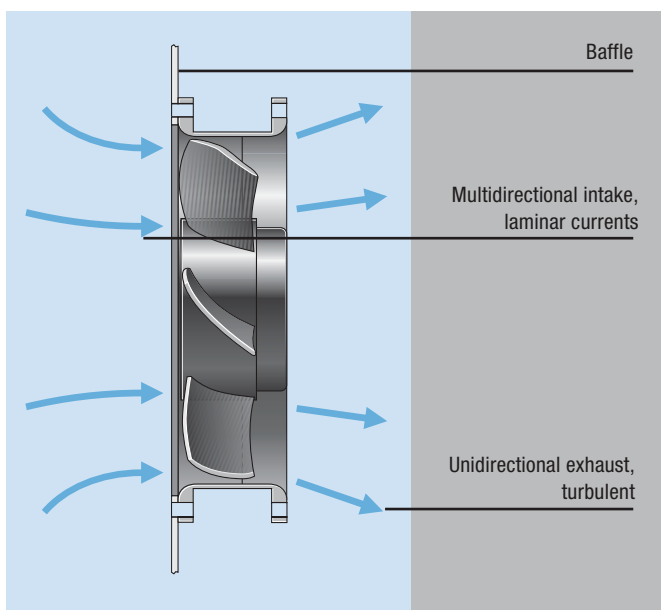
$$\dot{V} [\text{m}^3/\text{h}] \approx 3 \cdot \frac{P_v [\text{W}]}{\Delta T [\text{K}]}$$

## 4. Optimum operating range

The required fan, however, must also be able to deliver a suitable static pressure  $\Delta p_f$ , in order to force the cooling air through the appliance. A fan must therefore be selected that provides the required air flow performance within its optimum operating range (see also the performance curves under technical data).

## 5. Fan selection

If the requirements of an application are fulfilled by more than one fan, the noise level, space requirements, economy and ambient conditions will assist in making the final choice.



## Information on installation

When a fan is operated for the first time in an application, the user may have noticed that the flow rate in the appliance was lower than expected. What is the reason for this?

- The values stated in this catalogue were determined under optimum, constant and comparable measurement conditions.
- Ideal mounting conditions under which free air intake and exhaust are present is seldom feasible in practice. Quite frequently the fans must be mounted in the proximity of other components or cabinet panels. As a consequence, the intake and exhaust currents may be restricted causing the air flow to diminish and the noise level to increase. Fans are particularly sensitive to obstructions which are positioned directly in front of the output cross section as they often cause an increase in tonal noise.

**Our advice:** The distance between the fan and adjacent components should be at least equal to the mounting depth of the fan.

## Intake or exhaust side installation

Under ideal conditions, the operating point is represented as the intersection between the characteristic fan and device curves, regardless of whether the fan is positioned at the air intake or exhaust side of the device. In addition to ensuring the required flow rate, several additional aspects must be considered for determining an appropriate fan concept.

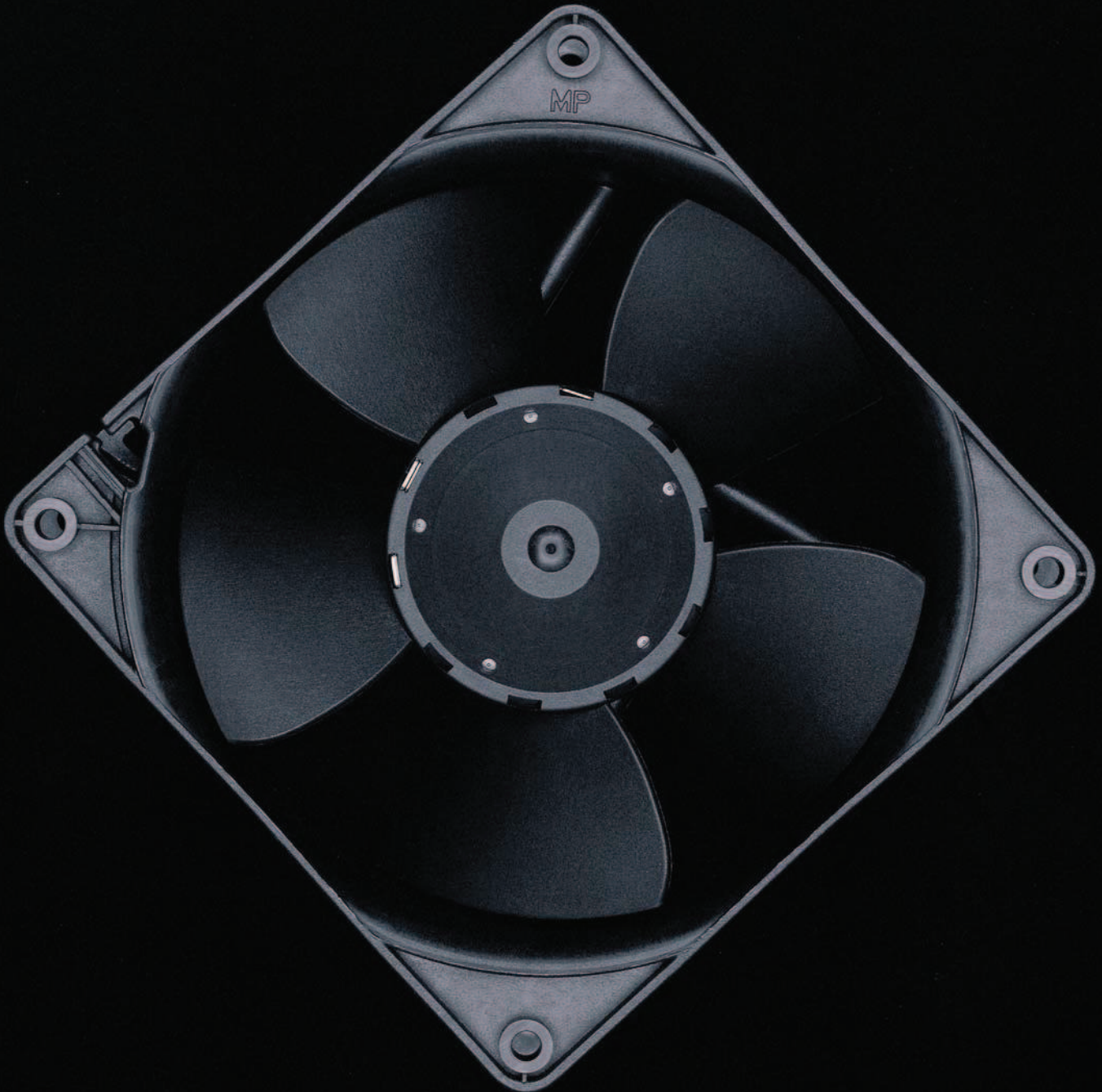
The intake air currents of a fan are mainly laminar, comprising nearly the entire suction area. By contrast, the exhaust air of a fan is generally turbulent, while it flows on a preferred direction, e.g. axial for an axial fan. The turbulences of the exhaust intensify the heat transfer from components within the air currents, so that mounting the fan at the air intake side of the device is recommended for cooling and heating. Mounting the fan at the device intake is also advantageous because the fan will not be subjected to the dissipation heat of the device. Therefore, it operates at low ambient temperatures and has a higher life expectancy.

## Accident prevention

With their high efficiency, our fan products operate at high speeds, which can pose a risk of injury. To prevent injury, they may be put into operation only after they have been properly installed and equipped with suitable protective devices (such as finger guards).

# DC Fans

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## Technical Information

### Range of fans

Users of ebm-papst fans have the widest range of DC axial fans at their disposal: From 25 mm to 280 mm in size. Every single type of fan can be optimally integrated in the respective appliance concept. The highly economic brushless motor technology of these fans provides a unique variety of intelligent innovations that can be realised today at prices that would have been unthinkable just a few years ago.

### Electronic protection against reverse polarity

ebm-papst DC fans have electronically commutated drives with electronic protection against reverse polarity. The electronics are conveniently located in the fan hub.

### Product life expectancy

A distinctive feature of DC fan technology is the convincingly high product life expectancy. Thanks to the excellent efficiency of the brushless drives, the thermal load of the bearings is reduced thus considerably increasing the life expectancy of the fans.

### Protection Class

DC fans with sleeve and ball bearings are powered by Class E insulated motors. All ebm-papst fans conform to the requirements of Protection Class IP 20. Fans conforming to IP 54 and special protection classes are also available.

### Supply voltage

The supply voltage of ebm-papst DC fans can be varied thus the airflow can be matched optimally to the cooling requirements and noise reduced to a minimum. ebm-papst DC fans can be driven with voltages that are reduced as much as 50 % or increased by 25 % of their nominal voltage (see voltage range in the tables containing technical data).

### Speed control

VARIOFAN – the fans with IC technology and temperature-dependent speed control. VARIOFANS always cool at the speed required by the appliance resulting in speeds as much as 50% lower than those of standard fans and a drastic reduction of the noise level in almost all operating conditions. VARIOFANS are controlled without dissipation losses: At lower speeds their power consumption is reduced proportionally.



# Axial Fans for DC Operation

## Overview

	Dimensions	Air Flow	Approvals	5 Volt	12 Volt	24 Volt	48 Volt	Sinter-Sleeve Bearings Ball Bearings	VARIOFAN	Page
DC axial	mm	m³/h		Type	Type	Type	Type	□/■	V	
Series 250	25 x 25 x 8	2.1	VDE, UL, CSA	255 M				■		19
		3.2	VDE, UL, CSA	255 N	252 N			■		19
		5.0	VDE, UL, CSA	255 H				■		19
Series 400 F	40 x 40 x 10	6.0	VDE, UL, CSA		412 FM			■		20
		8.0	VDE, UL, CSA	405 F	412 F	414 F		■		20
		9.0	VDE, UL, CSA	405 FH	412 FH	414 FH		■		20
Series 400	40 x 40 x 20	10	VDE, UL, CSA	405	412	414		■		21
		13.5	VDE, UL, CSA		412 H	414 H		■		21
Series 400 J	40 x 40 x 25	19	VDE, UL, CSA		412 J	414 J		■		22
		22	VDE, UL, CSA		412 JH	414 JH		■		22
		24	VDE, UL, CSA		412 JHH	414 JHH		■		22
Series 500 F	50 x 50 x 15	20	VDE, UL, CSA		512 F	514 F		■	23	
Series 600 F	60 x 60 x 15	19	VDE, UL, CSA		612 FL			■		24
		29	VDE, UL, CSA	605 F	612 F	614 F		■		24
		33	VDE, UL, CSA		612 FH			■		24
Series 620	60 x 60 x 25	21	VDE, UL, CSA		622 L	624 L		■		25
		30	VDE, UL, CSA		622 M	624 M		■		25
		40	VDE, UL, CSA		622 N	624 N		■		25
		46	VDE, UL, CSA		622 H	624 H		■		25
		56	VDE, UL, CSA		622 HH	624 HH		■		25
Series 600 N	60 x 60 x 25	21	VDE, UL, CSA		612 NGL	614 NGL		□/■		26
		25	VDE, UL, CSA		612 NGML	614 NGML		□/■		26
		35	VDE, UL, CSA		612 NGME	614 NGM	618 NM	□/■	V	26/27
		42	VDE, UL, CSA		612 NN	614 NN	618 NN	■	V	26/27
		46	VDE, UL, CSA		612 NH	614 NH		■		26
		56	VDE, UL, CSA		612 NHH	614 NHH		■		26
NEW Series 600 J	60 x 60 x 32	70	*		612 JH	614 JH	618 JH	■		28
Series 700 F	70 x 70 x 15	28	VDE, UL, CSA		712 FL-005			■		29
		36	VDE, UL, CSA		712 FM-006			■		29
		44	VDE, UL, CSA		712 F	714 F		■		29
Series 8400 N	80 x 80 x 25	33	VDE, UL, CSA		8412 NLE	8414 NL		□/■	V	30/31
		45	VDE, UL, CSA		8412 NMLE	8414 NML		□/■	V	30/31
		58	VDE, UL, CSA		8412 NME	8414 NM		□/■	V	30/31
		69	VDE, UL, CSA		8412 N	8414 N		□/■		30
		79	VDE, UL, CSA		8412 NH	8414 NH		■		30
Series 8300	80 x 80 x 32	32	VDE, UL, CSA		8312 L	8314 L		□/■		32
		48	VDE, UL, CSA		8312 M	8314 M		□/■		32
		54	VDE, UL, CSA	8305	8312	8314	8318	□/■		32
		67	VDE, UL, CSA		8312 HL	8314 HL	8318 HL	■		32
		80	VDE, UL, CSA			8314 H	8318 H	■		32
NEW Series 8200 J	80 x 80 x 38	132	*		8212 JN	8214 JN	8218 JN	■		33

\*approvals applied for

# Axial Fans for DC Operation

## Overview

	Dimensions	Air Flow	Approvals	12 Volt	24 Volt	48 Volt	Sinter-Sleeve Bearings Ball Bearings	VARIOFAN	Page
DC axial	mm	m³/h		Type	Type	Type	□/■	V	
Series 3400 N	92 x 92 x 25	61	VDE, UL, CSA	3412 NLE	3414 NL		□/■		34
		72	VDE, UL, CSA	3412 NME	3414 NM		□/■	V	34/35
		84	VDE, UL, CSA	3412 N	3414 N		□/■	V	34/35
		94	VDE, UL, CSA	3412 NH	3414 NH		□/■		34
		102	VDE, UL, CSA	3412 NHH	3414 NHH		□/■		34
Series 3300	92 x 92 x 32	56	VDE, UL, CSA	3312 L	3314 L		□/■		36
		68	VDE, UL, CSA	3312 M	3314 M		□/■		36
		80	VDE, UL, CSA	3312	3314	3318	□/■		36
		85	VDE, UL, CSA		3314-140		■		36
		93	VDE, UL, CSA	3312-177			■		36
		107	VDE, UL, CSA			3314 H	3318 H	■	
NEW Series 3200 J	92 x 92 x 38	130	VDE, UL, CSA	3212 JN	3214 JN	3218 JN	■		37
		146	VDE, UL, CSA	3212 JH-304	3214 JH-306	3218 JH	■		37
		230	*		3214 JH3	3218 JH3	■		37
Series 4400 F	119 x 119 x 25	94	VDE, UL, CSA	4412 FGL	4414 FL		□/■		38
		114	VDE, UL, CSA	4412 FGML			□		38
		140	VDE, UL, CSA	4412 FM	4414 FM		□/■		38
		170	VDE, UL, CSA	4412 F	4414 F	4418 F	□/■		38
NEW Series 4400 FN	119 x 119 x 25	225	*	4412 FNH	4414 FNH	4418 FNH	■		39
		200	*		4414 FNN		■		39
Series 4300 N	119 x 119 x 32	93	VDE, UL, CSA	4312 NL	4314 NL		□/■		40
		137	VDE, UL, CSA	4312 NM	4314 NM		□/■		40
		166	VDE, UL, CSA	4312 NN	4314 NN	**4318 NGN	□/■		40
		176	VDE, UL, CSA	4312 NH	4314 NH		■		40
		198	VDE, UL, CSA	4312 NHH	4314 NHH		■		40
Series 4300	119 x 119 x 32	95	VDE, UL, CSA	4312 L	4314 L		□/■		41
		140	VDE, UL, CSA	4312 M	4314 M	4318 M	□/■	V	41/42
		170	VDE, UL, CSA	4312	4314	4318	□/■	V	41/42
		180	VDE, UL, CSA	4312-143	4314-147		■		41
		204	VDE, CSA	4312-179	4314-180		■		41
NEW Series 4400	119 x 119 x 38	150	*	4412 L			■		43
		184	*	4412 M	4414 M	4418 M	■		43
		205	*	4412 N	4414 N	4418 N	■		43
		240	*	4412 H	4414 H	4418 H	■		43
Series 4200	119 x 119 x 38	86	VDE, UL, CSA	4212 L	4214 L		■		44
		127	VDE, UL, CSA	4212 M			□/■		44
		165	VDE, UL, CSA	4212	4214	4218	□/■		44
		184	VDE, UL, CSA	4212 H	4214 H	4218 H	■		44
Series 4100 N	119 x 119 x 38	160	VDE, UL, CSA	4182 NGX	4184 NGX		□		45
		160	VDE, UL, CSA		4184 NXM	4188 NXM	■		45
		180	VDE, UL, CSA	4182 NX	4184 NX		■		45
		237	VDE, UL, CSA	4182 NXH	4184 NXH		■		45

\*approvals applied for \*\*No approvals



		Dimensions	Air Flow	approvals	12 Volt	24 Volt	48 Volt	Sinter-Sleeve Bearings Ball Bearings	VARIOFAN	Page
DC axial		mm	m <sup>3</sup> /h		Type	Type	Type	□/■	V	
NEW	Series 4100 N	119 x 119 x 38	260	VDE, UL, CSA	4112 NHH	4114 NHH	4418 NHH	■		46
			310	VDE, UL, CSA	4112 NH3	4114 NH3	4118 NH3	■		46
			355	*	4112 NH4	4114 NH4	4118 NH4	■		46
			390	*		4114 NH5	4118 NH5	■		46
			440	*		4114 NH6	4118 NH6	■		46
	Series DV 4100	119 x 119 x 38	275	VDE, UL, CSA	DV 4112 N	DV 4114 N	DV 4118 N	■		47
NEW	Series 5200 N	127 x 127 x 38	187	VDE, UL, CSA	5212 NM	5214 NM	5218 NM	■		48
			216	VDE, UL, CSA	5212 NN	5214 NN	5218 NN	■		48
			252	VDE, UL, CSA	5212 NH	5214 NH	5218 NH	■		48
			338	VDE, UL, CSA	5212 NHH	5214 NHH	5218 NHH	■		48
	Series DV 5200	127 x 127 x 38	270	VDE, UL, CSA	DV 5212 N	DV 5214 N	DV 5218 N	■		49
	Series 5100 N	135 x 135 x 38	122	**			5118 NL	■		50
250			VDE, UL, CSA	5112 N	5114 N	5118 N	■		50	
	Series 7100 N	150 Ø x 38	360	VDE, UL, CSA	7112 N	7114 N	7118 N	■		51
420			VDE, UL, CSA		7114 NH		■		51	
	Series 7200 N	150 Ø x 55	360	VDE, UL, CSA	7212 N	7214 N	7218 N	■		52
	Series 6200 N	172 Ø x 51	205	VDE, UL, CSA			6248 NL	■		53
350			VDE, UL, CSA	6212 NM	6224 NM	6248 NM	■		53	
410			VDE, UL, CSA		6224 N	6248 N	■	V	53	
480			VDE, UL, CSA		6224 NH	6248 NH	■		53	
	Series 6200 NTD		600	VDE, UL, CSA		6224 NTD	6248 NTD	■		54
	Series DV 6200	172 Ø x 51	540	VDE, UL, CSA		DV 6224	DV 6248	■		55
NEW	Series DV 6200 TD	172 Ø x 51	700	VDE, UL, CSA		DV 6224 TD	DV 6248 TD	■		56
	Series 6400	172 x 150 x 51	350	VDE, UL, CSA	6412 M	6424 M	6448 M	■		57
410			VDE, UL, CSA		6424	6448	■	V	57	
480			VDE, UL, CSA		6424 H	6448 H	■		57	
NEW	Series 6400 TD	172 x 150 x 51	600	VDE, UL, CSA		6424 TD	6448 TD	■		58
600			VDE, UL, CSA			6448 TDHH	■		58	
	Series DV 6400	172 x 160 x 51	530	VDE, UL, CSA		DV 6424	DV 6448	■		59
NEW	Series DV 6400 TD	172 x 160 x 51	680	VDE, UL, CSA		DV 6424 TD	DV 6448 TD	■		60
	Series W1G 180	180 Ø x 70	900			W1G 180-AB31-01		■		61
925					W1G 180-AB47-01	■		61		
	Series W1G 200	225 x 225 x 80	1090	VDE, UL, CSA		W1G 200-HH70-52		■		62
1005			VDE, UL, CSA		W1G 200-HH01-52	■		62		
	Series W1G 208	232 Ø x 80	1050			W1G 208-BA35-52	W1G 208-BA73-52	■		63
	Series W1G 250	280 x 280 x 80	1920	VDE, UL, CSA		W1G 250-HH37-52	W1G 250-HH67-52	■		64

\*approvals applied for \*\*No approvals

# Radial Fans for DC Operation

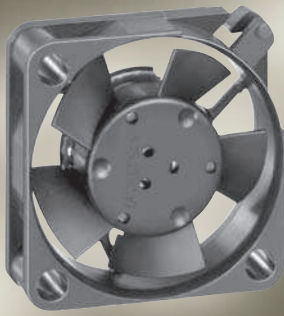
## Overview

	Dimensions	Air Flow	Approvals	12 Volt	24 Volt	48 Volt	Sinter-Sleeve Bearings Ball Bearings	VARIOFAN	Page
DC radial	mm	m <sup>3</sup> /h		Type	Type	Type	□/■	V	
Series RV 40	76 x 76 x 27	18	VDE, UL, CSA	RV 40-18/12 L			■		65
		24	VDE, UL, CSA	RV 40-18/12 H			■		65
Series RLF 35	51 x 51 x 15	9,6	*	RLF 35-8/12N	RLF 35-8/14N		■		66
Series RLF 48	76 x 76 x 27	22	VDE, UL, CSA	RL 48-19/12 ML	RL 48-19/14 ML		■		67
		28	VDE, UL, CSA	RL 48-19/12	RL 48-19/14 ML		■		67
NEW Series RL 65	94 x 97 x 33	56	*	RL 65-21/12	RK65-21/14		■		68
		61	*	RL65-21/12H	RL65-21/14H		■		68
Series RL 90 N	121 x 121 x 37	40	VDE, UL, CSA	RL 90-18/12 N	RL 90-18/14 N		□/■		69
		55	**			RL 90-18/18 NH	■		69
Series RLF 100	127 x 127 x 25	64	VDE, UL, CSA	RLF 100-11/12	RLF 100-11/14	RLF 100-11/18	■		70
Series RG 90	135 x 135 x 38	55	VDE, UL, CSA	RG 90-18/12 N	RG 90-18/14 N	RG 90-18/18 N	□/■		71
Series RG 125 N	180 x 180 x 40	60	VDE, UL, CSA	RG 125-19/12 NM	RG 125-19/14 NM		■		72
		87,5	VDE, UL, CSA	RG 125-19/12 N	RG 125-19/14 N	RG 125-19/18 N	■		72
Series RG 160 N	220 x 220 x 56	139	VDE, UL, CSA	RG 160-28/12 NM	RG 160-28/14 NM		■		73
		209	VDE, UL, CSA	RG 160-28/12 N	RG 160-28/14 N	RG 160-28/18 N	■		73
NEW Series RG 160NTD	220 x 220 x 56	308	VDE, UL, CSA		RG 160-28/14 NTD	RG 160-28/18 NTD	■		74
		370	VDE, UL, CSA		RG 160-28/14 NTDH		■		74
NEW Series REF 100	100 Ø x 25	86	VDE, UL, CSA	REF 100-11/12	REF 100-11/14	REF 100-11/18	■		75
		104	VDE, UL, CSA			REF 100-11/18 H	■		75
NEW Series RER 101	101 Ø x 52	190	*		RER 101-36/14 NHH	RER 101-36/18 NHH	■		76
Series RER 125 N	138 Ø x 35	110	VDE, UL, CSA	RER 125-19/12 NG			■		77
		74	VDE, UL, CSA		RER 125-19/14 NM		■		77
		110	VDE, UL, CSA	RER 125-19/12 N	RER 125-19/14 N	RER 125-19/18 N	■		77
Series RER 160 N	165 Ø x 54	240	VDE, UL, CSA	RER 160-28/12 N	RER 160-28/14 N	RER 160-28/18 N	■		78
NEW Series RER 160NTD	165 Ø x 54	354	VDE, UL, CSA			RER 160-28/18 NTD	■		79
DC Cross Flow	mm	m <sup>3</sup> /h		Type	Type	Type	□/■	V	
Series QG 030	203 x 50 x 48	75	VDE, UL, CSA	QG 030-148/12	QG 030-148/14		■		80
		100	VDE, UL, CSA	QG 030-198/12	QG 030-198/14		■		80
		140	VDE, UL, CSA	QG 030-303/12	QG 030-303/14		■		80
		155	VDE, UL, CSA	QG 030-353/12	QG 030-353/14		■		80

\*approvals applied for \*\*No approvals

# DC Axial Fans

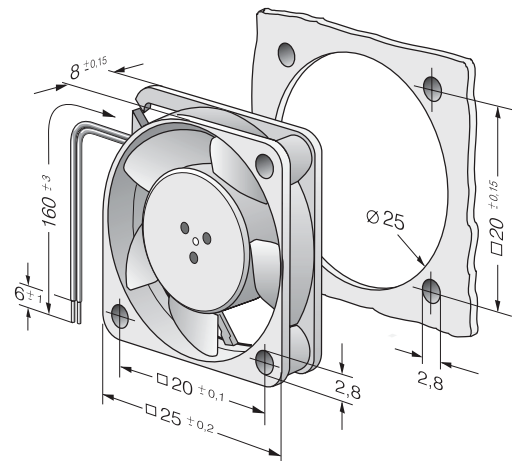
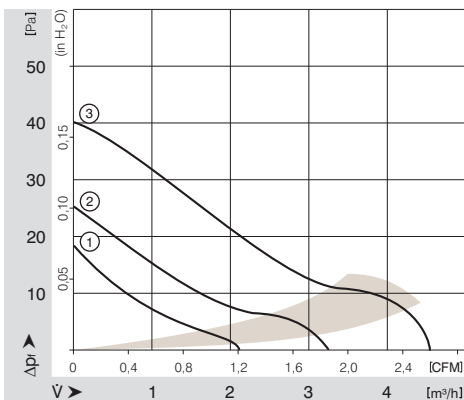
Series 250 25 x 25 x 8 mm



- DC micro-fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity. The fan only operates when the polarity is correct. Impedance-protected against locked rotor and overloading.
- Fan of fibreglass reinforced plastic. PBT housing, PA impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via 2 leads AWG 28. Stripped and tinned ends.
- Mass 5 g.

Nominal Data		Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise	Sintec-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 20 °C	at 60 °C	Curve	Specials
Type	m <sup>3</sup> /h	CFM	V DC	V DC	dB(A)	Bel	□ / ■	Watt	min <sup>-1</sup>	°C	Hours	Hours	P. 84	
255 M	2.1	1.2	5	4.5...5.5	5	< 3	■	0.2	6 000	-10...+70	45 000 / 14 000	1		
255 N	3.2	1.9	5	4.5...5.5	16	< 3	■	0.4	9 600	-10...+70	40 000 / 12 000	2	/2	
255 H	4.5	2.6	5	4.5...5.5	23	4.4	■	0.6	12 000	-10...+55	35 000 / 10 000*	3	/2	
252 N	3.2	1.9	12	10...14	15	< 3	■	0.5	9 000	-10...+70	40 000 / 12 000	2	/2	

\* at 55 °C





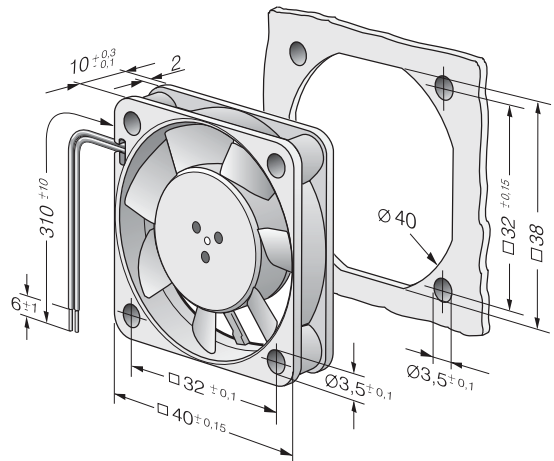
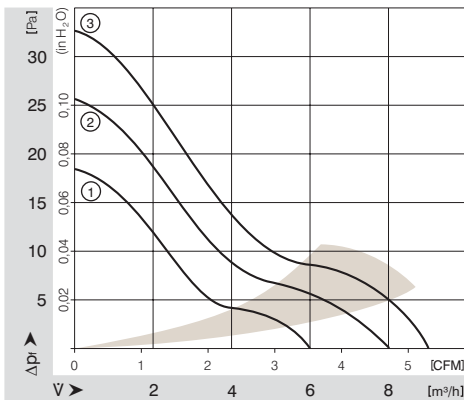
# DC Axial Fans

Series 400 F 40 x 40 x 10 mm



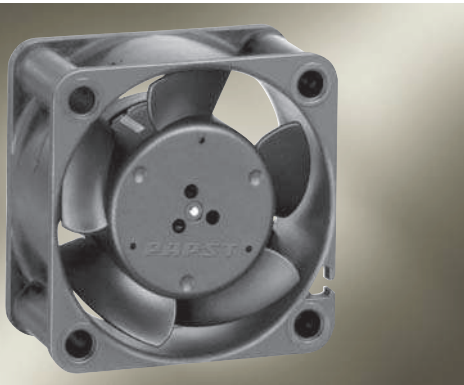
- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity. The fan only operates when the polarity is correct. Impedance-protected locked rotor and overloading.
- Fan of fibreglass reinforced plastic. PBT housing, PA impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via 2 leads AWG 28, TR 64. Stripped and tinned ends.
- Mass 17 g.

Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise		Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>		Curve	Specials
	m <sup>3</sup> /h	CFM			V DC	V DC					dB(A)	Bel		
405 F	8	4.7	5	4.5...5.5	22.1	4.4	■	0.7	5 400	-20...+70	45 000 / 15 000		2	/2
405 FH	9	5.3	5	4.5...5.5	26.0	4.6	■	0.9	6 000	-20...+70	45 000 / 15 000		3	/2
412 FM	6	3.5	12	10...14	16.5	3.8	■	0.6	4 300	-20...+70	45 000 / 15 000		1	
412 F	8	4.7	12	10...14	22.1	4.4	■	0.7	5 400	-20...+70	45 000 / 15 000		2	
412 FH	9	5.3	12	10...14	26.0	4.6	■	0.8	6 000	-20...+70	45 000 / 15 000		3	/2
414 F	8	4.7	24	20.0...28.0	22.1	4.4	■	0.8	5 400	-20...+70	45 000 / 15 000		2	/2
414 FH	9	5.3	24	21.6...26.4	26.0	4.6	■	0.9	6 000	-20...+70	45 000 / 15 000		3	



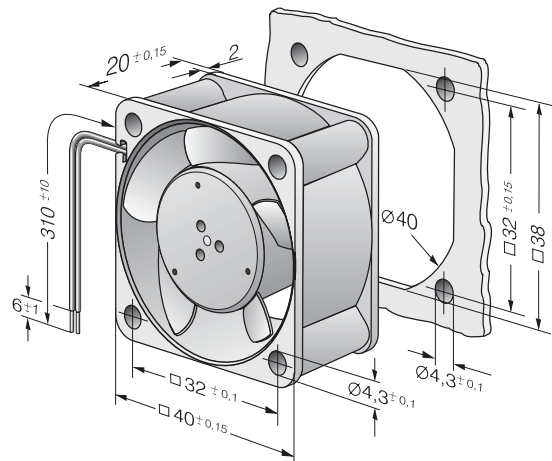
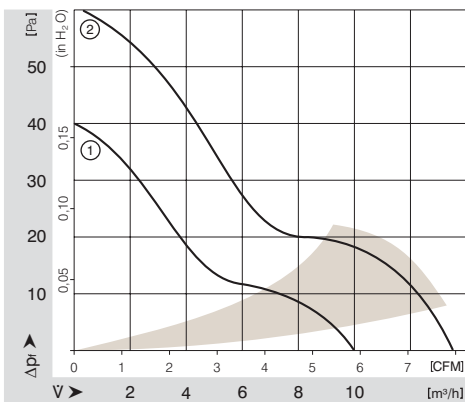
# DC Axial Fans

Series 400 40 x 40 x 20 mm



- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity. The fan only operates when the polarity is correct. Impedance-protected against locked rotor and overloading. Type 412 H and 414 H with electronic protection against blocking
- Fan of fibreglass reinforced plastic. PBT housing, PA impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via 2 leads AWG 28, TR 64. Stripped and tinned ends.
- Mass 27 g.

Nominal Data	Air Flow m <sup>3</sup> /h	Air Flow CFM	Nominal Voltage V DC	Voltage Range V DC	Noise dB(A)	Noise Bel	Sinter-Sleeve Bearings Ball Bearings	Power Input Watt	Nominal Speed min <sup>-1</sup>	Temperature Range °C	Service Life L <sub>10</sub>		Curve	Specials
											at 20 °C	at 60 °C		
405	10.0	5.9	5	4.5...5.5	18	3.8	■	0.9	6 000	-20...+70	50 000 / 20 000	1	/2	
412	10.0	5.9	12	10...14	18	3.8	■	0.9	6 000	-20...+70	50 000 / 20 000	1	/2;/39	
412 H	13.5	7.9	12	10...14	29	4.7	■	1.6	8 100	-20...+60	45 000 / 15 000	2	/39	
414	10.0	5.9	24	20...28	18	3.8	■	1.0	6 000	-20...+70	50 000 / 20 000	1	/2	
414 H	13.5	7.9	24	20...26.5	29	4.7	■	1.6	8 100	-20...+60	45 000 / 15 000	2	/2	



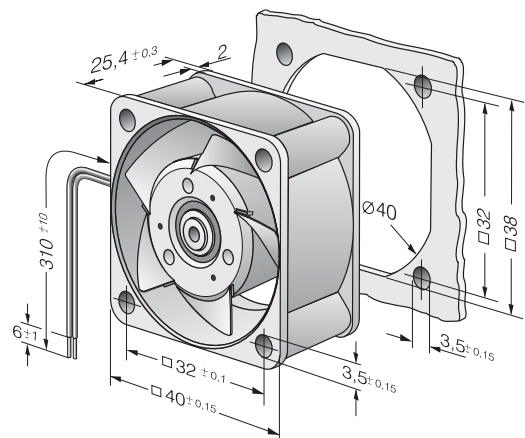
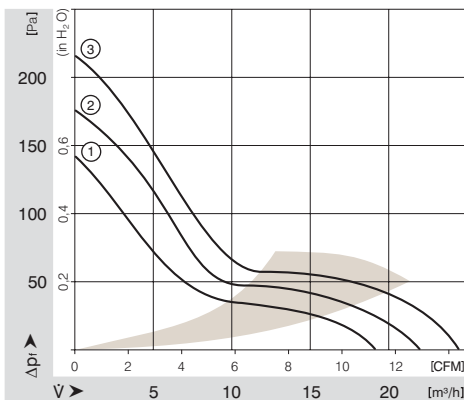
# DC Axial Fans

Series 400 J 40 x 40 x 25 mm



- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, locked rotor and overloading.
- Fan of fibreglass reinforced plastic. PBT housing, PA impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via 2 leads AWG 24, TR 64. Stripped and tinned ends.
- Mass 50 g.

Nominal Data	Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life $L_{10}$		Curve	Specials
											at 40 °C	at $t_{max}$		
Type	m <sup>3</sup> /h	CFM	V DC	V DC	dB(A)	Bel	□ / ■	Watt	min <sup>-1</sup>	°C	Hours	Hours		
412 J	19	11.2	12	8...14.0	39	5.5	■	2.4	10 300	-20...+70	60 000 / 30 000	1		
412 JH	22	12.9	12	8...13.5	43	5.8	■	3.0	11 700	-20...+70	60 000 / 30 000	2	/2	
412 JHH	24	14.1	12	8...13.5	46	6.1	■	3.3	13 000	-20...+60	57 500 / 35 000	3	/2	
414 J	19	11.2	24	18...27	39	5.5	■	2.4	10 300	-20...+70	60 000 / 30 000	1		
414 JH	22	12.9	24	18...27	43	5.8	■	3.0	11 700	-20...+70	60 000 / 30 000	2	/2	
414 JHH	24	14.1	24	18...27	46	6.1	■	3.6	13 000	-20...+60	57 500 / 35 000	3	/2	





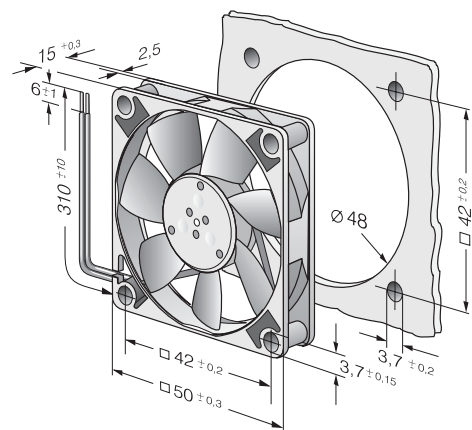
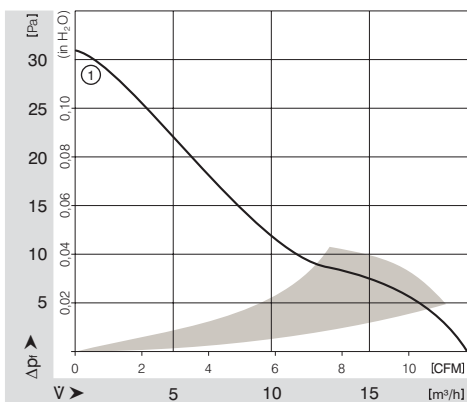
# DC Axial Fans

Series 500 F 50 x 50 x 15 mm



- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity. The fan only operates when the polarity is correct. Impedance-protected against locked rotor and overloading.
- Fan of fibreglass reinforced plastic. PBT housing, PA impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via 2 leads AWG 28, TR 64. Stripped and tinned ends.
- Mass 25 g.

Nominal Data		Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>	Curve	Specials
Type	m <sup>3</sup> /h	CFM	V DC	V DC	dB(A)	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours	
512 F	20	11.8	<b>12</b>	10.8...13.2	30	4.5	■	1.0	5 000	-20...+70	50 000 / 20 000	1	/2
514 F	20	11.8	<b>24</b>	21.6...26.4	30	4.5	■	1.0	5 000	-20...+70	50 000 / 20 000	1	/2



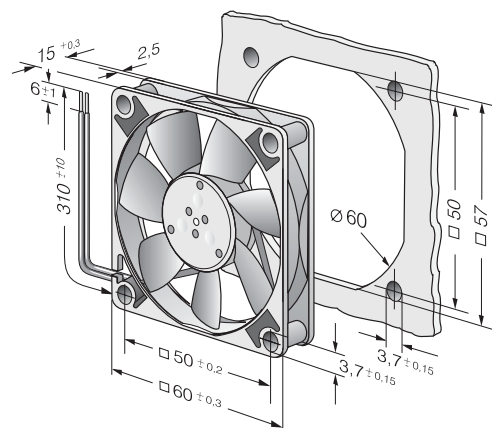
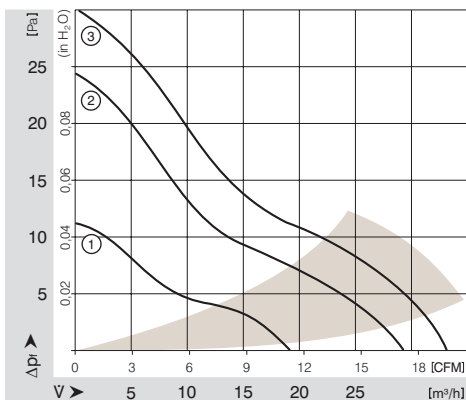
# DC Axial Fans

Series 600 F 60 x 60 x 15 mm



- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity. The fan only operates when the polarity is correct. Impedance-protected against locked rotor and overloading. Type 612 FH with electronic protection against blocking
- Fan of fibreglass reinforced plastic. PBT housing, PA impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via 2 leads AWG 28, TR 64. Stripped and tinned ends.
- Mass 30 g.

Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>		Curve	Specials
	m <sup>3</sup> /h	CFM								V DC	V DC		
605 F	29	17.1	5	4.5...5.2	27	4.4	■	1.1	4 000	-20...+50	50 000 / 20 000	2	
612 FL	19	11.2	12	11.5...13.2	16	3.6	■	0.4	2 650	0...+70	50 000 / 20 000	1	/39
612 F	29	17.1	12	10.8...13.2	27	4.4	■	1.0	3 900	-20...+70	50 000 / 20 000	2	/2
612 FH	33	19.4	12	10.0...13.2	31	4.8	■	1.4	4 500	-20...+60	45 000 / 15 000	3	/2
614 F	29	17.1	24	21.6...26.4	27	4.4	■	1.1	3 900	-20...+70	50 000 / 20 000	2	/2



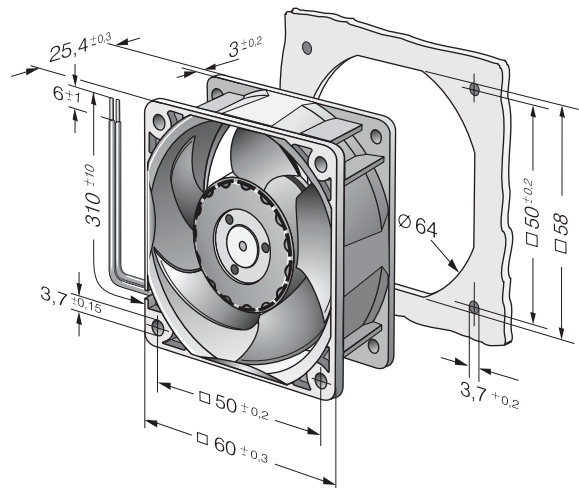
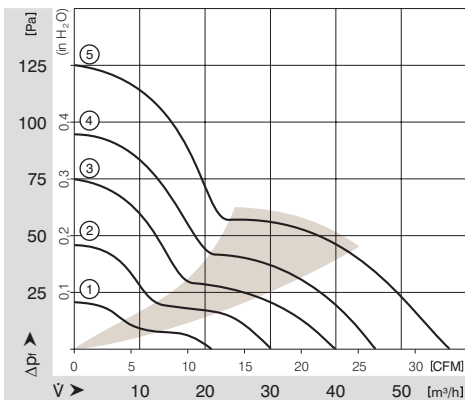
# DC Axial Fans

Series 620 60 x 60 x 25 mm



- DC fan with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, locked rotor and overloading.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- Air exhaust over struts. Rotational direction CW looking at rotor.
- High pressure build-up.
- Low impact sound development.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 85 g.

Nominal Data		Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C	at t <sub>max</sub>	Curve	Specials
Type	m <sup>3</sup> /h	CFM	V DC	V DC	dB(A)	Bel	□ / ■	Watt	min <sup>-1</sup>	°C	Hours	Hours			
622 L	21	12.4	12	8...15	20	3.7	■	0.5	3200	-20...+85	80 000 / 20 000	1			
622 M	30	17.7	12	8...15	29	4.3	■	1.0	4550	-20...+75	77 500 / 30 000	2			
622 N	40	23.5	12	8...15	35	4.7	■	1.9	6100	-20...+70	72 500 / 35 000	3			
622 H	46	27.1	12	8...15	39	5.1	■	2.3	6850	-20...+70	70 000 / 35 000	4			
622 HH	56	33.0	12	8...15	43	5.6	■	3.5	8200	-20...+70	65 000 / 32 500	5			
624 L	21	12.4	24	18...28	20	3.7	■	1.0	3200	-20...+70	80 000 / 40 000	1			
624 M	30	17.7	24	18...28	29	4.3	■	1.5	4550	-20...+70	77 500 / 37 500	2			
624 N	40	23.5	24	18...28	35	4.7	■	2.2	6100	-20...+70	72 500 / 35 000	3			
624 H	46	27.1	24	18...28	39	5.1	■	2.4	6850	-20...+70	70 000 / 35 000	4			
624 HH	56	33.0	24	18...28	43	5.6	■	3.6	8200	-20...+70	65 000 / 32 500	5	/2		



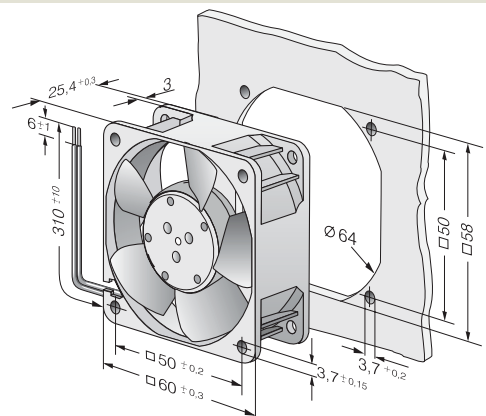
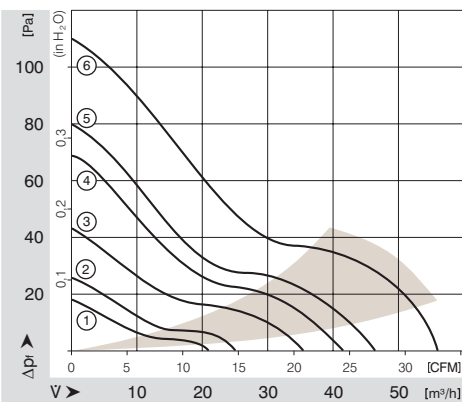
# DC Axial Fans

Series 600 N 60 x 60 x 25 mm



- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, locked rotor and overloading.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- Air exhaust over struts. Rotational direction CW looking at rotor.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 66 g.

Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C		Curve	Specials
	m <sup>3</sup> /h	CFM								V DC	V DC		
612 NGL	21	12.4	12	8...15	16	3.6	□	0.6	2 500	-20...+85	80 000 / 27 500	1	
612 NLE	21	12.4	12	8...15	16	3.6	■	0.4	2 500	-20...+85	80 000 / 27 500	1	
612 NGMLE	25	14.7	12	8...15	19	3.9	□	0.7	3 000	-20...+80	80 000 / 32 500	2	
612 NMLE	25	14.7	12	8...15	19	3.9	■	0.4	3 000	-20...+85	80 000 / 27 500	2	/2
612 NGME	35	20.6	12	8...15	28	4.6	□	1.2	4 100	-20...+75	80 000 / 35 000	3	
612 NME	35	20.6	12	8...15	28	4.6	■	0.8	4 100	-20...+75	80 000 / 35 000	3	/2
612 NN	42	24.7	12	8...15	35	5.0	■	1.6	5 100	-20...+70	70 000 / 35 000	4	/2
612 NH	46	27.1	12	8...15	37	5.3	■	2.0	5 600	-20...+70	70 000 / 35 000	5	/2
612 NHH-118	56	33.0	12	8...15	41	5.7	■	2.9	6 800	-20...+70	60 000 / 30 000	6	/2
614 NGL	21	12.4	24	18...28	16	3.6	□	1.0	2 500	-20...+70	80 000 / 40 000	1	
614 NL	21	12.4	24	18...28	16	3.6	■	0.9	2 500	-20...+70	80 000 / 40 000	1	/2
614 NGML	25	14.7	24	18...28	19	3.9	□	1.2	3 000	-20...+70	80 000 / 40 000	2	/2
614 NML	25	14.7	24	18...28	19	3.9	■	1.0	3 000	-20...+70	80 000 / 40 000	2	
614 NGM	35	20.6	24	18...28	28	4.6	□	1.7	4 100	-20...+70	80 000 / 40 000	3	/12
614 NM	35	20.6	24	18...28	28	4.6	■	1.4	4 100	-20...+70	80 000 / 40 000	3	/2;/39
614 NN	42	24.7	24	18...28	35	5.0	■	1.8	5 100	-20...+70	70 000 / 35 000	4	
614 NH	46	27.1	24	18...26	37	5.3	■	2.1	5 600	-20...+70	70 000 / 35 000	5	/2
614 NHH	56	33.0	24	18...26	41	5.7	■	3.0	6 850	-20...+70	60 000 / 30 000	6	
614 NHH-119	56	33.0	24	18...28	41	5.7	■	3.0	6 850	-20...+70	60 000 / 30 000	6	/2
618 NM	35	20.6	48	36...56	28	4.6	■	1.4	4 100	-20...+70	80 000 / 40 000	3	
618 NN	42	24.7	48	36...56	35	5.0	■	2.1	5 100	-20...+65	70 000 / 40 000	4	/2;/12;/39





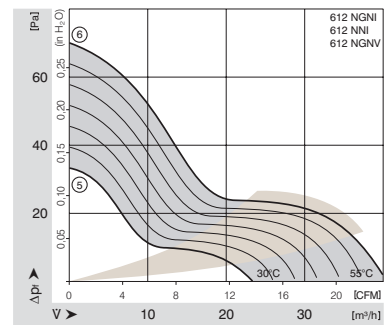
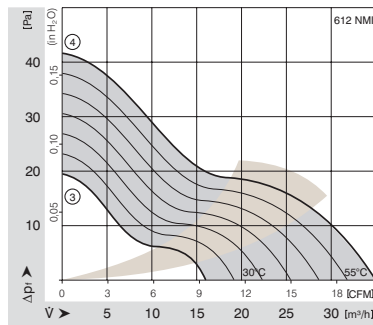
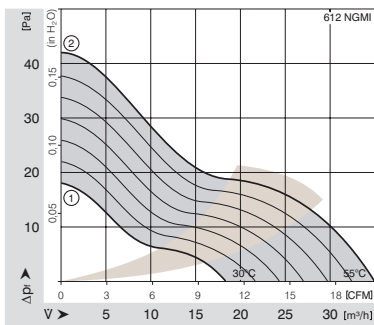
# DC Axial Fans

Series 600 N VARIOFAN 60 x 60 x 25 mm

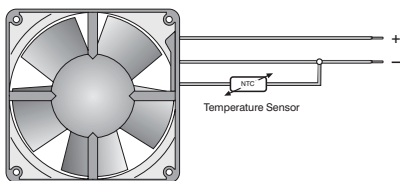


- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- Speed control by temperature sensor.
- With electronic protection against reverse polarity, locked rotor and overloading.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- Air exhaust over struts. Rotational direction CW looking at rotor.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 66 g.

Nominal Data		Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C	t <sub>max</sub>	Curve	Specials
Type		m <sup>3</sup> /h	CFM	V DC	V DC	dB(A)	Bel	□ / ■	Watt	min <sup>-1</sup>	°C	Hours	Hours		
30°C 55°C	612 NGMI	18	10.6	12	8...12.6	14	3.5	□	1.3	2 150	-20...+65	80 000 / 45 000		1	
		35	20.6			28	4.6		1.7	4 100				2	
30°C 55°C	612 NMI	16	9.4	12	8...12.6	16	3.6	■	1.0	2 400	-20...+65	80 000 / 45 000		3	
		35	20.6			28	4.6		1.4	4 100				4	
30°C 55°C	612 NGNI	23	13.5	12	8...12.6	18	3.8	□	1.7	2 900	-20...+65	70 000 / 40 000		5	
		41	24.1			35	5.0		2.4	5 100				6	
30°C 55°C	612 NNI	23	13.5	12	8...12.6	18	3.8	■	1.2	2 900	-20...+65	70 000 / 40 000		5	
		41	24.1			35	5.0		1.5	5 100				6	
30°C 55°C	612 NGNV	23	13.5	12	8...12.6	18	3.8	□	1.7	2 900	-20...+65	70 000 / 40 000		5	
		41	24.1			35	5.0		2.4	5 100				6	/37

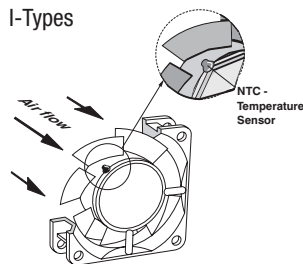


## V-Types

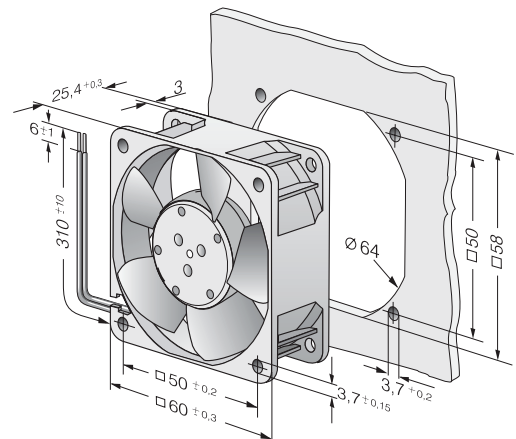


The temperature sensor for controlling the motor speed is not included in delivery.  
Temperature sensor LZ 370 see accessories.

## I-Types



Temperature sensor (NTC-resistor) for controlling the motor speed is positioned directly in the air flow.



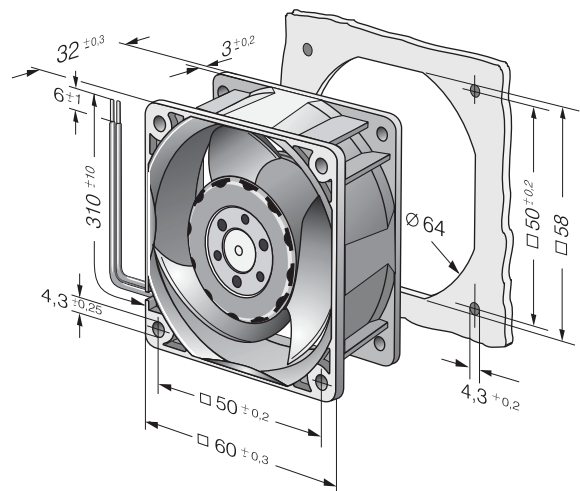
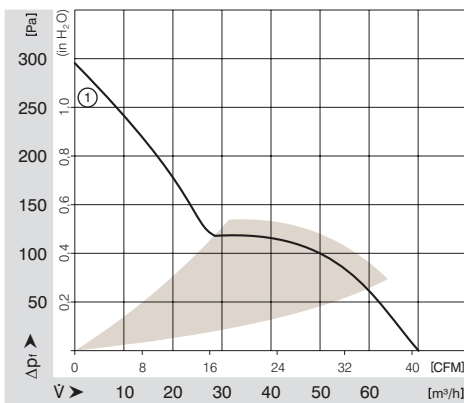
# DC Axial Fans

Series 600 J 60 x 60 x 32 mm



- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- Innovative impeller design with winglets.
- Compact design with high power density.
- With electronic protection against reverse polarity, locked rotor and overloading.
- Compression-rigid curve and low noise factor.
- Fan of fibreglass reinforced plastic. PBT housing, PA impeller.
- Air exhaust over struts. Rotational direction CW looking at rotor.
- Electrical connection via 2 leads AWG 24, TR 64. Stripped and tinned ends.
- Mass 100 g.

Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>		Curve	Specials
	m <sup>3</sup> /h	CFM									V DC	V DC		
612 JH	70	41.1	12	7...13.6	53	6.4	■	7.7	11 700	-20...+70	57 500 / 27 500	1	/2	
614 JH	70	41.1	24	14...26.4	53	6.4	■	7.7	11 700	-20...+70	57 500 / 27 500	1	/2	
618 JH	70	41.1	48	36...60.0	53	6.4	■	7.7	11 700	-20...+70	57 500 / 27 500	1		



# DC Axial Fans

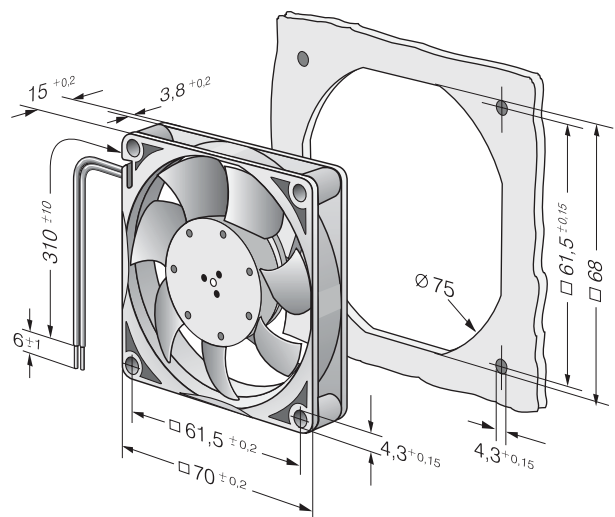
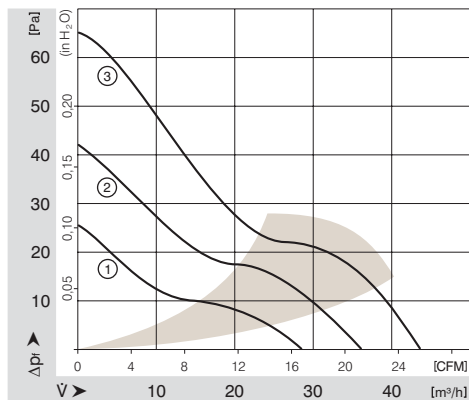
Series 700 F 70 x 70 x 15 mm



- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity. The fan only operates when the polarity is correct. Protected against locked rotor and overloading.
- Fan of fibreglass reinforced plastic. PBT housing, PA impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via 2 leads AWG 28, TR 64. Stripped and tinned ends.
- Mass 53 g.

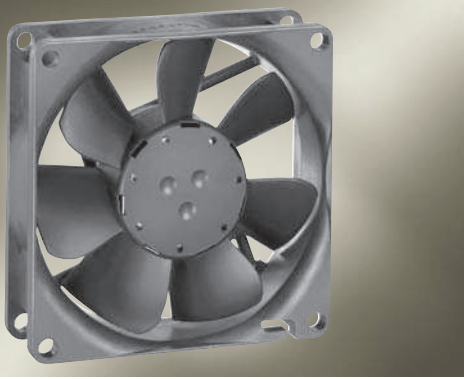
Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise		Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C		Curve	Specials
	m <sup>3</sup> /h	CFM			V DC	V DC					dB(A)	Bel		
712 F/2L*	28	16.5	12	8...13.8	25	4.7	■	0.6	3 300	-20...+70	60 000 / 30 000	1	/2	
712 F/2M*	36	21.2	12	8...13.8	32	5.0	■	1.1	4 300	-20...+70	60 000 / 30 000	2	/2	
712 F	44	25.9	12	8...13.8	38	5.3	■	1.7	5 300	-20...+70	60 000 / 30 000	3	/2	
714 F	44	25.9	24	18...28	38	5.3	■	1.5	5 300	-20...+70	60 000 / 30 000	3		

\*Version with 3-pole Molex plug housing 22-01-2035  
Molex Contacts 08-50-0113



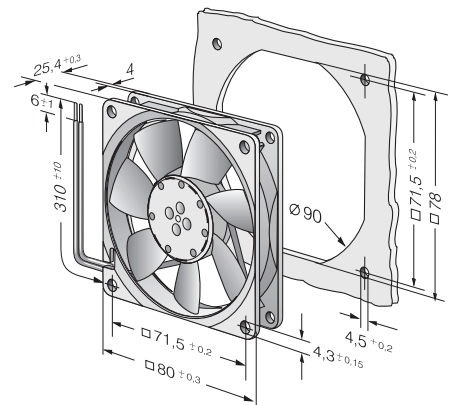
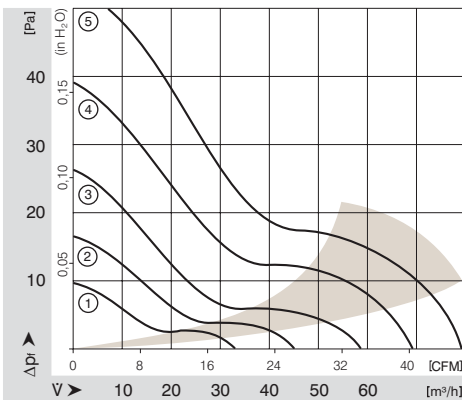
# DC Axial Fans

Series 8400 N 80 x 80 x 25 mm



- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, locked rotor and overloading; partially impedance protected.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via leads AWG 24, TR 64. Stripped and tinned ends.
- Mass 95 g.

Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>		Curve	Specials
	m <sup>3</sup> /h	CFM									V DC	V DC		
8412 NGL	33	19.4	12	8...15	12	3.5	□	0.5	1 500	-20...+85	80 000 / 27 500	1	/2	
8412 NLE	33	19.4	12	8...15	17	3.7	■	0.3	1 500	-20...+85	80 000 / 27 500	1		
8412 NGMLE	45	26.5	12	8...15	19	3.9	□	0.9	2 050	-20...+80	80 000 / 32 500	2	/2	
8412 NMLE	45	26.5	12	8...15	21	4.0	■	0.6	2 050	-20...+85	80 000 / 27 500	2		
8412 NGME	58	34.1	12	8...15	26	4.3	□	1.4	2 600	-20...+75	80 000 / 35 000	3	/2	
8412 NME	58	34.1	12	8...15	27	4.4	■	1.0	2 600	-20...+75	80 000 / 35 000	3		
8412 NG	69	40.6	12	8...15	32	4.7	□	2.0	3 100	-20...+70	70 000 / 35 000	4	/2	
8412 N	69	40.6	12	8...15	32	4.7	■	2.0	3 100	-20...+70	70 000 / 35 000	4	/2	
8412 NH	79	46.5	12	8...13.2	37	5.0	■	2.2	3 600	-20...+70	70 000 / 35 000	5	/2; /12	
8412 NH-217	79	46.5	12	8...15	37	5.0	■	2.4	3 600	-20...+70	70 000 / 35 000	5		
8414 NGL	33	19.4	24	18...28	12	3.5	□	0.7	1 500	-20...+70	80 000 / 40 000	1	/2	
8414 NL	33	19.4	24	18...28	17	3.7	■	0.7	1 500	-20...+70	80 000 / 40 000	1		
8414 NGML	45	26.5	24	18...28	19	3.9	□	1.1	2 050	-20...+70	80 000 / 40 000	2		
8414 NML	45	26.5	24	18...28	21	4.0	■	1.1	2 050	-20...+70	80 000 / 40 000	2		
8414 NGM	58	34.1	24	18...28	26	4.3	□	1.4	2 600	-20...+70	80 000 / 40 000	3	/2	
8414 NM	58	34.1	24	18...28	27	4.4	■	1.4	2 600	-20...+70	80 000 / 40 000	3		
8414 NG	69	40.6	24	18...28	32	4.7	□	2.0	3 100	-20...+70	70 000 / 35 000	4	/2	
8414 N	69	40.6	24	18...28	32	4.7	■	2.0	3 100	-20...+70	70 000 / 35 000	4	/2	
8414 NH	79	46.5	24	18...26	37	5.0	■	2.4	3 600	-20...+70	70 000 / 35 000	5	/2	
8414 NH-221	79	46.5	24	18...28	37	5.0	■	2.4	3 600	-20...+70	70 000 / 35 000	5		
8418 N	69	40.6	48	36...56	32	4.7	■	2.0	3 100	-20...+70	70 000 / 35 000	4		





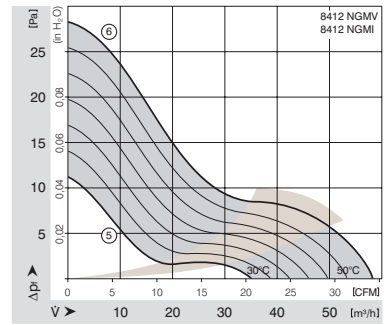
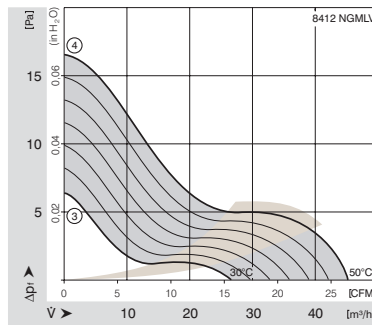
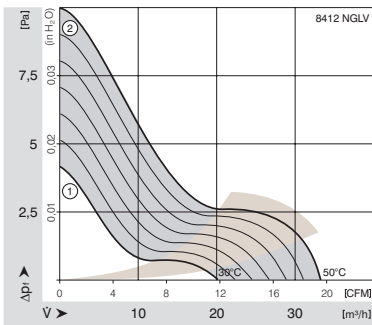
# DC Axial Fans

Series 8400 N VARIOFAN 80 x 80 x 25 mm

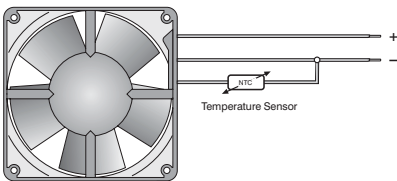


- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- Speed control by temperature sensor.
- With electronic protection against reverse polarity, locked rotor and overloading; partially impedance protected.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via leads AWG 24, TR 64. Stripped and tinned ends.
- Mass 95 g.

Nominal Data		Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C	at t <sub>max</sub>	Curve	Specials
Type		m <sup>3</sup> /h	CFM	V DC	V DC	dB(A)	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours		
30°C 50°C	8412 NGLV	20	11.8	12	10...14	< 10	< 3	■	0.9	900	-20...+70	80 000 / 40 000		1	
		33	19.4			12	3.5		1.1	1 500				2	
30°C 50°C	8412 NGMLV	27	15.9	12	8...14	< 10	3.0	■	1.1	1 200	-20...+70	80 000 / 40 000		3	/37
		45	26.5			19	3.9		1.5	2 050				4	
30°C 50°C	8412 NGMV	35	20.6	12	8...14	< 13	3.5	■	1.4	1 600	-20...+70	80 000 / 35 000		5	
		58	34.1			26	4.3		2.0	2 600				6	
30°C 50°C	8412 NGMI	35	20.6	12	8...14	< 13	3.5	■	1.4	1 600	-20...+70	80 000 / 35 000		5	
		58	34.1			26	4.3		2.0	2 600				6	

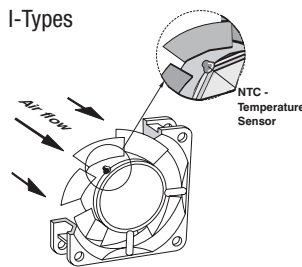


## V-Types

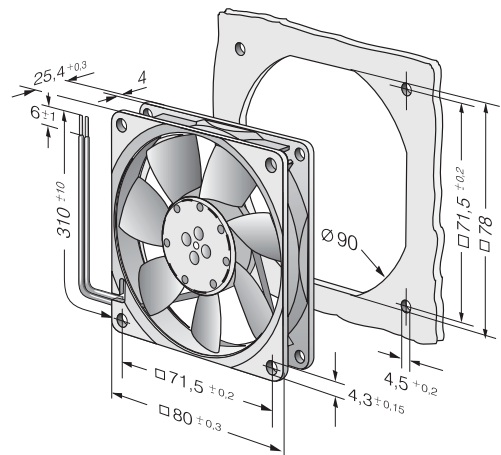


The temperature sensor for controlling the motor speed is not included in delivery. Temperature sensor LZ 370 see accessories.

## I-Types

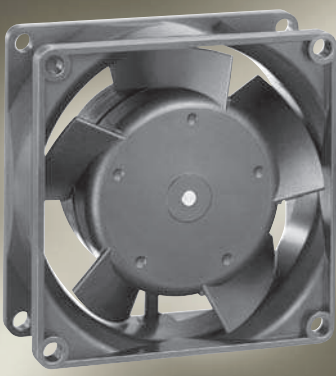


Temperature sensor (NTC-resistor) for controlling the motor speed is positioned directly in the air flow.



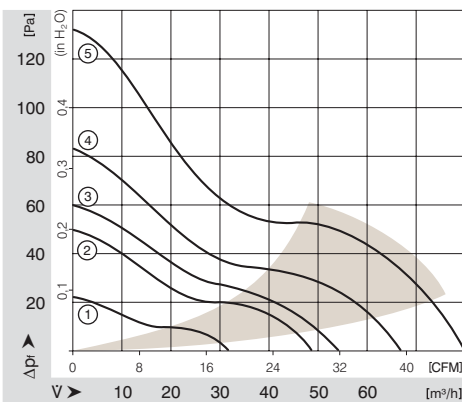
# DC Axial Fans

Series 8300 80 x 80 x 32 mm

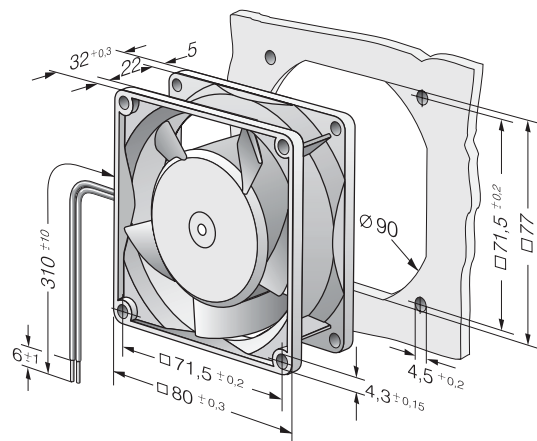


- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, locked rotor and overloading by PTC-resistor; partially impedance protected.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- Air exhaust over struts. Rotational direction CW looking at rotor.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 170 g.

Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life $L_{10}$		Curve	Specials
	m <sup>3</sup> /h	CFM									V DC	V DC		
8305 G	48	28.3	5	4.5...5.5	34	5.0	□	2.2	3 050	-20...+75	70 000 / 25 000	2		
8312 GL	32	18.8	12	6...15	24	4.0	□	1.0	2 000	-20...+75	80 000 / 35 000	1		
8312 L	32	18.8	12	6...15	24	4.0	■	1.0	2 000	-20...+75	80 000 / 35 000	1		
8312 GM	48	28.3	12	6...15	34	5.0	□	1.8	3 000	-20...+75	70 000 / 30 000	2		
8312 M	48	28.3	12	6...15	34	5.0	■	1.8	3 000	-20...+75	70 000 / 30 000	2		
8312 G	54	31.8	12	6...15	36	5.2	□	2.5	3 300	-20...+75	70 000 / 30 000	3		
8312	54	31.8	12	6...15	36	5.2	■	2.2	3 300	-20...+75	70 000 / 30 000	3	/12	
8312 HL	67	39.4	12	6...15	43	5.8	■	4.0	4 200	-20...+75	62 500 / 27 500	4	/2	
8312 H	80	47.1	12	7...12.6	48	6.2	■	5.5	5 000	-20...+60	50 000 / 25 000	5		
8314 L	32	18.8	24	12...28	24	4.0	■	1.0	2 000	-20...+75	80 000 / 35 000	1		
8314 M	48	28.3	24	12...28	34	5.0	■	2.1	3 000	-20...+75	70 000 / 30 000	2		
8314 G	54	31.8	24	12...28	36	5.2	□	2.5	3 300	-20...+75	70 000 / 30 000	3		
8314	54	31.8	24	12...28	36	5.2	■	2.5	3 300	-20...+75	70 000 / 30 000	3	/2; /12	
8314 HL	67	39.4	24	12...28	43	5.8	■	4.3	4 200	-20...+75	62 500 / 27 500	4	/2	
8314 H	80	47.1	24	12...26.5	48	6.2	■	6.0	5 000	-20...+75	55 000 / 25 000	5	/2; /12; /19	
8318	54	31.8	48	36...56	36	5.2	■	2.6	3 300	-20...+75	70 000 / 30 000	3	/2; /17	
8318 HL	67	39.4	48	36...56	43	5.8	■	4.3	4 200	-20...+75	62 500 / 27 500	4	/2; /12	
8318 H	80	47.1	48	36...56	48	6.2	■	5.8	5 000	-20...+65	55 000 / 30 000	5	/12; /17	



Rotor protrusion max. 0.4 mm



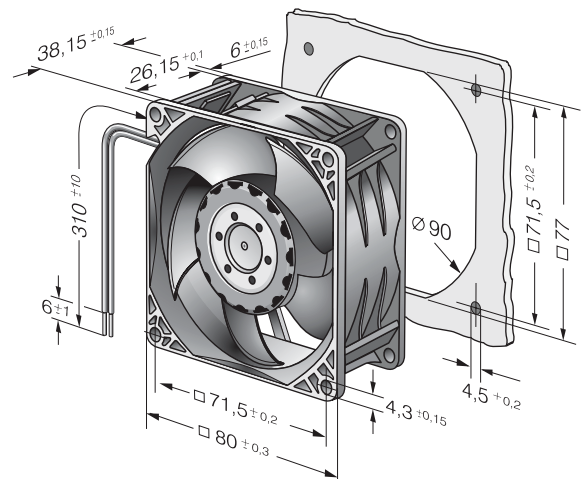
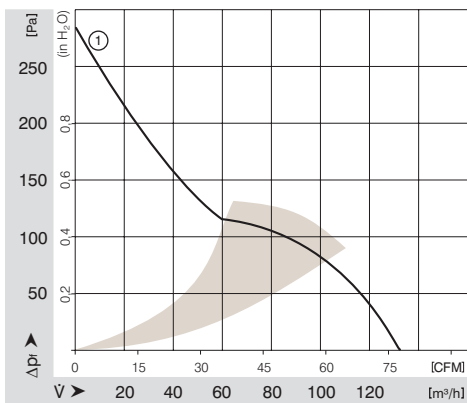
# DC Axial Fans

Series 8200 J 80 x 80 x 38 mm



- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- Innovative impeller design with winglets.
- Compact design with high power density.
- With electronic protection against reverse polarity, locked rotor and overloading.
- Compression-rigid curve and low noise factor.
- Fan of fibreglass reinforced plastic. PBT housing, PA impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via 2 leads AWG 24, TR 64. Stripped and tinned ends.
- Mass 160 g.

Nominal Data	Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise		Sintec-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C	at t <sub>max</sub>	Curve	Specials
Type	m <sup>3</sup> /h	CFM	V DC	V DC	dB(A)	Bel	□ / ■	Watt	min <sup>-1</sup>	°C	Hours	Hours		
8212 JN	132	77.7	12	7...13.8	55	6.6	■	10	8400	-20...+70	62 500 / 32 500	1	/2	
8214 JN	132	77.7	24	18...26.4	55	6.6	■	10	8400	-20...+70	62 500 / 32 500	1	/2	
8218 JN	132	77.7	48	36...53.0	55	6.6	■	11	8400	-20...+70	62 500 / 32 500	1	/2	



# DC Axial Fans

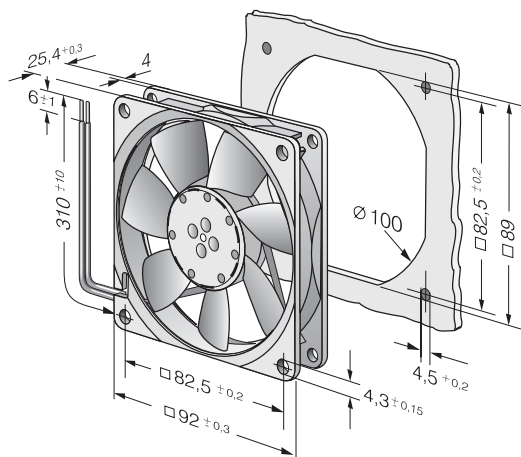
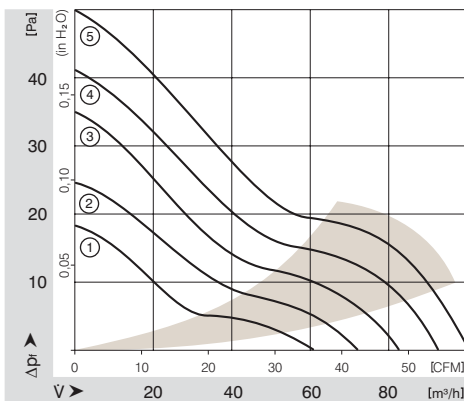
Series 3400 N 92 x 92 x 25 mm



- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, locked rotor and overloading; partially impedance protected.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via leads AWG 24, TR 64. Stripped and tinned ends.
- Mass 100 g.

Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise		Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>		Curve	Specials
	m <sup>3</sup> /h	CFM									V DC	V DC		
3412 NGL	61	35.9	12	8...15	23	4.0	□	1.1	1 950	-20...+80	80 000 / 30 000	1		
3412 NLE	61	35.9	12	8...15	23	4.0	■	0.8	1 950	-20...+85	80 000 / 27 500	1		
3412 NGME	72	42.4	12	8...15	28	4.3	□	1.6	2 300	-20...+75	75 000 / 32 500	2		
3412 NME	72	42.4	12	8...15	28	4.3	■	1.1	2 300	-20...+75	75 000 / 32 500	2	/2	
3412 NG	84	49.4	12	8...15	32	4.7	□	2.2	2 700	-20...+70	70 000 / 35 000	3	/2	
3412 N	84	49.4	12	8...15	32	4.7	■	2.2	2 700	-20...+70	70 000 / 35 000	3	/2	
3412 NGH	94	55.3	12	8...15	36	5.0	□	2.5	3 000	-20...+70	70 000 / 35 000	4		
3412 NH	94	55.3	12	8...15	36	5.0	■	2.5	3 000	-20...+70	70 000 / 35 000	4	/2; /39	
3412 NGH	102	60.0	12	8...13.2	39	5.1	□	3.2	3 250	-20...+60	70 000 / 45 000	5	/2	
3412 NHH	102	60.0	12	8...13.2	39	5.1	■	3.2	3 250	-20...+60	70 000 / 45 000	5	/2	
3412 NHH-379	102	60.0	12	8...15	39	5.1	■	2.7	3 250	-20...+70	70 000 / 35 000	5		
3414 NGL	61	35.9	24	18...28	23	4.0	□	1.4	1 950	-20...+70	80 000 / 40 000	1		
3414 NL	61	35.9	24	18...28	23	4.0	■	1.4	1 950	-20...+70	80 000 / 40 000	1		
3414 NGM	72	42.4	24	18...28	28	4.3	□	1.8	2 300	-20...+70	75 000 / 37 500	2		
3414 NM	72	42.4	24	18...28	28	4.3	■	1.8	2 300	-20...+70	75 000 / 37 500	2		
3414 NG	84	49.4	24	18...28	32	4.7	□	2.3	2 700	-20...+70	70 000 / 35 000	3		
3414 N	84	49.4	24	18...28	32	4.7	■	2.3	2 700	-20...+70	70 000 / 35 000	3	/2	
3414 NGH	94	55.3	24	18...26	36	5.0	□	3.0	3 000	-20...+70	70 000 / 35 000	4	/2	
3414 NH	94	55.3	24	18...26	36	5.0	■	3.0	3 000	-20...+70	70 000 / 35 000	4		
3414 NGH	102	60.0	24	18...28	39	5.1	□	3.2	3 250	-20...+70	70 000 / 35 000	5		
3414 NGH-389	102	60.0	24	18...28	39	5.1	□	3.2	3 250	-20...+70	70 000 / 35 000	5		
3414 NHH	102	60.0	24	18...26	39	5.1	■	3.2	3 250	-20...+70	70 000 / 35 000	5	/39	
3414 NHH-386	102	60.0	24	18...28	39	5.1	■	3.2	3 250	-20...+70	70 000 / 35 000	5		
3418 N	84	49.4	48	36...56	32	4.7	■	2.4	2 700	-20...+70	70 000 / 35 000	3		

Another 48 V DC models on request.



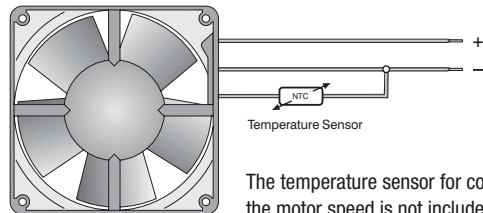
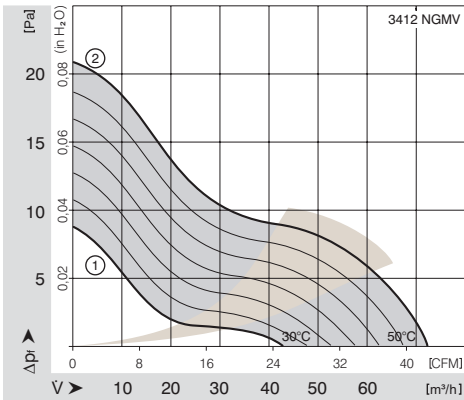
# DC Axial Fans

Series 3400 N VARIOFAN 92 x 92 x 25 mm

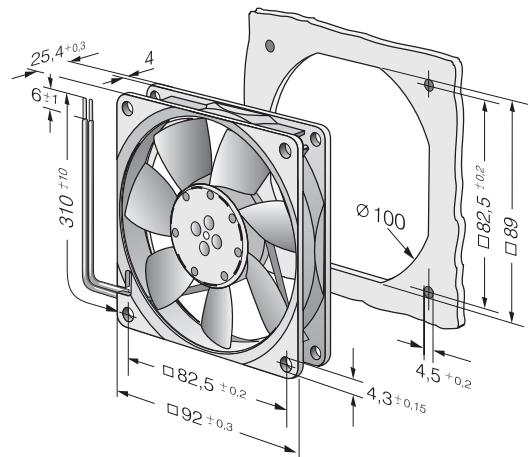
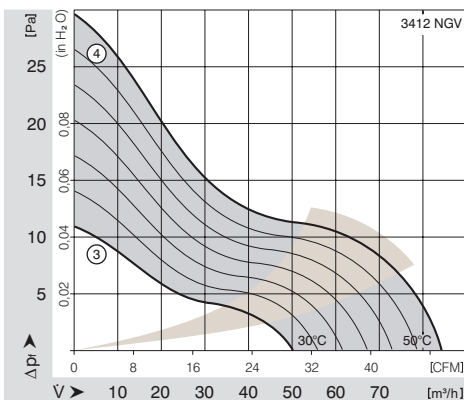


- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- Speed control by temperature sensor.
- With electronic protection against reverse polarity, locked rotor and overloading; partially impedance protected.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via leads AWG 24, TR 64. Stripped and tinned ends.
- Mass 100 g.

Nominal Data		Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C	at t <sub>max</sub>	Curve	Specials
Type		m <sup>3</sup> /h	CFM	V DC	V DC	dB(A)	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours			
30°C 50°C	3412 NGMV	44	25.9	12	8...14.0	14	3.5	1.5	1 400	-20...+70	75 000 / 37 500			1	/37
		72	42.4			28	4.3							2 300	
30°C 50°C	3412 NGV	50	29.4	12	8...12.6	16	3.7	1.6	1 600	-20...+70	75 000 / 37 500			3	/37
		84	49.4			32	4.7							2 700	



The temperature sensor for controlling the motor speed is not included in delivery. Temperature sensor LZ 370 see accessories.





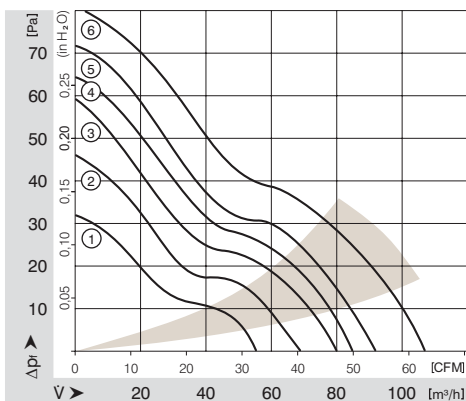
# DC Axial Fans

Series 3300 92 x 92 x 32 mm

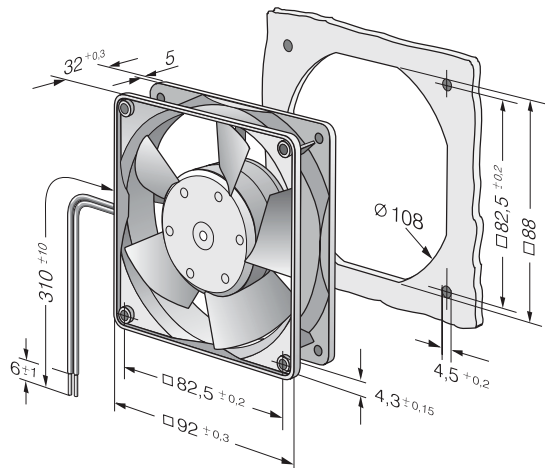


- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, locked rotor and overloading by PTC-resistor; partially impedance-protected.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- Air exhaust over struts. Rotational direction CW looking at rotor.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 190 g.

Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C		Curve	Specials
	m <sup>3</sup> /h	CFM								V DC	V DC		
3312 GL	56	33.0	12	6...15	29	4.5	□	1.4	2 150	-20...+75	80 000 / 35 000	1	
3312 L	56	33.0	12	6...15	29	4.5	■	1.4	2 150	-20...+75	80 000 / 35 000	1	
3312 GM	68	40.0	12	6...15	34	4.8	□	1.7	2 600	-20...+75	70 000 / 30 000	2	
3312 M	68	40.0	12	6...15	34	4.8	■	1.7	2 600	-20...+75	70 000 / 30 000	2	
3312 G	80	47.1	12	6...15	37	5.2	□	2.4	3 000	-20...+75	70 000 / 30 000	3	
3312	80	47.1	12	6...15	37	5.2	■	2.4	3 000	-20...+75	70 000 / 30 000	3	/2; /17
3312-177	93	54.7	12	6...15	43	5.7	■	3.5	3 500	-20...+75	65 000 / 27 500	5	
3314 G	80	47.1	24	12...28	37	5.2	□	2.6	3 000	-20...+75	70 000 / 30 000	3	
3314	80	47.1	24	12...28	37	5.2	■	2.6	3 000	-20...+75	70 000 / 30 000	3	/17
3314-140	85	50.0	24	12...28	40	5.4	■	3.0	3 200	-20...+75	60 000 / 25 000	4	
3314 H	107	63.0	24	12...28	47	6.0	■	5.3	4 000	-20...+75	57 500 / 25 000	6	/2
3318	80	47.1	48	36...56	37	5.2	■	2.7	3 000	-20...+75	70 000 / 30 000	3	/2
3318 H	107	63.0	48	36...56	47	6.0	■	4.3	4 000	-20...+60	57 500 / 35 000	6	/2; /12; /17



Rotor protrusion max. 0.4 mm



NEW TYPES

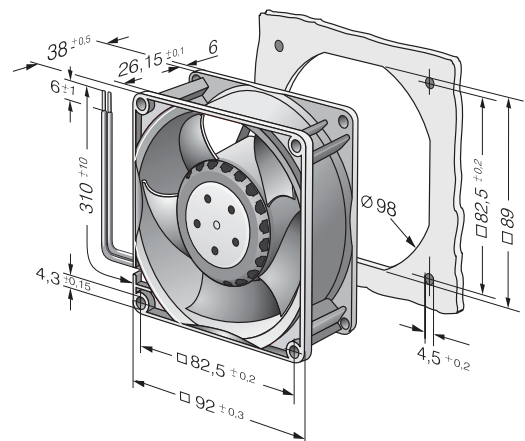
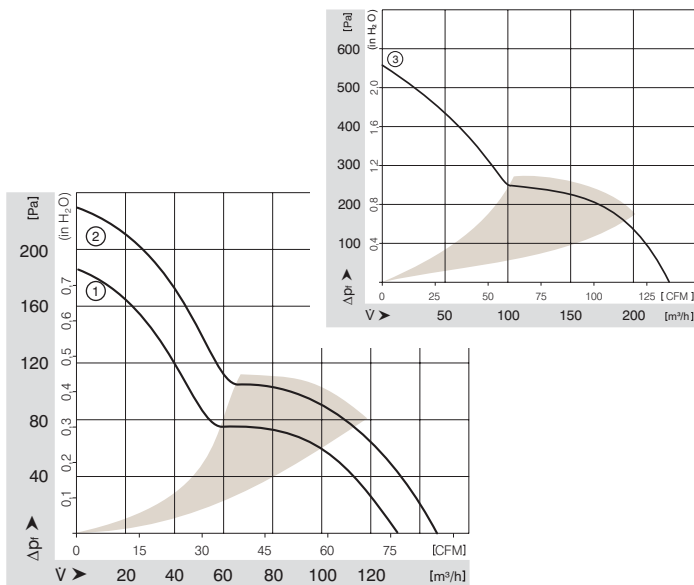
# DC Axial Fans

Series 3200 J 92 x 92 x 38 mm



- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- Innovative impeller design with winglets.
- Compact design with high power density.
- With electronic protection against reverse polarity, locked rotor and overloading.
- Compression-rigid curve and low noise factor.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- Air exhaust over struts. Rotational direction CW looking at rotor.
- Electrical connection via 2 leads AWG 24, TR 64. Stripped and tinned ends.
- Mass 240 g.

Nominal Data	Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise		Sinter-Sleeve Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>	at t <sub>max</sub>	Curve	Specials
Type	m <sup>3</sup> /h	CFM	V DC	V DC	dB(A)	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours		
3212 JN	130	76.5	12	7...13.8	51	6.1	■	7.5	6 000	-20 ...+70	70 000 / 35 000	1	/2	
3212 JH	146	86.0	12	7...15	55	6.4	■	9.0	6 800	-20 ...+70	70 000 / 35 000	2		
3214 JN	130	36.1	24	11...28	51	6.1	■	8.0	6 000	-20 ...+70	70 000 / 35 000	1		
3214 JH	146	86.0	24	11...30	55	6.4	■	9.0	6 800	-20 ...+70	70 000 / 35 000	2	/2	
3214 JH3	230	135.4	24	20...26	66	7.4	■	29.0	10 500	-20 ...+55	45 000 / 30 000	3		
3218 JN	130	76.5	48	36...56	51	6.1	■	7.0	6 000	-20 ...+70	70 000 / 35 000	1		
3218 JH	146	86.0	48	36...53	55	6.4	■	9.5	6 800	-20 ...+70	70 000 / 35 000	2		
3218 JH3	230	135.4	48	36...54	66	7.4	■	29.0	10 500	-20 ...+55	45 000 / 30 000	3		



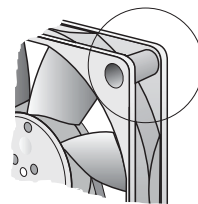
# DC Axial Fans

Series 4400 F 119 x 119 x 25 mm

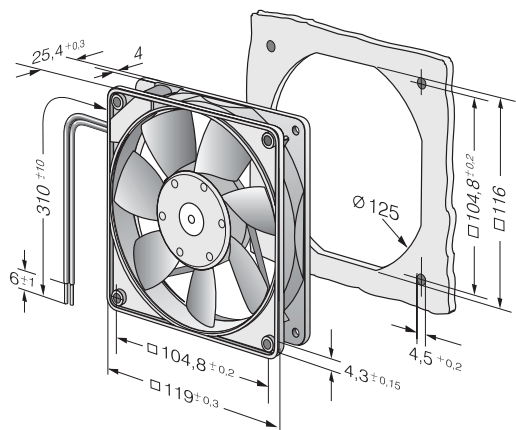
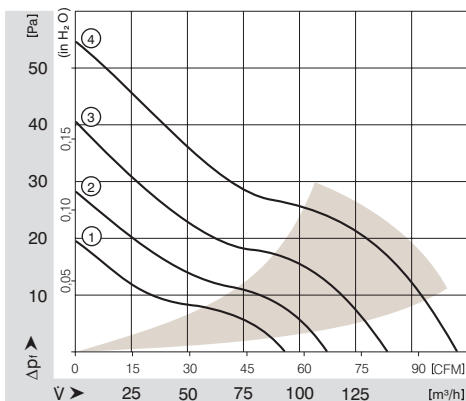


- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, locked rotor and overloading by PTC-resistor; partially impedance protected.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via 2 leads AWG 24, TR 64. Stripped and tinned ends.
- Mass 175 g.

Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise	Sintec-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>		Curve	Specials
	m <sup>3</sup> /h	CFM								V DC	V DC		
4412 FGL	94	55.3	12	7...14	26	3.9	□	1.3	1 600	-20...+75	80 000 / 35 000	1	/2;/39
4412 FGML	114	67.1	12	7...12.6	32	4.3	□	2.0	1 950	-20...+75	75 000 / 32 500	2	/2
4412 FML	114	67.1	12	7...12.6	32	4.3	■	2.0	1 950	-20...+75	75 000 / 32 500	2	
4412 FGM	140	82.4	12	7...12.6	38	4.8	□	3.2	2 400	-20...+75	70 000 / 30 000	3	/12
4412 FM	140	82.4	12	7...12.6	38	4.8	■	3.2	2 400	-20...+75	70 000 / 30 000	3	/2
4412 FG	170	100.1	12	8...12.6	43	5.3	□	5.3	2 900	-20...+60	60 000 / 37 500	4	
4412 F	170	100.1	12	8...12.6	43	5.3	■	5.3	2 900	-20...+60	60 000 / 37 500	4	/2
4414 FL	94	55.3	24	18...28	26	3.9	■	1.0	1 600	-20...+75	80 000 / 35 000	1	/2
4414 FM	140	82.4	24	12...28	38	4.8	■	3.2	2 400	-20...+75	70 000 / 30 000	3	/2
4414 FG	170	100.1	24	12...28	43	5.3	□	5.0	2 900	-20...+60	60 000 / 37 500	4	/2
4414 F	170	100.1	24	12...28	43	5.3	■	5.0	2 900	-20...+60	60 000 / 37 500	4	/2;/12;/39
4418 FG	170	100.1	48	28...53	43	5.3	□	5.5	2 900	-20...+60	60 000 / 37 500	4	
4418 F	170	100.1	48	28...53	43	5.3	■	5.5	2 900	-20...+60	60 000 / 37 500	4	/2;/12;/39



Available on request:  
Fan housing with moulded-in  
spacers. For mounting over  
both flanges.



NEW

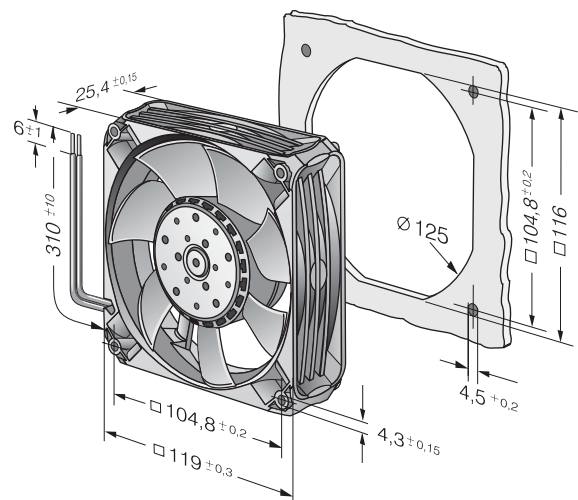
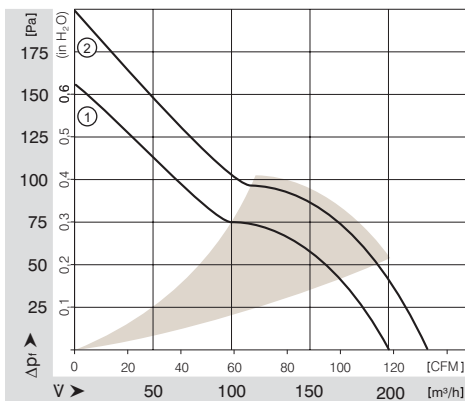
# DC Axial Fans

Series 4400 FN 119 x 119 x 25 mm



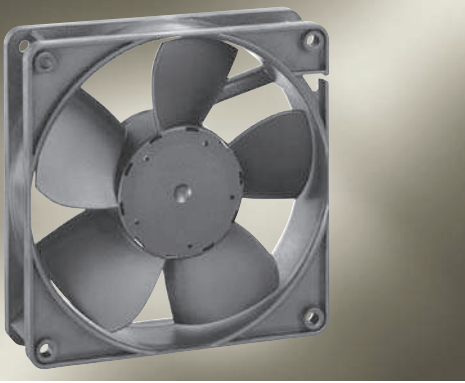
- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- Rigid compression curve at low noise.
- Innovative impeller design with winglets.
- Compact design with high power density.
- With electronic protection against reverse polarity and locked rotor.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 240 g.

Nominal Data	Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C	at t <sub>max</sub>	Curve
Type	m <sup>3</sup> /h	CFM	V DC	V DC	dB(A)	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours		
4412 FNH	225	132.4	12	7...13.2	55	6.7	■	12.0	5 400	-20...+70	60 000 / 30 000	2	
4414 FNN	200	117.7	24	14...28.0	52	6.5	■	8.5	4 850	-20...+70	60 000 / 30 000	1	
4414 FNH	225	132.4	24	18...26.4	55	6.7	■	12.0	5 400	-20...+70	60 000 / 30 000	2	
4418 FNH	225	132.4	48	36...53.0	55	6.7	■	12.0	5 400	-20...+70	60 000 / 30 000	2	



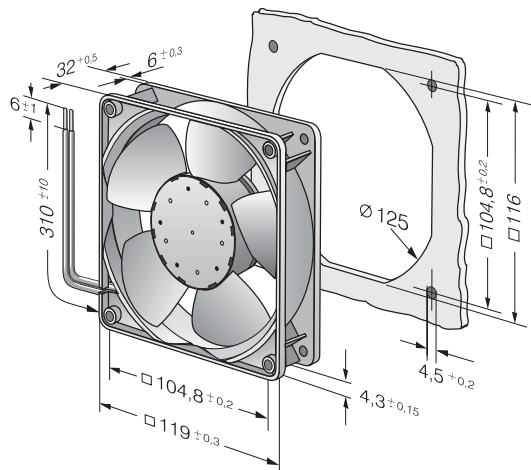
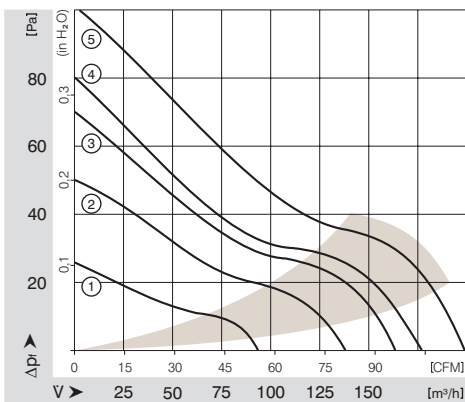
# DC Axial Fans

Series 4300 N 119 x 119 x 32 mm



- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, locked rotor and overloading; partially impedance protected.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 230 g.

Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>		Curve	Specials
	m <sup>3</sup> /h	CFM									V DC	V DC		
4312 NGL	93	54.7	12	7...14.5	27	4.1	□	1.2	1 650	-20...+70	80 000 / 40 000	1		
4312 NL	93	54.7	12	7...14.5	27	4.1	■	1.2	1 650	-20...+70	80 000 / 40 000	1		
4312 NGM	137	80.6	12	7...14.5	37	5.1	□	2.6	2 450	-20...+70	70 000 / 35 000	2		
4312 NM	137	80.6	12	7...14.5	37	5.1	■	2.6	2 450	-20...+70	70 000 / 35 000	2		
4312 NGN	166	97.7	12	7...14.5	43	5.6	□	4.0	3 000	-20...+70	60 000 / 30 000	3		
4312 NN	166	97.7	12	7...14.5	43	5.6	■	4.0	3 000	-20...+70	60 000 / 30 000	3		
4312 NH	176	103.6	12	7...14.5	45	5.8	■	4.5	3 150	-20...+70	60 000 / 30 000	4	/2	
4312 NHH	198	116.5	12	7...14.5	49	6.2	■	6.5	3 600	-20...+60	57 500 / 35 000	5		
4314 NGL	93	54.7	24	12...28	27	4.1	□	1.2	1 650	-20...+70	80 000 / 40 000	1		
4314 NL	93	54.7	24	12...28	27	4.1	■	1.2	1 650	-20...+70	80 000 / 40 000	1		
4314 NGM	137	80.6	24	12...28	37	5.1	□	2.6	2 450	-20...+70	70 000 / 35 000	2		
4314 NGN	166	97.7	24	12...28	43	5.6	□	4.3	3 000	-20...+70	60 000 / 30 000	3		
4314 NN	166	97.7	24	12...28	43	5.6	■	4.3	3 000	-20...+70	60 000 / 30 000	3		
4314 NH	176	103.6	24	12...28	45	5.8	■	4.5	3 150	-20...+70	60 000 / 30 000	4		
4314 NHH	198	116.5	24	12...28	49	6.2	■	6.0	3 600	-20...+70	57 500 / 27 500	5	/2	
4318 NGN	166	97.7	48	36...56	43	5.6	□	4.1	3 000	-20...+70	60 000 / 30 000	3		





# DC Axial Fans

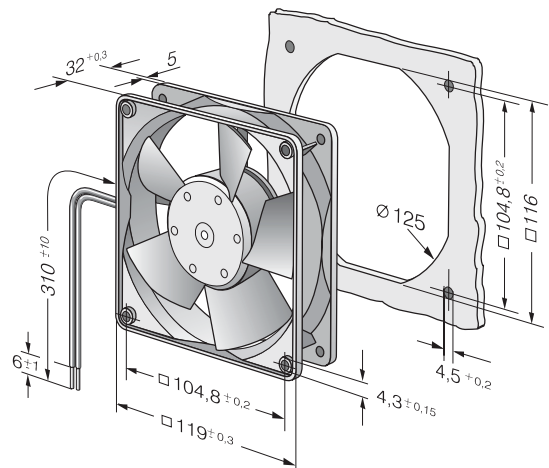
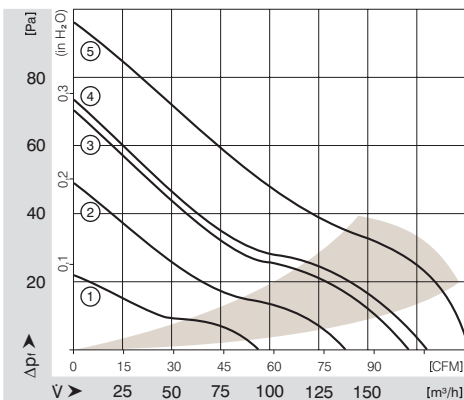
Series 4300 119 x 119 x 32 mm



- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, locked rotor and overloading by PTC-resistor; partially impedance protected.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- Air exhaust over struts. Rotational direction CW looking at rotor.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 220 g.

Nominal Data	Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise		Sinter-Sleeve Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C	at t <sub>max</sub>	Curve	Specials
Type	m <sup>3</sup> /h	CFM	V DC	V DC	dB(A)	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours		
4312 GL	95	55.9	12	6...15.0	30	4.3	■	1.2	1 550	-20...+75	80 000 / 35 000		1	
4312 L	95	55.9	12	6...15.0	30	4.3	■	1.2	1 550	-20...+75	80 000 / 35 000		1	
4312 GM	140	82.4	12	6...15.0	39	5.3	■	2.6	2 300	-20...+75	70 000 / 30 000		2	
4312 M	140	82.4	12	6...15.0	39	5.3	■	2.6	2 300	-20...+75	70 000 / 30 000		2	/12
4312 G	170	100.1	12	6...15.0	45	5.8	■	5.0	2 800	-20...+75	62 500 / 27 500		3	
4312	170	100.1	12	6...15.0	45	5.8	■	5.0	2 800	-20...+75	62 500 / 27 500		3	/2;/19
4312-143	180	105.9	12	6...15.0	47	6.1	■	5.8	3 000	-20...+75	57 500 / 25 000		4	
4312-179	204	120.1	12	6...13.2	51	6.4	■	8.5	3 400	-20...+75	47 500 / 20 000		5	
4314 L	95	55.9	24	12...28.0	30	4.3	■	1.2	1 550	-20...+75	80 000 / 35 000		1	
4314 M	140	82.4	24	12...28.0	39	5.3	■	2.6	2 300	-20...+75	70 000 / 30 000		2	
4314 G	170	100.1	24	12...28.0	45	5.8	■	5.0	2 800	-20...+75	62 500 / 27 500		3	
4314	170	100.1	24	12...28.0	45	5.8	■	5.0	2 800	-20...+75	62 500 / 27 500		3	/2;/12
4314-147	180	105.9	24	12...28.0	47	6.1	■	5.8	3 000	-20...+75	57 500 / 25 000		4	
4314-180	204	120.1	24	12...26.5	51	6.4	■	9.5	3 400	-20...+75	45 000 / 20 000		5	
4318 M	140	82.4	48	36...56.0	39	5.3	■	3.5	2 300	-20...+75	70 000 / 30 000		2	/2;/17
4318 G	170	100.1	48	36...53.0	45	5.8	■	5.0	2 800	-20...+75	62 500 / 27 500		3	/2
4318	170	100.1	48	36...53.0	45	5.8	■	5.0	2 800	-20...+75	62 500 / 27 500		3	/2;/17

Rotor protrusion max. 0.4 mm



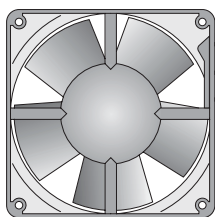
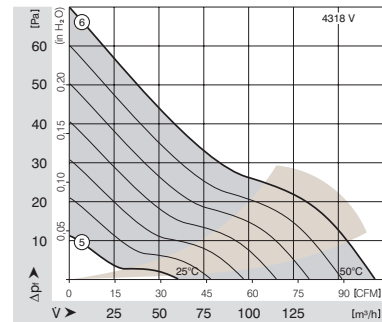
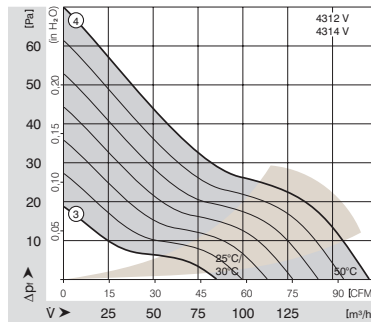
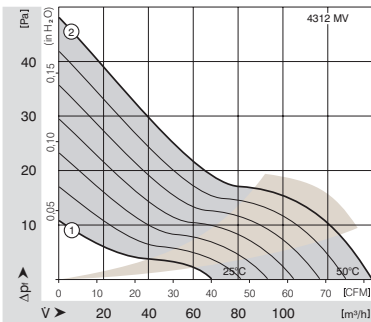
# DC Axial Fans

Series 4300 VARIOFAN 119 x 119 x 32 mm



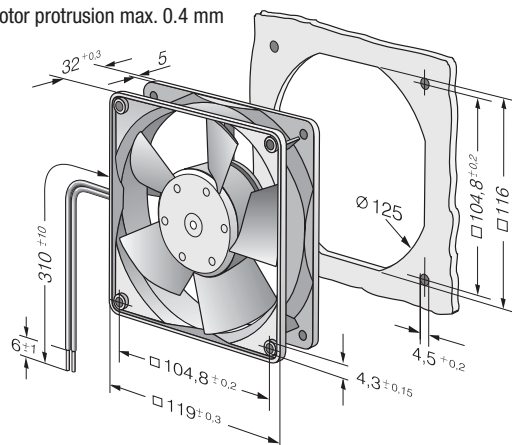
- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- Speed control by temperature sensor.
- With electronic protection against reverse polarity, locked rotor and overloading by PTC-resistor; partially impedance protected.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- Air exhaust over struts. Rotational direction CW looking at rotor.
- Electrical connection via 3 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 220 g.

Nominal Data		Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>	at t <sub>max</sub>	Curve	Specials
Type		m <sup>3</sup> /h	CFM	V DC	V DC	dB(A)	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours		
25°C 50°C	4312 MV	68 140	40.0 82.4	12	8...15	22 39	3.7 5.3	■	1.5 3.0	1 150 2 300	-20...+65	70 000 / 40 000		1 2	/17
25°C 50°C	4312 V	85 170	50.0 100.1	12	8...13.2	29 45	4.2 5.8	■	2.4 5.5	1 400 2 800	-20...+65	65 000 / 35 000		3 4	/17
30°C 50°C	4314 V	85 170	50.0 100.1	24	21...27	29 45	4.2 5.8	■	3.0 5.4	1 400 2 800	-20...+65	65 000 / 35 000		3 4	/17
25°C 50°C	4318 V	61 170	35.9 100.1	48	40...53	21 45	— 5.8	■	2.6 5.4	1 000 2 800	-20...+65	65 000 / 35 000		5 6	/17



The temperature sensor for controlling the motor speed is not included in delivery. Temperature sensor LZ 370 see accessories.

Rotor protrusion max. 0.4 mm



NEW

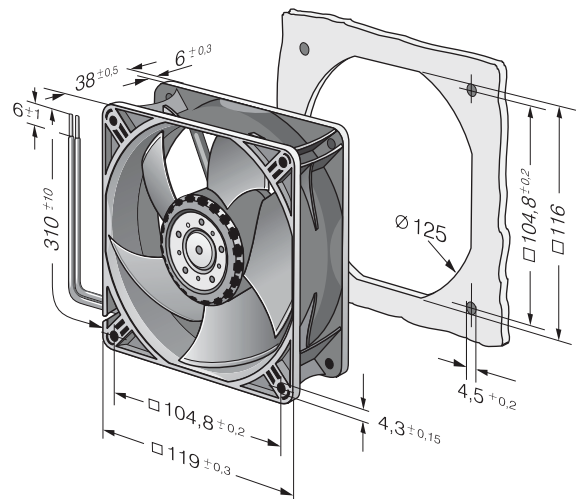
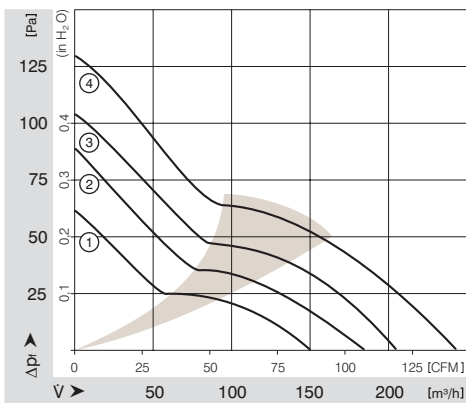
# DC Axial Fans

Series 4400 119 x 119 x 38 mm



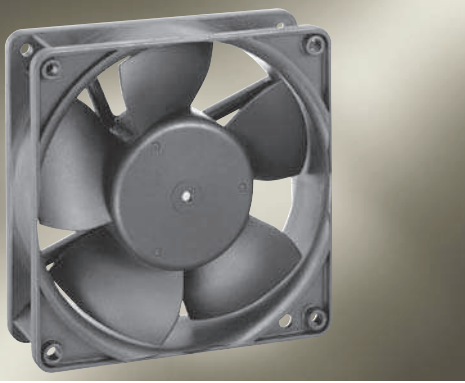
- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- Innovative impeller design with winglets.
- With electronic protection against reverse polarity, locked rotor and overloading.
- Fan of fibreglass reinforced plastic. PBTP housing, PBT impeller.
- Air exhaust over struts. Rotational direction CW looking at rotor.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 230 g.

Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C		Curve	Specials
	m <sup>3</sup> /h	CFM								V DC	V DC		
4412 L	150	88.3	12	7...14	37	5.0	■	2.5	2 700	-20...+70	65 000 / 32 500	1	
4412 M	184	108.3	12	7...14	42	5.3	■	4.2	3 300	-20...+70	60 000 / 30 000	2	
4412 N	205	120.7	12	7...14	46	5.6	■	5.5	3 650	-20...+70	55 000 / 27 500	3	/2
4412 H	240	141.3	12	7...14	49	6.0	■	8.9	4 300	-20...+70	50 000 / 25 000	4	/2
4414 L	150	88.3	24	18...28	37	5.0	■	2.5	2 700	-20...+70	65 000 / 32 500	1	
4414 M	184	108.3	24	18...28	42	5.3	■	4.0	3 300	-20...+70	60 000 / 30 000	2	
4414 N	205	120.7	24	18...28	46	5.6	■	5.2	3 650	-20...+70	55 000 / 27 500	3	
4414 H	240	141.3	24	18...28	49	6.0	■	8.6	4 300	-20...+70	50 000 / 25 000	4	/2
4418 L	150	88.3	48	36...60	37	5.0	■	2.5	2 700	-20...+70	65 000 / 32 500	1	
4418 M	184	108.3	48	36...60	42	5.3	■	4.2	3 300	-20...+70	60 000 / 30 000	2	
4418 N	205	120.7	48	36...60	46	5.6	■	5.2	3 650	-20...+70	55 000 / 27 500	3	
4418 H	240	141.3	48	36...60	49	6.0	■	8.6	4 300	-20...+70	50 000 / 25 000	4	/2



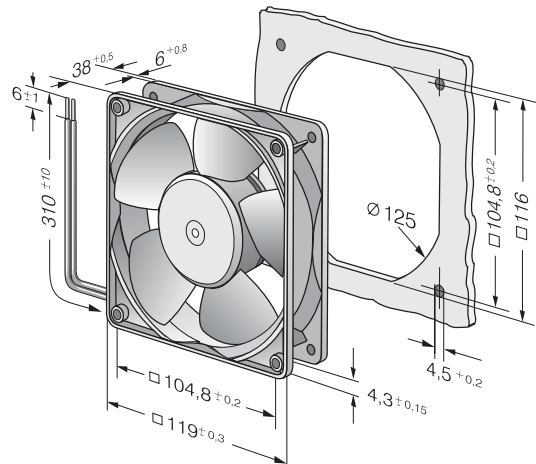
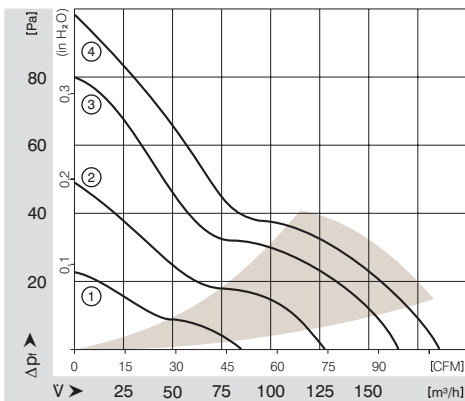
# DC Axial Fans

Series 4200 119 x 119 x 38 mm



- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, locked rotor and overloading by PTC-resistor; partially impedance protected.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 290 g.

Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C		Curve	Specials
	m <sup>3</sup> /h	CFM									V DC	V DC		
4212 L	86	50.6	12	7...14.5	29	4.2	■	1.2	1 600	-20...+75	80 000 / 35 000	1		
4212 GM	127	74.7	12	7...14.5	38	4.9	□	2.2	2 350	-20...+75	70 000 / 30 000	2		
4212 M	127	74.7	12	7...14.5	38	4.9	■	2.2	2 350	-20...+75	70 000 / 30 000	2		
4212	165	97.1	12	7...14.5	45	5.6	■	4.3	3 050	-20...+75	62 500 / 27 500	3	/2; /12	
4212 H	184	108.3	12	7...14.5	49	5.9	■	5.3	3 400	-20...+65	60 000 / 32 500	4	/2; /12	
4214 L	86	50.6	24	12...28	29	4.2	■	1.2	1 600	-20...+75	80 000 / 35 000	1		
4214 G	165	97.1	24	12...28	45	5.6	□	4.3	3 050	-20...+75	62 500 / 27 500	3		
4214	165	97.1	24	12...28	45	5.6	■	4.3	3 050	-20...+75	62 500 / 27 500	3	/2; /12; /17	
4214 H	184	108.3	24	12...28	49	5.9	■	5.3	3 400	-20...+65	60 000 / 32 500	4	/2; /12	
4218	165	97.1	48	36...56	45	5.6	■	4.3	3 050	-20...+75	62 500 / 27 500	3	/2; /12	
4218 H	184	108.3	48	36...56	49	5.9	■	5.6	3 400	-20...+65	60 000 / 32 500	4	/12	



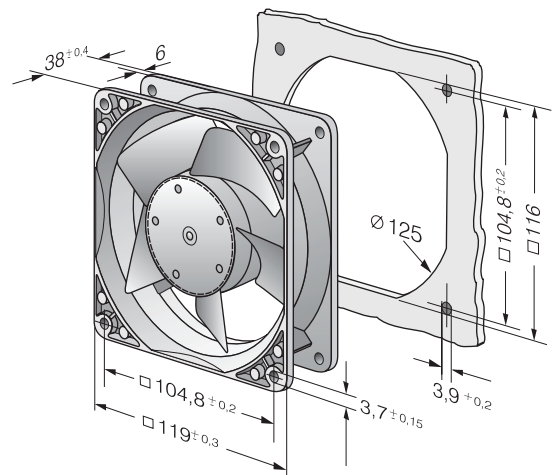
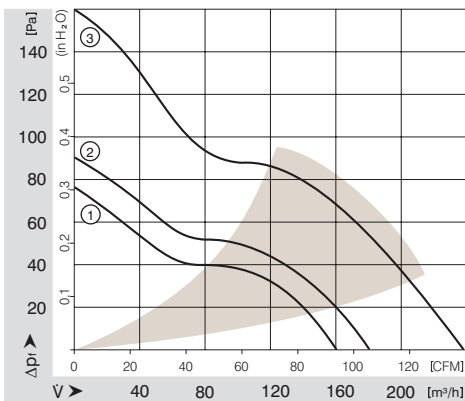
# DC Axial Fans

Series 4100 N 119 x 119 x 38 mm



- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, locked rotor and overloading by PTC-resistor; partially impedance protected.
- Metal fan housing. Impeller of fibre-glass reinforced plastic PA. Housing with ground lug M4 for M4 x 8 screws.
- Air intake over struts. Rotational direction CW looking at rotor.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via 2 flat pins 2,8 x 0,5 mm.
- Mass 390 g.

Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise		Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C		Curve	Specials
	m <sup>3</sup> /h	CFM			V DC	V DC					dB(A)	Bel		
4182 NGX	160	94.2	12	7...15	44	5.3	■	3.5	2 800	-10...+75	85 000 / 37 500	1	/2	
4182 NX	180	105.9	12	7...15	49	5.7	■	4.5	3 200	-30...+75	85 000 / 37 500	2	/2; /12	
4182 NXH	237	139.5	12	7...14	57	6.5	■	11.0	4 400	-30...+55	70 000 / 50 000	3		
4184 NGX	160	94.2	24	12...30	44	5.3	■	3.5	2 800	-10...+75	85 000 / 37 500	1	/2	
4184 NXM	160	94.2	24	12...30	44	5.3	■	3.5	2 800	-30...+75	85 000 / 37 500	1		
4184 NX	180	105.9	24	12...29	49	5.7	■	4.5	3 200	-30...+75	85 000 / 37 500	2	/2; /17	
4184 NXH	237	139.5	24	12...25	57	6.5	■	11.0	4 400	-30...+55	70 000 / 50 000	3	/2	
4188 NGX	160	94.2	48	36...56	44	5.3	■	3.8	2 800	-10...+75	85 000 / 37 500	1		
4188 NXM	160	94.2	48	36...56	44	5.3	■	3.5	2 800	-30...+75	85 000 / 37 500	1	/12	





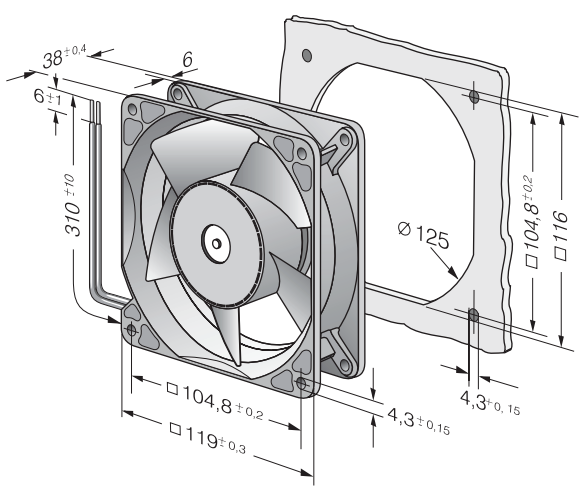
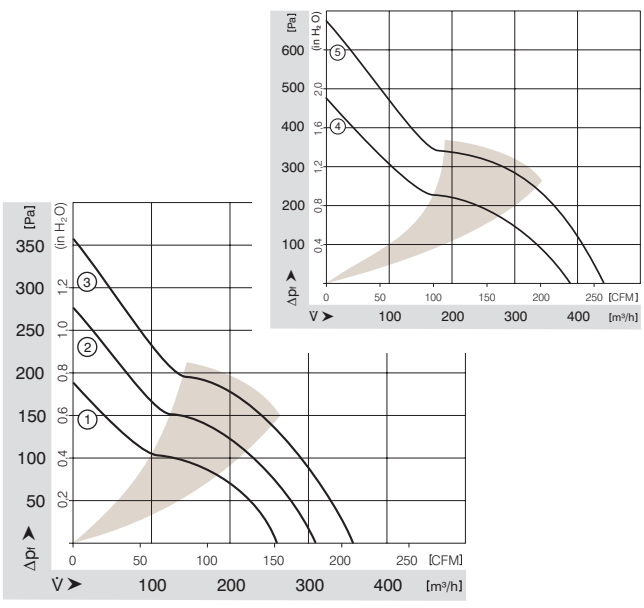
# DC Axial Fans

Series 4100 N High Performance 119 x 119 x 38 mm



- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, locked rotor and overloading.
- Metal fan housing. Impeller of fibre-glass reinforced plastic PA. Housing with ground lug M4 for M4 x 8 screws.
- Air intake over struts. Rotational direction CW looking at rotor.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via 2 leads AWG 22, UL 1007, TR 64.
- Mass 390 g.

Nominal Data	Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C	at t <sub>max</sub>	Curve	Specials
Type	m <sup>3</sup> /h	CFM	V DC	V DC	dB(A)	Bel	□ / ■	Watt	min <sup>-1</sup>	°C	Hours	Hours		P. 84
4112 NHH	260	152.9	12	9...15	60	6.8	■	15.5	5 000	-20...+65	70 000 / 55 000	1		
4112 NH3	310	182.4	12	9...15	65	7.2	■	19.5	6 000	-20...+65	65 000 / 37 500	2	/2	
4112 NH4	355	208.9	12	9...14	67	7.4	■	32.0	6 800	-20...+65	62 500 / 35 000	3	/2	
4114 NHH	260	152.9	24	16...30	60	6.8	■	12.5	5 000	-20...+65	70 000 / 52 500	1		
4114 NH3	310	182.4	24	16...30	65	7.2	■	19.5	6 000	-20...+65	65 000 / 37 500	2	/2	
4114 NH4	355	208.9	24	16...30	67	7.4	■	30.0	6 800	-20...+65	62 500 / 35 000	3	/2	
4114 NH5	390	229.5	24	16...30	70	7.6	■	45.0	7 500	-20...+65	62 500 / 35 000	4	/2	
4114 NH6	440	259.0	24	16...30	73	8.1	■	60.0	8 400	-20...+65	62 500 / 35 000	5	/2	
4118 NHH	260	152.9	48	36...60	60	6.8	■	15.5	5 000	-20...+65	70 000 / 52 500	1		
4118 NH3	310	182.4	48	36...60	65	7.2	■	19.5	6 000	-20...+65	65 000 / 37 500	2	/2	
4118 NH4	355	208.9	48	36...60	67	7.4	■	28.0	6 800	-20...+65	62 500 / 35 000	3	/2	
4118 NH5	390	229.5	48	36...60	70	7.6	■	42.0	7 500	-20...+65	62 500 / 35 000	4	/2	
4118 NH6	440	259.0	48	36...60	73	8.1	■	55.0	8 400	-20...+65	62 500 / 35 000	5	/2	



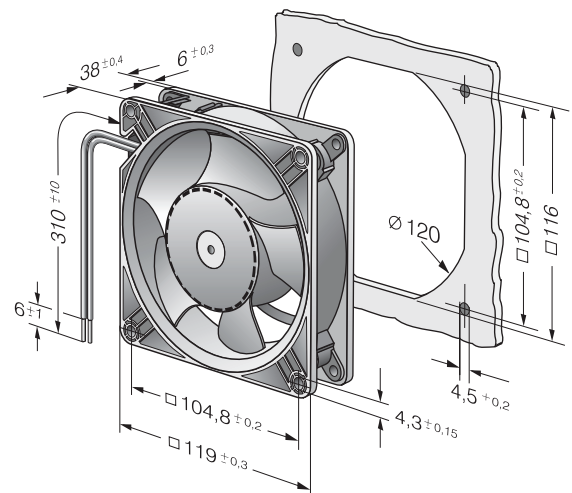
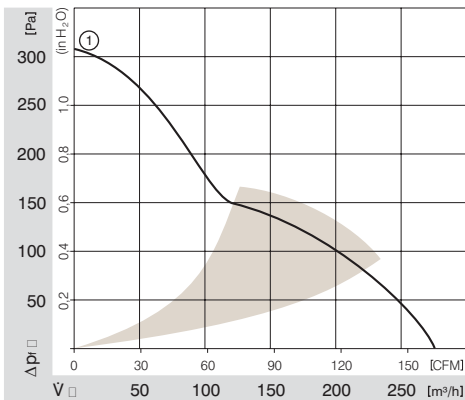
# DC Diagonal Fans

Series DV 4100 119 x 119 x 38 mm



- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- Diagonal fan with compression-proof curve and low noise level.
- With electronic protection against reverse polarity, locked rotor and overloading.
- Metal flange. Impeller of fibre-glass reinforced plastic PA. Housing of fibre-glass reinforced PBT. Metal housing optional.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass: Plastic housing 375 g, metall housing 455g.

Nominal Data	Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise		Sintec-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life $L_{10}$ at 40 °C	at $t_{max}$	Curve	Specials
Type	m <sup>3</sup> /h	CFM	V DC	V DC	dB(A)	Bel	□ / ■	Watt	min <sup>-1</sup>	°C	Hours	Hours		
DV 4112 N	275	161.9	12	9...15	60	6.7	■	21.0	6 000	-20...+65	70 000 / 40 000	1		
DV 4114 N	275	161.9	24	16...30	60	6.7	■	21.0	6 000	-20...+65	70 000 / 40 000	1	/2	
DV 4118 N	275	161.9	48	36...60	60	6.7	■	21.0	6 000	-20...+65	70 000 / 40 000	1		



NEW TYPES

# DC Axial Fans

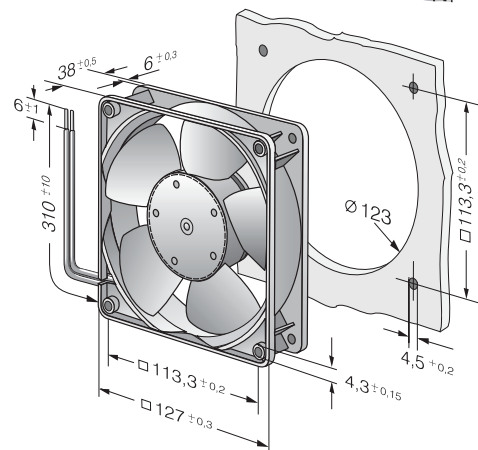
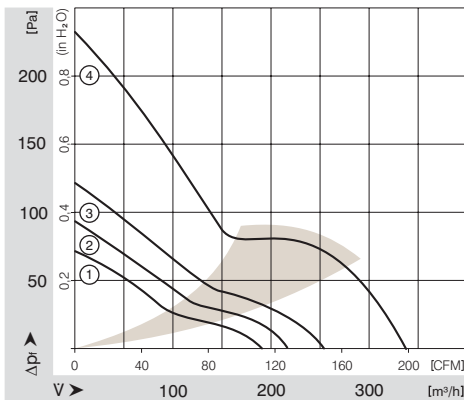
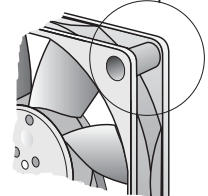
Series 5200 N 127 x 127 x 38 mm



- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, locked rotor and overloading.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 310 g.

Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise		Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C		Curve	Specials
	m³/h	CFM			V DC	V DC					dB(A)	Bel		
5212 NM	187	110.1	12	7...14.5	43	5.3	■	4.6	2 750	-20...+75	62 500 / 27 500	1		
5212 NN	216	127.1	12	7...14	46	5.6	■	6.0	3 150	-20...+75	57 500 / 25 000	2	/2	
5212 NH	252	148.3	12	7...14	51	6.0	■	9.8	3 650	-20...+70	45 000 / 22 500	3		
5212 NHH*	338	198.9	12	9...15	58	6.6	■	19.0	4 900	-20...+65	45 000 / 25 000	4	/2	
5214 NM	187	110.1	24	12...28	43	5.3	■	4.6	2 750	-20...+75	62 500 / 27 500	1		
5214 NN	216	127.1	24	12...28	46	5.6	■	6.0	3 150	-20...+75	57 500 / 25 000	2	/2	
5214 NH	252	148.3	24	12...28	51	6.0	■	9.8	3 650	-20...+70	45 000 / 22 500	3	/2; /12	
5214 NHH*	338	198.9	24	16...30	58	6.6	■	17.5	4 900	-20...+65	45 000 / 25 000	4	/2	
5218 NM	187	110.1	48	40...56	43	5.3	■	5.0	2 750	-20...+75	62 500 / 27 500	1		
5218 NN	216	127.1	48	40...56	46	5.6	■	6.5	3 150	-20...+65	57 500 / 32 500	2		
5218 NH	252	148.3	48	40...56	51	6.0	■	10.0	3 650	-20...+55	45 000 / 32 500	3	/2	
5218 NHH*	338	198.9	48	36...60	58	6.6	■	18.0	4 900	-20...+65	45 000 / 25 000	4	/2	

\* Type NHH: Fan housing with moulded-in spacers.



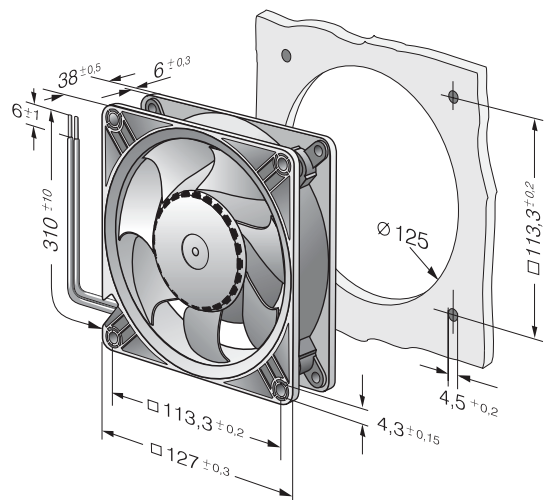
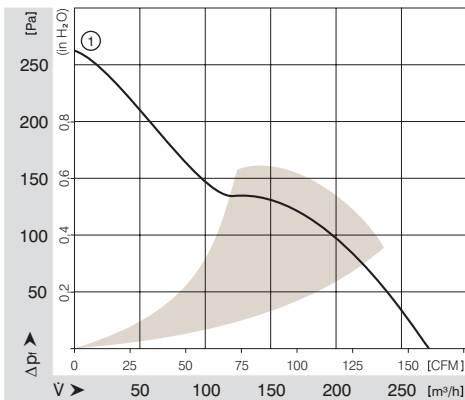
# DC Diagonal Fans

Series DV 5200 127 x 127 x 38 mm



- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, locked rotor and overloading.
- Metal flange, impeller of fibreglass reinforced plastic PA. Housing of fibre-glass reinforced PBT. Metal housing optional.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass: Plastig housing 415 g, metall housing 490 g.

Nominal Data		Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C	at t <sub>max</sub>	Curve	Specials
Type	m <sup>3</sup> /h	CFM	V DC	V DC	dB(A)	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours			
DV 5212 N	270	158.9	12	9...15	56	6.4	■	21.0	5 000	-20...+65	70 000 / 40 000	1	/2		
DV 5214 N	270	158.9	24	16...30	56	6.4	■	19.0	5 000	-20...+65	70 000 / 40 000	1	/2		
DV 5218 N	270	158.9	48	36...60	56	6.4	■	19.0	5 000	-20...+65	70 000 / 40 000	1	/2		



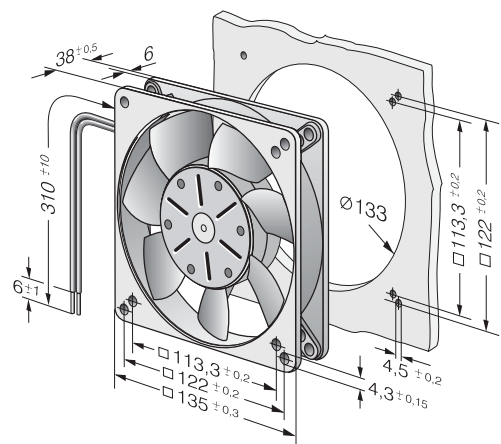
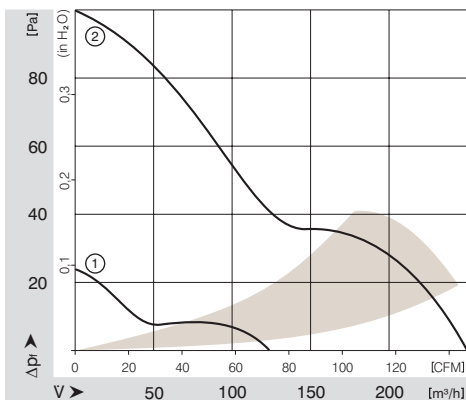
# DC Axial Fans

Series 5100 N 135 x 135 x 38 mm



- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics. With electronic protection against reverse polarity and locked rotor.
- Metal fan housing and impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via leads AWG 22, TR 64. Stripped and tinned ends. Housing with ground lug M4 for M4 x 8 screws. 48 V version incl. screws.
- Mass 650 g.

Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C		Curve	Specials
	m <sup>3</sup> /h	CFM								V DC	V DC		
5112 N	250	147.1	12	6...15	48	6.1	■	9.5	2 900	-25...+72	80 000 / 37 500	2	/2; /17
5114 N	250	147.1	24	12...30	48	6.1	■	9.5	2 900	-25...+72	80 000 / 37 500	2	/2
5118 NL	122	71.8	48	24...60	28	4.1	■	2.6	1 400	-25...+72	85 000 / 40 000	1	
5118 N	250	147.1	48	24...60	48	6.1	■	9.5	2 900	-25...+72	80 000 / 37 500	2	/2; /12





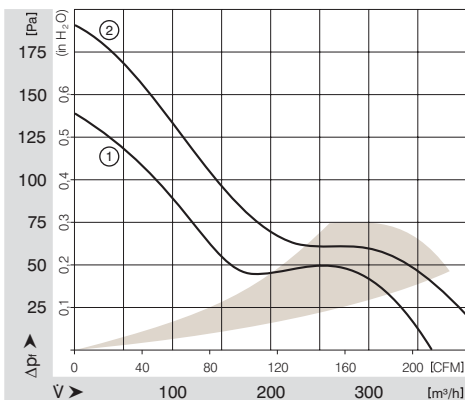
# DC Axial Fans

Series 7100 N 150 Ø x 38 mm

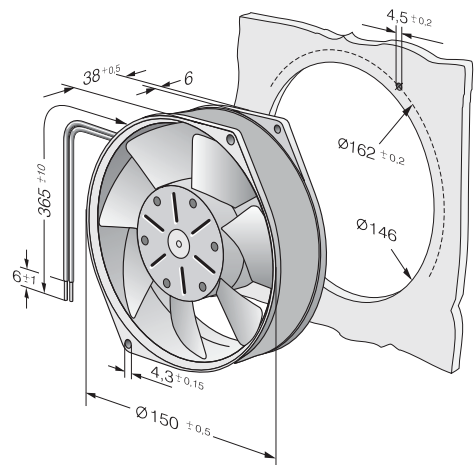


- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics. With electronic protection against reverse polarity and locked rotor.
- Metal fan housing and impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends. Housing with ground lug M4 for M4 x 8 screws. 48 V version incl. screws.
- Mass 620 g.

Nominal Data		Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C	at t <sub>max</sub>	Curve	Specials
Type	m <sup>3</sup> /h	CFM	V DC	V DC	dB(A)	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours			
7112 N	360	211.9	12	6...15.0	55	6.5	■	12.0	2 850	-25...+72	80 000 / 37 500	1		/2	
7114 N	360	211.9	24	12...30.0	55	6.5	■	12.0	2 850	-25...+72	80 000 / 37 500	1		/2	
7114 NH	420	247.2	24	12...26.5	59	7.0	■	19.0	3 350	-25...+72	75 000 / 35 000	2			
7118 N	360	211.9	48	24...60.0	55	6.5	■	12.0	2 850	-25...+72	80 000 / 37 500	1		/2; /12	



Leads fixed with cable fixer:  
supernatant of cable fixer 1 mm.



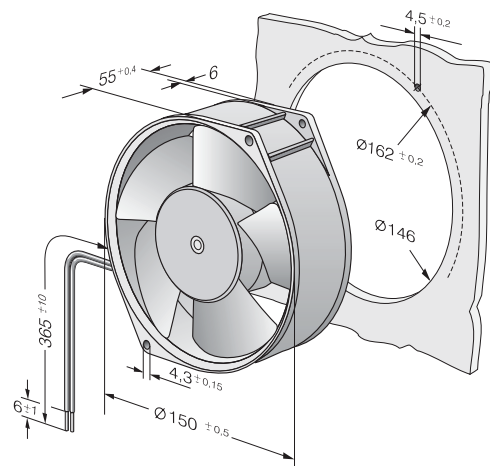
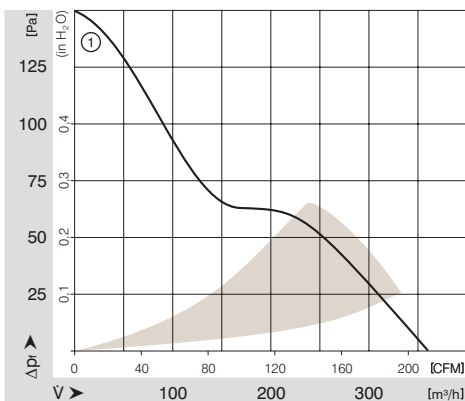
# DC Axial Fans

Series 7200 N 150 Ø x 55 mm



- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics. With electronic protection against reverse polarity and locked rotor.
- Metal fan housing. Impeller of fibreglass reinforced plastic PA.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends. Housing with ground lug M4 for M4 x 8 screws. 48 V version incl. screws.
- Mass 725 g.

Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise		Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C		Curve	Specials
	m <sup>3</sup> /h	CFM			V DC	V DC					dB(A)	Bel		
7212 N	360	211.9	12	6...15	53	6.2	■	12.0	3 050	-25...+72	80 000 / 37 500	1	/2	
7214 N	360	211.9	24	12...30	53	6.2	■	12.0	3 050	-25...+72	80 000 / 37 500	1	/12;/17;/19	
7218 N	360	211.9	48	24...60	53	6.2	■	12.0	3 050	-25...+72	80 000 / 37 500	1		



# DC Axial Fans

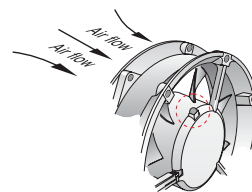
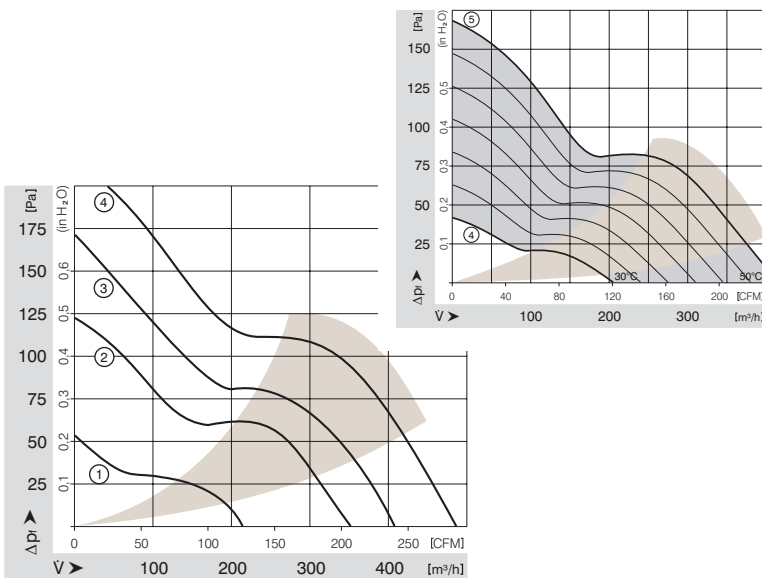
Series 6200 N 172 Ø x 51 mm



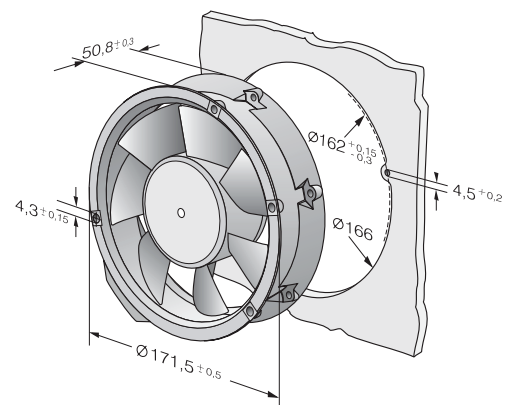
- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics. With electronic protection against reverse polarity and locked rotor; electronic motor current limitation in the start-up phase and when rotor is blocked.
- Metal fan housing, impeller of fibre-glass reinforced plastic PA.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via 2 flat pins 3 x 0.5 mm.
- Housing with ground lug M4 for M4 x 8 screws. 48 V version incl. screws.
- Mass 820 g.

Nominal Data		Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C	at t <sub>max</sub>	Curve	Specials
Type	m <sup>3</sup> /h	CFM	V DC	V DC	dB(A)	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours			
6212 NM	350	206.0	12	8...15	50	5.7	■	12.0	2 850	-20...+72	80 000 / 37 500	2			
6224 NM	350	206.0	24	12...32	50	5.7	■	12.0	2 850	-20...+72	80 000 / 37 500	2		/12	
6224 N	410	241.3	24	12...28	55	6.1	■	18.0	3 400	-20...+72	75 000 / 35 000	3		/2;/12;/19	
6224 NH	480	282.5	24	12...28	61	6.9	■	26.0	4 000	-20...+55*	70 000 / 50 000	4			
6248 NL	205	120.7	48	28...60	35	4.5	■	4.0	1 700	-20...+72	86 000 / 40 000	1			
6248 NM	350	206.0	48	28...60	50	5.7	■	11.5	2 850	-20...+72	80 000 / 37 500	2			
6248 N	410	241.3	48	28...60	55	6.1	■	17.0	3 400	-20...+72	75 000 / 35 000	3		/2;/12	
6248 NH	480	282.5	48	36...56	61	6.9	■	26.0	4 000	-20...+55*	70 000 / 50 000	4			
<b>VARIOFAN – DC fans with temperature-dependent speed control</b>															
30°C ↕ 50°C	6224 NT	205	120.7	24	12...28	35	4.5	■	8.5	1 700	-10...+72	77 500 / 35 000	5		
		410	241.3			55	6.1		18.0	3 400				6	
30°C ↕ 50°C	6248 NT	205	120.7	48	28...60	35	4.5	■	8.5	1 700	-10...+72	77 500 / 35 000	5		
		410	241.3			55	6.1		17.0	3 400				6	

\* 72 °C upon request



Temperature sensor (NTC-resistor) for controlling the motor speed is positioned directly in the air flow.



# DC Axial Fans

Series 6200 NTD TURBOFAN 172 Ø x 51 mm



- Particularly powerful DC electronic fan with 3 phase EC drive and fully integrated operating electronics. For load-dependent speed control with highly intelligent motor management and power and speed reserves which open up completely new areas of application.
- With electronic protection against reverse polarity, locked rotor and overloading.
- Metal fan housing, impeller of fibre-glass reinforced plastic PA.
- Air exhaust over struts. CCW rotational direction looking at rotor.
- Electrical connection via leads. Housing with ground lug M4 for M4 x 8 screws.
- 48 V version incl. screws.
- Mass 820 g.

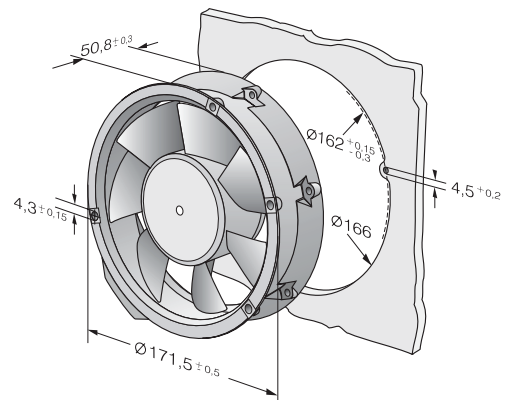
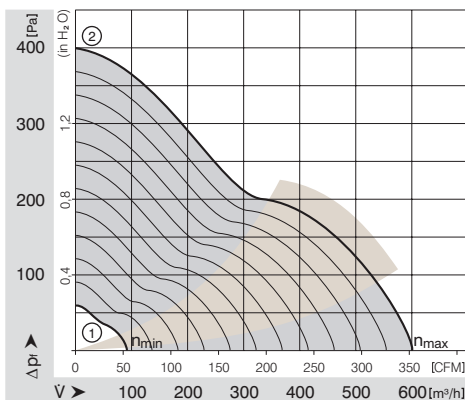
Nominal Data		Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C	at t <sub>max</sub>	Curve
Type		m <sup>3</sup> /h	CFM	V DC	V DC	dB(A)	□ / ■	Watt	min <sup>-1</sup>	°C	Hours	Hours		
min max	6224 NTD...	90	53.0	24	16...28	18	—	2.0	800	-20...+60	70 000 / 45 000		1	
		600	353.1			65	7.4	■	50.0				5 100	2
min max	6248 NTD...	90	53.0	48	40...55*	18	—	2.0	800	-20...+60	70 000 / 45 000		1	
		600	353.1			65	7.4	■	50.0				5 100	2

\*Fan with extended voltage range available on request.

Models 6224 NTD... and 6248 NTD... are available in customer-specific, custom-developed variants only.

The data specified here is technically feasible benchmark values. The fans can be specially adapted to your application with signal outputs and control inputs.

For details of the technical possibilities, refer to the chapters on the sensor signal, alarm signal and control inputs.



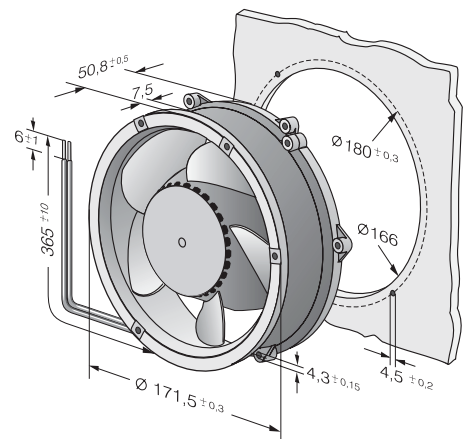
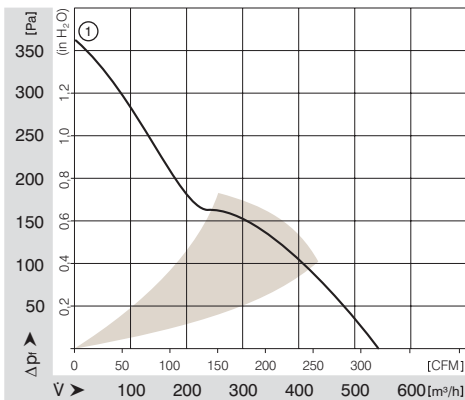
# DC Diagonal Fans

Series DV 6200 172 Ø x 51 mm



- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics. With electronic protection against reverse polarity and locked rotor; electronic motor current limitation in the start-up phase and when rotor is locked.
- Diagonal fan for high pressure build-up at low noise.
- Metal fan housing, impeller of fibre-glass reinforced plastic PA.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends. Housing with ground lug M4 for M4 x 8 screws. 48 V version incl. screws.
- Mass 820 g.

Nominal Data	Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise		Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C	at t <sub>max</sub>	Curve	Specials
Type	m <sup>3</sup> /h	CFM	V DC	V DC	dB(A)	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours		
DV 6224	540	317.8	24	16...28	63	7.1	■	40.0	4 300	-20...+75	90 000 / 40 000	1	1	12/12/17
DV 6248	540	317.8	48	28...60	63	7.1	■	40.0	4 300	-20...+75	90 000 / 40 000	1	1	12/12





# DC Diagonal Fans

Series DV 6200 TD TURBOFAN 172 Ø x 51 mm



- Particularly powerful DC electronic fan with 3 phase EC drive and fully integrated operating electronics. For load-dependent speed control with highly intelligent motor management and power and speed reserves which open up completely new areas of application.
- Diagonal fan with compression-proof curve and low noise level.
- With electronic protection against reverse polarity, locked rotor and overloading.
- Metal fan housing, impeller of fibre-glass reinforced plastic PA.
- Air exhaust over struts. CCW rotational direction looking at rotor.
- Electrical connection via 2 leads. AWG 22, TR 64. Stripped and tinned ends. Housing with ground lug M4 for M4 x 8 screws. 48 V version incl. screws.
- Mass 820 g.

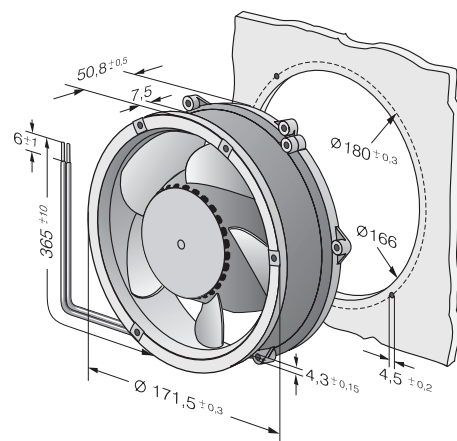
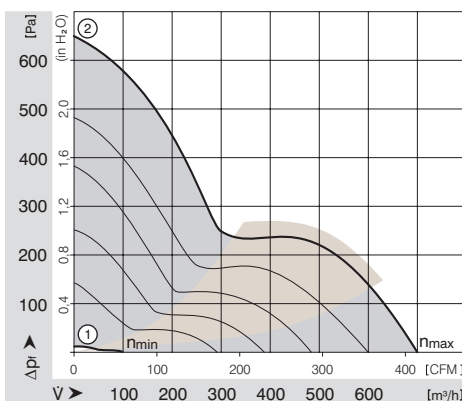
Nominal Data		Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise		Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C	Curve
Type		m <sup>3</sup> /h	CFM	V DC	V DC	dB(A)	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	
DV 6224 TD		700	412.0	24	16...36	69	7.8	■	91.0	5500	-20...+60	65 000	2
DV 6248 TD		700	412.0	48	40...55	69	7.8	■	89.0	5500	-20...+60	65 000	2
min max	DV 6224 TD...	100	58.9	24	16...36	29	—	■	2.0	800	-20...+60	65 000	1
		700	412.0			69	7.8		91.0	5 500			2
min max	DV 6248 TD...	100	58.9	48	40...55*	29	—	■	2.0	800	-20...+60	65 000	1
		700	412.0			69	7.8		89.0	5 500			2

\*Fan with extended voltage range available on request.

Models DV 6224 TD... and DV 6248 TD... are available in customer-specific, custom-developed variants only.

The data specified here are technically feasible benchmark values. The fans can be specially adapted to your application with signal outputs and control inputs.

For details of the technical possibilities, refer to the chapters on the sensor signal, alarm signal and control inputs.



# DC Axial Fans

Series 6400 172 x 150 x 51 mm

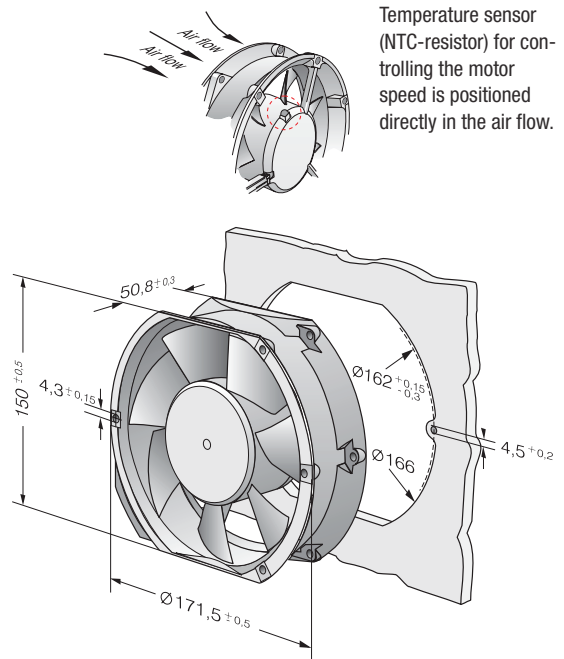
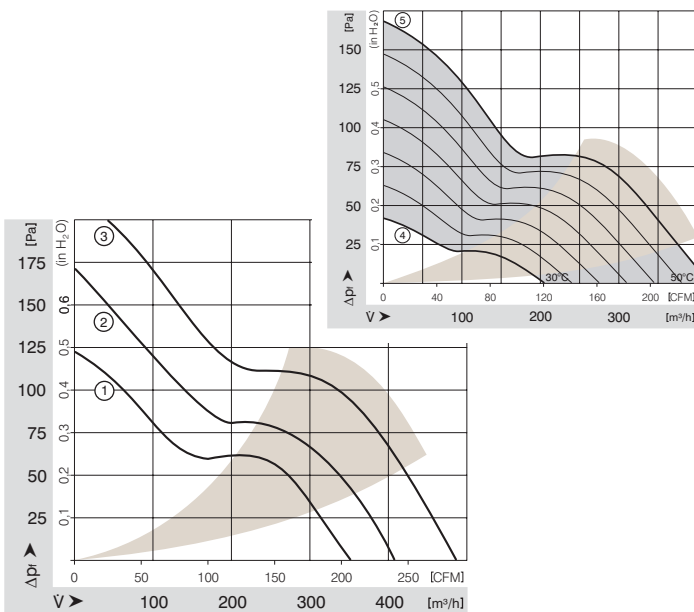


- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics. With electronic protection against reverse polarity and locked rotor; electronic motor current limitation in the start-up phase and when rotor is locked.
- Metal fan housing, impeller of fibre-glass reinforced plastic PA.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via 2 flat pins 3 x 0.5 mm.
- Housing with ground lug M4 for M4 x 8 screws. 48 V version incl. screws.
- Mass 760 g.

Nominal Data	Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C	at t <sub>max</sub>	Curve	Specials
Type	m <sup>3</sup> /h	CFM	V DC	V DC	dB(A)	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours		
6412 M	350	206.0	12	8...15	52	6.0	■	12.0	2 850	-20...+72	80 000 / 37 500	1		
6424 M	350	206.0	24	12...32	52	6.0	■	12.0	2 850	-20...+72	80 000 / 37 500	1		
6424	410	241.3	24	12...28	57	6.4	■	18.0	3 400	-20...+72	75 000 / 35 000	2	/2	
6424 H	480	282.5	24	12...28	63	7.1	■	26.0	4 000	-20...+55*	70 000 / 50 000	3	/12	
6448 M	350	206.0	48	28...60	52	6.0	■	11.5	2 850	-20...+72	80 000 / 37 500	1		
6448	410	241.3	48	28...60	57	6.4	■	17.0	3 400	-20...+72	75 000 / 35 000	2	/2	
6448 H*	480	282.5	48	28...60	63	7.1	■	26.0	4 000	-20...+55**	70 000 / 50 000	3	/2	
<b>VARIOFAN – DC fans with temperature-dependent speed control</b>														
30°C 50°C	6424 T	205 410	120.7 241.3	24	12...28	37 57	4.9 6.4	■	8.5 18.0	1 700 3 400	-10...+72	77 500 / 35 000	4 5	
30°C 50°C	6448 T	205 410	120.7 241.3	48	28...60	37 57	4.9 6.4	■	8.5 17.0	1 700 3 400	-10...+72	77 500 / 35 000	4 5	

\* Leads 310 mm.

\*\* 72 °C upon request



NEW

# DC Axial Fans

Series 6400 TD TURBOFAN 172 x 150 x 51 mm

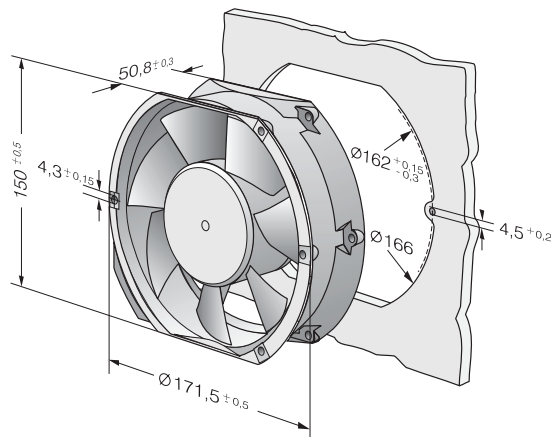
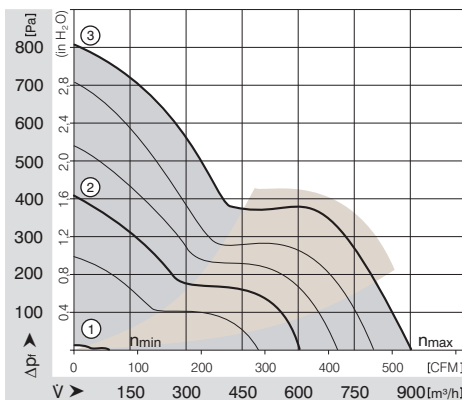


- DC electronic fan with 3 phase EC drive and fully integrated operating electronics. For load-dependent speed control with highly intelligent motor management and power and speed reserves which open up completely new areas of application.
- With electronic protection against reverse polarity, locked rotor and overloading.
- Metal fan housing, impeller of fibre-glass reinforced plastic PA.
- Air exhaust over struts. CCW rotational direction looking at rotor.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via leads. Housing with ground lug M4 for M4 x 8 screws.
- 48 V version incl. screws.
- Mass 760 g.

Nominal Data		Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life $L_{10}$ at 40 °C	at $t_{max}$	Curve
Type		m <sup>3</sup> /h	CFM	V DC	V DC	dB(A)	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours		
min max	6424 TD...	90	53.0	24	16...28	18	—	2.0	800	-20...+60	70 000 / 45 000		1	
		600	353.1			65	7.4						■	50.0
min max	6448 TD...	90	53.0	48	40...55*	18	—	2.0	800	-20...+60	70 000 / 45 000		1	
		600	353.1			65	7.4						■	50.0
min max	6448 TDHH...	90	53.0	48	36...72	18	—	2.0	800	-20...+60	70 000 / 45 000		1	
		900	529.7			78	8.6						■	163.0

\*Fan with extended voltage range available on request.

Models 6424 TD, 6448 TD... and 6448 TDHH... are available in customer-specific, custom-developed variants only. The data specified here are technically feasible benchmark values. The fans can be specially adapted to your application with signal outputs and control inputs. For details of the technical possibilities, refer to the chapters on the sensor signal, alarm signal and control inputs.



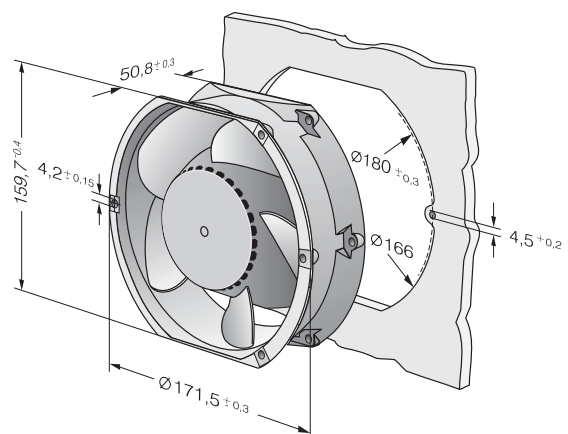
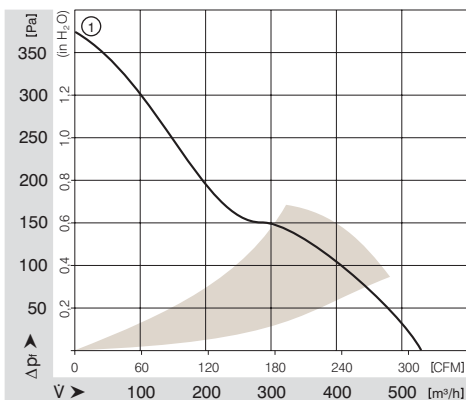
# DC Diagonal Fans

Series DV 6400 172 x 160 x 51 mm



- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics. With electronic protection against reverse polarity and locked rotor; electronic motor current limitation during start-up and at locked rotor.
- Metal fan housing, impeller of fibre-glass reinforced plastic PA.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via 2 leads. AWG 22, TR 64. Stripped and tinned ends. Housing with ground lug M4 for M4 x 8 screws. 48 V version incl. screws.
- Mass 820 g.

Nominal Data	Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise		Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life $L_{10}$ at 40 °C	at $t_{max}$	Curve	Specials
Type	m <sup>3</sup> /h	CFM	V DC	V DC	dB(A)	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours		
DV 6424	530	311.9	24	16...28	65	7.3	■	40.0	4 300	-20...+75	90 000 / 45 000	1	/12	
DV 6448	530	311.9	48	28...60	65	7.3	■	40.0	4 300	-20...+75	90 000 / 45 000	1	/12	



# DC Diagonal Fans

Series DV 6400 TD TURBOFAN 172 x 160 x 51 mm



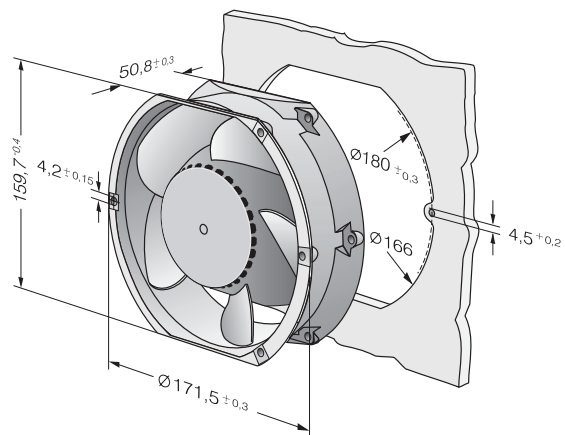
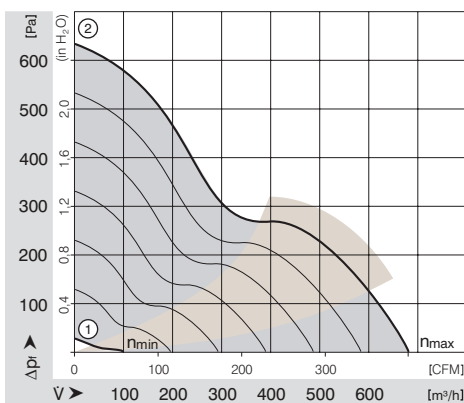
- DC electronic fan with 3 phase EC drive and fully integrated operating electronics. For load-dependent speed control with highly intelligent motor management and power and speed reserves which open up completely new areas of application.
  - With electronic protection against reverse polarity, locked rotor and overloading.
  - Metal fan housing, impeller of fibre-glass reinforced plastic PA.
  - Air exhaust over struts. CCW rotational direction looking at rotor.
  - Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
  - Electrical connection via leads.
- Housing with ground lug M4 for M4 x 8 screws. 48 V version incl. screws.
- Mass 820 g.

Nominal Data		Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C	Curve
Type		m <sup>3</sup> /h	CFM	V DC	V DC	dB(A)	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	
DV 6424 TD		680	400.2	24	16...28	71	7.9	■	91.0	5500	-20...+60	65 000	2
min max	DV 6424 TD...	100	58.9	24	16...28	29	—	■	2.0	800	-20...+60	65 000	1
		680	400.2			71	7.9		91.0	5 500			2
min max	DV 6448 TD...	100	58.9	48	40...55	29	—	■	2.0	800	-20...+60	65 000	1
		680	400.2			71	7.9		89.0	5 500			2

Models DV 6424 TD... and DV 6448 TD... are available in customer-specific, custom-developed variants only.

The data specified here are technically feasible benchmark values. The fans can be specially adapted to your application with signal outputs and control inputs.

For details of the technical possibilities, refer to the chapters on the sensor signal, alarm signal and control inputs.





# DC Diagonal Fans

W1G 180 Ø 200 x 70 mm



- Fan housing of die-cast aluminium GDAISI.
- Impeller of plastic PA 6.6.
- Polarity and locked-rotor protection, soft start.
- Blowing over struts. Rotational direction CCW looking at rotor.
- Mass 1800 g.

Nominal Data	Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Power Input	Nominal Speed	Temperature Range	Service Life $L_{10}$ at 40 °C	at $t_{max}$	Curve
Type	m <sup>3</sup> /h	CFM	V DC	V DC	dB(A)	Bel	Watt	min <sup>-1</sup>	°C	Hours	Hours	
W1G 180-AB31-01	900	529.7	24	16...28	68	—	93.0	4 550	-25...+60	42 000 / 40 000		1
W1G 180-AB47-01	925	544.4	48	36...57	69	—	100.0	4 600	-25...+60	42 000 / 40 000		1

	n [min <sup>-1</sup> ]	P <sub>i</sub> [W]	η <sub>II</sub> [%]	Lp <sub>A</sub> [dBA]
①	5180	133	—	71
②	4970	141	70	70
③	4760	146	67	68
④	5010	140	55	69
⑤	4600	100	—	69
⑥	4500	106	70	68
⑦	4340	112	67	66
⑧	4550	105	55	67
⑨	3920	60	—	66
⑩	3790	64	70	65
⑪	3660	68	67	63
⑫	3790	63	55	63

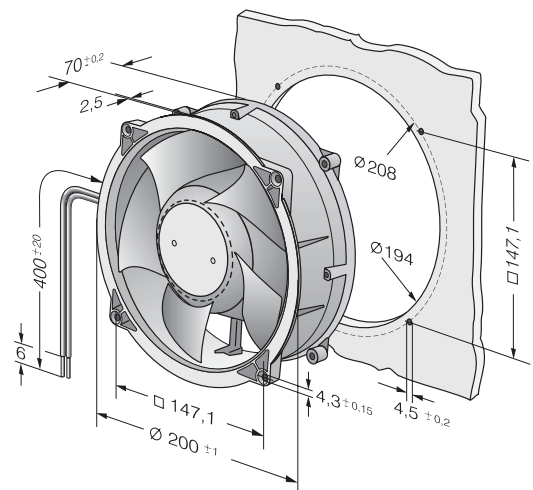
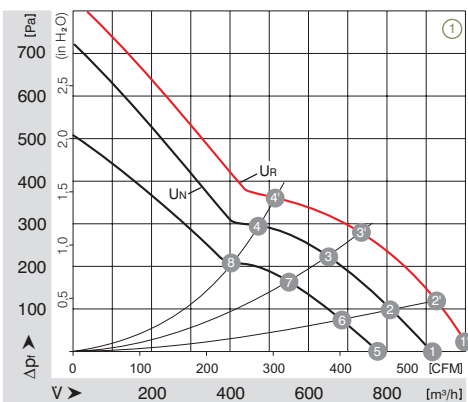
Connection leads:

red = +

blue = -

yellow = control input PWM/Lin

white = speed output



# DC Axial Fans

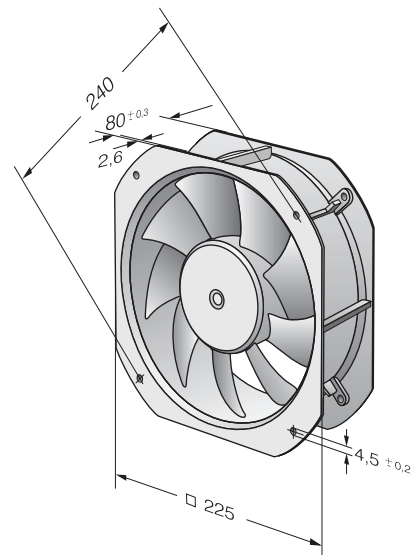
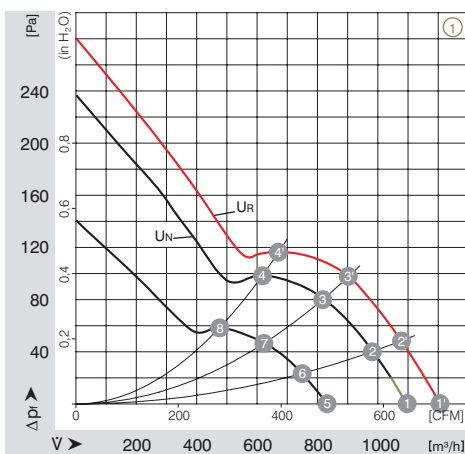
W1G 200 225 x 225 x 80 mm



- Fan housing of die-cast aluminium GDAISi.
- Impeller of sheet steel, welded onto rotor.
- Connection leads with terminal strip.
- Blowing over struts. Rotational direction CCW looking at rotor.
- Mass 2100 g.

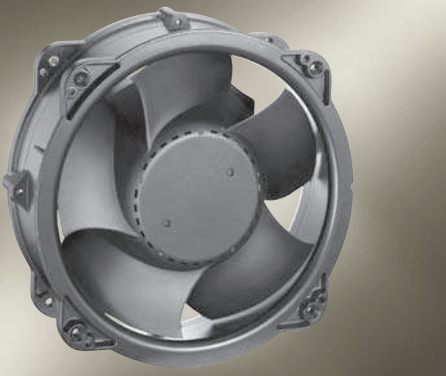
Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise		Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>		Curve
	m <sup>3</sup> /h	CFM			V DC	V DC					dB(A)	Bel	
W1G 200-HH77-52	1 090	641.6	24	16...28	60	—	■	55.0	2 950	-25...+60	55 000 / 55 000	1	
W1G 200-HH01-52	1 005	591.5	48	36...57	60	—	■	45.0	2 750	-25...+60	57 000 / 57 000	1	

	n [min <sup>-1</sup> ]	P <sub>1</sub> [W]	η <sub>h</sub> [%]	L <sub>pA</sub> [dBA]
① ①	2300	73	—	63
① ②	2970	77	67	62
① ③	3100	80	64	63
① ④	2970	80	54	66
① ⑤	2950	55	—	60
① ⑥	2890	58	67	60
① ⑦	2800	61	64	61
① ⑧	2780	63	54	64
① ⑨	2270	27	—	55
① ⑩	2230	28	67	54
① ⑪	2170	29	64	54
① ⑫	2130	30	54	57



# DC Diagonal Fans

W1G 208 Ø 232 x 80 mm



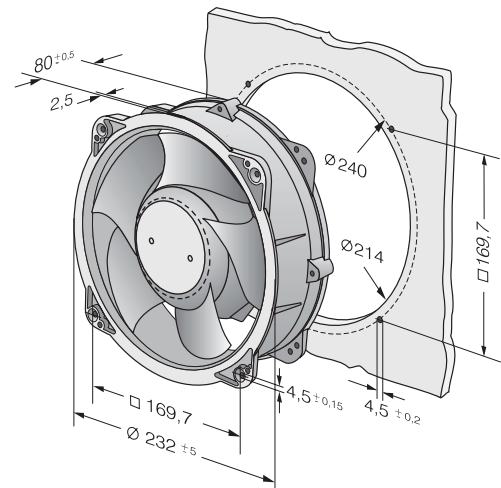
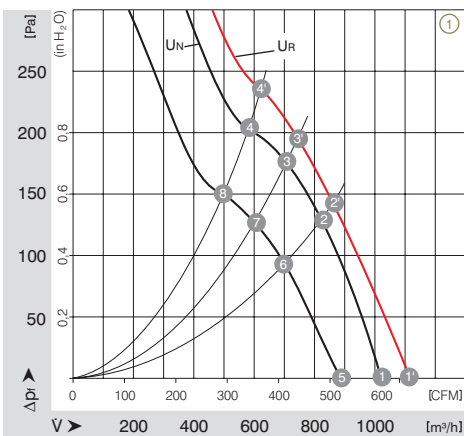
- Fan housing of die-cast aluminium GDAISi.
- Impeller of plastic PA 6.6.
- Connection leads with terminal strip (cable exit possible via terminal strip).
- Blowing over struts. Rotational direction CCW looking at rotor.
- Mass 2300 g.

Nominal Data	Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise		Sintec-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life $L_{10}$ at 40 °C	at $t_{max}$	Curve
Type	m <sup>3</sup> /h	CFM	V DC	V DC	dB(A)	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours	
W1G 208-BA35-52	1 050	618.0	24	16...28	74	—	■	96.0	3 500	-25...+72	51 000 / 40 000		1
W1G 208-BA73-52	1 050	618.0	48	36...57	74	—	■	96.0	3 500	-25...+72	51 000 / 40 000		1

	n [min <sup>-1</sup> ]	P <sub>1</sub> [W]	$\eta_{II}$ [%]	L <sub>DA</sub> [dBA]
① ①'	3740	116	—	75
① ②'	3500	118	52	74
① ③'	3450	119	53	73
① ④'	3530	118	48	75
① ①	3500	96	—	74
① ②	3300	99	52	72
① ③	3250	100	53	72
① ④	3330	99	48	73
① ⑤	2960	58	—	70
① ⑥	2830	63	52	69
① ⑦	2780	64	53	68
① ⑧	2840	62	48	70

Connection leads:

- red = +
- blue = -
- yellow = control input PWM/Lin
- white = speed output



# EC Axial Fans

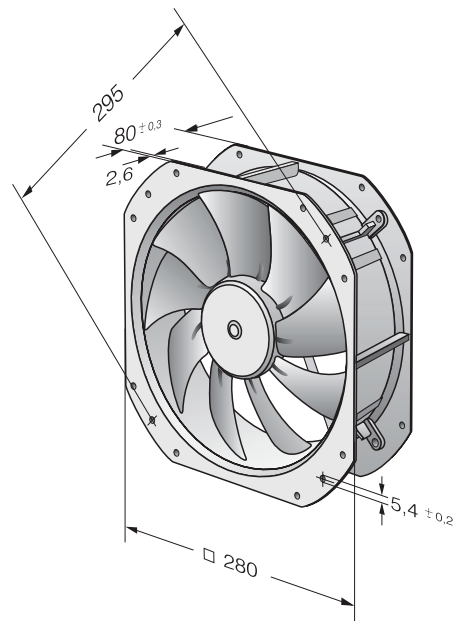
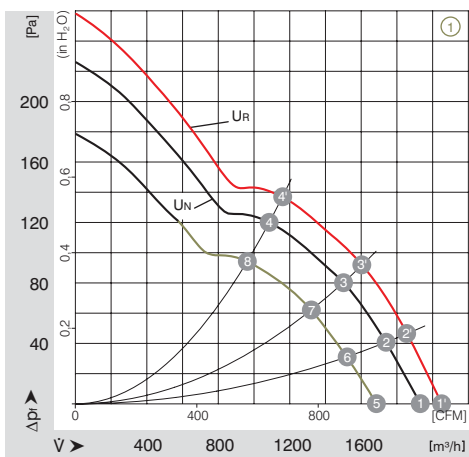
W1G 250 280 x 280 x 80 mm



- Fan housing of die-cast aluminium.
- Impeller of sheet steel, welded onto rotor.
- Connection leads with terminal strip.
- Blowing over struts. Rotational direction CCW looking at rotor.
- Mass 2500 g.

Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise		Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>		Curve
	m <sup>3</sup> /h	CFM			V DC	V DC					dB(A)	Bel	
W1G 250-HH37-52	1 920	1130.1	24	16...28	70	—	■	105.0	2 750	-25...+60	57 000 / 46 000	1	
W1G 250-HH67-52	1 920	1130.1	48	36...57	70	—	■	105.0	2 750	-25...+60	57 000 / 46 000	1	

	n [min <sup>-1</sup> ]	P <sub>1</sub> [W]	η <sub>u</sub> [%]	L <sub>pA</sub> [dBA]
①	2920	129	—	71
①	2800	132	63	72
①	2680	135	60	71
①	2600	139	45	72
①	2750	105	—	70
①	2630	110	63	69
①	2520	111	60	69
①	2440	114	45	70
①	2610	73	—	66
①	2320	75	63	67
①	2230	78	60	67
①	2170	80	45	68



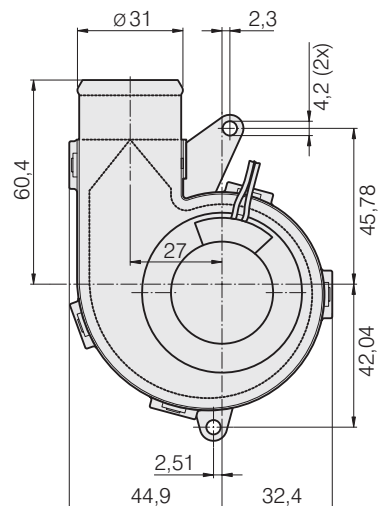
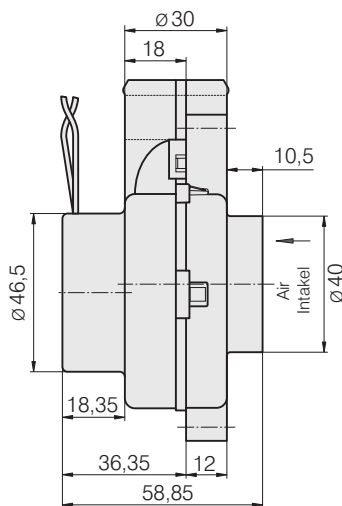
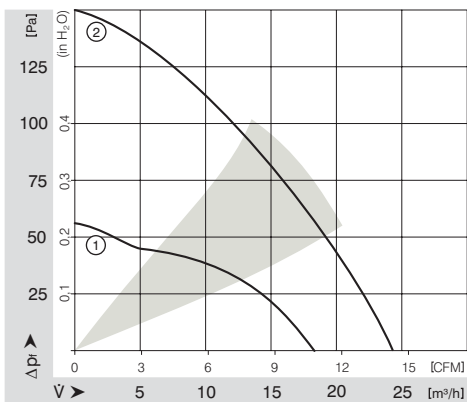
# DC Radial Fans

Series RV 40 105 x 59 x 79 mm



- DC radial blower with electronically commutated external rotor motor. Fully integrated commutation electronics.
- Spiral housing and blower wheel of fibreglass reinforced plastic.
- Radial air exhaust through housing port.
- Electrical connection via 2 leads AWG 26, TR 64. Stripped and tinned ends.
- Mass 100 g.

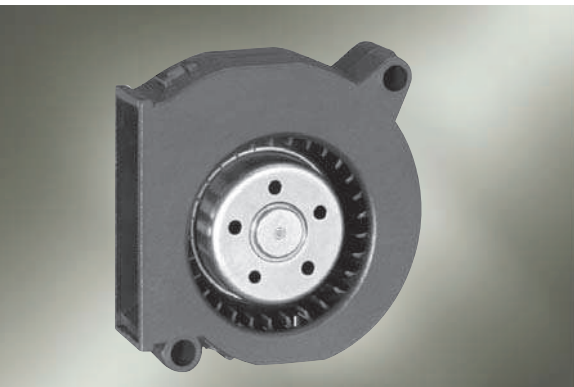
Nominal Data	Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C		Curve
	m <sup>3</sup> /h	CFM								V DC	V DC	
RV 40-18/12 L	18	10.6	12	9...16	4.0	■	2.0	3 900	-20...+70	70 000 / 35 000		1
RV 40-18/12 H	24	14.1	12	9...16	5.0	■	4.5	4 800	-20...+70	50 000 / 25 000		2





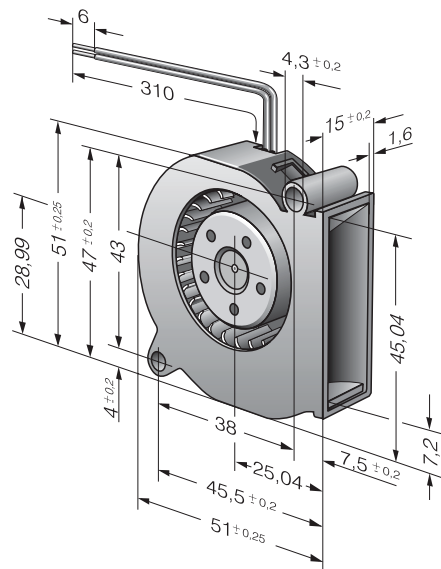
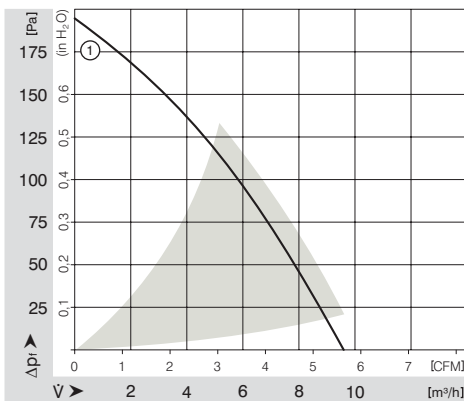
# DC Radial Fans

Series RLF 35 51 x 51 x 15 mm



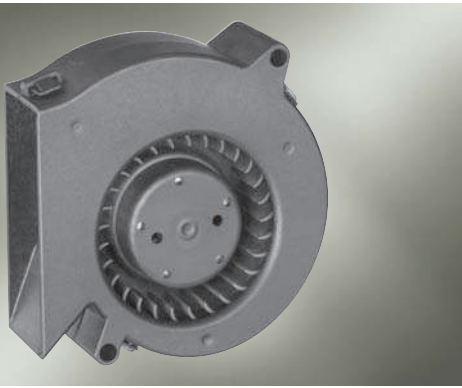
- DC radial blower with electronically commutated external rotor motor. Fully integrated commutation electronics.
- Low noise thanks to special design of spiral housing.
- With electronic protection against reverse polarity and overloading.
- Fan of fibreglass reinforced plastic. Housing PBT. Impeller of PA.
- Radial air exhaust through housing port.
- Electrical connection via 2 leads AWG 26, TR 64. Stripped and tinned ends.
- Mass 40 g.

Nominal Data	Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C	at t <sub>max</sub>	Curve
Type	m <sup>3</sup> /h	CFM	V DC	V DC	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours	
RLF 35-8/12 N	9.6	5.7	12	9...14	5.5	■	3.5	7 200	-20...+70	60 000 / 30 000		1
RLF 35-8/14 N	9.6	5.7	24	14...28	5.5	■	4.3	7 200	-20...+70	60 000 / 30 000		1



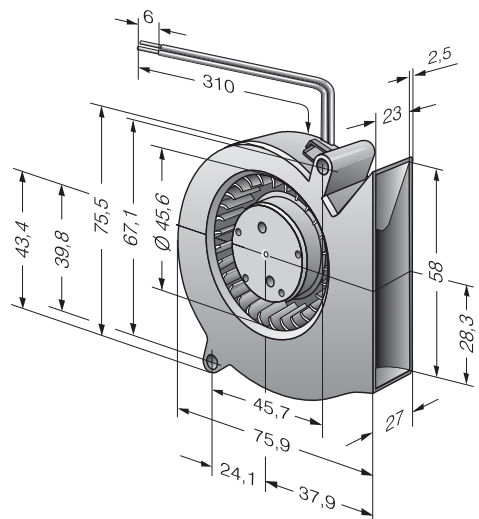
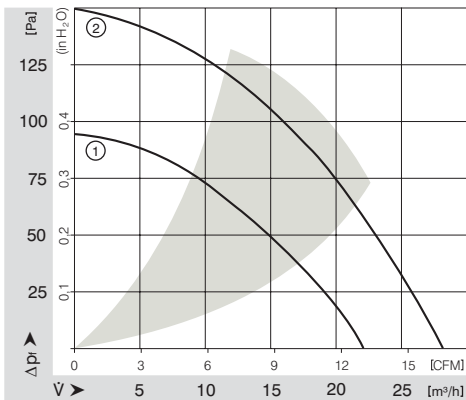
# DC Radial Fans

Series RL 48 76 x 76 x 27 mm



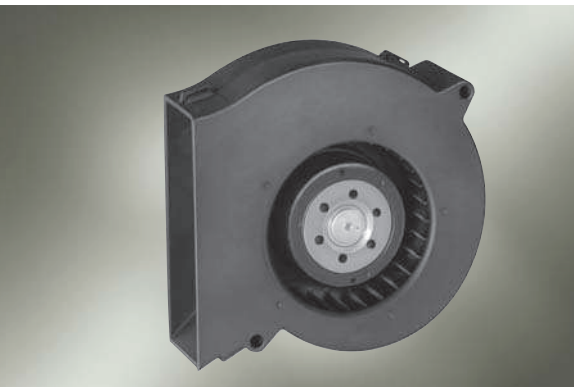
- DC radial blower with electronically commutated external rotor motor. Fully integrated commutation electronics.
- Low noise thanks to special design of spiral housing.
- With electronic protection against reverse polarity and overloading.
- Spiral housing and blower wheel of fibreglass reinforced plastic.
- Radial air exhaust through housing port.
- Electrical connection via 2 leads AWG 26, TR 64. Stripped and tinned ends.
- Mass 75 g.

Nominal Data		Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C	at t <sub>max</sub>	Curve	Specials
Type		m <sup>3</sup> /h	CFM	V DC	V DC	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours		
RL 48-19/12 ML		22	12.9	12	8...15.0	5.3	■	2.9	3 500	-20...+70	70 000 / 35 000		1	
RL 48-19/12		28	16.5	12	8...13.5	5.7	■	5.0	4 400	-20...+70	60 000 / 30 000		2	/2
RL 48-19/14 ML		22	12.9	24	18...28.0	5.3	■	2.9	3 500	-20...+70	70 000 / 35 000		1	
RL 48-19/14		28	16.5	24	18...26.4	5.7	■	5.0	4 400	-20...+70	60 000 / 30 000		2	/2



# DC Radial Fans

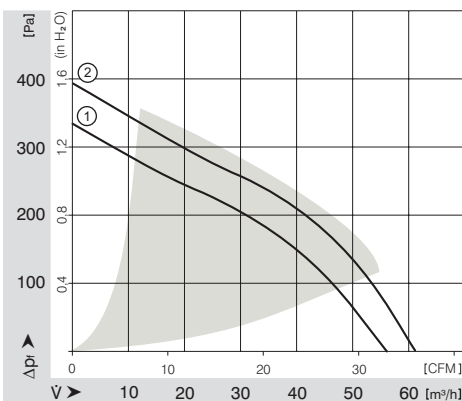
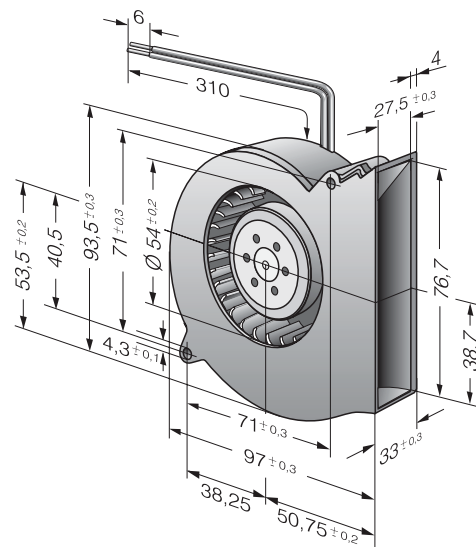
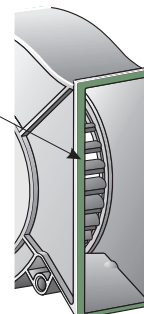
Series RL 65 97 x 93.5 x 33 mm



- DC radial blower with electronically commutated external rotor motor. Fully integrated commutation electronics.
- Low noise thanks to special design of spiral housing.
- With electronic protection against reverse polarity and overloading.
- Spiral housing and blower wheel of fibreglass reinforced plastic.
- Integrated snap-in fins for easy assembly.
- Radial air exhaust through housing port.
- Electrical connection via 2 leads AWG 26, TR 64. Stripped and tinned ends.
- Mass 170 g.

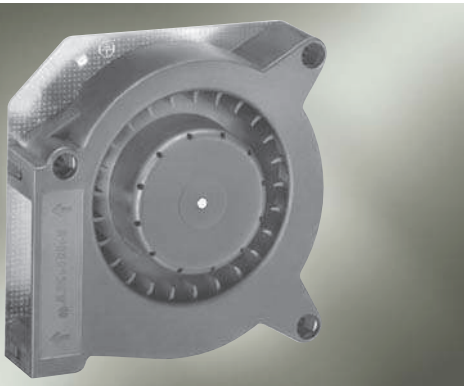
Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C		Curve	Specials
	m <sup>3</sup> /h	CFM								V DC	V DC		
RL 65-21/12	56	33	12	6.8...13.8	6.6	■	15.0	4 500	-20...+70	60 000 / 30 000		1	/2
RL 65-21/12H	61	35.9	12	6.8...13.2	6.8	■	19.2	4 900	-20...+55	55 000/ 37 500		2	
RL 65-21/14	56	33	24	12...26.4	6.6	■	14.0	4 500	-20...+70	60 000 / 30 000		1	
RL 65-21/14H	61	35.9	24	12...26.4	6.8	■	18.0	4 900	-20...+60	55 000/ 35 000		2	

Snap-in fins for easy assembly



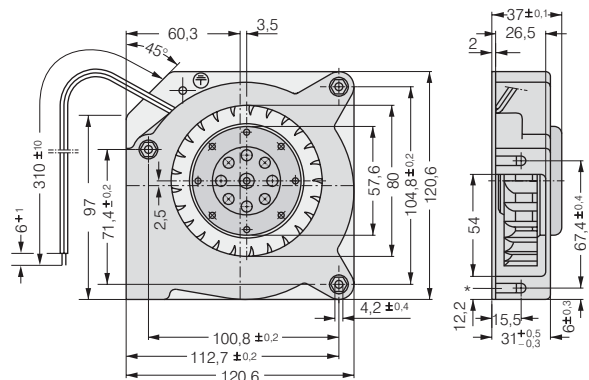
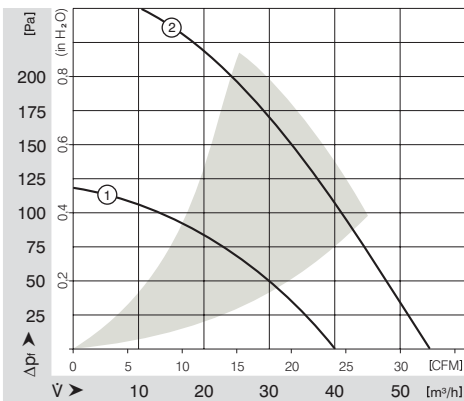
# DC Radial Fans

Series RL 90 N 121 x 121 x 37 mm



- DC radial blower with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, locked rotor and overloading via PTC-resistor; partially impedance protected.
- Spiral housing and blower wheel of fibreglass reinforced plastic. Housing base of galvanised steel plate.
- Radial air exhaust through housing port.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 420 g.

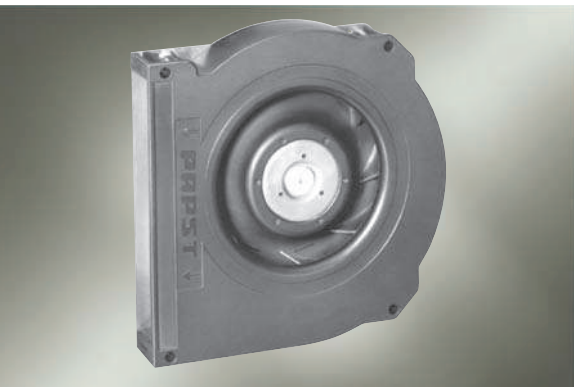
Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>		Curve	Specials
	m <sup>3</sup> /h	CFM								V DC	V DC		
RL 90-18/12 NG	40	23.5	12	7...15	5.8	□	5.5	2 500	-10...+75	62 500 / 27 500		1	
RL 90-18/12 N	40	23.5	12	7...15	5.8	■	5.5	2 500	-30...+75	62 500 / 27 500		1	/2
RL 90-18/14 NG	40	23.5	24	12...28	5.8	□	5.0	2 500	-10...+75	62 500 / 27 500		1	
RL 90-18/14 N	40	23.5	24	12...28	5.8	■	5.0	2 500	-30...+75	62 500 / 27 500		1	/2
RL 90-18/18 NH	55	32.4	48	40...53	6.9	■	15.0	3 500	-30...+55	32 500 / 22 500		2	



\*Speed nut M4 or 8-32UNC. Screw- in depth max.12,5 min 9,0

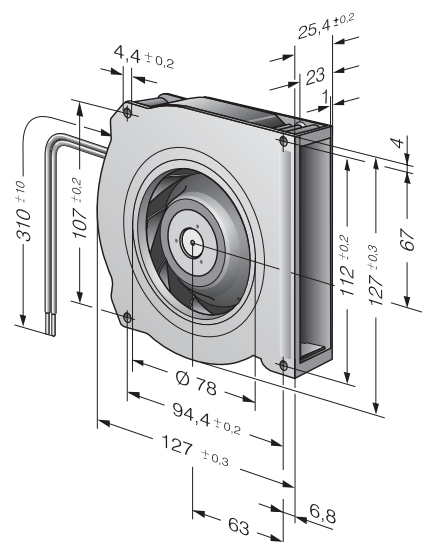
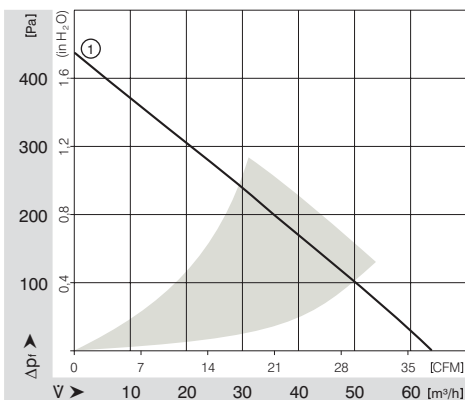
# DC Radial Fans

Series RLF 100 127 x 127 x 25 mm



- DC radial blower with electronically commutated external rotor motor. Fully integrated commutation electronics.
- Extremely flat and powerful radial fan.
- With electronic protection against reverse polarity, locked rotor and overloading.
- Housing and blower wheel of fibreglass reinforced plastic.
- Radial direction of flow, direction of motor as seen from right.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 320 g.

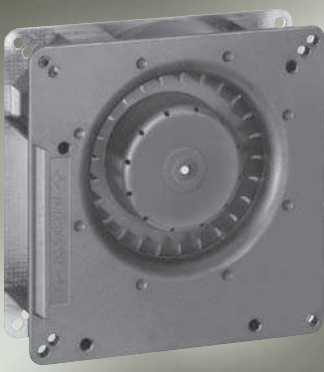
Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>		Curve	Specials
	m <sup>3</sup> /h	CFM								V DC	V DC		
RLF 100-11/12	64	37.7	12	8...15	6.4	■	8.0	5 100	-20...+75	80 000 / 30 000	1	/2	
RLF 100-11/14	64	37.7	24	16..30	6.4	■	8.0	5 100	-20...+75	80 000 / 30 000	1	/19	
RLF 100-11/18	64	37.7	48	36..60	6.4	■	8.6	5 100	-20...+75	80 000 / 30 000	1		





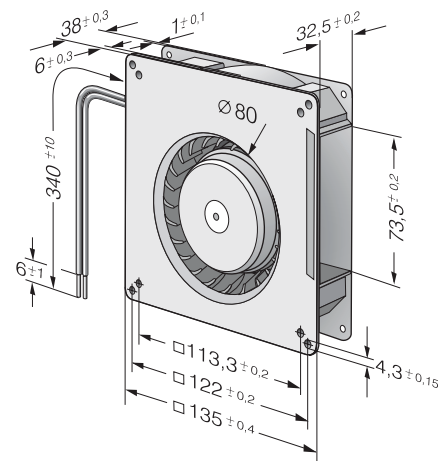
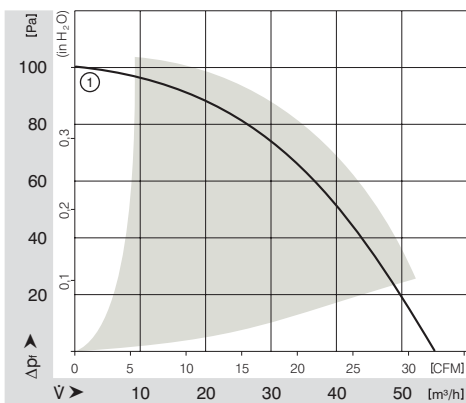
# DC Radial Fans

Series RG 90 N 135 x 135 x 38 mm



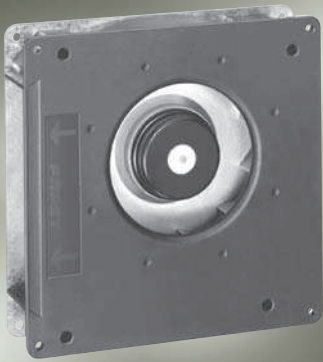
- DC radial blower with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, locked rotor and overloading via PTC-resistor; partially impedance protected.
- Spiral housing and blower wheel of fibreglass reinforced plastic. Housing base of galvanised steel plate.
- 48 V Type: flat pin 6.3 x 0.8 mm for grounding wire.
- Radial air exhaust through housing port.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 440 g.

Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C		Curve	Specials
	m <sup>3</sup> /h	CFM								V DC	V DC		
RG 90-18/12 NG	55	32.4	12	7...15	5.5	□	6.0	2 200	-10...+75	62 500 / 27 500	1		
RG 90-18/12 N	55	32.4	12	7...15	5.5	■	6.0	2 200	-30...+75	62 500 / 27 500	1	/2	
RG 90-18/14 NG	55	32.4	24	12...28	5.5	□	5.5	2 200	-10...+75	62 500 / 27 500	1		
RG 90-18/14 N	55	32.4	24	12...28	5.5	■	5.5	2 200	-30...+75	62 500 / 27 500	1	/2	
RG 90-18/18 N	55	32.4	48	36...56	5.5	■	5.5	2 200	-30...+75	62 500 / 27 500	1		



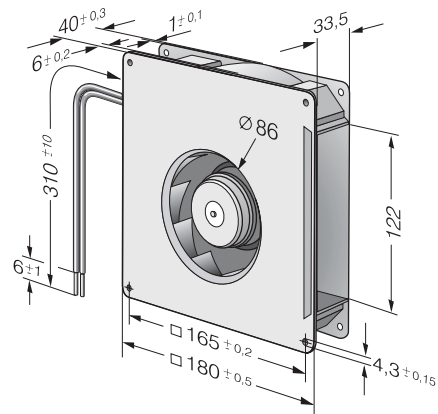
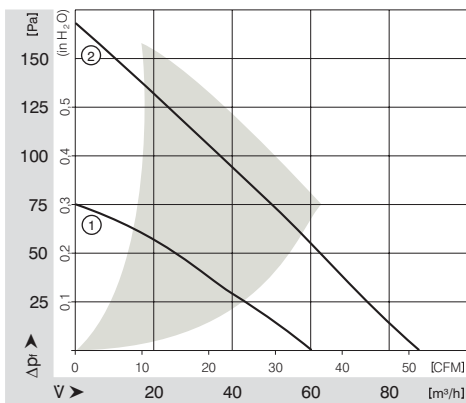
# DC Radial Fans

Series RG 125 N 180 x 180 x 40 mm



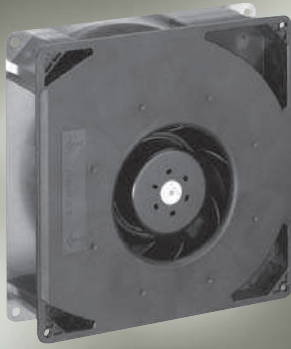
- DC radial blower with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, locked rotor and overloading via PTC-resistor; partially impedance protected.
- Spiral housing and blower wheel of fibreglass reinforced plastic. Housing base of galvanised steel plate.
- 48 V Type: flat pin 6.3 x 0.8 mm for grounding wire.
- Radial air exhaust through housing port.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 730 g.

Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C		Curve	Specials
	m <sup>3</sup> /h	CFM								V DC	V DC		
RG 125-19/12 NM	60.0	35.3	12	7...15	4.8	■	2.0	1 750	-30...+75	70 000 / 30 000		1	
RG 125-19/12 N	87.5	51.5	12	7...15	5.8	■	5.0	2 550	-30...+75	62 500 / 27 500		2	/2; /12
RG 125-19/14 NM	60.0	35.3	24	12...28	4.8	■	2.0	1 750	-30...+75	70 000 / 30 000		1	
RG 125-19/14 N	87.5	51.5	24	12...28	5.8	■	5.0	2 550	-30...+75	62 500 / 27 500		2	/2
RG 125-19/18 N	87.5	51.5	48	36...56	5.8	■	5.0	2 550	-30...+75	62 500 / 27 500		2	/2



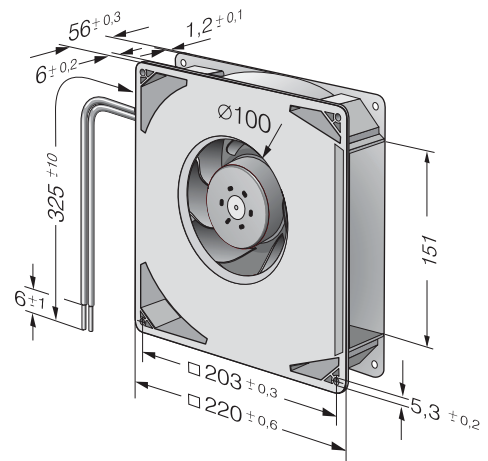
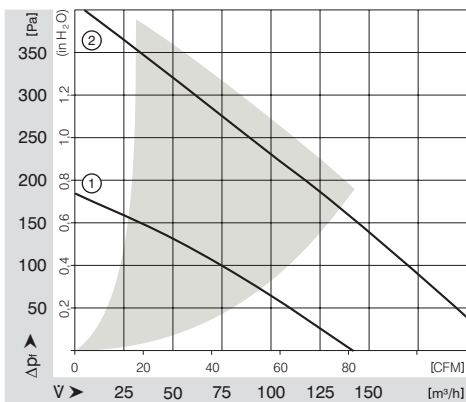
# DC Radial Fans

Series RG 160 N 220 x 220 x 56 mm



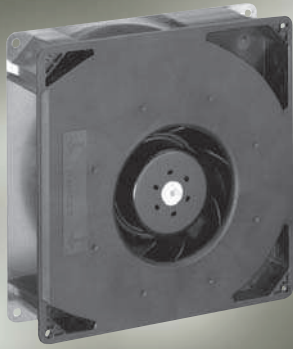
- DC radial blower with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, locked rotor and overloading.
- Spiral housing and blower wheel of fibreglass reinforced plastic. Housing base of galvanised steel plate.
- 48 V Type: flat pin 6.3 x 0.8 mm for grounding wire.
- Radial air exhaust through housing port.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 1400 g.

Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>		Curve	Specials
	m <sup>3</sup> /h	CFM								V DC	V DC		
RG 160-28/12 NM	139	81.8	12	7...14	5.6	■	7.5	1 900	-20...+70	80 000 / 40 000		1	
RG 160-28/12 N	209	123.0	12	7.5...14	6.6	■	21.0	2 850	-20...+70	70 000 / 35 000		2	/12
RG 160-28/14 NM	139	81.8	24	12...28	5.6	■	7.0	1 900	-20...+70	80 000 / 40 000		1	
RG 160-28/14 N	209	123.0	24	12...28	6.6	■	20.0	2 850	-20...+70	70 000 / 35 000		2	/2
RG 160-28/18 N	209	123.0	48	28...60	6.6	■	20.0	2 850	-20...+70	70 000 / 35 000		2	/12



# DC Radial Fans

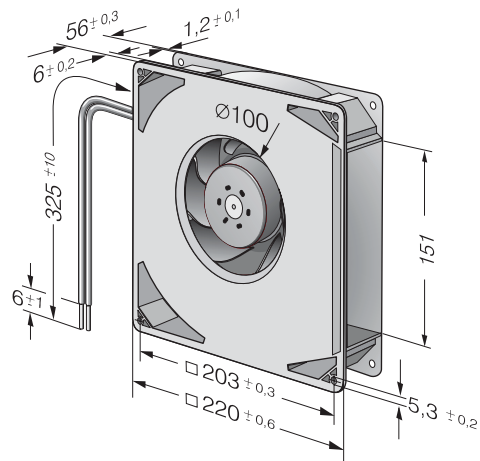
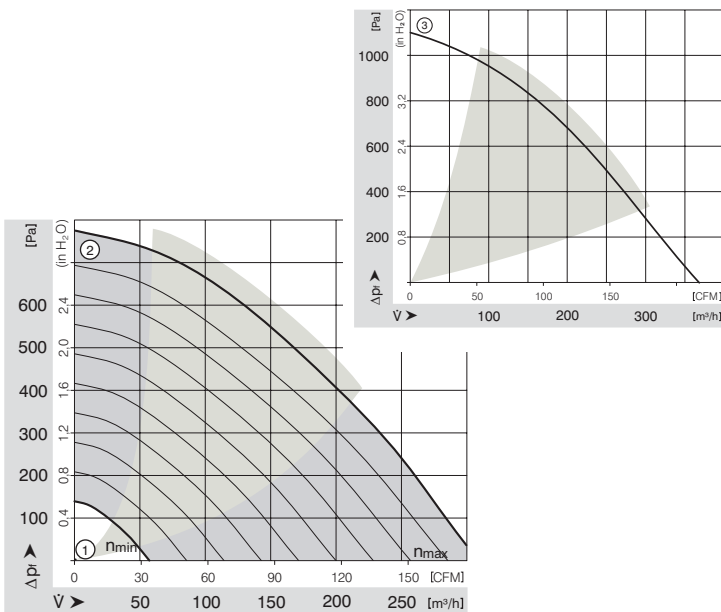
Series RG 160 NTD TURBOFAN 220 x 220 x 56 mm



- DC radial blower with electronically commutated external rotor motor. Fully integrated commutation electronics with electronic protection against reverse polarity, locked rotor and overloading.
- Spiral housing and blower wheel of fibreglass reinforced plastic. Housing base of galvanised steel plate.
- Radial air exhaust through housing port.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- 48 V Type: flat pin 6.3 x 0.8 mm for grounding wire.
- Mass 1400 g.

Nominal Data		Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise	Sintec-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life $L_{10}$ at 40 °C	at $t_{max}$	Curve
Type		m <sup>3</sup> /h	CFM	V DC	V DC	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours	
RG 160-28/14 NTD		308	181.3	24	16...28	7.5	■	64.0	4 200	-20...+60	55 000 / 35 000		2
RG 160-28/14 NTDH		370	217.8	24	16...28	7.8	■	101.0	5 000	-20...+60	50 000 / 32 500		3
min. max.	RG 160-28/14 NTD...	59	34.7	24	16...28	—	■	2.0	800	-20...+60	55 000 / 27 500		1
		308	181.3			7.5		64.0	4 200				2
min. max.	RG 160-28/18 NTD...	59	34.7	48	38...57	—	■	2.0	800	-20...+70	55 000 / 27 500		1
		308	181.3			7.5		59.0	4 200				2

Models RG 160-28/14 NTD... and RG 160-28/18 NTD... are available in customer-specific, custom-developed variants only. The data specified here are technically feasible benchmark values. The fans can be specially adapted to your application with signal outputs and control inputs. For details of the technical possibilities, refer to the chapters on the sensor signal, alarm signal and control inputs.



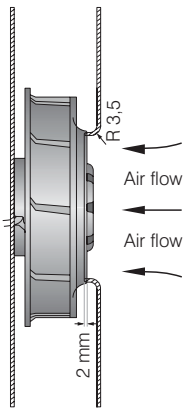
# DC Radial Fans

Series REF 100 100 Ø x 25 mm



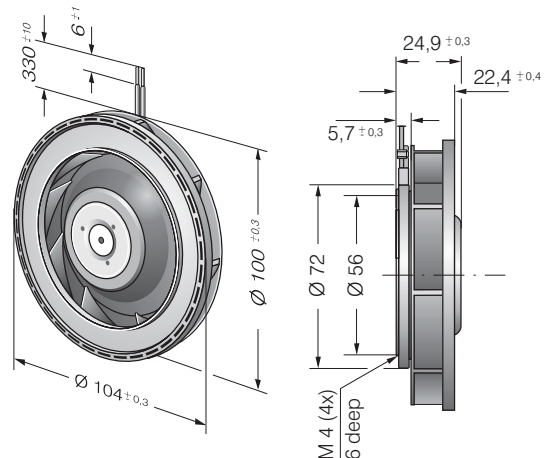
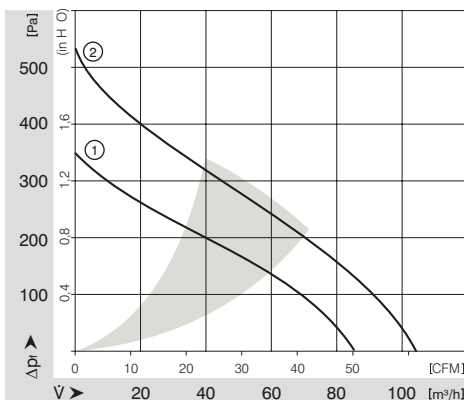
- DC radial blower with electronically commutated external rotor motor. Fully integrated commutation electronics.
- Extremely flat and powerful radial fan.
- With electronic protection against reverse polarity, locked rotor and overloading.
- Blower wheel of fibreglass reinforced plastic.
- Air exhaust radial. Rotational direction CCW looking at rotor.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 160 g.

Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>		Curve	Specials
	m <sup>3</sup> /h	CFM								V DC	V DC		
REF 100-11/12	86	50.6	12	8...15	6.3	■	7.5	5 400	-20...+75	80 000 / 30 000		1	/2
REF 100-11/14	86	50.6	24	16...30	6.3	■	7.5	5 400	-20...+75	80 000 / 30 000		1	/2
REF 100-11/18	86	50.6	48	36...60	6.3	■	7.5	5 400	-20...+75	80 000 / 30 000		1	/2
REF 100-11/18 H	104	61.2	48	36...56	6.9	■	14.8	6 700	-20...+70	67 500 / 30 000		2	



The air flow and noise level of fans without external housing depends on the installation conditions. The stated air flow and noise levels have been measured under the following conditions:

Centrifugal fan mounted on a base plate 127 x 127 mm. Cover plate 127 x 127 mm with an air-inlet of Ø 70 mm, concentric to the blower wheel.





NEW TYPE

# DC Radial Fans

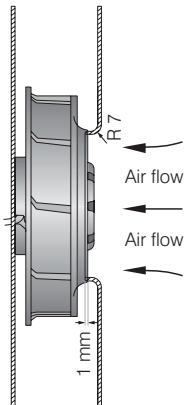
Series RER 101 101 Ø x 52 mm



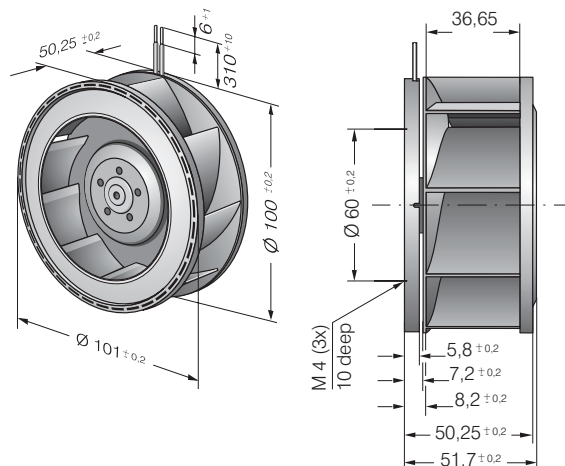
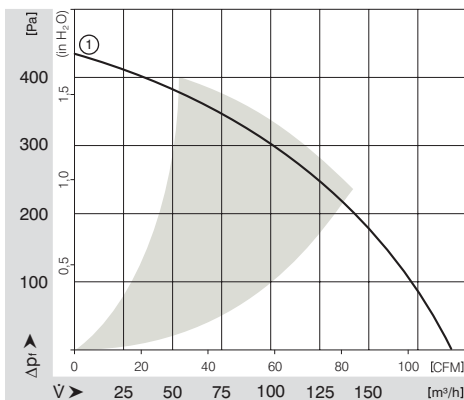
- DC radial blower with electronically commutated external rotor motor. With integrated programmable motor and drive electronics.
- Highly adaptable software configuration enables a tailor-made solution to the specific requirements of your application.
- With electronic protection against reverse polarity and locked rotor.
- Blower wheel of fibreglass reinforced plastic.
- Air exhaust radial. Rotational direction CW looking at rotor.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via 4 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 305 g.

Nominal Data	Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise	Sintec-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C	at t <sub>max</sub>	Curve	Specials
Type	m <sup>3</sup> /h	CFM	V DC	V DC	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours		
RER 101-36/14NHH	190	111.8	24	18...27.2	7.2	■	20	5 900	-20...+70	60 000 / 30 000		1	/19
RER 101-36/18NHH	190	111.8	48	43...52.0	7.2	■	19	5 900	-20...+70	60 000 / 30 000		1	/19

12 V DC Type on request.



The air flow and noise level of fans without external housing depends on the installation conditions. The stated air flow and noise levels have been measured under the following conditions:  
Centrifugal fan mounted on a base plate 148 x 148 mm.  
Cover plate 148 x 148 mm with an air-inlet of Ø 66 mm, concentric to the blower wheel.



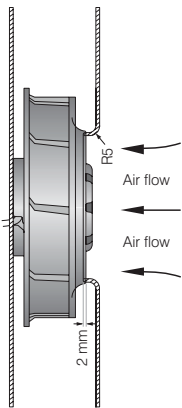
# DC Radial Fans

Series RER 125 N 138 Ø x 35 mm



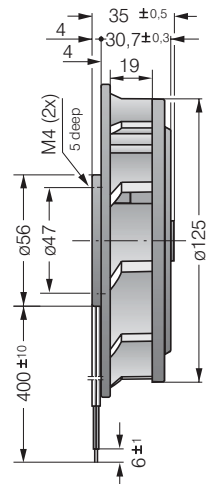
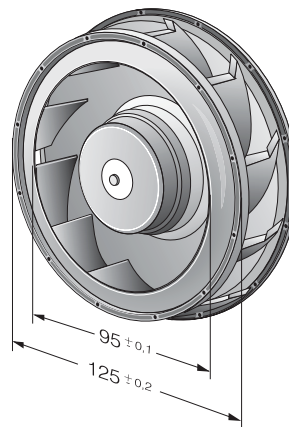
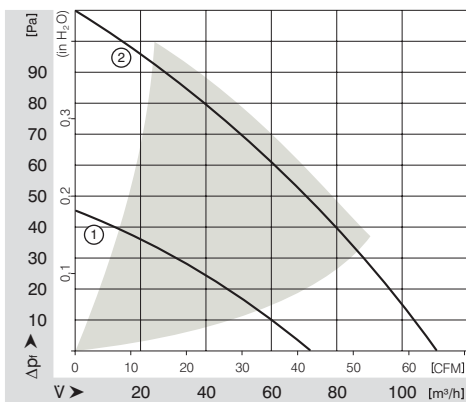
- DC radial blower with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, locked rotor and overloading.
- Blower wheel of fibreglass reinforced plastic, with steel plate reinforced.
- Air exhaust radial. Rotational direction CW looking at rotor.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 320 g.

Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>		Curve	Specials
	m <sup>3</sup> /h	CFM								V DC	V DC		
RER 125-19/12 N	110	64.7	12	7...15	5.7	■	4.5	2 650	-30...+75	62 500 / 27 500	2	/12	
RER 125-19/14 NM	74	43.6	24	12...28	4.8	■	2.0	1 750	-30...+75	62 500 / 27 500	1		
RER 125-19/14 N	110	64.7	24	12...28	5.7	■	4.5	2 650	-30...+75	62 500 / 27 500	2	/2	
RER 125-19/18 N	110	64.7	48	36...56	5.7	■	5.0	2 650	-30...+75	62 500 / 27 500	2		



The air flow and noise level of fans without external housing depends on the installation conditions. The stated air flow and noise levels have been measured under the following conditions:

Centrifugal fan mounted on a base plate 220 x 220 mm.  
Cover plate 220 x 220 mm with an air-inlet of Ø 86 mm, concentric to the blower wheel.



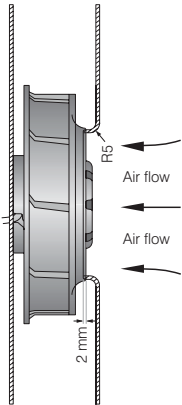
# DC Radial Fans

Series RER 160 N 165 Ø x 51 mm

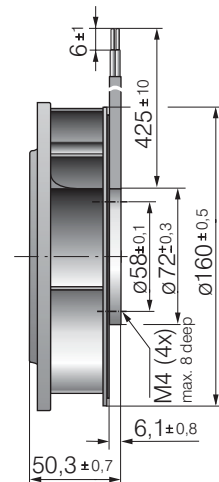
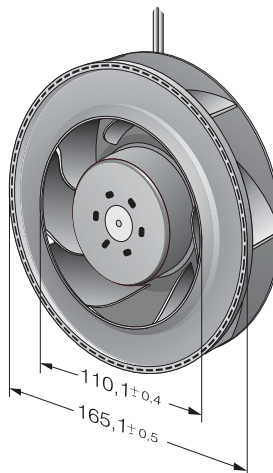
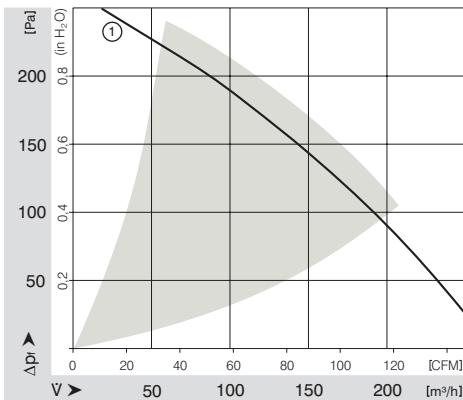


- DC radial blower with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, locked rotor and overloading.
- Blower wheel of fibreglass reinforced plastic.
- Air exhaust radial. Rotational direction CCW looking at rotor.
- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 590 g.

Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>		Curve	Specials
	m <sup>3</sup> /h	CFM								V DC	V DC		
RER 160-28/12 N	255	150.1	12	7...14	6.4	■	19.0	3 000	-20...+70	75 000 / 35 000		1	/12
RER 160-28/14 N	255	150.1	24	12...28	6.4	■	19.0	3 000	-20...+70	75 000 / 35 000		1	
RER 160-28/18 N	255	150.1	48	28...60	6.4	■	19.0	3 000	-20...+70	75 000 / 35 000		1	/12



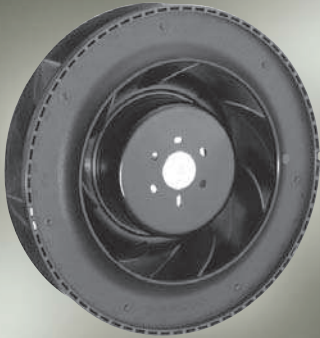
The air flow and noise level of fans without external housing depends on the installation conditions. The stated air flow and noise levels have been measured under the following conditions:  
Centrifugal fan mounted on a base plate 260 x 260 mm.  
Cover plate 260 x 260 mm with an air-inlet of Ø 100 mm, concentric to the blower wheel.



NEW TYPE

# DC Radial Fans

Series RER 160 NTD TURBOFAN 165 Ø x 51 mm



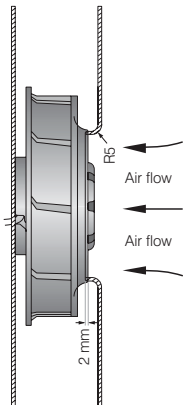
- DC electronic radial blower with 3 phase EC drive and fully integrated operation electronics. For load-dependent speed control with highly intelligent motor management and power and speed reserves which open up completely new areas of application.
- With electronic protection against reverse polarity, locked rotor and overloading.
- Blower wheel of fibreglass reinforced plastic.
- Air exhaust radial. Rotational direction CCW looking at rotor.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 590 g.

Nominal Data		Air Flow	Air Flow	Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C	at t <sub>max</sub>	Curve
Type	m <sup>3</sup> /h	CFM	V DC	V DC	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours		
min. max.	RER 160-28/18 NTD...	66	38.8	48	38...57	—	■	2.0	800	-20...+70	55 000 / 27 500	1	
		354	208.4			7.4	■	43.0	4 200				2

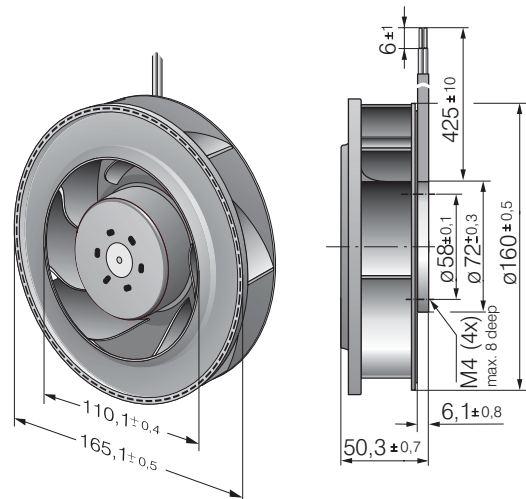
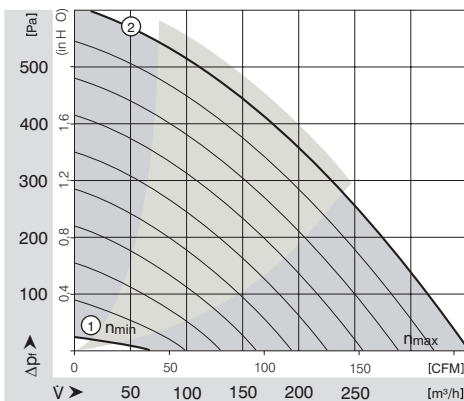
Model RER 160-28/18 NTD... is available in customer-specific, custom-developed variant only.

The data specified here are technically feasible benchmark values. The fans can be specially adapted to your application with signal outputs and control inputs.

For details of the technical possibilities, refer to the chapters on the sensor signal, alarm signal and control input.s.



The air flow and noise level of fans without external housing depends on the installation conditions. The stated air flow and noise levels have been measured under the following conditions:  
Centrifugal fan mounted on a base plate 260 x 260 mm.  
Cover plate 260 x 260 mm with an air-inlet of Ø 100 mm, concentric to the blower wheel.



# DC Cross-Flow Fans

Series QG 030 200...415 x 50 x 48 mm



- DC blower with electronically commutated external rotor motor. Fully integrated commutation electronics. With electronic protection against reverse polarity, locked rotor and overloading by PTC-resistor; partially impedance protected.
- Motor with ball bearing system. Blower wheel mounting plate with sleeve bearings.
- Fan blower where and air duct housing of aluminium. Plastic flanges.
- Rotational direction CW looking at rotor. Air exhaust through housing port.
- Electrical connection via 2 leads. Stripped and tinned ends.
- Mass 235/290/380/415 g.

Nominal Data	Air Flow		Nominal Voltage	Voltage Range	Noise	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Temperature Range	Service Life $L_{10}$		Curve
	m <sup>3</sup> /h	CFM								V DC	V DC	
QG 030-148/12	75	44.1	12	8...14	49	5.7	□/■	6.2	-20...+60	30 000 / 10 000	1	
QG 030-198/12	100	58.9	12	8...14	51	5.8	□/■	8.0	-20...+60	30 000 / 10 000	2	
QG 030-303/12	140	82.4	12	8...14	51	5.8	□/■	8.7	-20...+60	30 000 / 10 000	3	
QG 030-353/12	155	91.2	12	8...14	51	5.9	□/■	9.6	-20...+60	30 000 / 10 000	4	
QG 030-148/14	75	44.1	24	16...28	49	5.7	□/■	6.2	-20...+60	30 000 / 10 000	1	
QG 030-198/14	100	58.9	24	16...28	51	5.8	□/■	8.0	-20...+60	30 000 / 10 000	2	
QG 030-303/14	140	82.4	24	16...28	51	5.8	□/■	8.7	-20...+60	30 000 / 10 000	3	
QG 030-353/14	155	91.2	24	16...28	51	5.9	□/■	9.6	-20...+60	30 000 / 10 000	4	

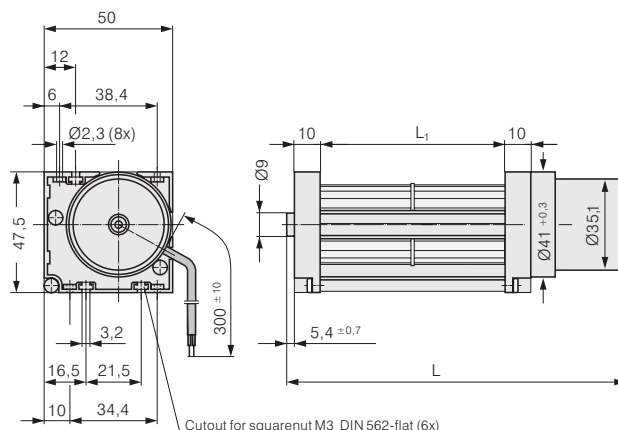
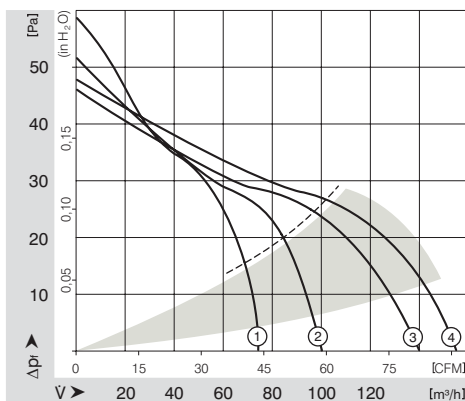
### Previous ebm designations:

Q2G 030-EA 21-01 <	QG 030-148/12
Q2G 030-GC 01-01 <	QG 030-198/12
Q2G 030-FB 01-01 <	QG 030-303/12
Q2G 030-ID 01-01 <	QG 030-353/12
Q2G 030-EA 19-01 <	QG 030-148/14
Q2G 030-GC 03-01 <	QG 030-198/14
Q2G 030-FB 03-01 <	QG 030-303/14
Q2G 030-ID 03-01 <	QG 030-353/14

Type	Dimension:	L	L <sub>1</sub>
QG 030-148/ ..		201 <sup>+1.5</sup>	148
QG 030-198/ ..		258 <sup>+1.5</sup>	198
QG 030-303/ ..		363 <sup>+1.5</sup>	303
QG 030-353/ ..		413 <sup>+1.5</sup>	353

The service life values refer to horizontal installation of the blower.

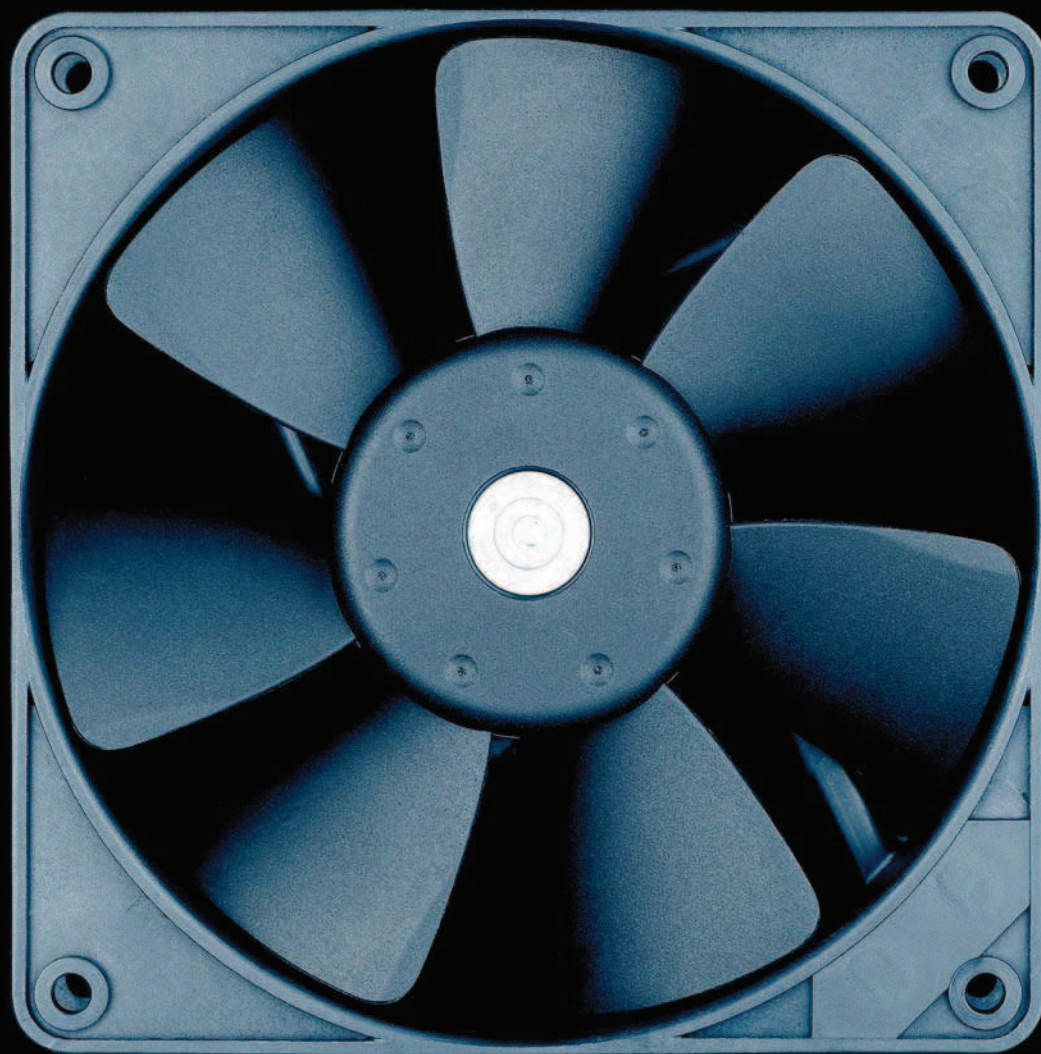
Cross-flow fans are only suitable for operation with high rate and low counterpressure.





# DC Fans with Added Features

Sensor signal	84
Alarm signal	88
Vario-Pro / Speed setting	93 / 94
Protection against ambient influences	96





## Technical Information

### Cooling capacity and efficiency

Greater power density, increasing miniaturization and extreme electronic component density are posing increased demands on the cooling capacity and efficiency of fans. The intelligent and space-saving integration of the fan in the appliance configuration is therefore of major importance:

- Tailor-made cooling adapted to the situation as and when required.
- Programmable cooling by defining speed profiles.
- Transparency of function thanks to complete, interactive monitoring in all operating conditions.

ebm-papst provides intelligent cooling concepts which are optimally adapted to requirements. For example:

#### 1. Speed adaptation via NTC sensor

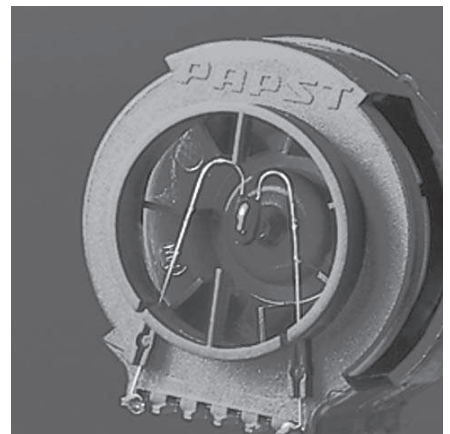
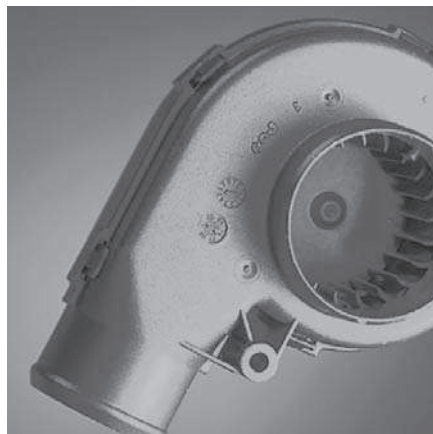
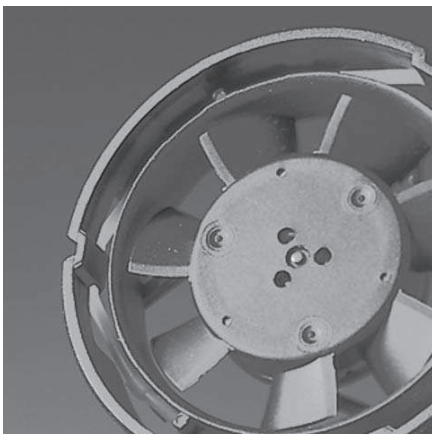
Standard fans in electronic cooling—millionfold tried and tested and nevertheless a temporary solution because standard fans have a distinct disadvantage: With constant speed and a corresponding high noise factor they continuously provide the airflow required in extreme cases. This extreme case only occurs, if it occurs at all, for a fraction of the service life. What is needed is the intelligent fan that automatically adapts to the current cooling requirements.

The ebmpapst answer: A complete range of DC fans with temperature-controlled speed adaptation - in all standard dimensions.

Installation is simple. The control electronics receive their thermal information for speed adaptation steplessly and loss-free via a temperature sensor either externally via a single lead, positioned as required, or internally directly in the fan hub in the airflow.

#### 2. DC fans with separate control input

Speed control is also possible with DC fans that have a separate control input. A variation in speed can thus be realized via a control voltage or a pulse-width modulated signal. These possibilities are used above all in devices that have appropriate standard interfaces and thus require a load-dependent variation of the fans.



Fans with TD motor  
Programmable fans  
Vario-Pro®  
Fans with sensor signal  
Fans with alarm signal



## Technical Information

### 3. Sensor signal

DC fans with sensor signal.

The integrated „electronic tachometer“ continuously provides an actual speed signal for external evaluation. The user is informed at all times of the current fan speed via an extremely simple signal evaluation by the customer. The sensor signal is via a separate lead.

### 4. Alarm signal

For applications which require monitored fan operation with alarm signal, ebm-papst has numerous alarm signal versions, either a static, pre-processed or interface-compatible long- or short-term signal depending on the type of fan.

### 5. Turbo drives

Fans with three-phase EC drives and fully integrated operating electronics. These three-phase motors whose torque is virtually non-reliant on the rotor position are used for extremely high power. These motors can also be operated in both directions of rotation so that in special cases reverse operation of the fans can be realized.

### 6. Vario-Pro fans

This High-end fan concept by ebmpapst with programmed intelligence and customer-specific integrated functions makes your electronic cooling even more variable and competitive. Vario-Pro ensures fresh impetus as far as economy is concerned for all demanding cooling tasks – e.g. where reliability, more flexibility and intelligent function features such as alarm function, speed control etc. are required.

The successful concept of Vario-Pro is: Tailor-made software instead of a fixed hardware because programmed software modules for motor control and application intelligence are responsible for the work that analogue components were responsible for in the past. This central control unit of the Vario-Pro comprises of a microcontroller and an EEPROM, on which all characteristics are stored.

### 7. Protection against environmental influences

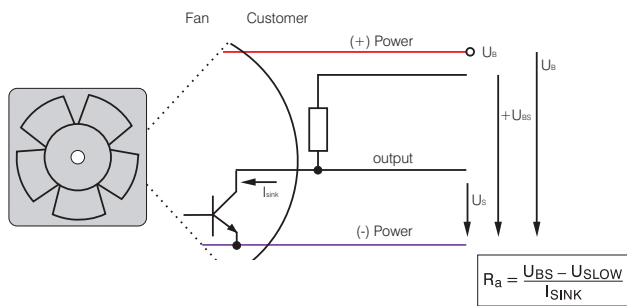
Some applications are demanding on the fans' resistance to ambient influences, such as dust, humidity, water and salt. ebm-papst offer solutions for adapting fans to various ambient conditions.

# Sensor signal /2 “tacho”



- Speed-proportional rectangular pulse for external speed monitoring of fan motor
- 2 pulses per revolution / 6 pulses per revolution with TURBOFANS.
- Open-Collector signal output
- Extremely wide operating voltage range (5 ... 60 V)
- Easy adaptation to user interface
- Connection via separate lead
- The sensor signal also serves as a major comparison variable for setting and maintaining the desired speed for interactive or controlled cooling with one or several interconnected fans.

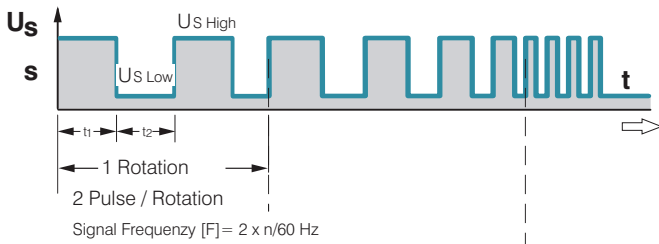
## Electrical connection



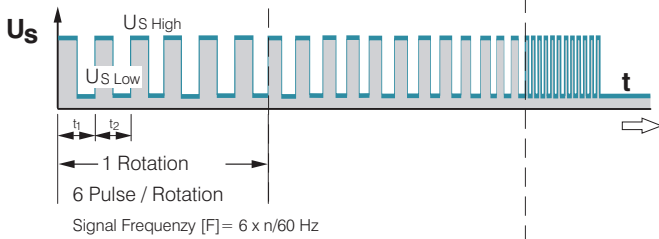
All voltages measured to ground.  
External load resistance  $R_a$  /  $U_s$  /  $U_{BS}$  required.

## Signal output voltage

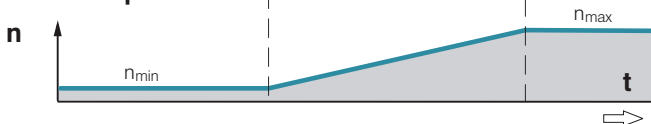
all models except TD-Fans



## only TD-Fans



## Fan speed



## Signal data

Type	Sensor signal $U_{S\ Low}$	Condition: $I_{sink}$	Sensor signal $U_{S\ High}$	Condition: $I_{source}$	Sensor operating voltage $U_{BS}$	Perm. sink current $I_{sink\ max}$	Fan description
Type	V DC	mA	V DC	mA	V DC	mA	Page
250	≤0.4	≤2	30	0	≤30	2	19
400 F	≤0.4	1	30	0	≤30	≤2	20
400	≤0.4	1	30	0	≤30	≤2	21
412 J	≤0.4	2	30	0	≤30	≤4	22
414 J	≤0.4	2	30	0	≤30	≤4	22
500 F	≤0.4	1	30	0	≤30	≤2	23
600 F	≤0.4	1	30	0	≤30	≤2	24
620	≤0.4	2	30	0	≤30	≤4	25
600 N	≤0.4	2	30	0	≤30	≤4	26
600 J	≤0.4	2	30	0	≤30	≤4	28
700 F	≤0.4	2	30	0	≤30	≤4	29
8400 N	≤0.4	2	28	0	≤28	≤4	30
8300	≤0.4	2	30	0	≤30	≤4	32
8200 J	≤0.4	2	30	0	≤30	≤4	33
3400 N	≤0.4	2	28	0	≤28	≤4	34
3300	≤0.4	2	30	0	≤30	≤4	36
3200 J	≤0.4	2	30	0	≤30	≤4	37
4400 F	≤0.4	2	30	0	≤30	≤4	39
4300 N	≤0.4	2	30	0	≤30	≤4	40
4300	≤0.4	2	30	0	≤30	≤4	41
4400	≤0.4	2	30	0	≤30	≤4	43
4212	≤0.4	2	30	0	≤30	≤4	44
4214	≤0.4	2	30	0	4-30	≤4	44
4218	≤0.4	2	30	0	4-30	≤4	44
4100 N	≤0.4	2	30	0	4-30	≤4	45/46
DV 4100	≤0.4	2	30	0	≤30	≤4	47
5200 N	≤0.4	2	30	0	4-30	≤4	48
DV 5200	≤0.4	2	30	0	≤30	≤4	49
5112 N	≤0.4	2	15	0	≤5	≤20	50
5114 N	≤0.4	2	60	0	≤60	≤20	50
5118 N	≤0.4	2	60	0	≤60	≤20	50
7112 N	≤0.4	2	60	0	≤60	≤20	51
7114 N	≤0.4	2	30	0	≤30	≤20	51
7118 N	≤0.4	2	60	0	≤60	≤20	51

**Available on request:**

- Galvanically separated sensor signal circuit
- Varying voltage potentials for power and logic circuit.

Signal data	Sensor signal $U_{S,low}$	Condition: $I_{SINK}$	Sensor signal $U_{S,high}$	Condition: $I_{SOURCE}$	Sensor operating voltage $U_{SS}$	Perm. sink current $I_{SINK,max}$	Fan description
Type	V DC	mA	V DC	mA	V DC	mA	Page
6224 N	≤0.4	8	30	0	≤30	≤20	53
6248 N	≤0.4	8	60	0	≤30	≤20	53
DV 6200	≤0.4	2	30	0	≤60	≤20	55
6400	≤0.4	2	60	0	≤60	≤20	57
RL 48	≤0.4	2	28	0	4–30	≤4	67
RL 65	≤0.4	2	30	0	≤30	≤4	68
RL 90 N	≤0.4	2	30	0	≤30	≤4	69
RLF 100	≤0.4	2	30	0	≤30	≤4	70
RG 90 N	≤0.4	2	30	0	≤30	≤4	71
RG 125 N	≤0.4	2	30	0	≤30	≤4	72
RG 160 N	≤0.4	2	30	0	≤30	≤20	73
REF 100	≤0.4	2	30	0	≤30	≤4	75

**Attention:**

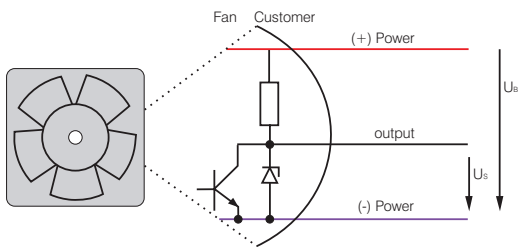
With these fan options, deviations in regard to temperature range, voltage range and power consumption are possible compared with standard fan data.

# Sensor signal /12 “tacho”



- Speed-proportional rectangular pulse for external speed monitoring of fan motor
- 2 pulses per revolution / 6 pulses per revolution with TURBOFANS.
- TTL-compatible
- Integrated pull-up resistor
- Connection via separate lead
- The sensor signal also serves as a major comparison variable for setting and maintaining the desired speed for interactive or controlled cooling with one or more interconnected fans.

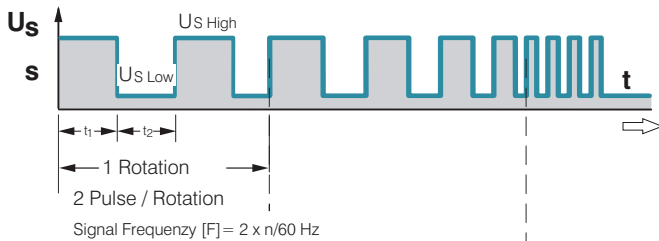
## Electrical connection



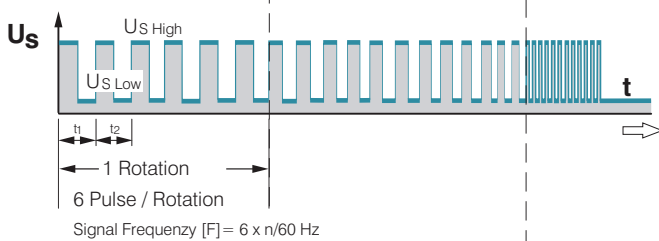
All voltages measured to ground.

## Signal output voltage

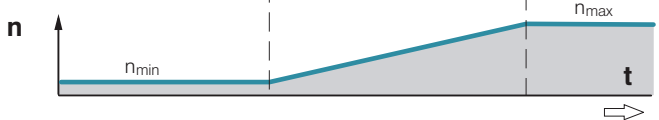
all models except TD-Fans



## only TD-Fans



## Fan speed



Signal data	Sensor signal $U_{S, Low}$	Condition: $I_{link}$	Sensor signal $U_{S, High}$	Condition: $I_{source}$	Perm. sink current $I_{link, max}$	Fan description
Type	V DC	mA	V DC	mA	mA	Page
614 N/12 GM	$\leq 0.4$	1	2.5–5.5	1	1	26
618 N/12 N	$\leq 0.4$	1	2.5–5.5	1	1	26
8412 N/12 H	$\leq 0.4$	1	2.5–5.5	1	1	30
8312 /12	$\leq 0.4$	1	2.5–5.5	1	1	32
8314 /12	$\leq 0.4$	1	2.5–5.5	1	1	32
8318 /12 HL	$\leq 0.4$	1	2.5–5.5	1	1	32
8318 /12 H	$\leq 0.4$	1	2.5–5.5	1	1	32
4412 F/12 GM	$\leq 0.4$	1	2.5–5.5	1	1	38
4414 F/12	$\leq 0.4$	1	2.5–5.5	1	1	38
4418 F/12	$\leq 0.4$	1	2.5–5.5	1	1	38
4312 /12 M	$\leq 0.4$	1	2.5–5.5	1	1	41
4314 /12	$\leq 0.4$	1	2.5–5.5	1	1	41
4318 /12	$\leq 0.4$	1	2.5–5.5	1	1	41
4212 /12	0.4	1	2.5–5.5	1	1	44
4212 /12 H	$\leq 0.4$	1	2.5–5.5	1	1	44
4214 /12	$\leq 0.4$	1	2.5–5.5	1	1	44
4214 /12 H	$\leq 0.4$	1	2.5–5.5	1	1	44
4218 /12	$\leq 0.4$	1	2.5–5.5	1	1	44
4218 /12 H	$\leq 0.4$	1	2.5–5.5	1	1	44
4182 N/12 X	$\leq 0.4$	1	2.5–5.5	1	1	45
4188 N/12 XM	0.4	1	2.5–5.5	1	1	45
5214 N/12 H	$\leq 0.4$	1	2.5–5.5	1	$\leq 1$	48

### Attention:

With these fan options, deviations in regard to temperature range, voltage range and power consumption are possible compared with standard fan data.

**Available on request:**

- Galvanically separated sensor and signal circuit
- Varying voltage potentials for power and logic circuit.

Signal data	Sensor signal $U_{S, Low}$	Condition: $I_{Sink}$	Sensor signal $U_{S, High}$	Condition: $I_{Source}$	Perm. sink current $I_{Sink, max.}$	Fan description
Type	V DC	mA	V DC	mA	mA	Page
5118 N/12	$\leq 0.4$	2	2.5–5.5	1	$\leq 20$	50
5214 N/12 H	$\leq 0.4$	1	2.5–5.5	1	$\leq 1$	48
7118 N/12	$\leq 0.4$	2	2.5–5.5	1	$\leq 20$	51
7214 N/12	$\leq 0.4$	2	2.5–5.5	1	$\leq 20$	52
6224 N/12 M	$\leq 0.4$	2	2.5–5.5	1	$\leq 20$	53
6224 N/12	$\leq 0.4$	2	2.5–5.5	1	$\leq 20$	53
6248 N/12	$\leq 0.4$	2	2.5–5.5	1	$\leq 20$	53
DV 6224 /12	$\leq 0.4$	2	4.5–5.25	2	$\leq 12$	55
DV 6248 /12	$\leq 0.4$	2	4.5–5.25	2	$\leq 12$	55
6424 /12 H	$\leq 0.4$	2	2.5–5.5	1	$\leq 20$	57
DV 6424 /12	$\leq 0.4$	2	4.5–5.25	2	$\leq 12$	59
DV 6448 /12	$\leq 0.4$	2	4.5–5.25	2	$\leq 12$	59
RG 125-19/12N/12	$\leq 0.4$	1	2.5–5.5	1	$\leq 1$	72
RG 160-28/12N/12	$\leq 0.4$	2	2.5–5.5	1	$\leq 5$	73
RG 160-28/18N/12	$\leq 0.4$	2	2.5–5.5	1	$\leq 20$	73
RER 125-19/12N/12	$\leq 0.4$	1	2.5–5.5	1	$\leq 1$	77
RER 160-28/12N/12	$\leq 0.4$	2	2.5–5.5	1	$\leq 5$	78

**Attention:**

With these fan options, deviations in regard to temperature range, voltage range and power consumption are possible compared with standard fan data.



# Alarm signal /17



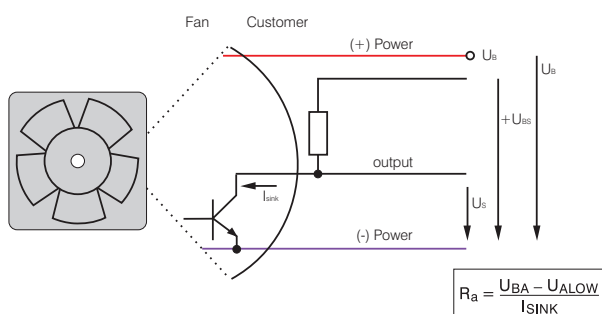
- Alarm signal for speed monitoring
- Signal output via open collector
- The fan emits a high continuous signal during trouble-free operation within the permissible voltage range
- Low signal when speed limit is not reached.
- After elimination of fault, the fan returns to its desired speed; the alarm signal reverts to high

Alarm signal-data	Alarm output voltage $U_{A,Low}$	Condition:	Condition: $I_{SINK} =$	Alarm output voltage $U_{A,High}$	Condition:	Condition: $I_{SOURCE}$	Alarm operating voltage $U_{A,max}$	Max. permissible sink current	Alarm delay time $t_2$	Condition:	Speed limit $n_G$
Type	V DC		mA	V DC		mA	V DC	mA	S		min <sup>-1</sup>
8318 /17	≤0.4	$n < n_G$	2	$U_{BS}$	$n > n_G$	0	≤60	20	≤15	*	1500 ± 100
8318 /17 H	≤0.4	$n < n_G$	2	$U_{BS}$	$n > n_G$	0	≤60	20	≤15	*	1500 ± 100
3312 /17	≤0.4	$n < n_G$	2	$U_{BS}$	$n > n_G$	0	≤60	20	≤15	*	1500 ± 100
3314 /17	≤0.4	$n < n_G$	2	$U_{BS}$	$n > n_G$	0	≤60	20	≤15	*	1500 ± 100
3318 /17 H	≤0.4	$n < n_G$	2	$U_{BS}$	$n > n_G$	0	≤60	20	≤15	*	1500 ± 100
4318 /17 M	≤0.4	$n < n_G$	2	$U_{BS}$	$n > n_G$	0	≤60	20	≤15	*	1150 ± 100
4318 /17	≤0.4	$n < n_G$	2	$U_{BS}$	$n > n_G$	0	≤60	20	≤15	*	850 ± 100
4214 /17	≤0.4	$n < n_G$	2	$U_{BS}$	$n > n_G$	0	≤60	20	≤15	*	1150 ± 100
4184 N /17X	≤0.4	$n < n_G$	2	$U_{BS}$	$n > n_G$	0	≤60	20	≤15	*	1500 ± 100

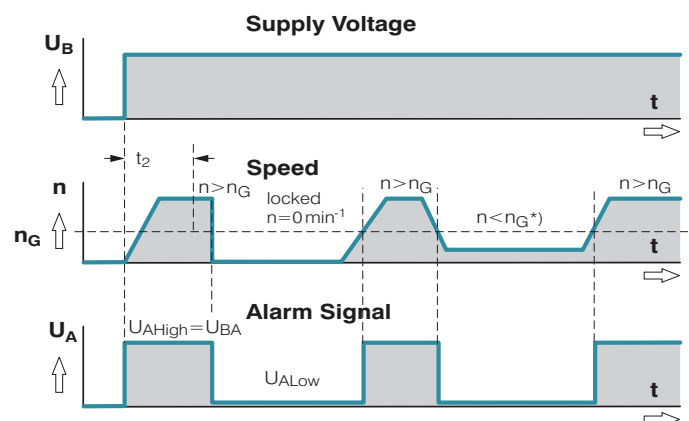
**Attention:** With these fan specials, deviations as regards temperature range, voltage range and power consumption are possible compared with standard fans.

\* After switching on  $U_B$

## Electrical connection



All voltages measured to ground.  
 External load resistance  $R_a$  from  $U_A$  to  $U_{BA}$  required.  
 With VARIOFANS with external temperature sensor for controlling the motor speed, the NTC sensor is not included in the scope of delivery.  
 Temperature sensor LZ 370, see Accessories.



$t_2$  = Alarm signal suppression during start-up  
 \*  $n < n_G$  by braking or blocking.

**Available on request:**

- With integrated signal latching for subsequent recognition of short-time faults
- Alarm circuit open collector or TTL
- Galvanically isolated for maximum device safety;  
Defects in the power circuit do not affect the alarm circuit.

Alarm signal-data	Alarm output-voltage $U_{A,Low}$	Condition:	Condition: $I_{sink} =$	Alarm output-voltage $U_{A,High}$	Condition:	Condition: $I_{source} =$	Alarm operating voltage $U_{A,max}$	Max. permissible sink current	Alarm delay time $t_2$	Condition:	Speed limit $n_c$	Fan description
Type	V DC		mA	V DC		mA	V DC	mA	S		min <sup>-1</sup>	Page
4312/17 MV VARIOFAN	≤ 0.4	n < nG	2	60	n > nG	0	≤ 60	20	≤ 15	*	1500 ± 100	42
4312/17 V VARIOFAN	≤ 0.4	n < nG	2	60	n > nG	0	≤ 60	20	≤ 15	*	1500 ± 100	42
4314/17 V VARIOFAN	≤ 0.4	n < nG	2	60	n > nG	0	≤ 60	20	≤ 15	*	1150 ± 100	42
4318/17 V VARIOFAN	≤ 0.4	n < nG	2	60	n > nG	0	≤ 60	20	≤ 15	*	850 ± 100	42
5112 N/17	≤ 0.4	n < nG	2	60	n > nG	0	≤ 60	20	≤ 15	*	1250 ± 50	50
7214 N/17	≤ 0.4	n < nG	2	60	n > nG	0	≤ 60	15	≤ 15	*	1330 ± 60	52
DV 6224/17	≤ 0.4	n < nG	2	60–28	n > nG	0	≤ 60	10	10 ± 4	*	1900 ± 100	55

\* After switching on

**Attention:**

With these fan specials, deviations as regards temperature range, voltage range and power consumption are possible compared with standard fans.

# Alarm signal /19



- Alarm signal for speed monitoring
- Signal output via open collector
- The fan emits a low continuous signal during trouble-free operation within the permissible voltage range.
- High signal when speed limit is not reached.
- After elimination of fault, the fan returns to its desired speed; the alarm signal reverts to low.

Alarm signal-data	Alarm output-voltage $U_{A,Low}$	Condition:	Condition: $I_{SINK} =$	Alarm output-voltage $U_{A,High}$	Condition:	Condition: $I_{SOURCE} =$	Alarm operating voltage $U_{BA,max}$	Max. permissible sink current	Alarm delay time $t_2$	Condition:	Speed limit $n_G$
Type	V DC		mA	V DC		mA	V DC	mA	S		min <sup>-1</sup>
8314 /19 H	≤ 0.4	$n > n_G$	2	60	$n < n_G$	0	≤ 60	20	≤ 15	*	1500 ± 100
4312 /19	≤ 0.4	$n > n_G$	2	60	$n < n_G$	0	≤ 60	20	≤ 15	*	1500 ± 100
7214 N /19	≤ 0.4	$n > n_G$	2	60	$n < n_G$	0	4.5–60	10	10 ± 4	*	1800 ± 20
6224 N /19	≤ 0.4	$n > n_G$	2	≤ 28	$n < n_G$	0	16–28	10	10 ± 4	*	1900 ± 100
RLF100-11/14 /19	≤ 0.4	$n > n_G$	2	≤ 28	$n < n_G$	0	16–28	10	10 ± 4	*	1900 ± 100
RER101-36/18N /19 H	≤ 0.4	$n > n_G$	2	≤ 28	$n < n_G$	0	16–28	10	10 ± 4	*	1900 ± 100

### Attention:

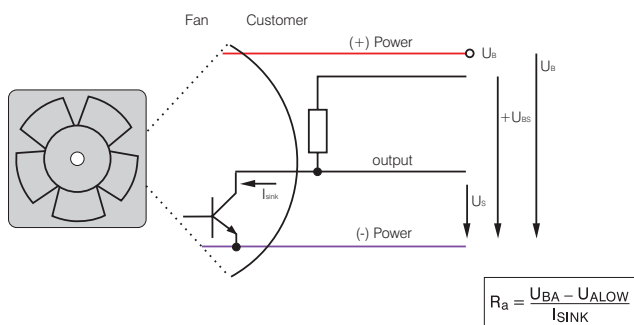
With these fan specials, deviations as regards temperature range, voltage range and power consumption are possible compared with standard fans.

\* After switching on  $U_B$

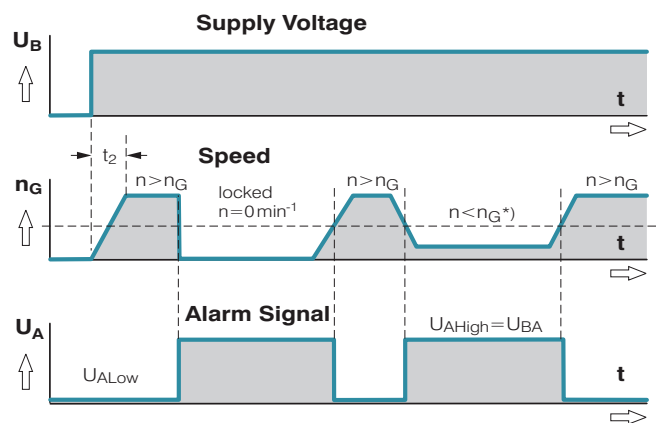
### Available on request:

- With integrated signal latching for subsequent recognition of short-term faults
- Alarm circuit open collector or TTL
- Galvanically separated for max. device safety; defects in power circuit have no effect on the alarm circuit.

### Electrical connection



All voltages measured to ground.  
External load resistance  $R_a$  from  $U_A$  to  $U_{BA}$  required.



$t_2$  = Alarm signal suppression during start-up  
\*  $n < n_G$  by braking or blocking.

## Alarm signal /37



- Alarm signal for speed monitoring
- Signal output for open collector
- The fan emits a high continuous signal during trouble-free operation within the permissible voltage range.
- Low signal when speed limit is not reached
- After elimination of fault, the fan returns to its desired speed; the alarm signal reverts to high.

### Available on request:

- Alarm circuit TTL compatible

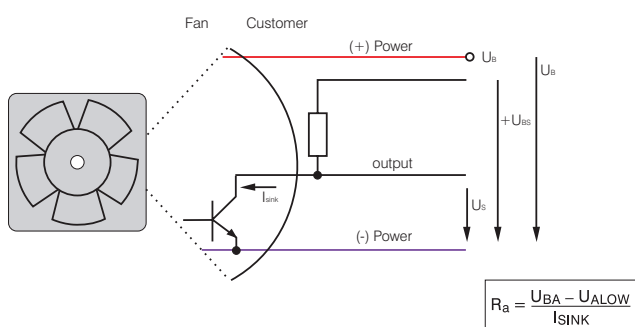
Alarm signal-data	Alarm output-voltage $U_{A,Low}$	Condition:	Condition: $I_{SINK} =$	Alarm output-voltage $U_{A,High}$	Condition:	Condition: $I_{SOURCE} =$	Alarm operating voltage $U_{A, max.}$	Max. permissible sink current $I_{SINK}$	Alarm delay time $t_2$	Condition:	Speed limit $n_6$	Fan description
Type	V DC		mA	V DC		mA	V DC	mA	S		min <sup>-1</sup>	Page
612 N/37 GNV	≤0.4	$n \leq n_G$	2	28	$n > n_G$	0	≤28	10	<1	*	0	27
8412 N/37 GMLV	≤0.4	$n \leq n_G$	2	28	$n > n_G$	0	≤28	10	<1	*	0	31
3412 N/37 GMV	≤0.4	$n \leq n_G$	2	28	$n > n_G$	0	≤28	10	<1	*	0	34
3412 N/37 GV	≤0.4	$n \leq n_G$	2	28	$n > n_G$	0	≤28	10	<1	*	0	34

### Attention:

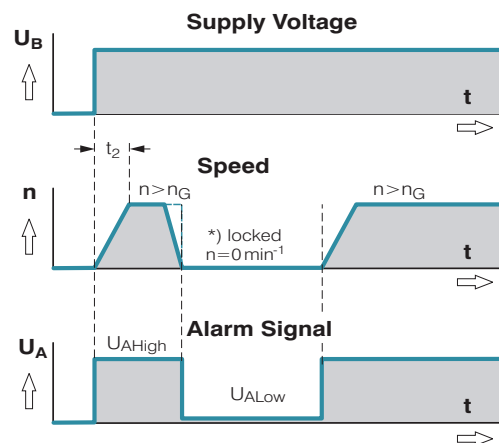
With these fan specials, deviations as regards temperature range, voltage range and power consumption are possible compared with standard fans.

\* After switching on  $U_B$

### Electrical connection



All voltages measured to ground  
External load resistance  $R_a$  from  $U_A$  to  $U_{BA}$  required.



$t_2$  = Alarm signal suppression during start-up  
\*  $n < n_6$  by braking or blocking.

# Alarm signal /39



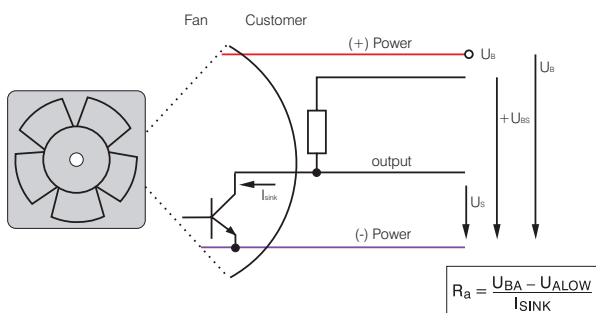
- Alarm signal for speed monitoring
- Signal output via open collector
- The fan emits a low continuous signal during trouble-free operation within the permissible voltage range.
- High signal when speed limit is not reached.
- After elimination of fault, the fan returns to its desired speed; the alarm signal reverts to low.

Alarm signal-data	Alarm output-voltage $U_{A,Low}$	Condition:	Condition: $I_{sink} =$	Alarm output-voltage $U_{A,High}$	Condition:	Condition: $I_{source} =$	Alarm operating voltage $U_{A, max.}$	Max. permissible sink current $I_{sink}$	Alarm delay time $t_2$	Condition:	Speed limit $n_6$	Fan description
Type	V DC		mA	V DC		mA	V DC	mA	S		min <sup>-1</sup>	Page
412 /39	≤0,5	n > nG	2	28	n = nG	0	≤28	10	<1	*	0	21
412 /39H	≤0,5	n > nG	2	28	n = nG	0	≤28	10	<1	*	0	21
612 /39FL	≤0,5	n > nG	2	28	n = nG	0	≤28	10	<1	*	0	24
614 N /39GM	≤0,5	n > nG	2	28	n = nG	0	≤28	10	<1	*	0	26
618 N /39 N	≤0,5	n > nG	2	28	n = nG	0	≤28	10	<1	*	0	26
3412 N/39 H	≤0,5	n > nG	2	28	n = nG	0	≤28	10	<1	*	0	34
3414 N/39 HH	≤0,5	n > nG	2	28	n = nG	0	≤28	10	<1	*	0	34
4412 F/39 GL	≤0,5	n > nG	2	28	n = nG	0	≤28	10	<1	*	0	38
4414 F/39	≤0,5	n > nG	2	28	n = nG	0	≤28	10	<1	*	0	38
4418 F/39	≤0,5	n > nG	2	28	n = nG	0	≤28	10	<1	*	0	38

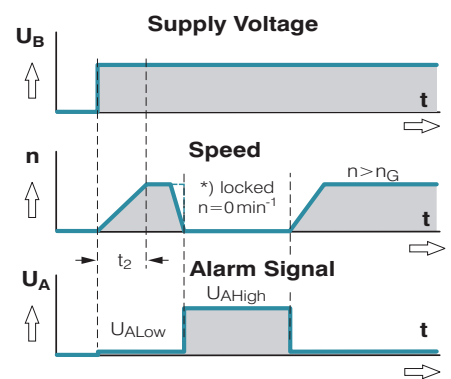
### Attention:

With these fan specials, deviations as regards temperature range, voltage range and power consumption are possible compared with standard fans.

### Electrical connection



All voltages measured to ground  
External load resistance  $R_a$  from  $U_A$  to  $U_{BA}$  required.



$t_2$  = Alarm signal suppression during start-up  
\*  $n <$  Speed limit  $n_6$  by braking or blocking

# Vario-Pro®



- "Software instead of hardware" – aptly describes the unique fan concept, equipped at the plant with tailor-made intelligence for cooling electronics.
- Flexible configuration using software, allows quicker availability, sampling from the factory and the ability to supply customer-specific solutions in any quantity.

## Vario-Pro-Features

### Externally Speed setting

- Speed Setting via temperature, PWM or analog control voltage. On Page 94 (Speed setting).
- Description of speed curve with up to 14 selectable interpolation points. Linear interpolation between the points.
- 0 rpm. possible.
- Recognition of sensor failure: In case of loss of sensor, the fan operates at programmable (fail-safe) speed.

### Alarm- and tacho functions

- Optional alarm/or tacho function
- Selectable alarm speed limit (with hysteresis) and alarm delay time
- Latching of alarm signal
- Delay only when starting or permanently active
- Output signal "High" or "Low" in case of alarm
- Optional alarm when temperature sensor fails.
- Optional alarm in case of excess temperature.

### Motor management

- High control accuracy due to digital motor management
- Higher operating efficiency due to optimum adaption of motor hardware and software.

Fan series	Page
620	25
8400 N	30
8300	32
8200 J	33
3400 N	34
3300	36
3200 J	37
4400 FN	39
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Fan series	Page
4100 NH	46
DV 4100	47
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5100 N	50
7100 N	51
7200 N	52
6200 N	53
DV 6200	55
6400	57
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RL 90 N	69
RLF 100	70
RG 90 N	71
RG 125 N	72
RG 160 N	73
REF 100	75
RER 101	76
RER 125 N	77
RER 160 N	78



# Speed setting

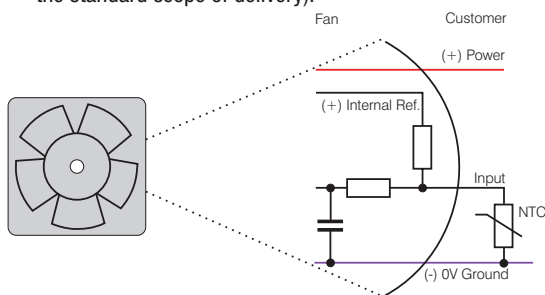
with temperature

- ebm-papst fans can come equipped with optional fan speed control.
- Temperature, analog voltage or a PWM can serve as control variables.



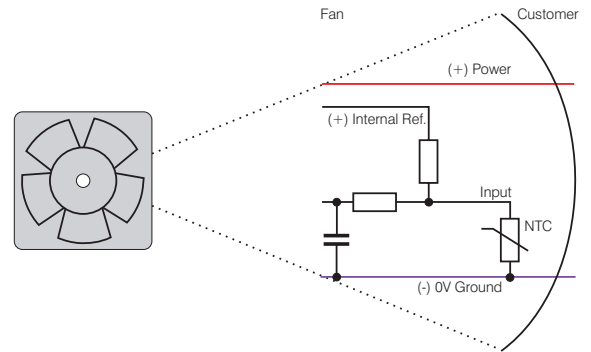
## External Temperature sensor Type T

- Ext. NTC type LZ370 is required (not included in the standard scope of delivery).

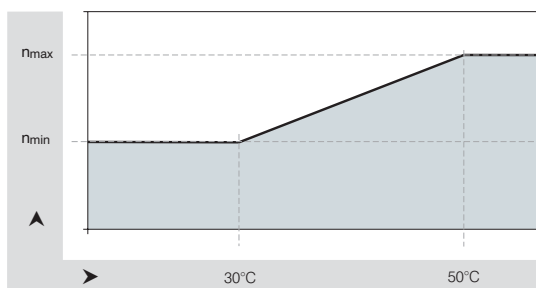


## Internal Temperature sensor Type I

- NTC integrated in fan hub.



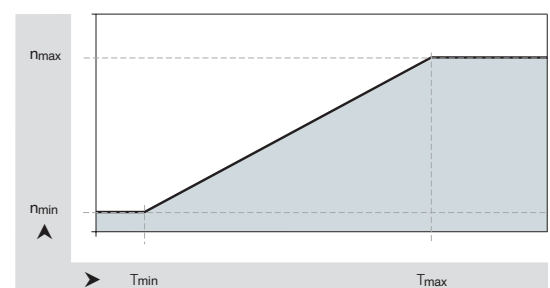
## Standard speed-temperature curve for type T and type I



$$n_{\min} \approx \frac{1}{2} n_{\max}$$

$$T_{\min} \approx 30\text{ }^{\circ}\text{C}; T_{\max} = 50\text{ }^{\circ}\text{C}$$

## Optionally available with user-selectable temperature-speed curve control



$$n_{\min} \approx 800\text{ } \frac{1}{\text{min}}$$

$$T_{\min} \approx 5\text{ }^{\circ}\text{C}$$

$$n_{\max} \text{ model-dependent}$$

$$T_{\max} \leq 85\text{ }^{\circ}\text{C, model-dependent}$$

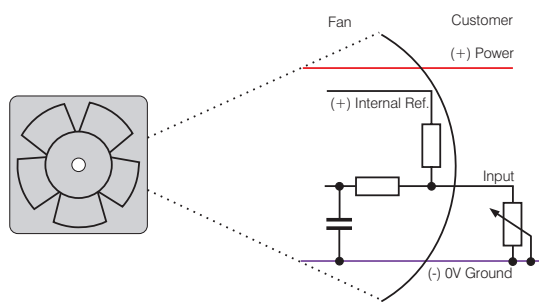
# Speed setting

with control voltage or PWM

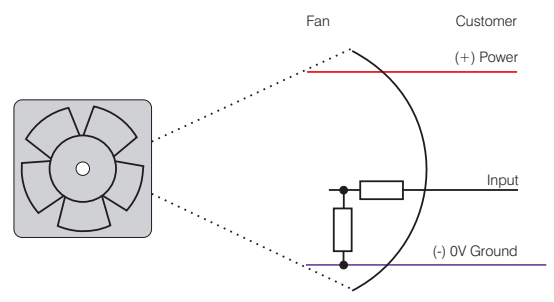


## Speed setting via control voltage Type A

– Standard control range 0 ... 5 V

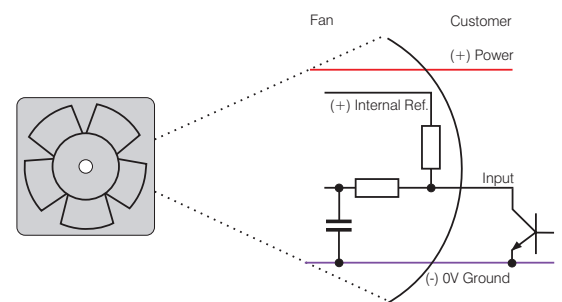


– Optional control range 0 ... 10 V

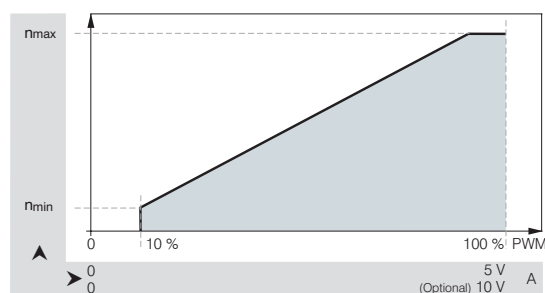


## Speed setting via PWM Type P

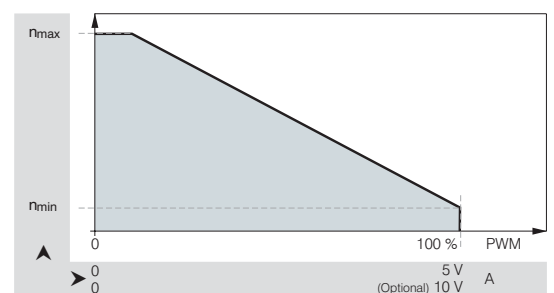
– Speed setting via PWM signal that is user generated as a controlled variable.  
 PWM signal: 2 KHz (0–100 %)  
 Open collector input



## Standard curve P / A



## Optional – selectable curve P / A



# Protected Fans

against environmental influences



- Meeting special requirements for a broad range of applications.
- Resistant to environmental influences, such as dust, splash water, humidity, spray water and salt fog.
- Highly competent solutions for adapting fans to environmental conditions.

## Humidity protection

A coating on the motor and printed circuit board protects against humidity and condensation.

## IP 54 protection

The motor and circuit board are coated to protect them against splash water and humidity. High protection classes up to IP 67 are available on request.

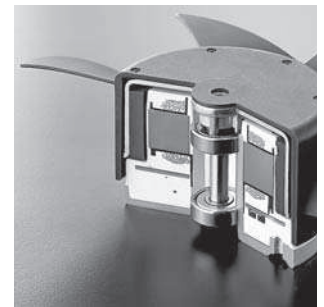
## Salt fog protection

Salt fog is extremely demanding on the resistance of the product. ebm-papst make use of technologies that protect fans and blowers from salt fog reliably and durably.

## Stainless steel bearings

Special bearings made of stainless steel provide additional protection.

The solutions that are available and in use can differ depending on size. We would be glad to develop solutions tailored for the demands of your application.



ACmaxx Axial Fans	100



## Technical Information

### Progress made by ebm-papst

The best example: The ACmaxx fans from ebm-papst, which, thanks to an ingenious yet simple improvement over conventional AC fans, provide substantial benefits.

The aim in developing the new ACmaxx series was to raise the technology standard of the conventional AC fan and, in the process, facilitate the transition to the new technology by retaining the overall mounting dimensions. In short, to ensure the fans can be replaced 1:1 without any peripheral changes or changes to the voltage situation.

The outstanding features of ACmaxx fans:

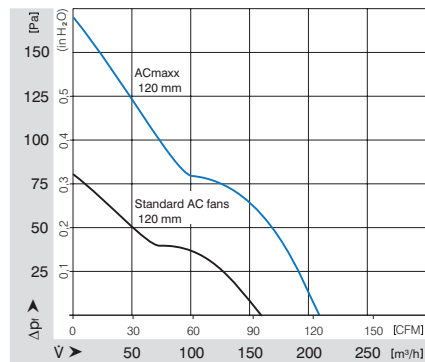
#### 1. Designed for all AC voltages

The ACmaxx generation of fans is designed for direct connection to all AC voltages and frequencies with no switching required, handling from 85 to 265 V AC and frequencies of 50 to 60 Hertz.

Voltage fluctuations in the power system are automatically compensated for. Its universal power supply allows for great potential savings in reduced stockholding and logistics.

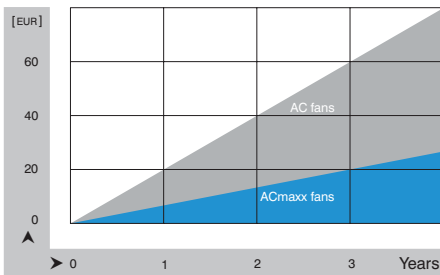
#### 2. More power, more flexibility

In contrast to conventional AC technology, the modern drive concept of this fan series is not linked to a fixed power frequency. Hence the motor speed can be increased over a wide range. As such, ACmaxx provides significantly higher air flow and increased pressure.



### 3. Highest energy efficiency

The ACmaxx drive concept is based on state-of-the-art EC technology with outstanding motor efficiency. Compared to AC fans of the same size, ACmaxx energy consumption is up to 75% lower – for higher cooling capacity! The energy difference alone means that the ACmaxx pays for itself after a few months. The savings over the entire service life, especially in systems with multiple fans, is considerable.

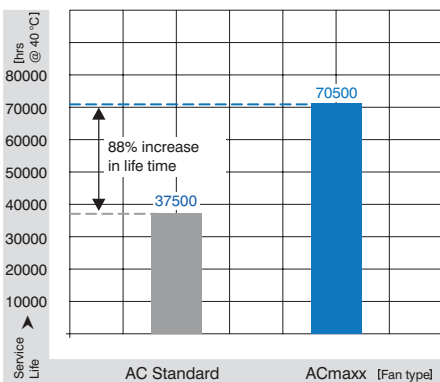


Energy cost comparison: Standard AC fan versus ACmaxx, at the same air performance.

### 4. Long service life

The ACmaxx motor efficiency is up to 75% greater than that of conventional AC fan variants. This not only saves energy, it also means less intrinsic heating in the motor. The reduced heating has a direct, positive affect on the bearing system, which is why ACmaxx fans have a service life that is up to 85% longer than conventional AC fans!

This also lengthens the service and maintenance intervals significantly. The expense of replacement fans, and even more expensive downtimes, are kept to a minimum.



### 5. Flexible and failsafe

The flexibility of ACmaxx is one-of-a-kind. With its intelligent features, ACmaxx can be individually adapted to the specific application: standby mode, overload mode at peak times or night reduction all the way to temperature-controlled quiet operation are all possible. From speed setting to alarm or speed signal outputs, ACmaxx offers optional interfaces with which you can quickly and easily implement operation monitoring.

You can find further information about these fan options in the "Specialized fans" chapter, starting on page 82. Or you can simply contact our application engineers to discuss your ideal ACmaxx fan.

### 6. Security

- Safety UL and CSA. VDE 0805 / EN60950 approvals applied for. VDE 0700 / EN60335 on request.
- Our fans have the CE mark of conformity
- EMV protection
  - > EN61000-4-4 Level 1 (1 kV/B)
  - > EN61000-4-2 Level 8 kV/15 kV
  - > EN61000-4-3
  - > EN61000-4-6
  - > EN61000-4-8
  - > EN55022 Class B

### 7. Environment

- Optional: improved humidity protection or Protection Class IP 54



NEW TYPE

# ACmaxx Axial Fans

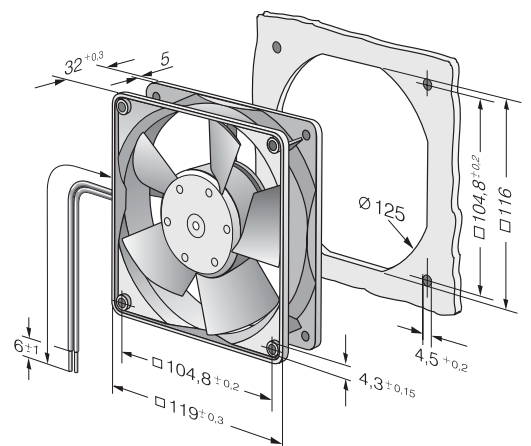
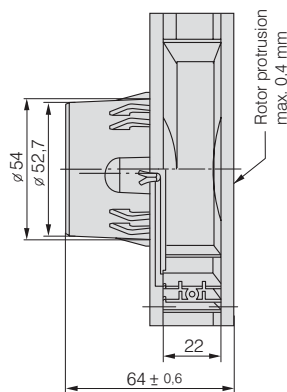
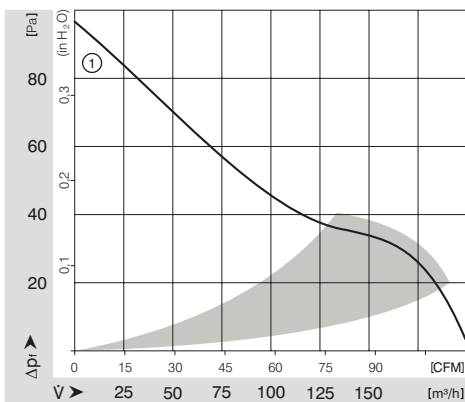
Series AC 4300 119 x 119 x 32 mm



- Fans with electronically commutated external rotor motor for connection to AC voltage.
- With electronic protection against locked rotor and overloading.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- Air exhaust over struts. Rotational direction CW looking at rotor.
- Electrical connection via leads AWG 22. Stripped and tinned ends.
- Open-loop speed control, sensor and alarm signals, and protection against environmental influences are available upon request.
- Masse 325 g.

Nominal data	Air Flow	Air Flow	Nominal Voltage	Frequency	Voltage Range	Noise		Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C	at t <sub>max</sub>	curve
Type	m <sup>3</sup> /h	CFM	V	Hz	V AC	dB(A)	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours	
AC 4300 H	204	120	115 / 230	50 / 60	85 ... 265	51	6.4	■	11	3 400	-20...+70	45 000 / 22 500		1

Extended speed monitoring on request.



# ACmaxx Axial Fans

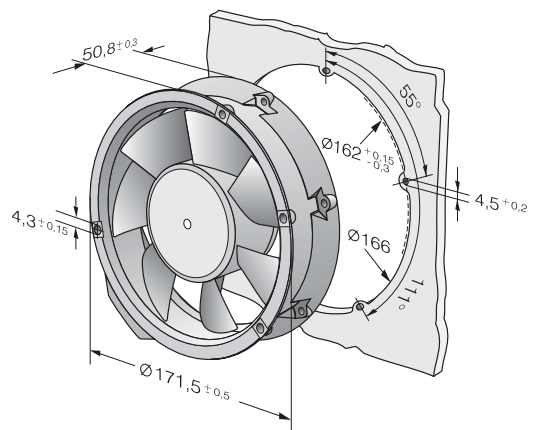
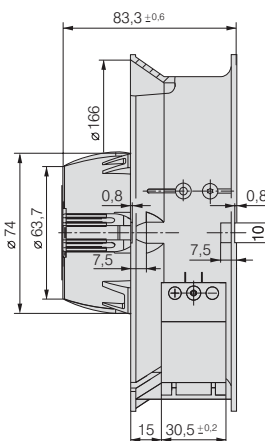
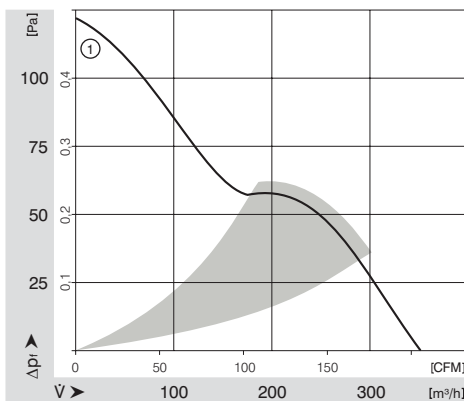
Series AC 6200 N 172 ø x 51 mm

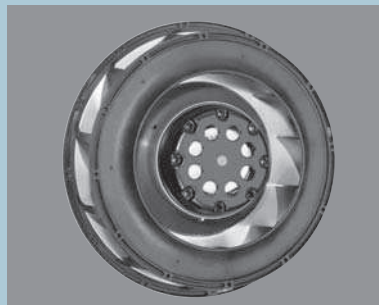
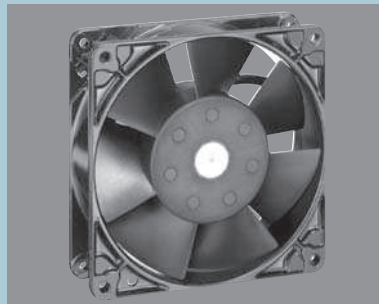
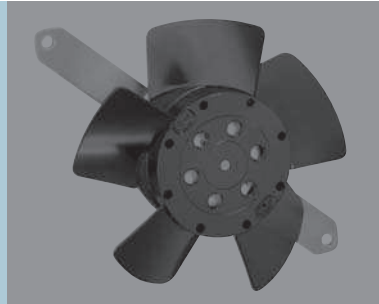


- Fans with electronically commutated external rotor motor.
- With electronic protection against locked rotor and overloading; electronic motor current limitation in the startup phase and when rotor is blocked.
- Metal fan housing, impeller of fibreglass reinforced plastic PA.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via leads AWG 22. Housing with ground lug M4 x 8 (TORX).
- 48 V DC with screws.
- Open-loop speed control, sensor and alarm signals, and protection against environmental influences are available upon request.
- Mass 900 g.

Nominal data		Air Flow	Air Flow	Nominal Voltage	Frequency	Voltage Range	Noise		Sintec-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C	at t <sub>max</sub>	curve
Type		m <sup>3</sup> /h	CFM	V	Hz	V AC	dB(A)	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours	
AC 6200 NM		350	206	115 / 230	50 / 60	85 ... 265	50	5.7	■	14	2 850	-20...+70	80 000 / 40 000		1

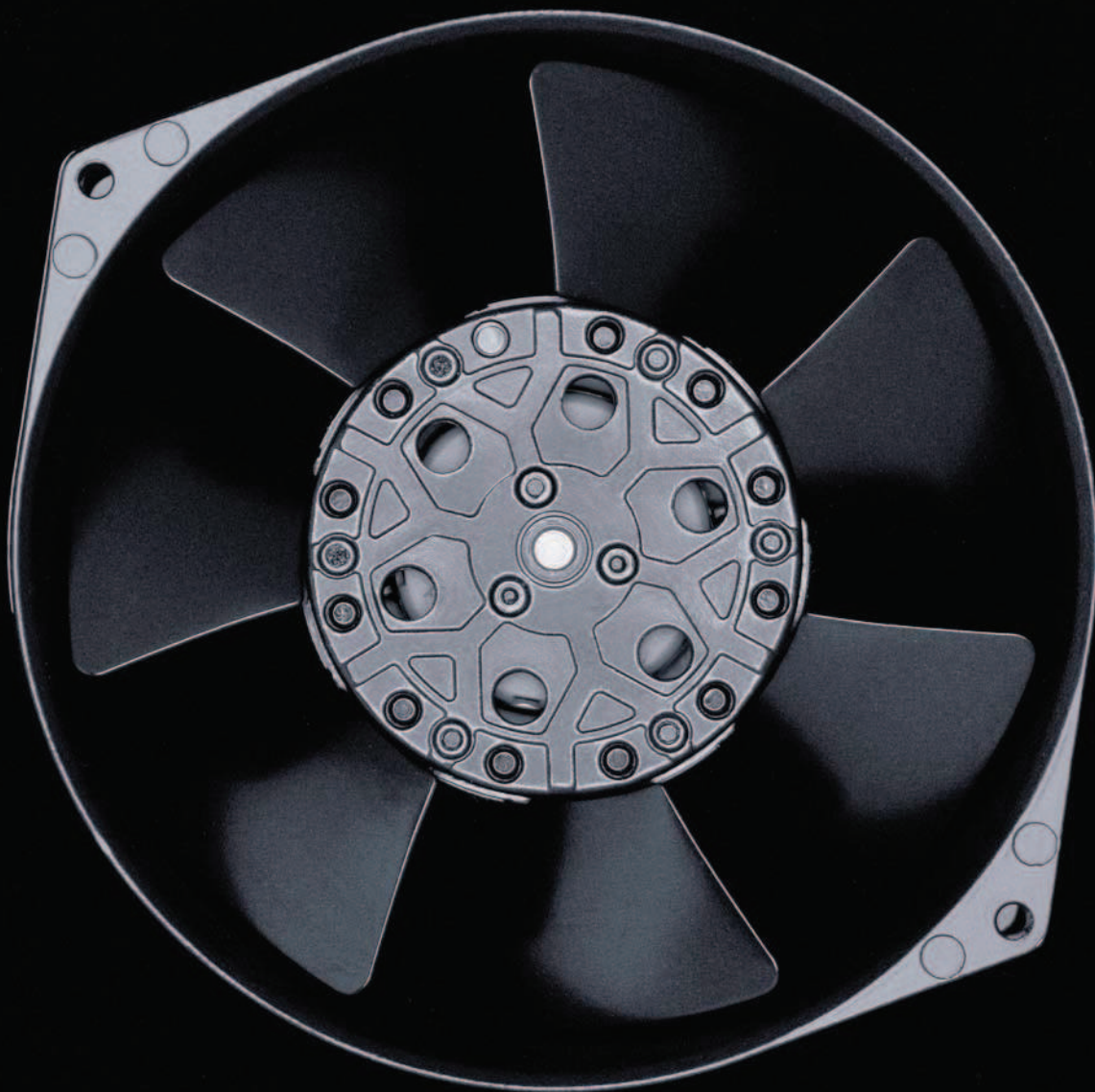
Extended speed monitoring on request.





# AC Fans

AC Fans Overview	105
AC Axial Fans	106
AC Radial Fans	126



## Technical Informations

### Program

The renowned ebm-papst AC fans are used when DC voltage is not available. The AC range of fans is based on experience gained from decades of development activity, millions of units in series production and competence in innovation of a world-wide technological leader.

A wide range of fans for AC operation are presented in this catalogue. In addition to complete equipment fans, you will also find fans without external housing, providing a particularly economical advantage when the air duct can be integrated in the respective appliance.

### Variety of sizes

AC fans are available in a variety of sizes with either air exhaust or air intake over struts. Silent running models with sleeve bearings. For extreme ambient conditions: Fans with ball bearings. With pin connection or free-hanging leads.

### Shaded-pole or capacitor motors

Fan drive by shaded-pole or capacitor motors most of which incorporate the world-famous ebm-papst external rotor principle: The fan blades are directly attached to the external rotor of the external rotor motor thus combining both high performance and profitability.

### Flat built AC fans

ebm-papst also has particularly flat built AC fans with internal rotor motor. Their advantage being, quick start to full speed. A plastic impeller and the both smaller and lighter internal rotor motor lead to a lower moment of inertia.

### Bearings

AC fans with sleeve bearings are powered by Class E insulated motors. Fans with ball bearings are equipped with Class B, E or F insulated motors.

### Protection class

All ebm-papst fans conform to the requirements of IP 20. Fans conforming to IP 54 and special types of protection class are also available.

### AC voltage

The line of AC fans for Euro voltage according to IEC 38 (230 V + 6 %, -10 %) is basically also available for 115 V.

### Frequencies

AC fans can be operated at frequencies of 50 Hz or 60 Hz. However, their technical data then change accordingly.

### Capacitor

Fans driven by capacitor external motors provide particularly high operating efficiency. Generally, the required phase-shift capacitor is already integrated in the fan housing.

### Overloading

Almost all AC fans are protected against overloading (e.g. due to blocked rotor) the drive motors are either impedance protected (marked "Impedance protected", and/or "Z.P.") or are equipped with a thermal switch (marked "Thermally protected" or "Th.P."). The model designation of these fans ends with "S".

# Fans for AC Operation

## Overview

	Dimensions	Air Flow	Approvals	Air in over struts	Air out over struts	230 V / 50 Hz	Version for 115 V / 50 Hz	Fans without external housing	Sinter-Sleeve Bearings Ball Bearings	Page
ACmaxx	mm	m³/h				Type	Type	Type	□/■	
Series 8000 A	80 x 80 x 38	29	VDE, UL, CSA	•		8880 A	•	•	□	106
		36	VDE, UL, CSA	•		8850 A	•	•	□	106
		48	VDE, UL, CSA	•		8550 A	•	•	□	106
		48	VDE, UL, CSA	•	•	8556 A	•	•	■	106
Series 8000 N	80 x 80 x 38	30	VDE, UL, CSA	•		8880 N	•	•	□	107
		37	VDE, UL, CSA	•		8850 N	•	•	□	107
		50	VDE, UL, CSA	•		8550 N	•	•	□	107
		50	VDE, UL, CSA	•	•	8556 N	•	•	■	107
Series 3900	92 x 92 x 25	31	VDE, UL, CSA	•		3950 L	•		□	110
		45	VDE, UL, CSA	•		3950 M	•		□	110
		59	VDE, UL, CSA	•		3950	•		□	110
		31	VDE, UL, CSA	•		3956 L	•		■	110
		45	VDE, UL, CSA	•		3956 M	•		■	110
Series 3000	92 x 92 x 38	59	VDE, UL, CSA	•		3956	•		■	110
		49	VDE, UL, CSA	•		3850	•		□	111
		54	VDE, UL, CSA	•		3856	•		■	111
		67	VDE, UL, CSA	•		3550	•		□	111
		67	VDE, UL, CSA	•		3556	•		■	111
Series 9900	119 x 119 x 25	75	VDE, UL, CSA	•		3650	•		□	111
		75	VDE, UL, CSA	•		3656	•		■	111
		84	VDE, UL, CSA	•		9956 L	•		■	112
		104	VDE, UL, CSA	•		9956 M	•		■	112
Series 4000 N	119 x 119 x 38	117	VDE, UL, CSA	•		9950	•		□	112
		117	VDE, UL, CSA	•		9956	•		■	112
		80	VDE, UL, CSA	•		4890 N	•		□	113
		100	VDE, UL, CSA	•	•	4850 N	•		□	113
Series 4000 Z	119 x 119 x 38	123	VDE, UL, CSA	•		4580 N	•		□	113
		145	VDE, UL, CSA	•		4550 N	•		□	113
		160	VDE, UL, CSA	•	•	4650 N	•	•	□	113/114
		160	VDE, UL, CSA	•	•	4656 N	•	•	■	113/114
		100	VDE, UL, CSA	•		4850 Z	•		□	114
Series 5900	127 x 127 x 38	115	VDE, UL, CSA	•		4580 Z	•		□	114
		160	VDE, UL, CSA	•		4650 Z	•	•	□	114/116
		160	VDE, UL, CSA	•		4656 Z	•	•	■	114/116
		150	VDE, UL, CSA	•		5988	•		■	117
Series 5600	135 x 135 x 38	180	VDE, UL, CSA	•		5950	•		□	117
		180	VDE, UL, CSA	•		5958	•		■	117
		235	VDE, UL, CSA	•		5656 S	•		■	118
Series 7000	150 x 172 x 38	330	VDE, UL, CSA	•		7056 ES	•		■	119
Series 7800	150 Ø x 55	325	VDE, UL, CSA	•		7855 ES	•		■	120
		325	VDE, UL, CSA	•		7856 ES	•		■	120
Series 7400	150 Ø x 55	390	VDE, UL, CSA	•	•	7450 ES	•		■	121
Series 6000	172 Ø x 51	375	VDE, UL, CSA	•		6058 ES	•		■	122
		420	VDE, UL, CSA	•		6078 ES	•		■	122
Series W2E 200	Ø 200	925	VDE, UL, CSA	•		W2E 200-HH38-01	•		■	123
Series W4S 200	Ø 200	455	VDE, UL, CSA	•		W4S 200-HH04-01			■	123
Series W2E 208	Ø 208	815		•		W2E 208-BA20-01	•		■	124
Series W2E 250	Ø 250	925	VDE, UL, CSA	•		W2E 250-HL06-01			■	125
AC radial	mm	m³/h				Type	Type	Type	□/■	
Series RL 90	121 x 121 x 37	40	VDE, UL, CSA			RL 90-18/50	•		□/■	126
Series RG 90	135 x 135 x 38	54	VDE, UL, CSA			RG 90-18/50	•		□/■	127
Series RG 125	180 x 180 x 40	86	VDE, UL, CSA			RG 125-19/56	•		■	128
Series RG 160	220 x 220 x 56	202	VDE, UL, CSA			RG 160-28/56 S	•		■	129
Series 125	138 Ø x 40	104	VDE, UL, CSA			RER 125-19/56	•		■	130
Series 160	176 Ø x 54	234	VDE, UL, CSA			RER 160-28/56 S	•		■	131



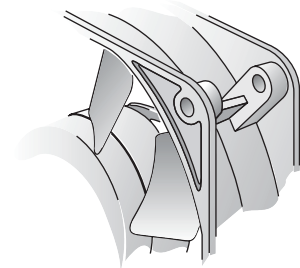
# AC Axial Fans

Series 8000 A 80 x 80 x 38 mm

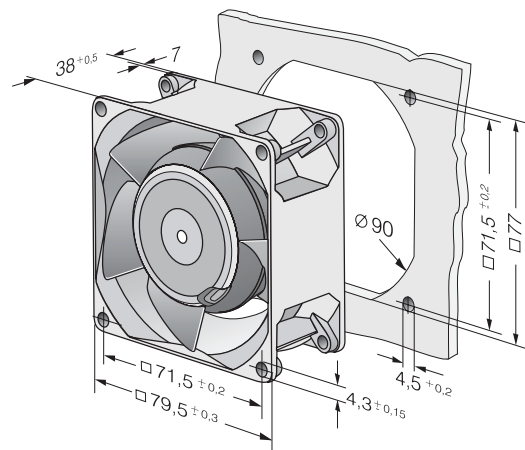
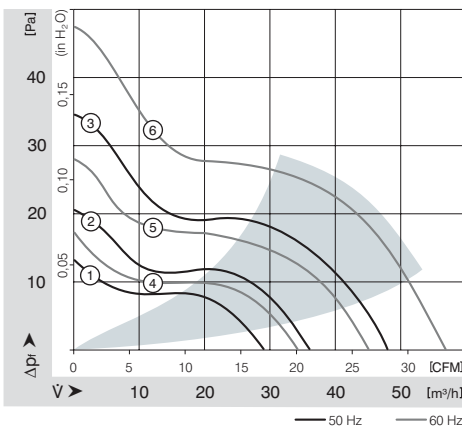


- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Metal fan housing and impeller.
- Air intake over struts. Rotational direction CW looking at rotor.
- Electrical connection via 2 flat pins 2.8 x 0.5 mm.
- Fan housing with ground lug and screw M4 x 8 (TORX).
- Mass 490 g.
- Also available with electrical connection via leads.
- Also available with air-exhaust over struts and of rotation cw.

Nominal Data	Air Flow		Nominal Voltage	Frequency	Noise		Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>		Curve
	m <sup>3</sup> /h	CFM			V	Hz					dB(A)	Bel	
8880 A	29	17.1	230	50	26	4.1	□	9.0	1 750	-10...+80	60 000 / 25 000		1
8850 A	36	21.2	230	50	31	4.6	□	12.5	2 150	-10...+70	52 500 / 25 000		2
8550 A	48	28.3	230	50	36	5.0	□	12.0	2 700	-10...+70	52 500 / 25 000		3
8556 A	48	28.3	230	50	37	5.1	■	12.0	2 800	-40...+90	52 500 / 15 000		3
8830 A	34	20.0	115	60	29	4.3	□	8.0	1 950	-10...+80	62 500 / 25 000		4
8800 A	45	26.5	115	60	34	4.8	□	11.0	2 500	-10...+70	55 000 / 27 500		5
8500 A	57	33.5	115	60	41	5.5	□	11.0	3 200	-10...+75	55 000 / 25 000		6
8506 A	57	33.5	115	60	42	5.7	■	11.0	3 300	-40...+95	55 000 / 15 000		6



Series 8000 A with mounting bosses



# AC Axial Fans

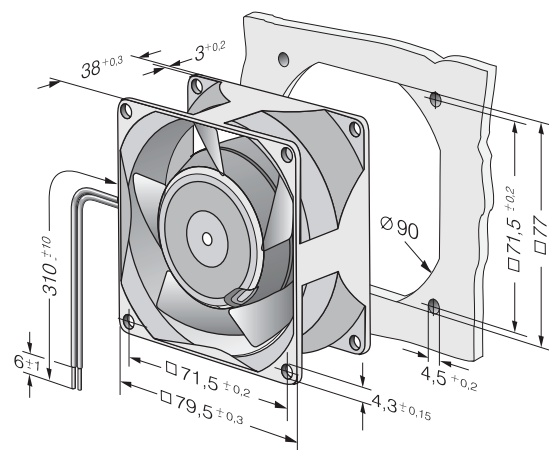
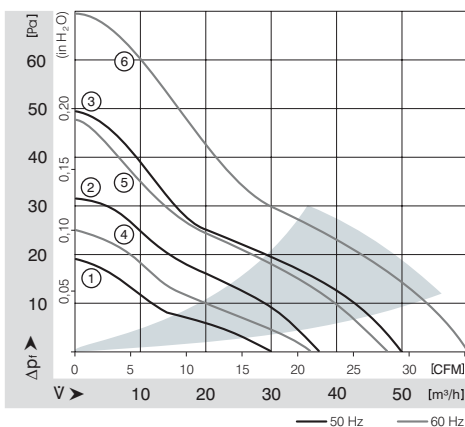
Series 8000 N 80 x 80 x 38 mm



- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Metal fan housing and impeller.
- Air exhaust over struts. Rotational direction CW looking at rotor.
- Electrical connection via 2 leads. Stripped and tinned ends.
- Fan housing with ground lug for screw M4 x 8 (TORX).
- Mass 490 g.

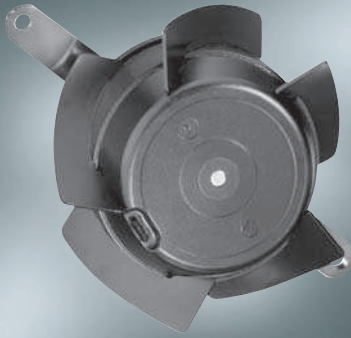
Nominal Data		Air Flow	Air Flow	Nominal Voltage	Frequency	Noise		Sinter-Sleeve Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>	Curve
Type		m <sup>3</sup> /h	CFM	V	Hz	dB(A)	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours
8880 N		30	17.7	230	50	18	3.3	□	9.0	1 750	-10...+80	60 000 / 25 000	1
8850 N		37	21.8	230	50	24	3.9	□	12.5	2 150	-10...+70	52 500 / 25 000	2
8550 N		50	29.4	230	50	30	4.4	□	12.0	2 700	-10...+70	52 500 / 25 000	3
8556 N		50	29.4	230	50	31	4.5	■	12.0	2 800	-40...+90	52 500 / 15 000	3
8830 N		36	21.2	115	60	21	3.7	□	8.0	1 950	-10...+80	62 500 / 25 000	4
8800 N		47	27.7	115	60	28	4.3	□	11.0	2 500	-10...+70	55 000 / 27 500	5
8500 N		61	35.9	115	60	34	4.8	□	11.0	3 200	-10...+75	55 000 / 25 000	6
8506 N		61	35.9	115	60	35	5.0	■	11.0	3 300	-40...+95	55 000 / 15 000	6

Fan Type				Lead Wires	
8830 N	8800 N	8550 N	8500 N	310 mm long	AWG 18, TR 64
8880 N				310 mm long	AWG 18, TR 64
8556 N	8506 N			310 mm long	AWG 22
8850 N				440 mm long	AWG 18, TR 64



# AC Axial Fans

Series 8000 TA 76 Ø x 37 mm

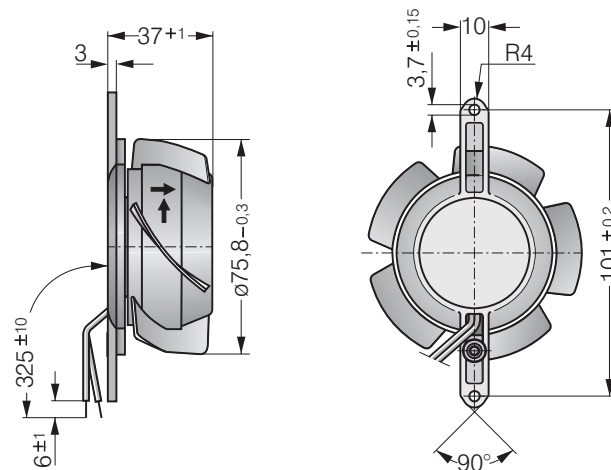


- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Impeller and mounting bracket of metal.
- Air intake over mounting bracket. Rotational direction CW looking at rotor.
- Electrical connection via 2 leads. Stripped and tinned ends.
- Mass 370 g.

Nominal Data	Air Flow		Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C		Curve
	m <sup>3</sup> /h	CFM								V	Hz	
8880 TA	23	13.5	230	50	15	□	9.0	1 650	-10...+80	60 000 / 25 000		-
8850 TA	30	17.7	230	50	19	□	12.0	2 100	-10...+70	52 500 / 25 000		-
8550 TA	38	22.4	230	50	25	□	12.0	2 650	-10...+70	52 500 / 25 000		-
8556 TA	38	22.4	230	50	26	■	12.0	2 750	-40...+90	52 500 / 15 000		-
8830 TA	26	15.3	115	60	18	□	8.0	1 850	-10...+80	62 500 / 25 000		-
8800 TA	34	20.0	115	60	23	□	11.0	2 450	-10...+70	55 000 / 27 500		-
8500 TA	45	26.5	115	60	30	□	11.0	3 150	-10...+75	55 000 / 25 000		-
8506 TA	45	26.5	115	60	31	■	11.0	3 250	-40...+95	55 000 / 15 000		-

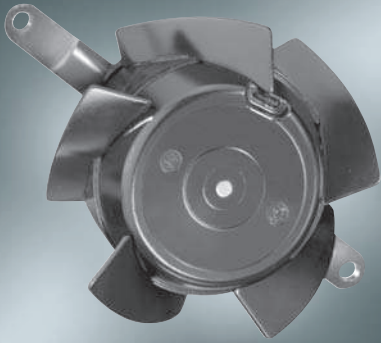
The air flow and noise level of fans without external housing depends on the installation conditions. The stated air flow and noise has been measured with an orifice 76.5 mm Ø at a distance of approx. 17 mm from the mounting bracket. Under exceptionally favourable mounting conditions, the air flow of fan series 8000 A is achievable. The noise in the optimal operating range can only be measured for these fans in a specific application.

Fan Type				Lead Wires	
8880 TA	8850 TA	8830 TA	8800 TA	325 mm long	AWG 18, TR 64
8550 TA	8500 TA			325 mm long	AWG 18, TR 64
8556 TA	8506 TA			325 mm long	AWG 18



# AC Axial Fans

Series 8000 TV 76 Ø x 37 mm

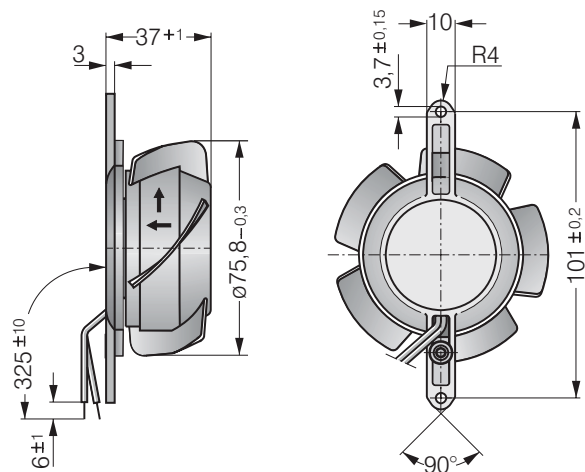


- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Impeller and mounting bracket of metal.
- Air exhaust over struts. Rotational direction CW looking at rotor.
- Electrical connection via 2 leads. Stripped and tinned ends.
- Mass 370 g.

Nominal Data	Air Flow		Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C		Curve
	m <sup>3</sup> /h	CFM								V	Hz	
8880 TV	24	14.1	230	50	15	□	9.0	1 650	-10...+80	60 000 / 25 000		-
8850 TV	31	18.2	230	50	20	□	12.0	2 100	-10...+70	52 500 / 25 000		-
8550 TV	40	23.5	230	50	27	□	12.0	2 650	-10...+70	52 500 / 25 000		-
8556 TV	40	23.5	230	50	28	■	12.0	2 750	-40...+90	52 500 / 15 000		-
8830 TV	27	15.9	115	60	18	□	8.0	1 850	-10...+80	62 500 / 25 000		-
8800 TV	36	21.2	115	60	24	□	11.0	2 450	-10...+70	55 000 / 27 500		-
8500 TV	47	27.7	115	60	32	□	11.0	3 150	-10...+75	55 000 / 25 000		-
8506 TV	47	27.7	115	60	33	■	11.0	3 250	-40...+95	55 000 / 15 000		-

The air flow and noise level of fans without external housing depends on the installation conditions. The stated air flow and noise has been measured with an orifice 76.5 mm Ø at a distance of approx. 17 mm from the mounting bracket. Under exceptionally favourable mounting conditions, the air flow of fan series 8000 N is achievable. The noise in the optimal operating range can only be measured for these fans in a specific application.

Fan Type				Lead Wires	
8880 TV	8850 TV	8830 TV	8800 TV	325 mm long	AWG 18, TR 64
8550 TV	8500 TV			325 mm long	AWG 18, TR 64
8556 TV	8506 TV			325 mm long	AWG 18



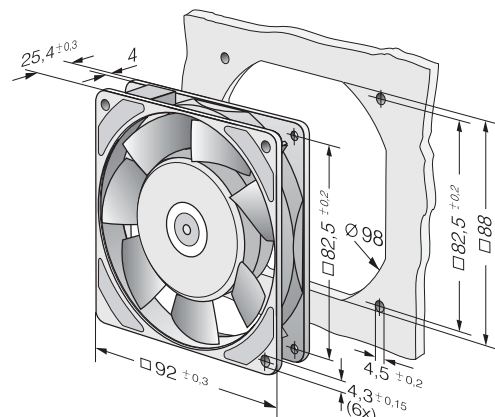
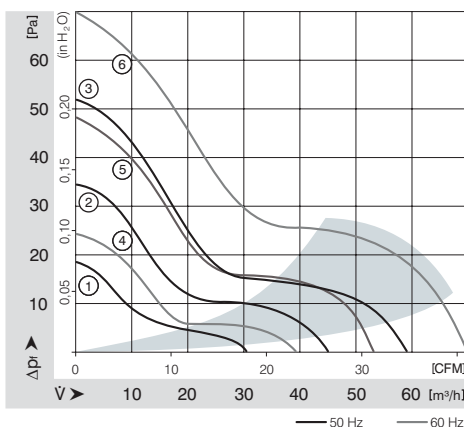
# AC Axial Fans

Series 3900 92 x 92 x 25 mm



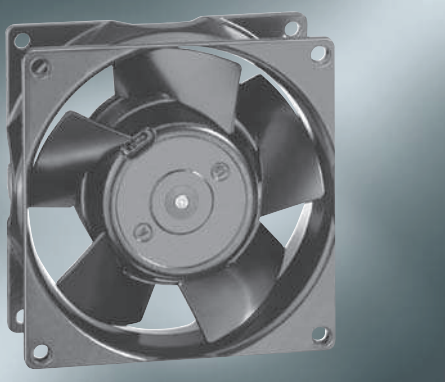
- AC fans with internal rotor shaded-pole motor. Impedance protected against overloading.
- Metal fan housing, impeller of mineral-reinforced plastic PA.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via 2 flat pins 2.8 x 0.5 mm.
- Fan housing with ground lug for screw M4.
- Mass 280 g.

Nominal Data	Air Flow		Nominal Voltage	Frequency	Noise		Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C		Curve
	m <sup>3</sup> /h	CFM			V	Hz					dB(A)	Bel	
3950 L	31	18.2	230	50	24	3.8	□	6.0	1 550	-10...+80	70 000 / 27 500	1	
3956 L	31	18.2	230	50	24	3.8	■	6.0	1 550	-40...+80	70 000 / 27 500	1	
3950 M	45	26.5	230	50	29	4.2	□	6.0	2 150	-10...+80	70 000 / 27 500	2	
3956 M	45	26.5	230	50	29	4.2	■	6.0	2 150	-40...+80	70 000 / 27 500	2	
3950	59	34.7	230	50	35	4.7	□	11.0	2 650	-20...+80	55 000 / 20 000	3	
3956	59	34.7	230	50	35	4.7	■	11.0	2 650	-40...+80	55 000 / 20 000	3	
3900 L	39	23.0	115	60	27	4.0	□	5.0	1 850	-10...+80	70 000 / 27 500	4	
3906 L	39	23.0	115	60	27	4.0	■	5.0	1 850	-40...+80	70 000 / 27 500	4	
3900 M	53	31.2	115	60	34	4.6	□	5.0	2 600	-10...+80	70 000 / 27 500	5	
3906 M	53	31.2	115	60	34	4.6	■	5.0	2 600	-40...+80	70 000 / 27 500	5	
3900	70	41.2	115	60	40	5.1	□	9.0	3 150	-20...+80	60 000 / 22 500	6	
3906	70	41.2	115	60	40	5.1	■	9.0	3 150	-40...+80	60 000 / 22 500	6	



# AC Axial Fans

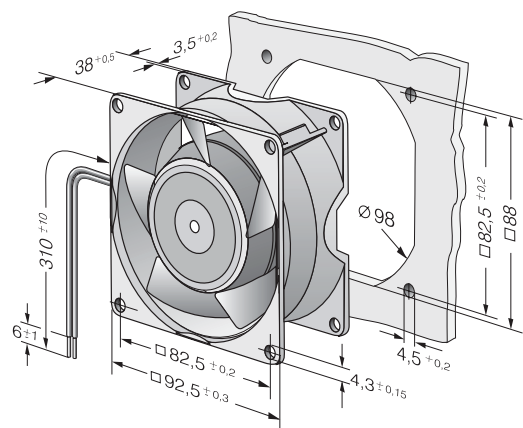
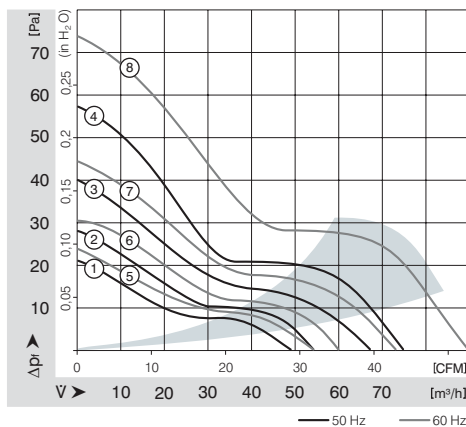
Series 3000 92 x 92 x 38 mm



- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Metal fan housing and impeller.
- Air exhaust over struts. Rotational direction CW looking at rotor.
- Electrical connection via 2 leads. Stripped and tinned ends.
- Fan housing with ground lug and screw M4 x 8 (TORX).
- Mass 420 g.

Nominal Data		Air Flow	Air Flow	Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>	at t <sub>max</sub>	Curve
Type		m <sup>3</sup> /h	CFM	V	Hz	dB(A)	Bel	Watt	min <sup>-1</sup>	°C	Hours	Hours	
3850		49	28.8	230	50	24	3.7	9.0	1 750	-10...+75	60 000 / 27 500		1
3856		54	31.8	230	50	26	3.9	9.0	1 950	-40...+90	60 000 / 20 000		2
3550		67	39.4	230	50	32	4.4	9.0	2 300	-10...+80	60 000 / 25 000		3
3556		67	39.4	230	50	33	4.5	9.0	2 400	-40...+90	60 000 / 20 000		3
3650		75	44.1	230	50	36	4.8	12.0	2 650	-10...+55	52 500 / 37 500		4
3656		75	44.1	230	50	37	4.9	12.0	2 700	-40...+75	52 500 / 22 500		4
3800		54	31.8	115	60	26	3.9	8.0	1 900	-10...+80	62 500 / 25 000		5
3806		60	35.3	115	60	29	4.2	8.0	2 150	-40...+95	62 500 / 17 500		6
3500		73	43.0	115	60	35	4.6	8.0	2 500	-10...+80	62 500 / 25 000		7
3506		73	43.0	115	60	36	4.7	8.0	2 600	-40...+95	62 500 / 17 500		7
3600		89	52.4	115	60	41	5.1	11.0	3 100	-10...+65	55 000 / 30 000		8
3606		89	52.4	115	60	42	5.2	11.0	3 200	-40...+75	55 000 / 25 000		8

Fan Type	Lead Wires	
With Sleeve bearings	310 mm long	AWG 18, TR 64
With Ball bearings	310 mm long	AWG 18





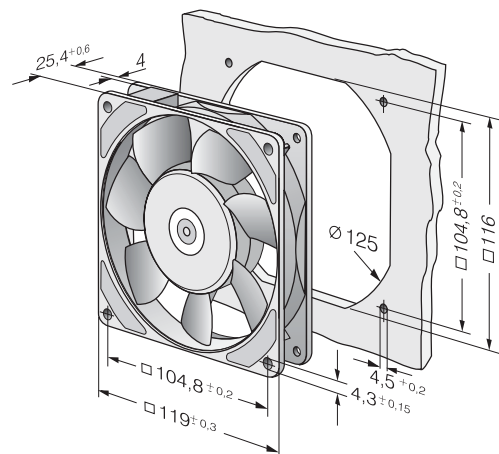
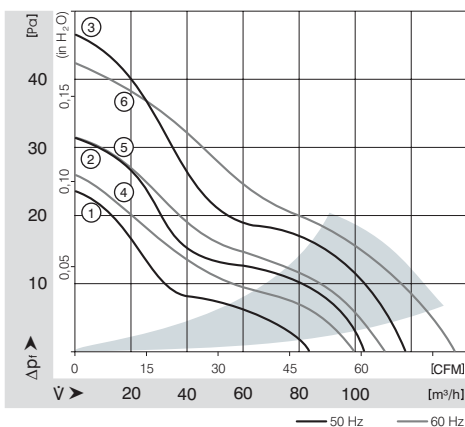
# AC Axial Fans

Series 9900 119 x 119 x 25 mm



- AC fans with external rotor shaded-pole motor. Protected against overloading by thermal cutout.
- Metal fan housing and impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via 2 flat pins 2.8 x 0.5 mm.
- Fan housing with ground lug and screw M4 x 8 (TORX).
- Mass 800 g.

Nominal Data	Air Flow		Nominal Voltage	Frequency	Noise		Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>		Curve
	m <sup>3</sup> /h	CFM			V	Hz					dB(A)	Bel	
Type	m <sup>3</sup> /h	CFM	V	Hz	dB(A)	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours	
9956 L	84	49.4	230	50	29	4.4	■	9.5	1850	-40...+80	57 500 / 22 500		1
9956 M	104	61.2	230	50	35	4.7	■	10.0	2250	-40...+80	57 500 / 22 500		2
9950	117	68.9	230	50	37	5.0	□	14.0	2450	-20...+70	47 500 / 22 500		3
9956	117	68.9	230	50	37	5.0	■	14.0	2450	-40...+70	47 500 / 22 500		3
9906 L	100	58.9	115	60	34	4.6	■	8.0	2100	-40...+80	62 500 / 25 000		4
9906 M	111	65.3	115	60	37	5.0	■	8.0	2450	-40...+80	62 500 / 25 000		5
9900	135	79.5	115	60	42	5.4	□	12.0	2850	-20...+70	52 500 / 25 000		6
9906	135	79.5	115	60	42	5.4	■	12.0	2850	-40...+70	52 500 / 25 000		6



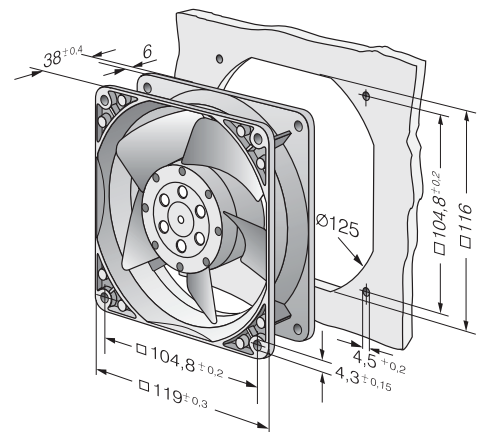
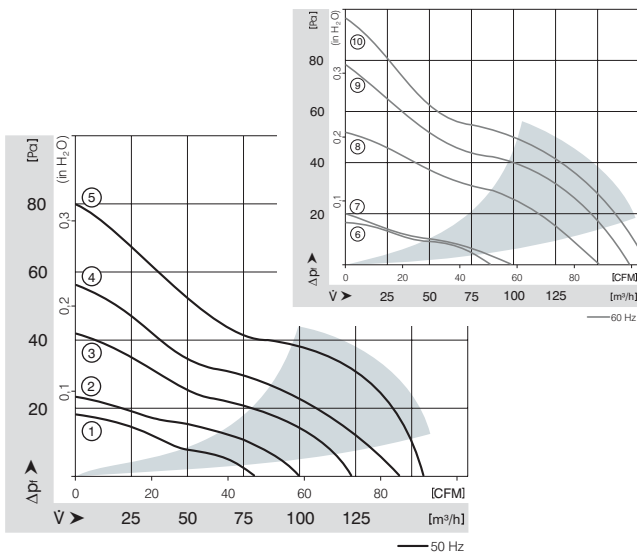
# AC Axial Fans

Series 4000 N 119 x 119 x 38 mm



- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Metal fan housing and impeller
- Air intake over struts. Rotational direction CW looking at rotor.  
Types 4890 N and 4840 N air exhaust over struts.
- Electrical connection via 2 flat pins 3.0 x 0.5 mm.
- Also available: Models with mounting bosses and single leads.
- Fan housing with ground lug for screw M 4 and UNC.
- Mass 550 g.

Nominal Data		Air Flow	Air Flow	Nominal Voltage	Frequency	Noise		Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C	at t <sub>max</sub>	Curve
Type		m <sup>3</sup> /h	CFM	V	Hz	dB(A)	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours	
4890 N		80	47.1	230	50	25	4.0	□	11.0	1 550	-10...+70	55 000 / 27 500		1
4850 N		100	58.9	230	50	32	4.4	□	10.0	1 800	-10...+70	57 500 / 27 500		2
4580 N		123	72.4	230	50	41	5.2	□	18.0	2 350	-10...+55	40 000 / 27 500		3
4550 N		145	85.3	230	50	44	5.4	□	16.5	2 550	-10...+55	42 500 / 30 000		4
4650 N		160	94.2	230	50	46	5.4	□	19.0	2 650	-10...+55	37 500 / 27 500		5
4656 N		160	94.2	230	50	47	5.5	■	19.0	2 650	-40...+85	37 500 / 15 000		5
4840 N		85	50.0	115	60	26	4.1	□	10.0	1 650	-10...+75	57 500 / 25 000		6
4800 N		97	57.1	115	60	32	4.3	□	9.0	1 750	-10...+75	60 000 / 27 500		7
4530 N		151	88.9	115	60	45	5.4	□	16.0	2 700	-10...+65	42 500 / 25 000		8
4500 N		169	99.5	115	60	48	5.7	□	15.0	3 000	-10...+65	47 500 / 25 000		9
4600 N		180	105.9	115	60	50	5.7	□	18.0	3 100	-10...+60	40 000 / 25 000		10
4606 N		180	105.9	115	60	51	5.8	■	18.0	3 100	-40...+90	40 000 / 15 000		10



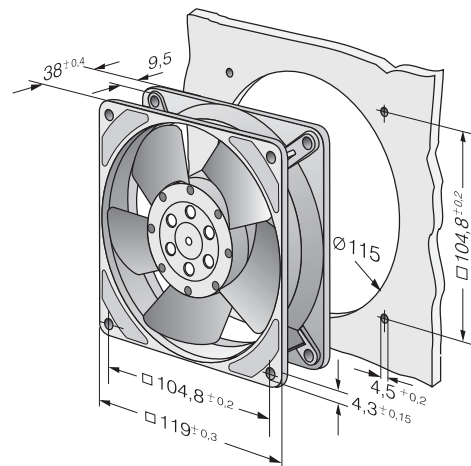
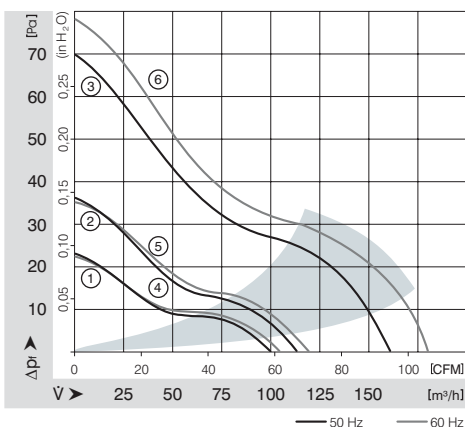
# AC Axial Fans

Series 4000 Z 119 x 119 x 38 mm



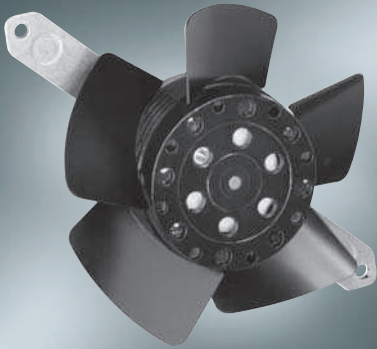
- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Metal fan housing and impeller.
- Air exhaust over struts. Rotational direction CW looking at rotor.
- Electrical connection via 2 flat pins 2.8 x 0.5 mm.
- Also available: Models with mounting bosses and single leads.
- Fan housing with ground lug and screw M4 x 8 (TORX).
- Mass 540 g.

Nominal Data	Air Flow		Nominal Voltage	Frequency	Noise		Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C		Curve
	m <sup>3</sup> /h	CFM			V	Hz					dB(A)	Bel	
4850 Z	100	58.9	230	50	26	4.0	□	13.0	1 700	-10...+65	50 000 / 27 500		1
4856 Z	100	58.9	230	50	26	4.0	■	13.0	1 700	-40...+75	50 000 / 20 000		1
4580 Z	115	67.7	230	50	30	4.3	□	13.0	1 900	-10...+65	50 000 / 27 500		2
4586 Z	115	67.7	230	50	30	4.3	■	13.0	1 900	-40...+75	50 000 / 20 000		2
4650 Z	160	94.2	230	50	40	5.3	□	19.0	2 650	-10...+50	37 500 / 30 000		3
4656 Z	160	94.2	230	50	40	5.3	■	19.0	2 650	-40...+75	37 500 / 17 500		3
4800 Z	105	61.6	115	60	28	4.1	□	12.0	1 800	-10...+70	52 500 / 25 000		4
4806 Z	105	61.6	115	60	28	4.1	■	12.0	1 800	-40...+75	52 500 / 17 500		4
4530 Z	120	70.6	115	60	32	4.4	□	12.0	2 000	-10...+70	52 500 / 25 000		5
4536 Z	120	70.6	115	60	32	4.4	■	12.0	2 000	-40...+75	52 500 / 17 500		5
4600 Z	180	105.9	115	60	45	5.6	□	18.0	3 100	-10...+60	40 000 / 25 000		6
4606 Z	180	105.9	115	60	45	5.6	■	18.0	3 100	-40...+85	40 000 / 15 000		6



# AC Axial Fans

Series 4600 TA 113 Ø x 37 mm

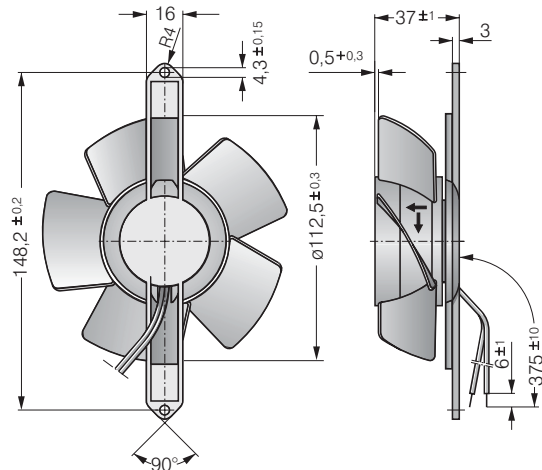


- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Impeller and mounting bracket of metal.
- Air intake over mounting bracket. Rotational direction CW looking at rotor.
- Electrical connection via 2 leads. Stripped and tinned ends.
- Mass 430 g.

Nominal Data	Air Flow		Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C		Curve
	m <sup>3</sup> /h	CFM								V	Hz	
4650 TA	138	81.2	230	50	41	□	19.0	2 550	-10...+45	37 500 / 32 500	-	
4656 TA	138	81.2	230	50	42	■	19.0	2 550	-40...+75	37 500 / 17 500	-	
4600 TA	147	86.5	115	60	43	□	18.0	2 900	-10...+50	40 000 / 32 500	-	
4606 TA	147	86.5	115	60	44	■	18.0	2 900	-40...+80	40 000 / 17 500	-	

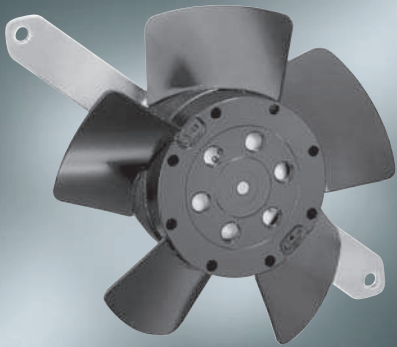
The air flow and noise level of fans without external housing depends on the installation conditions. The stated air flow and noise has been measured with an orifice 109 mm Ø at a distance of approx. 17 mm from the mounting bracket. Under exceptionally favourable mounting conditions, the air flow of fan series 4600 N is achievable. The noise in the optimal operating range can only be measured for these fans in a specific application.

Fan Type	Lead Wires
4650 TA	4600 TA
4656 TA	4606 TA
	AWG 22, TR 32
	AWG 18



# AC Axial Fans

Series 4600 TZ 108 Ø x 37 mm

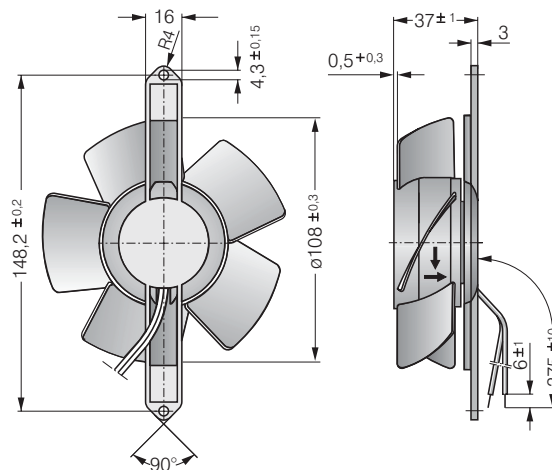


- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Impeller and mounting bracket of metal.
- Air exhaust over struts. Rotational direction CW looking at rotor.
- Electrical connection via 2 leads. Stripped and tinned ends.
- Mass 430 g.

Nominal Data	Air Flow		Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C		Curve
	m <sup>3</sup> /h	CFM								V	Hz	
4650 TZ	125	73.6	<b>230</b>	<b>50</b>	42	□	19.0	2 600	-10...+50	37 500 / 37 500		-
4656 TZ	125	73.6	<b>230</b>	<b>50</b>	42	■	19.0	2 600	-40...+65	37 500 / 20 000		-
4600 TZ	140	82.4	<b>115</b>	<b>60</b>	45	□	18.0	2 950	-10...+50	40 000 / 32 500		-
4606 TZ	140	82.4	<b>115</b>	<b>60</b>	45	■	18.0	2 950	-40...+75	40 000 / 17 500		-

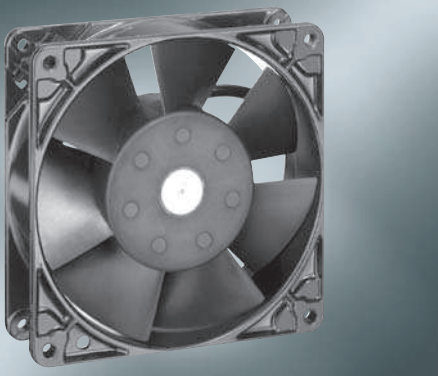
The air flow and noise level of fans without external housing depends on the installation conditions. The stated air flow and noise has been measured with an orifice 109 mm Ø at a distance of approx. 17 mm from the mounting bracket. Under exceptionally favourable mounting conditions, the air flow of fan series 4000 Z is achievable. The noise in the optimal operating range can only be measured for these fans in a specific application.

Fan Type	Lead Wires
4650 TZ	4600 TZ AWG 22, TR 32
4656 TZ	4606 TZ AWG 18



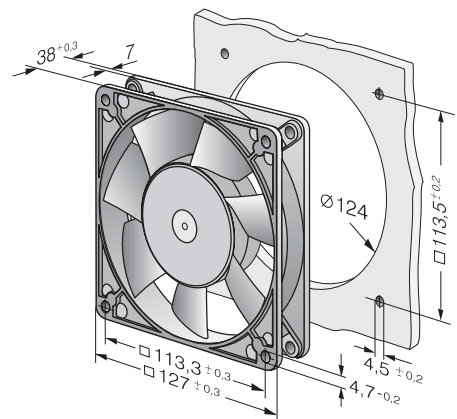
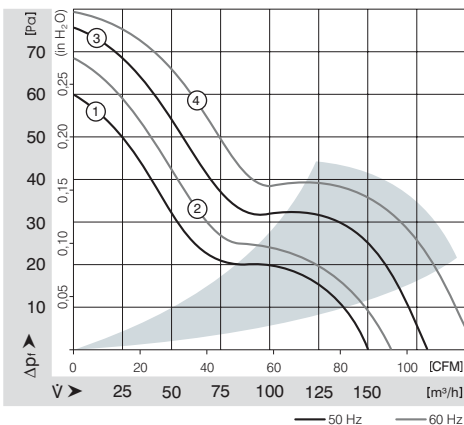
# AC Axial Fans

Series 5900 127 x 127 x 38 mm



- AC fans with internal rotor shaded-pole motor. Impedance protected against overloading.
- Metal fan housing and impeller of fibreglass reinforced plastic.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via 2 flat pins 2.8 x 0.8 mm.
- Fan housing with ground lug and screw M4 x 6.
- Mass 570 g.

Nominal Data		Air Flow	Air Flow	Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>	Curve
Type	m <sup>3</sup> /h	CFM	V	Hz	dB(A)	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours
5988	150	88.3	230	50	37	4.9	■	13.0	2 250	-30...+55	35 000 / 20 000	1
5950	180	105.9	230	50	43	5.4	□	18.0	2 700	-20...+50	40 000 / 32 500	3
5958	180	105.9	230	50	44	5.5	■	18.0	2 750	-30...+60	40 000 / 25 000	3
5938	162	95.3	115	60	40	4.9	■	12.0	2 500	-30...+55	35 000 / 20 000	2
5900	206	121.2	115	60	46	5.7	□	17.0	3 050	-20...+55	42 500 / 30 000	4
5908	206	121.2	115	60	47	5.8	■	17.0	3 100	-30...+75	42 500 / 20 000	4





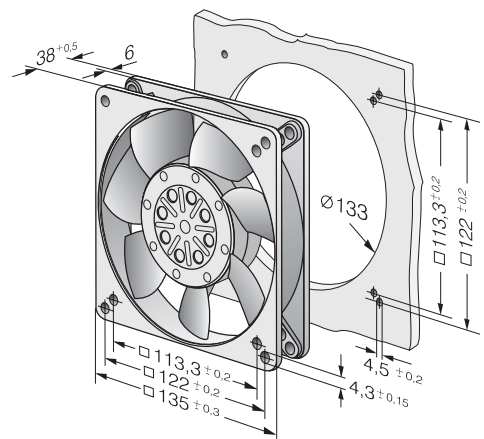
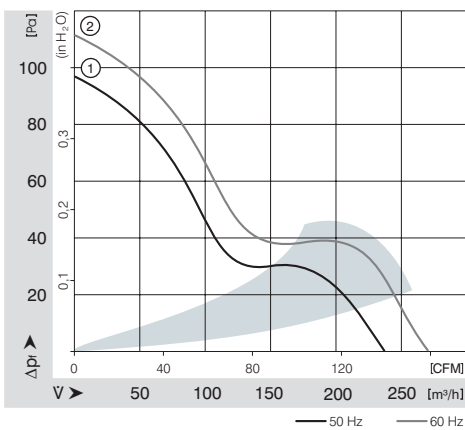
# AC Axial Fans

Series 5600 135 x 135 x 38 mm



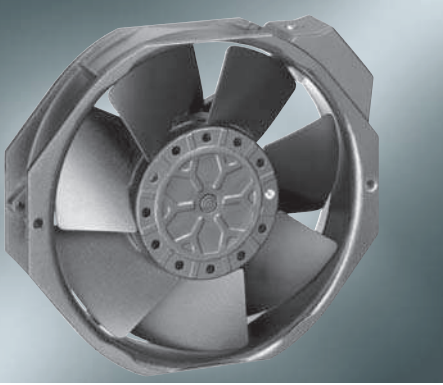
- AC fans with external rotor shaded-pole motor. Protected against overloading by thermal cutout.
- Metal fan housing and impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via 2 flat pins 2.8 x 0.5 mm.
- Fan housing with ground lug and screw M4 x 8 (TORX).
- Mass 800 g.

Nominal Data	Air Flow		Nominal Voltage	Frequency	Noise		Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C		Curve
	m <sup>3</sup> /h	CFM			V	Hz					dB(A)	Bel	
5656 S	235	138.3	<b>230</b>	<b>50</b>	46	5.9	■	30.0	2 700	-35...+70	45 000 / 20 000		1
5606 S	270	158.9	<b>115</b>	<b>60</b>	50	6.2	■	26.0	3 100	-35...+80	47 500 / 20 000		2



# AC Axial Fans

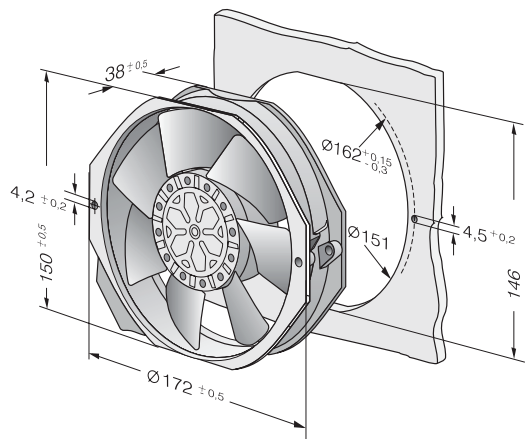
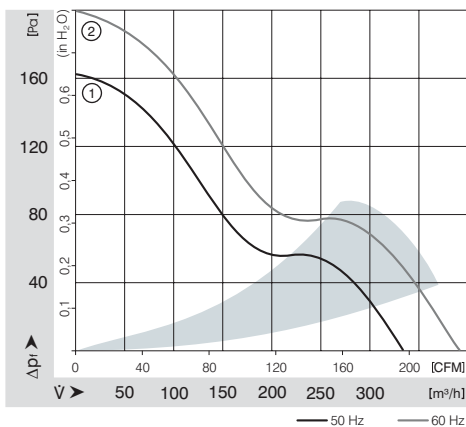
Series 7000 150 x 172 x 38 mm



- AC fans with external rotor capacitor motor. Protected against overloading by integrated thermal cutout.
- Metal fan housing and impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via 2 flat pins 2.8 x 0.5 mm.
- Fan housing with ground lug and screw M4 x 6.
- Mass 900 g.

Nominal Data		Air Flow	Air Flow	Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>	Curve
Type		m <sup>3</sup> /h	CFM	V	Hz	dB(A)	Bel	Watt	min <sup>-1</sup>	°C	Hours	Hours
7056 ES		330	194.2	230	50	52	6.4	29.0	2 800	-30...+65	60 000 / 32 000	1
7006 ES		390	229.5	115	60	57	6.8	24.0	3 300	-30...+80	55 000 / 18 000	2

Minimum ambient temperature -15 °C, admissible for a short time at -30 °C; without reaching dew point.



# AC Axial Fans

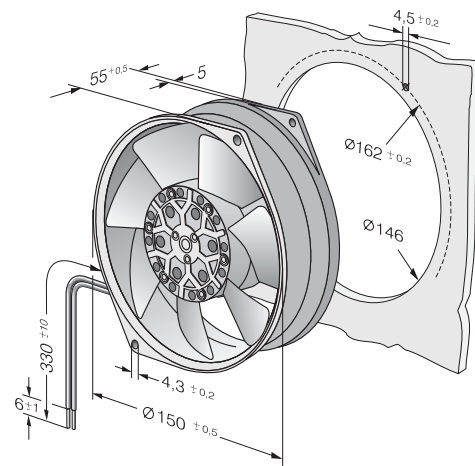
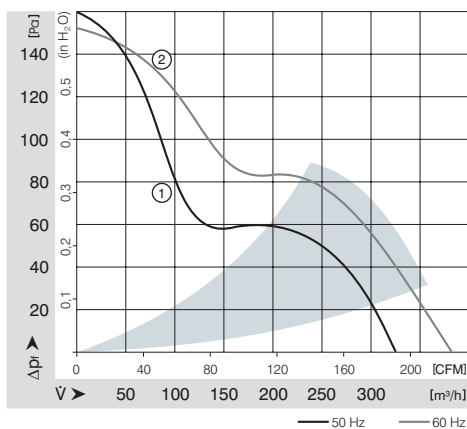
Series 7800 150 Ø x 55 mm



- AC fans with external rotor shaded-pole motor. Protected against overloading by integrated thermal cutout.
- Metal fan housing and impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via 2 leads. Stripped and tinned ends.
- Fan housing with ground lug and screw M4 x 6.
- Mass 1000 g.

Nominal Data	Air Flow		Nominal Voltage	Frequency	Noise		Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>		Curve
	m <sup>3</sup> /h	CFM			V	Hz					dB(A)	Bel	
7855 ES	325	191.3	230	50	48	6.0	■	45.0	2 800	-30...+50	40 000 / 21 000		1
7856 ES	325	191.3	230	50	48	6.0	■	45.0	2 800	-30...+70	40 000 / 12 000		1
7805 ES	380	223.7	115	60	52	6.4	■	38.0	3 250	-30...+75	40 000 / 19 000		2
7806 ES	380	223.7	115	60	52	6.4	■	38.0	3 250	-30...+90	40 000 / 12 500		2

Minimum ambient temperature -15 °C, admissible for a short time at -30 °C; without reaching dew point.



# AC Axial Fans

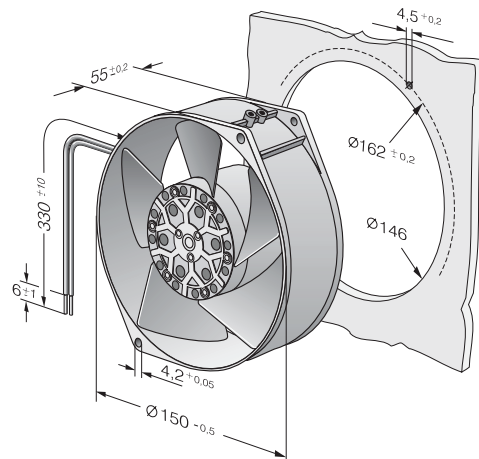
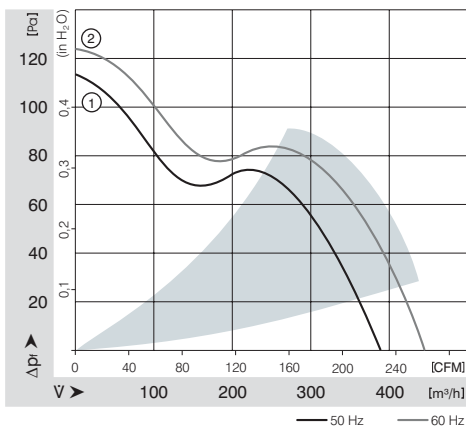
Series 7400 150 Ø x 55 mm



- AC fans with external rotor shaded-pole motor. Protected against overloading by integrated thermal cutout.
- Metal fan housing and impeller.
- Air intake over struts. Rotational direction CCW looking at rotor.
- Electrical connection via 2 leads. Stripped and tinned ends.
- Fan housing with ground lug and screw M4 x 6.
- Mass 1000 g.

Nominal Data		Air Flow	Air Flow	Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>	Curve
Type		m <sup>3</sup> /h	CFM	V	Hz	dB(A)	Bel	Watt	min <sup>-1</sup>	°C	Hours	Hours
7450 ES		390	229.5	230	50	58	6.8	47.0	2 700	-30...+60	40 000 / 18 000	1
7400 ES		445	261.9	115	60	60	6.9	46.0	3 050	-30...+80	38 000 / 15 000	2

Minimum ambient temperature -15 °C, admissible for a short time at -30 °C; without reaching dew point.



# AC Axial Fans

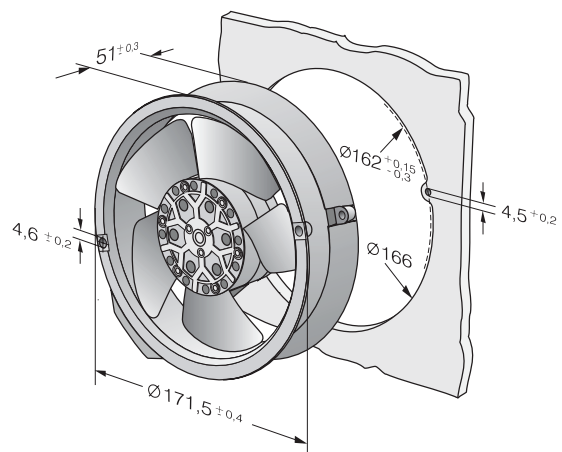
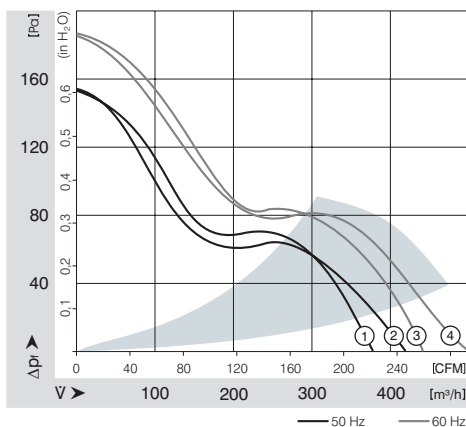
Series 6000 172 Ø x 51 mm



- AC fans with external rotor capacitor motor. Protected against overloading by integrated thermal cutout.
- Metal fan housing and impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via 2 flat pins 2.8 x 0.5 mm.
- Fan housing with ground lug and screw M4 x 6.
- Mass 1000 g.

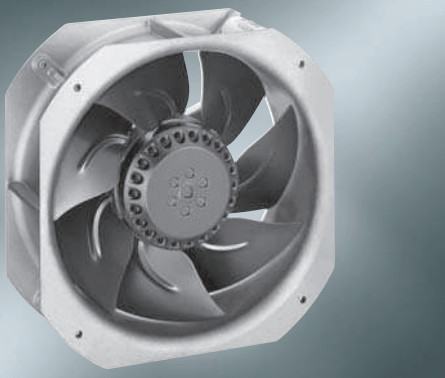
Nominal Data	Air Flow		Nominal Voltage	Frequency	Noise		Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>		Curve
	m <sup>3</sup> /h	CFM			V	Hz					dB(A)	Bel	
6058 ES	375	220.7	230	50	54	5.9	■	24.0	2 800	-30...+70	48 000 / 32 000		1
6078 ES	420	247.2	230	50	54	6.3	■	26.0	2 800	-30...+75	37 500 / 20 000		2
6008 ES	440	259.0	115	60	58	6.4	■	26.0	3 300	-30...+70	42 000 / 28 000		3
6028 ES	500	284.3	115	60	58	6.7	■	29.0	3 300	-30...+75	40 000 / 20 000		4

Minimum ambient temperature -15 °C, admissible for a short time at -30 °C; without reaching dew point.



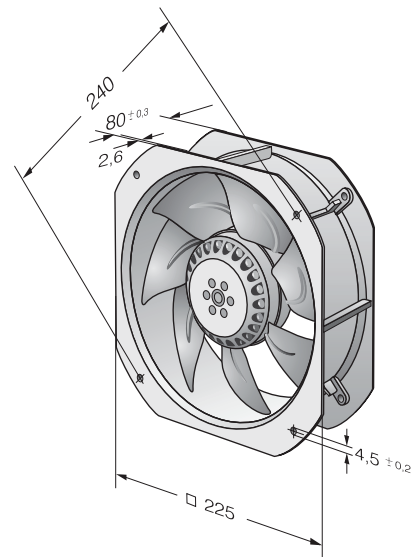
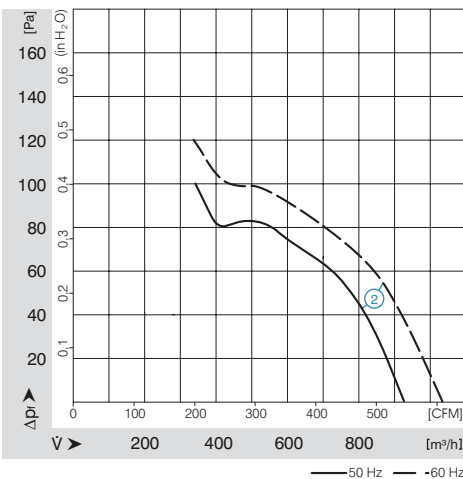
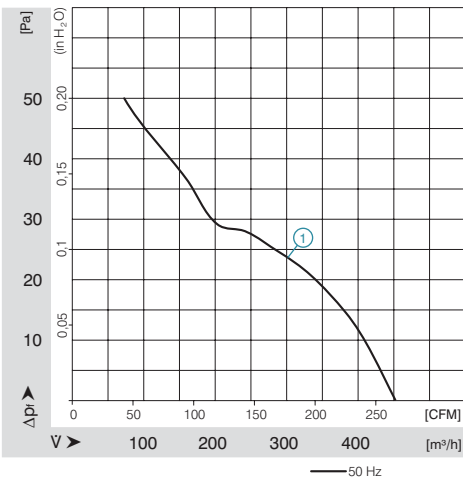
# AC Axial Fans

W\*\* 200 Ø 225 x 225 x 80 mm



- External-single-phase motor.\*
- External-current motor.\*\*
- Integrated thermal monitor.
- Fan housing of die-cast aluminium.
- Impeller of sheet steel, welded onto rotor.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Connection leads
- W2E 200: wired with capacitor on terminal strip.
- W4S 200: terminal strip.
- Mass 2000 g.

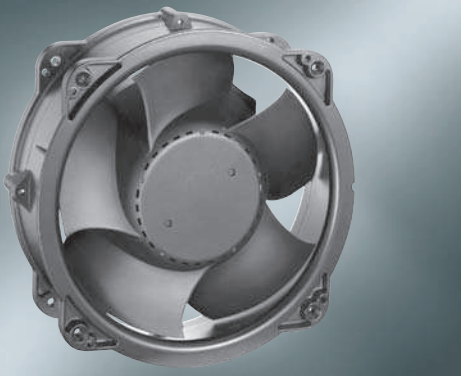
Nominal Data		Air Flow	Air Flow	Nominal Voltage	Frequency	Noise		Sinter-Sleeve Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>	at t <sub>max</sub>	Curve
Type		m <sup>3</sup> /h	CFM	V DC	Hz	dB(A)	Bel	□ / ■	Watt	min <sup>-1</sup>	°C	Hours	Hours	
W2E200-HK86-01*		1030	606.2	115	60	61	4.1	■	80.0	2800	-25...+65	60 000 / 58 000		2
W2E200-HK38-01*		925	544.4	230	50	59	4.6	■	64.0	2550	-25...+60	63 000 / 60 000		2
W4S200-HK04-01**		450	264.9	230	50	40	5.0	■	30.0	1370	-25...+70	85 000 / 80 000		1





# AC Diagonal Fans

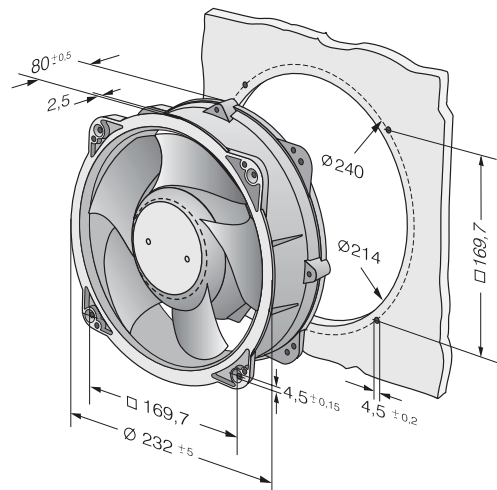
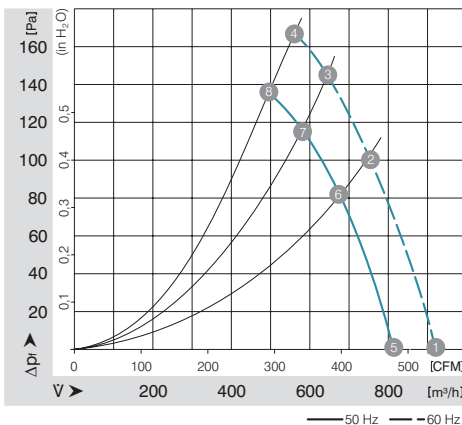
W2\*208 Ø 232 x 80 mm



- External-single-phase motor.\*
- External-current motor.\*\*
- Fan housing of die-cast aluminium GDAISi.
- Impeller of plastic PA 6.6.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Connection leads with terminal strip (cable exit possible via terminal strip).
- Only W2E 208-BA: integrated operating capacitor.
- Mass 2800 g.
- Insulation class „F“.

Nominal Data	Air Flow		Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>		Curve
	m <sup>3</sup> /h	CFM								at 40 °C	at t <sub>max</sub>	
Type	m <sup>3</sup> /h	CFM	V	Hz	dB(A)	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours	
W2E 208-BA86-01*	925	544.4	115	60	70	■	87.0	3100	-25...+72	57 000 / 54 000		1
W2E 208-BA20-01*	815	479.7	230	50	68	■	67.0	2750	-25...+72	61 000 / 58 000		1
W2D 208-BA02-01**	820	482.6	400 Y	50	67	■	60.0	2740	-25...+70	61 000 / 58 000		1
	920	541.5		60	70		80.0	3090				

Type	[Hz]	n [min <sup>-1</sup> ]	P <sub>1</sub> [W]	L <sub>DA</sub> [dBA]
W2D 208-BA	50	① 3090	80	70
		② 2990	93	69
		③ 2960	96	69
	60	④ 2990	92	70
		⑤ 2740	60	67
		⑥ 2690	69	67
		⑦ 2670	70	66
⑧ 2690	67	68		
W2E 208-BA	50	① 3100	87	70
		② 2990	100	70
		③ 2960	102	69
	60	④ 3020	97	70
		⑤ 2750	67	68
		⑥ 2690	74	67
		⑦ 2680	75	66
⑧ 2700	72	68		



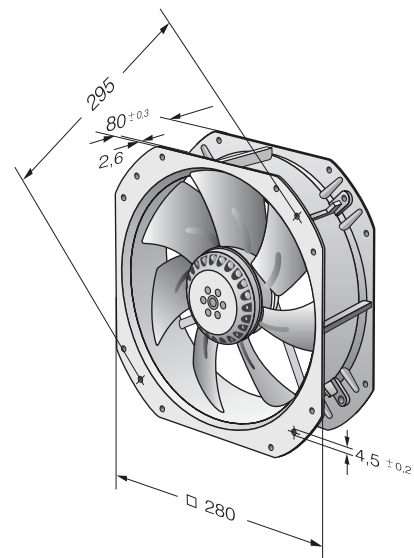
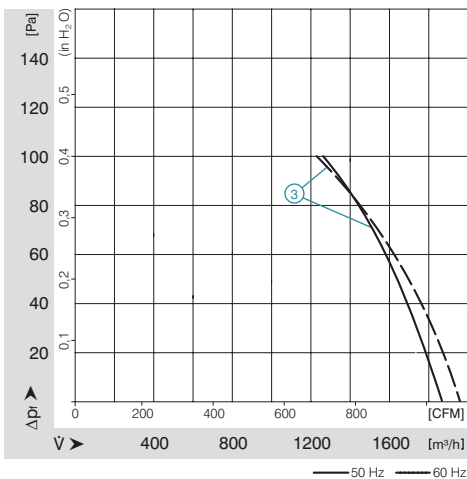
# AC Axial Fans

W2E 250 280 x 280 x 80 mm



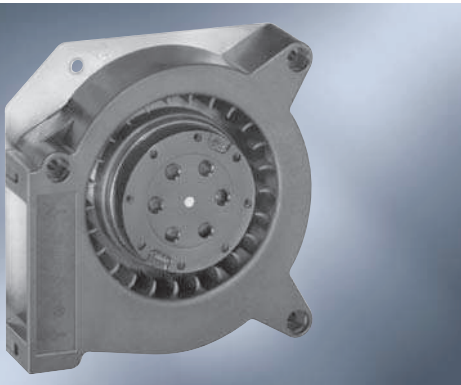
- External single-phase motor.
- Fan housing of die-cast aluminium.
- Impeller of sheet steel, welded onto rotor.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Connection leads with terminal strip, wired with capacitor on terminal strip.
- Integrated thermal monitor.
- Mass 2000 g.
- Class F insulated.

Nominal Data		Air Flow	Air Flow	Nominal Voltage	Frequency	Noise		Sinter-Sleeve Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>		Curve
Type	m <sup>3</sup> /h	CFM	V DC	Hz	dB(A)	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours		
W2E 250-HL06-01	1865	1077.1	230	50	69	4.1	■	127.0	2 550	-15...+60	63 000 / 70 000		3	



# AC Radial Fans

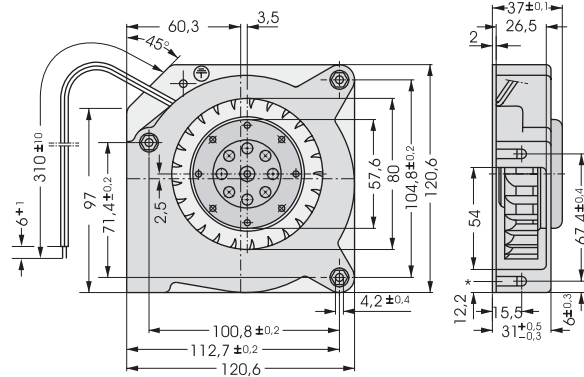
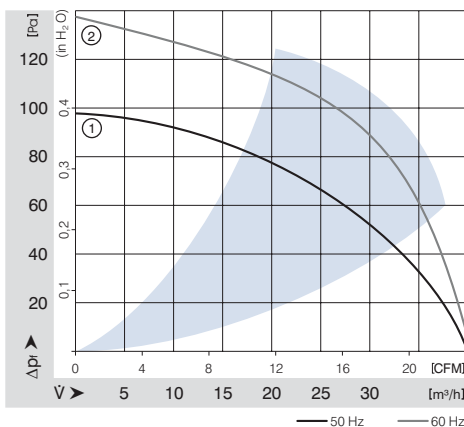
Series RL 90 121 x 121 x 37 mm



- AC radial blower with external rotor shaded-pole motor. Impedance protected against overloading.
- Spiral housing and blower wheel of fibreglass-reinforced plastic. Housing base of galvanised steel plate.
- Air exhaust radial, through housing port. Rotational direction CW looking at rotor.
- Electrical connection via 2 leads. Stripped and tinned ends.
- Mass 680 g.

Nominal Data	Air Flow		Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>		Curve
	m <sup>3</sup> /h	CFM								at 40 °C	at t <sub>max</sub>	
Type	m <sup>3</sup> /h	CFM	V	Hz	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours	
RL 90-18/50	40	23.5	230	50	5.6	□	20.0	2 450	-10...+50	37 500 / 30 000		1
RL 90-18/56	40	23.5	230	50	5.6	■	20.0	2 450	-30...+70	37 500 / 20 000		1
RL 90-18/00	42	24.7	115	60	6.0	□	19.5	2 550	-10...+60	37 500 / 25 000		2
RL 90-18/06	42	24.7	115	60	6.0	■	19.5	2 550	-30...+85	37 500 / 15 000		2

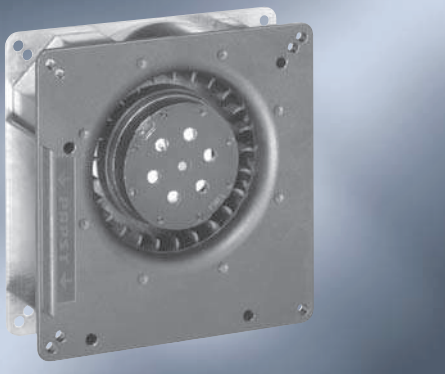
Fan Type		Lead Wires
RL 90-18/50	RL 90-18/00	AWG 18, TR 32
RL 90-18/56	RL 90-18/06	AWG 22



\*Speed nut M4 or 8-32UNC. Screw-in depth max. 12.5 min 9.0

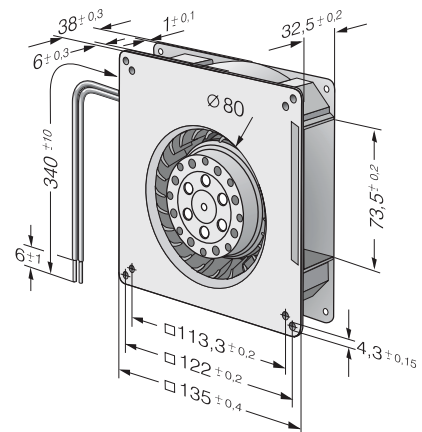
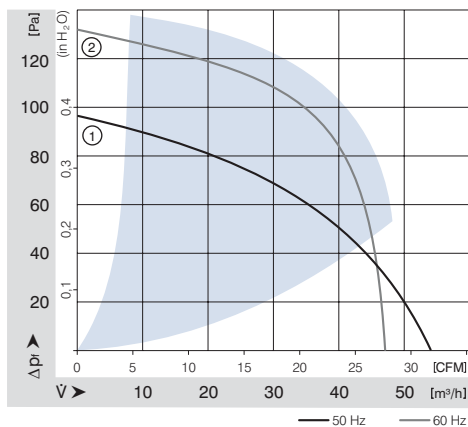
# AC Radial Fans

Series RG 90 135 x 135 x 38 mm



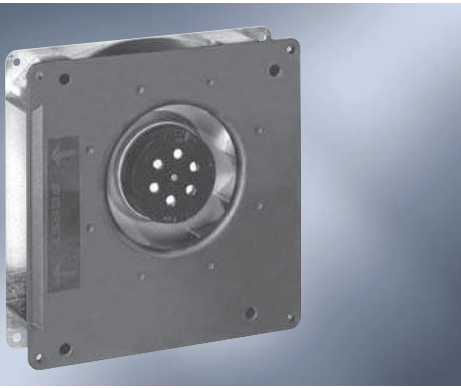
- AC radial blower with external rotor shaded-pole motor. Impedance protected against overloading.
- Spiral housing and blower wheel of fibreglass-reinforced plastic. Housing base of galvanised steel plate.
- Air exhaust radial, through housing port. Rotational direction CW looking at rotor.
- Electrical connection via 2 leads AWG 22. Stripped and tinned ends.
- Mass 560 g.

Nominal Data		Air Flow	Air Flow	Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C	at t <sub>max</sub>	Curve
Type		m <sup>3</sup> /h	CFM	V	Hz	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours	
RG 90-18/50		54	31.8	230	50	5.8	□	22.0	2 200	-30...+60	35 000 / 20 000		1
RG 90-18/56		54	31.8	230	50	5.8	■	22.0	2 200	-30...+60	35 000 / 20 000		1
RG 90-18/00		47	27.7	115	60	6.2	□	22.0	1 900	-30...+65	35 000 / 20 000		2
RG 90-18/06		47	27.7	115	60	6.2	■	22.0	1 900	-30...+65	35 000 / 20 000		2



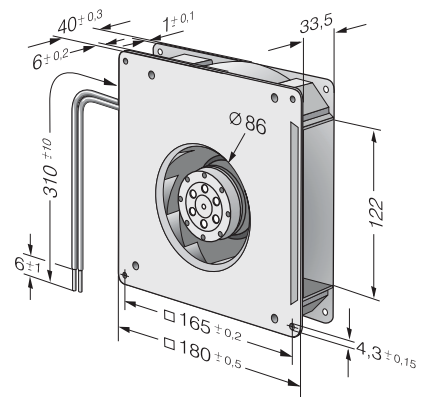
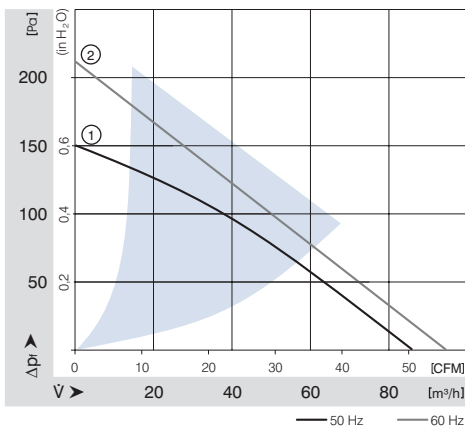
# AC Radial Fans

Series RG 125 180 x 180 x 40 mm



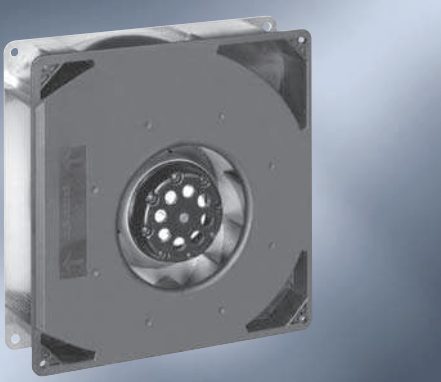
- AC radial blower with external rotor shaded-pole motor. Impedance protected against overloading.
- Spiral housing and blower wheel of fibreglass-reinforced plastic. Housing base of galvanised steel plate.
- Air exhaust radial, through housing port. Rotational direction CW looking at rotor.
- Electrical connection via 2 leads AWG 22. Stripped and tinned ends.
- Mass 850 g.

Nominal Data		Air Flow	Air Flow	Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C	at t <sub>max</sub>	Curve
Type		m <sup>3</sup> /h	CFM	V	Hz	Bel	□ / ■	Watt	min <sup>-1</sup>	°C	Hours	Hours	
RG 125-19/56		86	50.6	230	50	5.8	■	20.0	2 550	-30...+70	37 500 / 20 000		1
RG 125-19/06		94	55.3	115	60	6.0	■	19.0	2 750	-30...+80	40 000 / 15 000		2



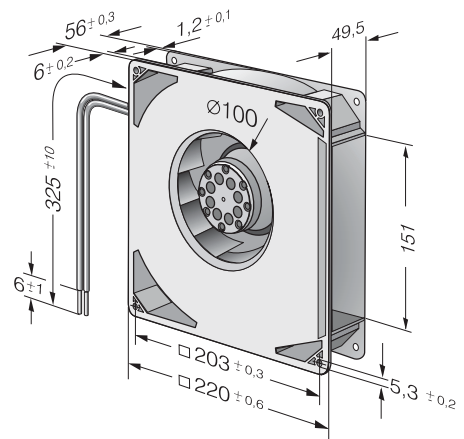
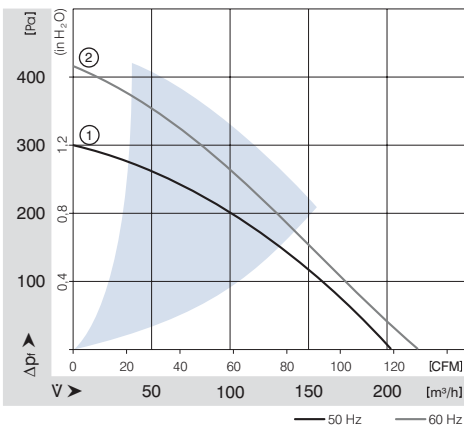
# AC Radial Fans

Series RG 160 220 x 220 x 56 mm



- AC radial blower with external rotor shaded-pole motor. Thermal contactor as protection against thermal overloading.
- Spiral housing and blower wheel of fibreglass-reinforced plastic. Housing base of galvanised steel plate.
- Air exhaust radial, through housing port. Rotational direction CCW looking at rotor.
- Electrical connection via leads AWG 18. Stripped and tinned ends.
- Mass 1.7 kg.

Nominal Data		Air Flow	Air Flow	Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C	at t <sub>max</sub>	Curve
Type		m <sup>3</sup> /h	CFM	V	Hz	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours	
RG 160-28/56S		202	118.9	<b>230</b>	<b>50</b>	6.6	■	47.0	2 750	-30...+70	30 000 / 15 000		1
RG 160-28/06S		223	131.3	<b>115</b>	<b>60</b>	6.9	■	50.0	3 050	-30...+80	27 500 / 12 500		2





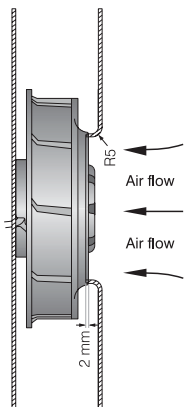
# AC Radial Fans

Series RER 125 138 Ø x 40 mm

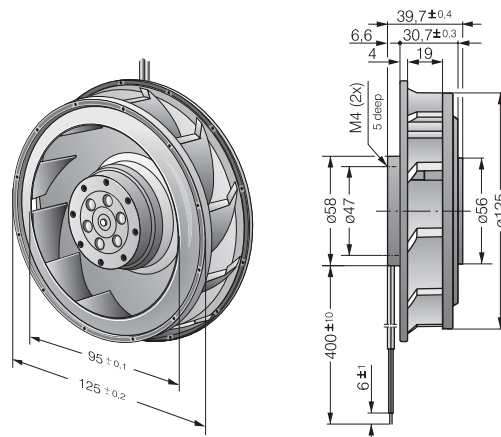
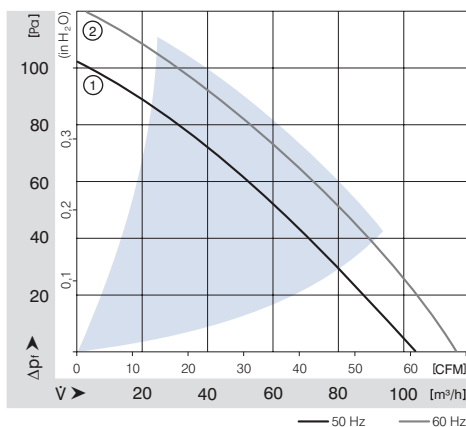


- AC radial blower with external rotor shaded-pole motor. Impedance protected against overloading.
- Blower wheel of fibreglass-reinforced plastic, with steel plate reinforced.
- Air exhaust radial. Rotational direction CW looking at rotor.
- Electrical connection via leads AWG 22. Stripped and tinned ends.
- Mass 500 g.

Nominal Data	Air Flow		Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub>		Curve
	m <sup>3</sup> /h	CFM								at 40 °C	at t <sub>max</sub>	
Type	m <sup>3</sup> /h	CFM	V	Hz	Bel	□/■	Watt	min <sup>-1</sup>	°C	Hours	Hours	
RER 125-19/56	104	61.2	230	50	6.2	■	19.0	2 600	-30...+60	37 500 / 22 500		1
RER 125-19/06	115	67.7	115	60	6.5	■	18.0	2 850	-30...+70	40 000 / 20 000		2



The air flow and noise level of fans without external housing depend on the installation conditions. The stated air flow and noise levels have been measured under the following conditions:  
Centrifugal fan mounted on a base plate 220 x 220 mm. Cover plate 220 x 220 mm with an air-inlet of Ø 86 mm, concentric to the blower wheel.



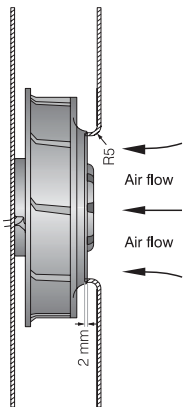
# AC Radial Fans

Series RER 160 176 Ø x 54 mm

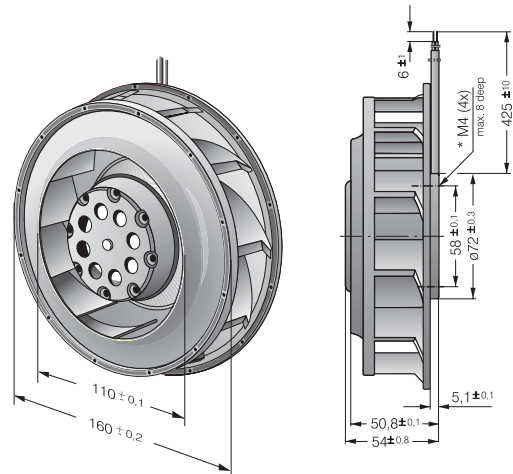
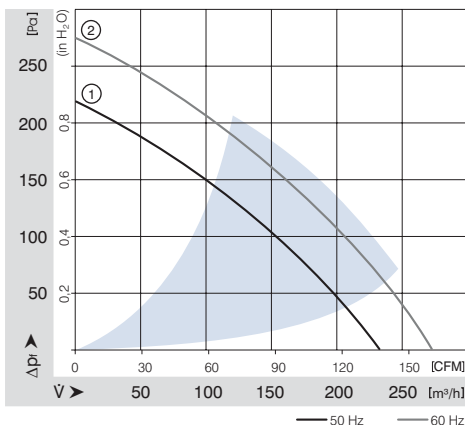


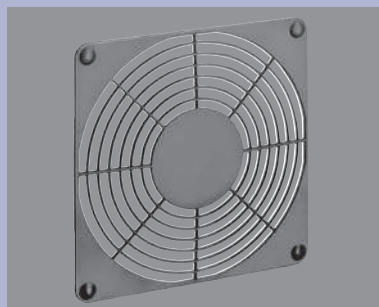
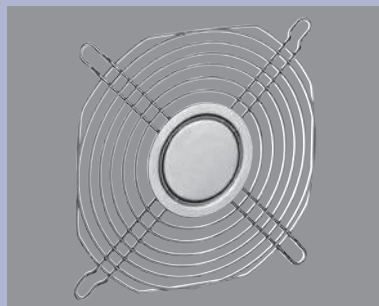
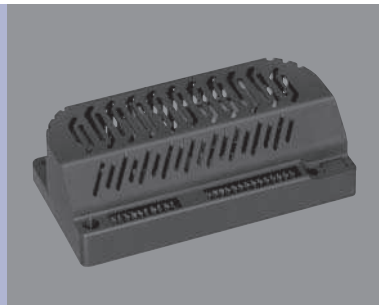
- AC radial blower with external rotor shaded-pole motor. Impedance protected against overloading.
- Blower wheel of fibreglass-reinforced plastic, with steel plate reinforced.
- Air exhaust radial. Rotational direction CCW looking at rotor.
- Electrical connection via leads AWG 18. Stripped and tinned ends.
- Mass 1000 g.

Nominal Data	Air Flow		Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L <sub>10</sub> at 40 °C		Curve
	m <sup>3</sup> /h	CFM								V	Hz	
RER 160-28/56S	234	137.7	230	50	6.6	■	45.0	2 800	-30...+60	30 000 / 20 000		1
RER 160-28/06S	274	161.3	115	60	6.8	■	46.0	3 250	-30...+70	30 000 / 15 000		2

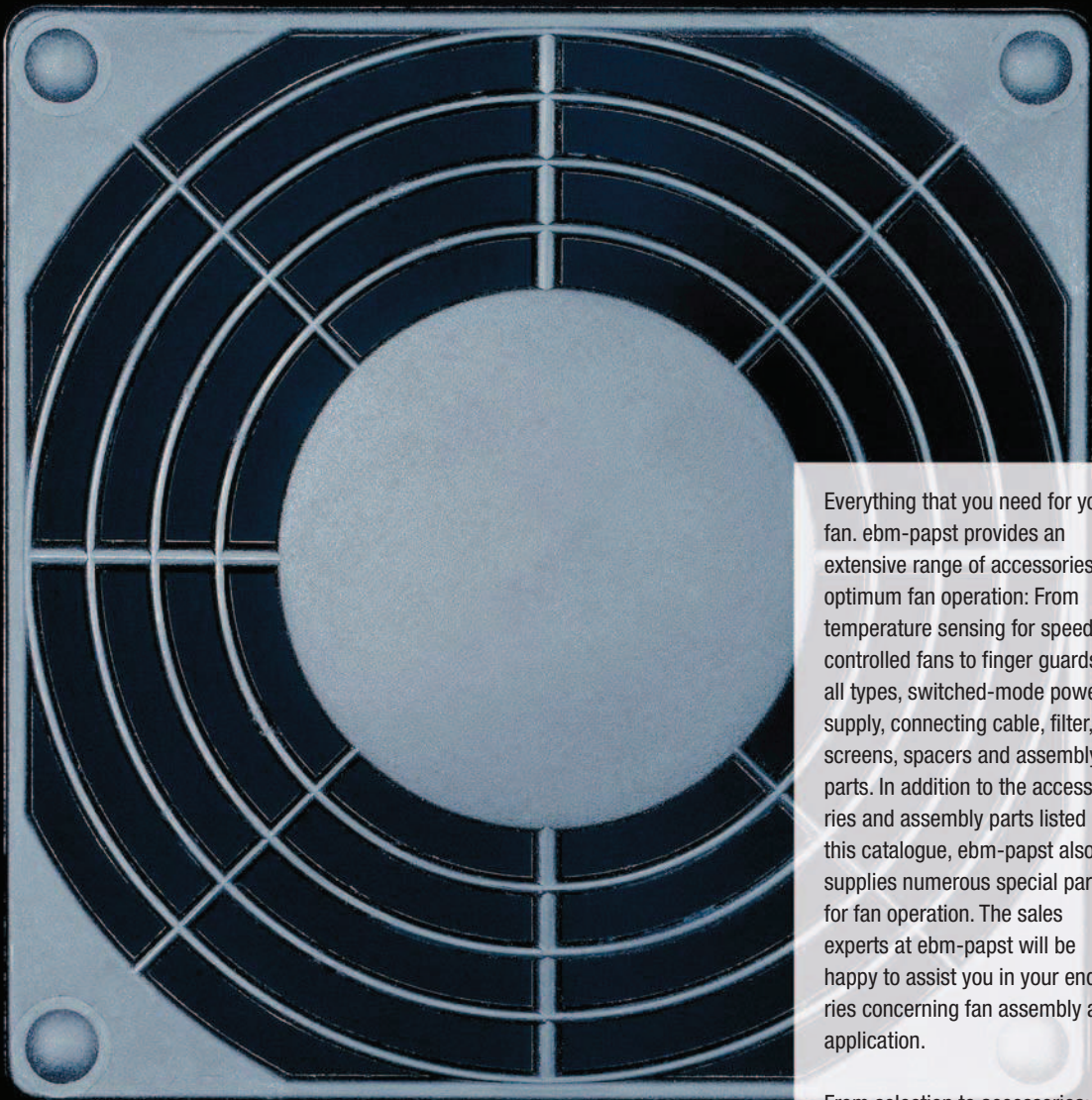


The air flow and noise level of fans without external housing depend on the installation conditions. The stated air flow and noise levels have been measured under the following conditions:  
Centrifugal fan mounted on a base plate 260 x 260 mm. Cover plate 260 x 260 mm with an air-inlet of Ø 100 mm, concentric to the blower wheel.





Finger Guards	134
Filter Guards grille	139
Accessories	140



Everything that you need for your fan. ebm-papst provides an extensive range of accessories for optimum fan operation: From temperature sensing for speed-controlled fans to finger guards of all types, switched-mode power supply, connecting cable, filter, screens, spacers and assembly parts. In addition to the accessories and assembly parts listed in this catalogue, ebm-papst also supplies numerous special parts for fan operation. The sales experts at ebm-papst will be happy to assist you in your enquiries concerning fan assembly and application.

From selection to accessories: Insist on the efficient and reliable service provided by ebm-papst.

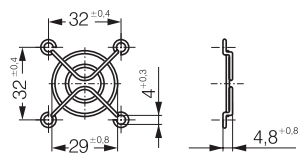
# Finger Guards



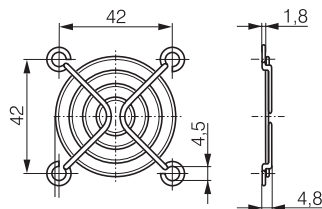
- Finger guards as per EN 294, of rust-proof steel wire for equipment fans.
- Further finger guards that do not conform to EN 294 can be supplied on request.

Fan series	Finger Guards
400	LZ29-1
500	LZ31
600	LZ28-1
3000	LZ23-1
8000	LZ32-4
9000	LZ30-4
4000	LZ30-4

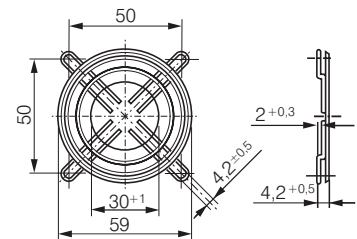
**LZ29-1** Fan size 40 x 40



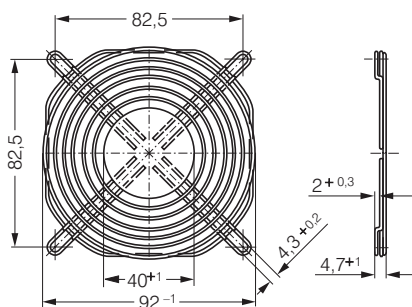
**LZ31** Fan size 50 x 50



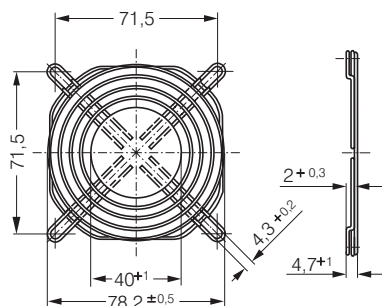
**LZ28-1** Fan size 60 x 60



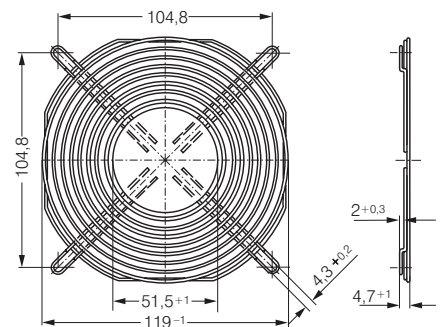
**LZ23-1** Fan size 92 x 92



**LZ32-4** Fan size 80 x 80



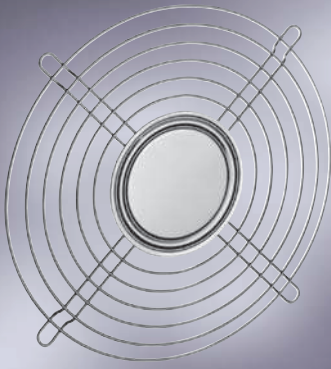
**LZ30-4** Fan size 119 x 119



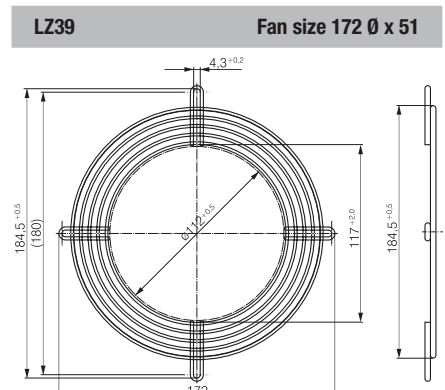
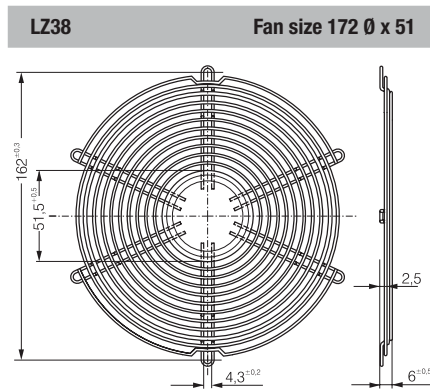
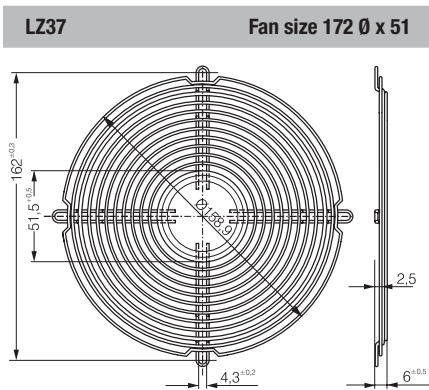
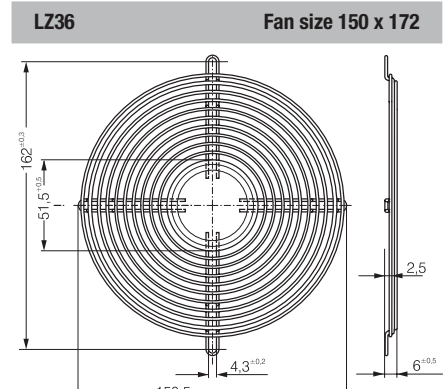
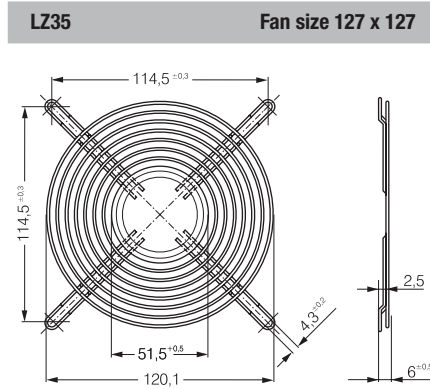
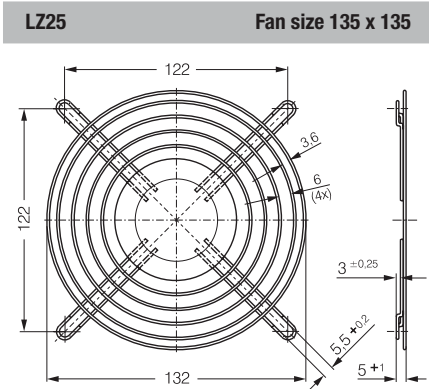


# Finger Guards

- Finger guards as per EN 294, of rust-proof steel wire for equipment fans.
- Further finger guards that do not conform to EN 294 can be supplied on request.



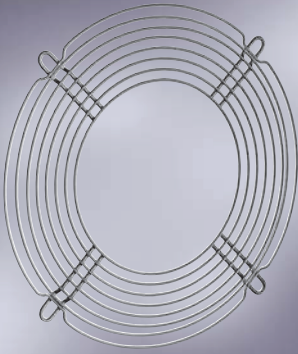
Fan series	Finger Guards	Fan series	Finger Guards	
5100	LZ25	DV 6200	LZ37	suction face
5600	LZ25	DV 6200	LZ39	blade face
5200	LZ35	DV 6400	LZ38	suction face
5900	LZ35	DV 6400	LZ39	blade face
7000	LZ36			
6200	LZ37			
6400	LZ38			





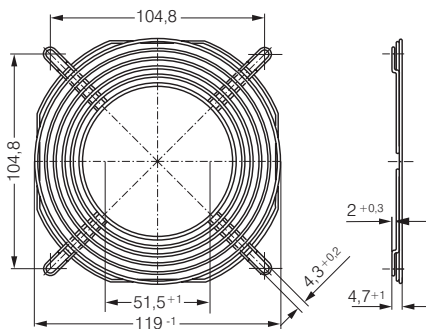
# ACmaxx Axial Fans Finger Guards

– Finger guards as per EN 294, of rust-proof steel wire for equipment fans.

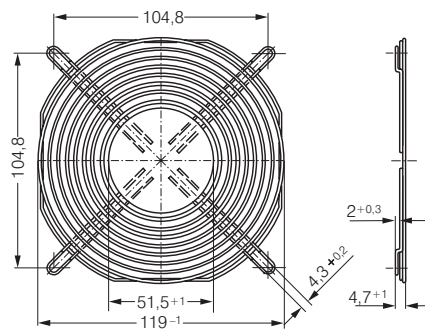


Fan series	Finger Guards	
AC 4300 H	LZ30-4	suction face
AC 4300 H	LZ30-9	blade face
AC 6200 NM	LZ37	suction face
AC 6200 NM	LZ37-2	blade face

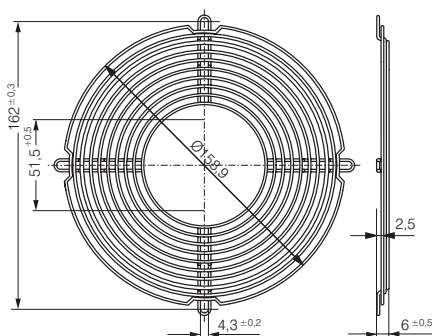
**LZ30-9** Fan size 119 x 119



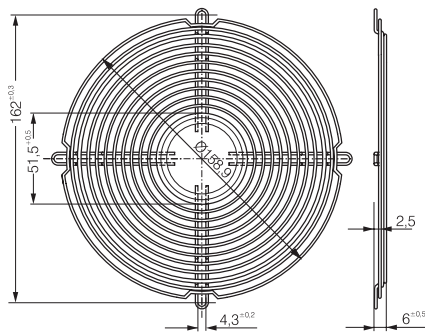
**LZ30-4** Fan size 119 x 119



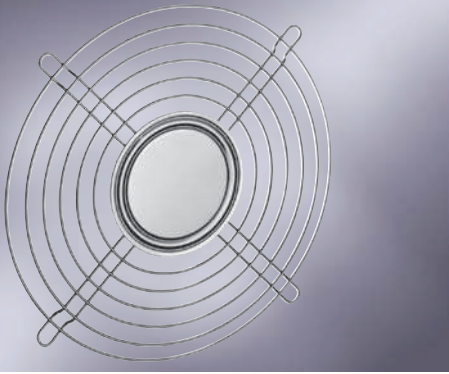
**LZ37-2** Fan size 172 Ø X 52



**LZ37** Fan size 172 Ø x 51



# Finger Guards

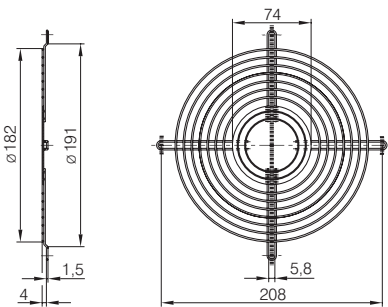


- Size 180: galvanised steel wire, chromatised in blue.
- Size 200 / 208 / 250: steel wire, plastic coated, silver metallic gloss.

Fan series	Finger Guards	Fan series	Finger Guards
W1G 180	26388-2-4039	W4S 200	78128-2-4039
W1G 200	78128-2-4039	W2E 208	35139-2-4039
W1G 208	35139-2-4039		35138-2-4039
	35138-2-4039	W2D 208	35139-2-4039
W1G 250	09418-2-4039		35138-2-4039
W2E 200	78128-2-4039	W2E 250	09418-2-4039

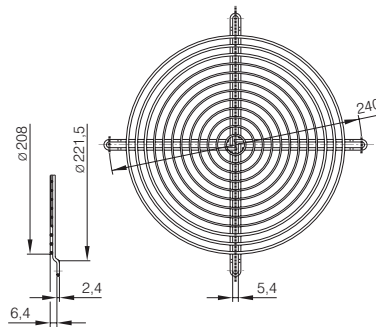
26388-2-4039

Size 180



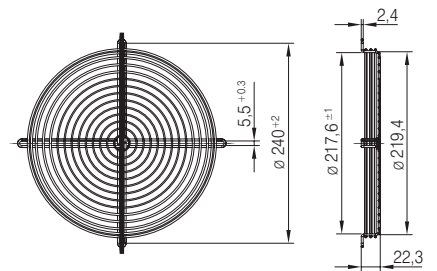
78128-2-4039

Size 200



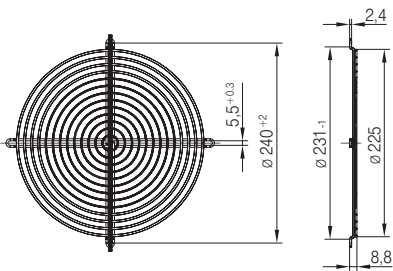
35139-2-4039

Size 208



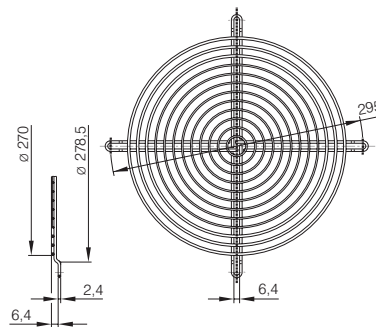
35138-2-4039

Size 208

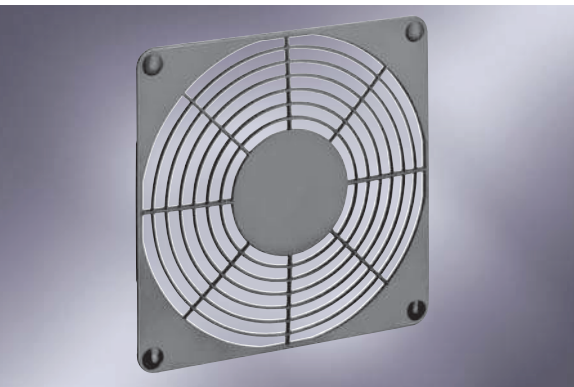


09418-2-4039

Size 250

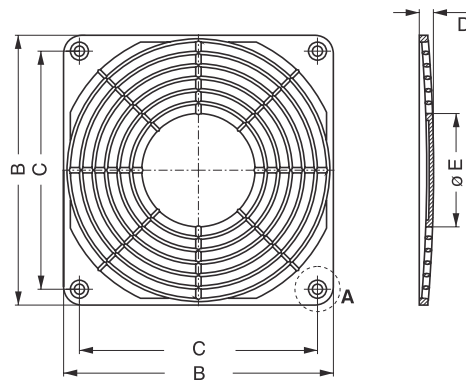


# Finger Guards

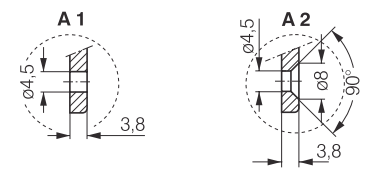


- Finger guards of black, fibreglass reinforced plastik (conform to EN 294).

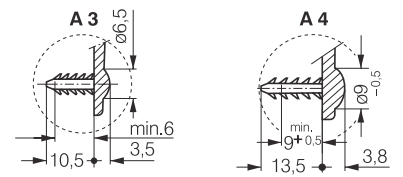
Fan series	Finger Guards	Fan series	Finger Guards	Finger Guards	Mounting	B	C	D	E
8000	LZ32-2	4000	LZ30-5	LZ32-2	A1	80 <sup>-0,5</sup>	71,5 <sup>±0,2</sup>	7.0	34
8000	LZ32-3	4000	LZ30-6	LZ32-3	A3	80 <sup>-0,5</sup>	71,5 <sup>±0,2</sup>	7.0	34
3000	LZ23-2	5200	LZ33-1	LZ23-2	A1	92,5 <sup>-0,5</sup>	82,5 <sup>±0,2</sup>	6.5	46
3000	LZ23-3	5200	LZ33-2	LZ23-3	A3	92,5 <sup>-0,5</sup>	82,5 <sup>±0,2</sup>	6.5	46
9000	LZ30-5	5900	LZ33-1	LZ30-5	A2	119 <sup>-0,5</sup>	105 <sup>±0,2</sup>	6.5	50
9000	LZ30-6	5900	LZ33-2	LZ30-6	A4	119 <sup>-0,5</sup>	105 <sup>±0,2</sup>	6.5	50
				LZ33-1	A2	127 <sup>-0,5</sup>	113,5 <sup>±0,2</sup>	6.5	50
				LZ33-2	A4	127 <sup>-0,5</sup>	113,5 <sup>±0,2</sup>	6.5	50



## Screw connection

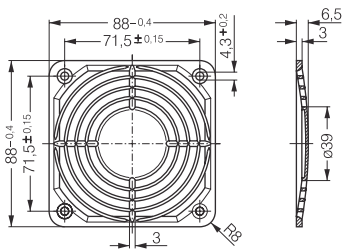


## Barbed inserts



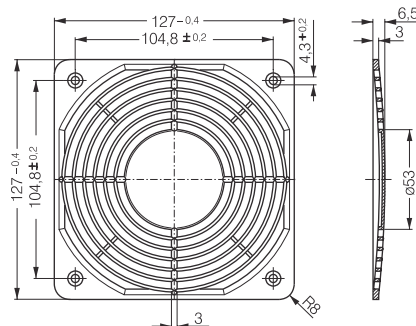
### LZ32P

### Fan size 80 x 80



### LZ30P

### Fan size 119 x 119



# Fan Filter Guards



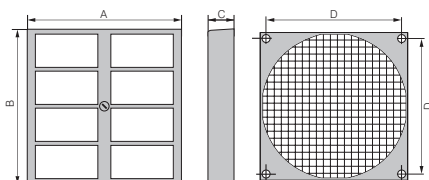
- Fan filter guards for installation on axial fan series for sizes 60 mm, 80 mm, 92 mm, 119 mm, 172 mm. All filter units fit directly onto the existing installation holes on the fans.
- Fan filter guards consist of 3 parts: the outer grille, the inner fastening plate and the replaceable filter mat.
- Grille is molded of polycarbonate (PC) with a matt surface.
- A quick-release on the grille allows for quick and easy filter mat replacement.
- Wire-mesh fastening plate, black powder coating.
- Filter mat replacement can be performed on running fans, welded wire-mesh protection.
- Filter mat made of white, synthetically bonded fibers.

Protection Filter	Fan size	A	B	C	D
FF60	60 x 60 mm	65	65	13.5	50.0
FF80	80 x 80 mm	85	85	14.0	71.5
FF92	92 x 92 mm	125	105	17.5	82.5
FF119	119 x 119 mm	162	136	18.5	104.8
FF172	∅ 172 mm	226	190	19.5	162.0

Replacement filter mats on request.

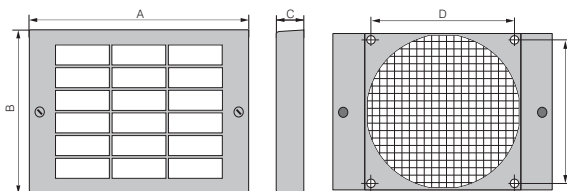
## FF60 / FF80

Fan size: 60 x 60 mm  
80 x 80 mm



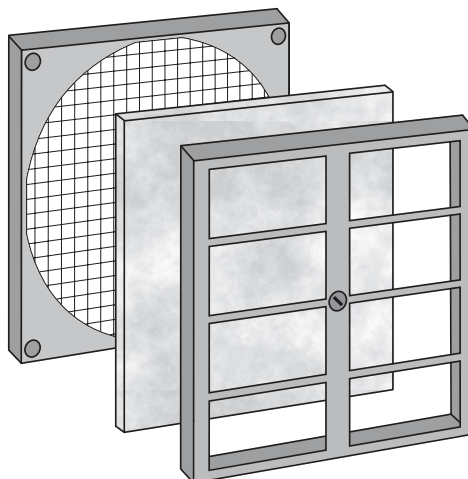
## FF92 / FF 119 / FF 172

Fan size: 92 x 92 mm  
119 x 119 mm  
∅ 172 mm

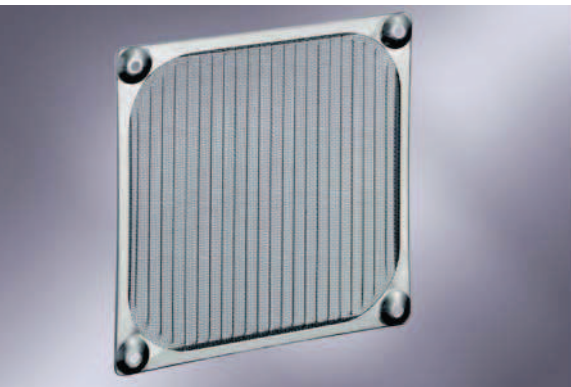


### Filter capacity

A fan filter guard filters out up to 75% of dust particles up to a size of 5-10 microns and withstands temperatures of up to 100°C. Flame retardant in accordance with BS2963. For installed, clean filters, an air flow reduction of 20 – 30% can be assumed.

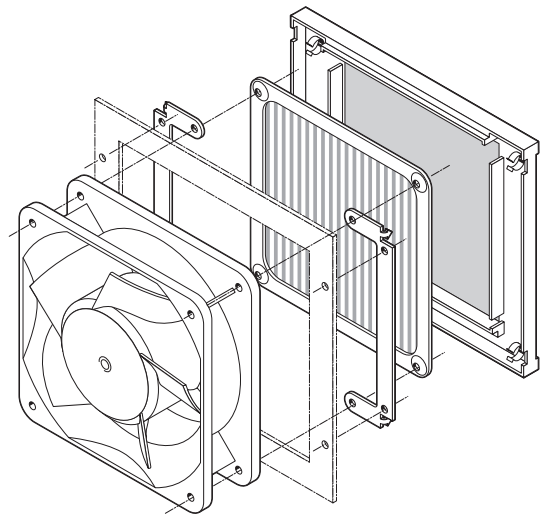


# Accessories

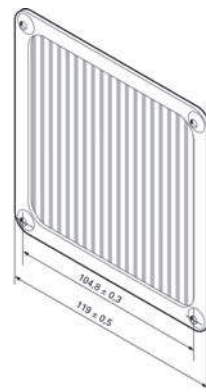
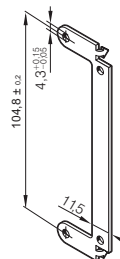
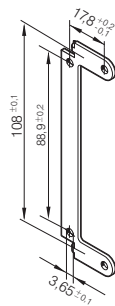
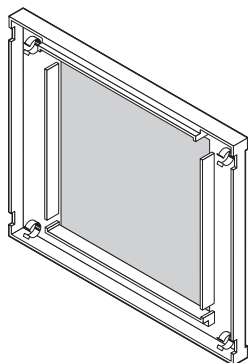


In addition to the accessories and assembly parts listed in this catalogue, ebm-papst also supplies numerous special parts for fan operation. The sales experts at ebm-papst will be happy to assist you in your enquiries concerning fan assembly and application.

Fan series DC	Fan series AC
4400 F	AC 4300
4400 FN	9900
4300	4000 N
4300 N	4000 Z
4400	
4200	
4100 N	

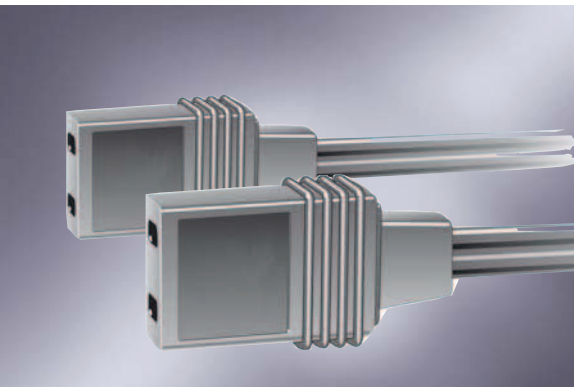


<b>LZ40N</b>	<b>Screen</b>	<b>LZ40-1</b>	<b>Bracket</b>	<b>LZ60</b>	<b>Filter</b>
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# Accessories

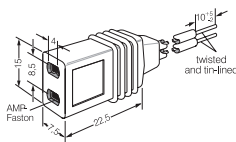
In addition to the accessories and assembly parts listed in this catalogue, ebm-papst also supplies numerous special parts for fans. The sales experts at ebm-papst will be happy to assist you in your enquiries concerning fan assembly and application.



Fan series	Accessories
8300	LZ212
8300	LZ260
8400 N	LZ261
3300	LZ212
3300	LZ260
3400 N	LZ261
9000	LZ210
4000	LZ210

Fan series	Accessories
4300 / 8300	LZ212
4300	LZ260
5100	LZ210
5600	LZ210
5200	LZ210
5900	LZ210
7000	LZ210
VARIOFAN	LZ370

## LZ120

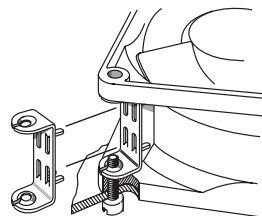


Type	Cable length	Pins
LZ120	610 mm	0.5 mm
LZ126	1000 mm	0.5 mm
LZ130-1	610 mm, UL approved	0.5 mm

Additional versions are available on special order

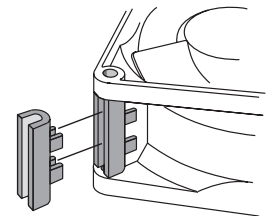
Cable connection with injection molded plug (PVC, black). Strands with core-end sleeves in accordance with DIN 46228. For all fan types with flat plugs of 2.8 / 3.0 x 0.5 mm.

## LZ212



Screw clip of stainless steel. For mounting fans with threaded pin 3.5 DIN 7970.

## LZ260 / LZ261



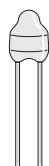
Spacer of fibreglass reinforced plastic. For screw mounting over both fan mounting flanges.

## LZ210



Screw clip of hardened steel. For mounting fans with threaded pin 6-32 UNC and/or 3.5 DIN 7970.

## LZ370

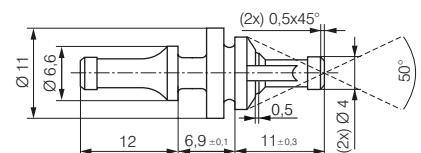


Required performance data:

$R_{25}$	= 100 $K\Omega$ $\pm 5\%$ @25°C
B-value	= 4190 $\pm 2\%$
$P_{max}$	= 0,25 W

Temperature sensor for speed-controlled fan operation. Temperature range 30...50 °C.

## LZ550



Rubber anti vibration mounts for fans with a hole  $\varnothing$  of 4.3  $\pm 0.2$  mm and flange thickness of 3 - 5.5 mm. For a carrier plate with a hole  $\varnothing$  of 6.5  $\pm 0.15$  mm and plate thickness of 1 - 2 mm.