

PAPST

Предлагаем вентиляторы
и другие ЭЛЕКТРОННЫЕ
КОМПОНЕНТЫ
(радиодетали) СО СКЛАДА И ПОД
ЗАКАЗ

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PAPST BASICS

Standard Range
of Fans and Blowers

Trendsetter in Fan Technology

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 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 PAPST.





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The P A P S T Fan – the Original in the World of Fans

Leaders in fan technology

The widest range of equipment fans for electronic cooling emerged from the principle of the external rotor motor. This special motor design is synonymous with the name of PAPST. Not only more than 50 years of acquired know-how but also numerous patented innovations have contributed to this principle.

PAPST is both pacesetter for large volume production and pioneer in the development and manufacture of customised fans. In achieving this goal PAPST has continually set new standards in both technology and quality, efficiency and reliability – from the first DC fan with integrated electronic commutation to the very latest example of intelligent cooling with variable air output.

PAPST customers not only profit from the innumerable advantages of this technological competence but also have access to almost unlimited application know-how.

It is therefore, not a coincidence that the list of PAPST customers is a reflection of the IT and electronic industry, a list containing world leading companies. The confidence placed in PAPST is evidenced by long-term partnerships that are based on confidence that is justifiable both now and in years to come as well as in the constant search for advanced products, the ability to respond quickly to new developments, implementation of quick delivery and intensive customer consultation.

Guaranteed safety

Quality planning and preventive quality control at all production stages plus zero-defect programmes have always been the mainstay of the PAPST quality philosophy. Even in early years, PAPST fulfilled the requirements of DIN ISO 9001 and received official certification in 1993.

Strong partners for a complete solution

A strong group emerged from synergistic cooperation with ebm, the parent company of PAPST and the subsidiary mvl. Nearly 6.500 employees are involved in providing optimum solutions for every application – from the smallest to the largest fan. PAPST operates as an independent company within this group with its own development department and program strategy.



PAPST Plant 1 in St. Georgen, Germany



Plant 2 in Herbolzheim, Germany

World-wide presence

The world-wide success of PAPST is based firstly on its high-class products and secondly on a universal presence that enables customer consultation, sales and service to be provided wherever needed. PAPST, ebm and mvl are represented in over 30 countries of the world by subsidiaries or local representatives. In Germany, PAPST cooperates with the ebm field sales engineers. The field service is supported by sales engineers of the parent firm. A comprehensive network of distributors complements this sales presence.

Product range

The standard range of fans described in this catalogue provides a easy to use selection of fans and blowers which are available at short notice.

PAPST Plant 1 in St. Georgen

The PAPST Head Office in the Black Forest is simultaneously development and logistics centre of all production facilities.

Drive technology and automotive products are produced here.

PAPST Plant 2 in Herbolzheim

Medium and large sized fans are produced here, e.g. for telecommunication and data technology. Also blowers for ventilation of seats and electronic cooling of vehicles are produced here.

The plant is also responsible for manufacturing engineering and quality assurance of the Hungarian production facilities.

**Plant 3, Cellcomp Kft.
in Celldömölk, Hungary and
Plant 4, PAPST Hungary Kft.
In Vecsés, Hungary**

Together with Plant 1 and 2 these additional facilities produce modules, components and a row of complete high-tech fan series.



Plant 3, Cellcomp Kft. in Celldömölk, Hungary



Plant 4, PAPST Hungary Kft. In Vecsés, Hungary

The Ultimate: Quality in Detail

Drive know-how



For the past 50 years all conceivable types and applications of drive technology have played an

essential role at 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 wheel 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.

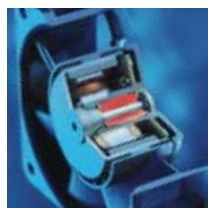
Low noise factor



Our aerodynamically optimised design and high mechanical precision produce outstanding noise properties in

this series of fans. So-called “soft” commutation electronics of the DC fans ensure an excellent noise factor. By avoiding the use of steep switching ramps when the individual coils are switched, the resonances produced by the motor is also considerably reduced. Computer-aided and analysed measurement test series in the most modern sound measuring chamber are conducted on each fan from the very beginning.

Long service life



The bearing system plays a vital role in the long life and quiet running of equipment fans. The PAPST

SINTEC compact bearing provides most of the equipment fans with a proven bearing system. Constant low noise load during the entire operating time, and considerably lower shock sensitivity are the outstanding features of this bearing technology. Also, with regard to temperature resistance, Sintec compact bearings can be used without problem in most applications. Despite the slightly higher noise factor and shock sensitivity of ball bearings, this bearing technology should be given preference when exposed to extreme thermal load and adverse application conditions (e.g. extreme environmental conditions, critical installation position, etc.). The service life data provided in this catalogue are based on extensive service life tests and mathematically/scientifically approved service life calculations. Our product descriptions are continuously updated with all relevant new 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 contour of the housing. Air output and available motor performance are exactly adapted to the size of fan.

Safety all inclusive



It goes without saying that all 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). 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, electronic anti-blocking protection against overloading, alarm function or have speed monitoring and speed control.



Technology

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-resistant, 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 advantage of both types of design.

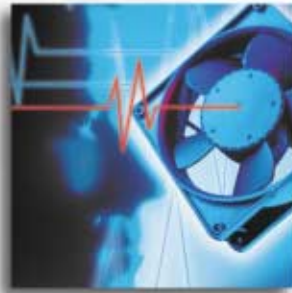
Economical



The true costs are a combination of availability, service, reliability and service life and this is exactly where PAPST fans prove that they are particularly competitive: Insist on PAPST and reap the benefits.

Tailor-made to Meet Your Special Requirements

PAPST has always developed customer-specified 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 drive 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.



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.



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. The tailor-made fan solution which is ready for the future.



Higher protection class for every type of application

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. Rustproof ball bearings can be used for operating in particularly aggressive media and using under extreme environmental conditions, thus providing additional safety under extreme operating conditions.



Speed setting via interfaces

With a wide range of DC fans with separate control input, 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.



Alarm signal for more safety

If your application requires monitored fan operation in addition to speed monitoring, 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 monitoring and status signal under critical operating conditions.



Temperature-controlled fans.

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



“Electronic tachometer” thanks to sensor signal

You wish to be informed at all times of the current fan speed? 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.



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: Air flow is conducted parallel to the axis of rotation.

Axial fans: High flow rate at medium pressure

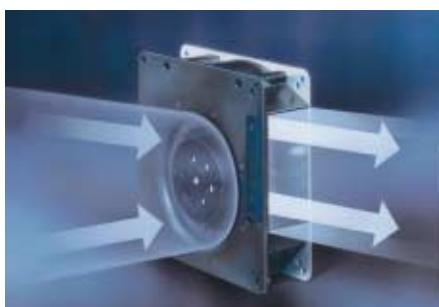
The air flow in axial fans of the blower wheel that is similar to that of a propeller is conducted to a great extent, parallel to the axis of rotation, in other words in the axial direction. Axial fans with free air delivery at zero static pressure have the lowest power input that rises with increasing counterpressure. Axial fans for the cooling of electronic equipment are in most cases, equipped with external housing and an electric motor integrated in the blower wheel hub. This compact construction allows space-saving accommodation of all devices; the flange is equipped with mounting holes mounting.



Diagonal fans: Axial air intake, diagonal exhaust.

Diagonal fans: High flow rate at relatively high pressure

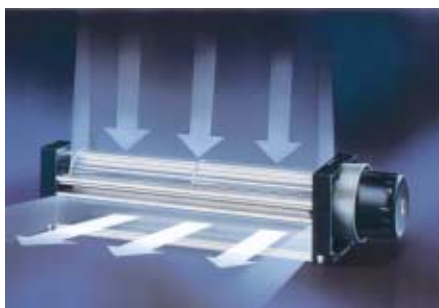
At first glance diagonal fans only differ slightly from axial fans. Intake is axial whereas exhaust is diagonal. The circumferential velocity at the blower wheel hub that is required for the pressure is increased by the conical shape of the wheel and housing. In direct comparison with axial fans of the same size and comparable performance, these fans are distinguished by the low operating noise.



With radial fans air is sucked in axially and blown out radially round an angle of 90°.

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, PAPST offers not only complete radial fans but also motor/blower wheel combinations without external housing.



Air intake and exhaust in the cross flow fan.

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 conductors which guarantee a steady flow of air through the blower wheel.

Selecting the Correct Fan

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 (ΔT) of the cooling air flow (from entry to exit of the device to be cooled). The max. allowable ΔT depends greatly on the temperature sensitivity of the individual device components. $\Delta T = 5\text{ K}$ means e.g. that the average air flow leaving the device to be cooled may only be 5°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. $\Delta T = 20\text{ K}$), can be tolerated.

3. Required cooling air flow

- In the adjoining diagram a horizontal line is drawn from the dissipated heat to intersect with the selected ΔT line.
- Read down from this point to obtain the required value for the cooling air flow.

4. Optimum operating range

The required fan, however, must also be able to deliver a suitable static pressure Δp_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

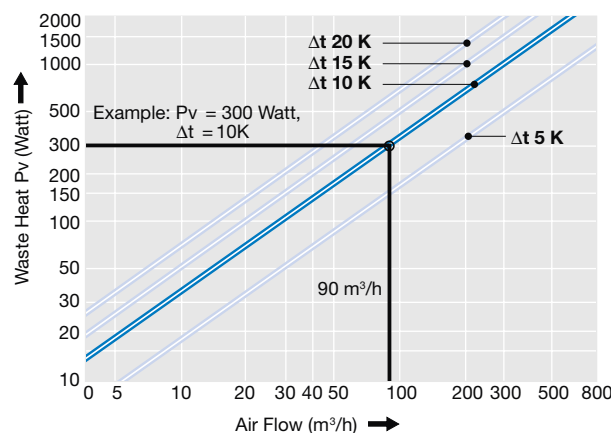
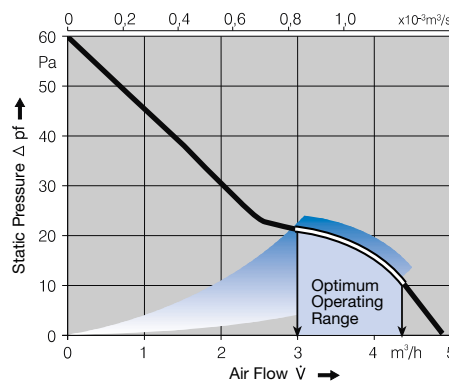
If the requirements of an application are fulfilled by more than one fan, the noise level, space requirements, economy and ambient conditions will assist in making the final choice.

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 realisable in practice. The fans must frequently 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 highly sensitive to interference sources which are positioned directly in front of the output cross section as they often cause a tonal increase in noise.

- Our advice:** The distance between the fan and adjacent components should be at least equal to the mounting depth of the fan. Talk to PAPST sales engineers early in the design stage of your equipment.



DC Fans for Individual Cooling Solutions

Users of PAPST fans have the widest range of DC axial fans at their disposal: From 25 mm to 172 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.

- PAPST DC fans have electronically commutated drives with electronic protection against reverse polarity. The electronics are conveniently located in the fan hub.
- A distinctive feature of DC fan technology is the convincingly high product life expectancy. Thanks to the excellent efficiency factor of the brushless drives, the thermal load of the bearings is reduced thus considerably increasing the life expectancy of the fans.
- DC fans with sleeve and ball bearings are powered by Class E insulated motors. All PAPST fans conform to the requirements of Protection Class IP 20. Fans conforming to IP 54 and special types of protection class are also available.

- The supply voltage of PAPST DC fans can be varied thus the airflow can be matched optimally to the cooling requirements and noise reduced to a minimum. 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 table containing technical data).
- PAPST 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. VARIOFAN are controlled without dissipation losses: At lower speeds their power consumption is reduced proportionally.





DC Fans



Fans for DC Operation

DC-AXIAL	Dimensions	Air Flow	Dissipation max.	Approvals	5 Volt	12 Volt	24 Volt	48 Volt	Sinter-Sleeve Bearings	Ball Bearings	VARIOFAN	Page	
	mm	m3/h	Watt		Type	Type	Type	Type	<input type="checkbox"/> /■	<input checked="" type="checkbox"/>			
25x25x8		3,2	10	VDE, UL, CSA	255N	252N			<input type="checkbox"/>	<input type="checkbox"/>		16	
		5,0	15	VDE, UL, CSA	255H				<input type="checkbox"/>	<input type="checkbox"/>		16	
40x40x10		6	20	VDE, UL, CSA		412FM			<input type="checkbox"/>	<input type="checkbox"/>		17	
		8	25	VDE, UL, CSA	405F*	412F	414F		<input type="checkbox"/>	<input type="checkbox"/>		17	
		9	30	VDE, UL, CSA	405FH*	412FH*			<input type="checkbox"/>	<input type="checkbox"/>		17	
40x40x20		10	35	VDE, UL, CSA	405	412	414		<input type="checkbox"/>	<input type="checkbox"/>		17	
		13,5	45	VDE, UL, CSA		412H	414H		<input type="checkbox"/>	<input type="checkbox"/>		17	
50x50x15		20	70	VDE, UL, CSA		512F	514F		<input type="checkbox"/>	<input type="checkbox"/>		18	
60x60x15		19	65	VDE, UL, CSA		612FL			<input type="checkbox"/>	<input type="checkbox"/>		19	
		29	100	VDE, UL, CSA	605F	612F	614F		<input type="checkbox"/>	<input type="checkbox"/>		19	
		33	110	VDE, UL, CSA		612FH			<input type="checkbox"/>	<input type="checkbox"/>		19	
60x60x25		21	70	VDE, UL, CSA		612NGL	614NGL		<input type="checkbox"/> /■	<input type="checkbox"/>		20	
		25	85	VDE, UL, CSA		612NGML	614NGML		<input type="checkbox"/> /■	<input type="checkbox"/>		20	
		35	120	VDE, UL, CSA		612NGM	614NGM		<input type="checkbox"/> /■	<input checked="" type="checkbox"/>		20/21	
		42	145	VDE, UL, CSA		612NN	614NN	618NN		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		20/21
		46	155	VDE, UL, CSA		612NH	614NH			<input checked="" type="checkbox"/>	<input type="checkbox"/>		20
		56	185	VDE, UL, CSA			614NHH			<input checked="" type="checkbox"/>	<input type="checkbox"/>		20
60x60x32		21	70	VDE, UL, CSA	605L	612L	614L		<input type="checkbox"/> /■	<input type="checkbox"/>		22	
		30	100	VDE, UL, CSA		612M	614M		<input type="checkbox"/> /■	<input type="checkbox"/>		22	
		40	135	VDE, UL, CSA		612	614		<input type="checkbox"/> /■	<input type="checkbox"/>		22	
		46	155	VDE, UL, CSA			614H		<input type="checkbox"/> /■	<input type="checkbox"/>		22	
80x80x25		33	110	VDE, UL, CSA		8412NL	8414NL		<input type="checkbox"/> /■	<input checked="" type="checkbox"/>		23/24	
		45	150	VDE, UL, CSA		8412NML	8414NML		<input type="checkbox"/> /■	<input checked="" type="checkbox"/>		23/24	
		58	195	VDE, UL, CSA		8412NM	8414NM		<input type="checkbox"/> /■	<input checked="" type="checkbox"/>		23/24	
		69	230	VDE, UL, CSA		8412N	8414N		<input type="checkbox"/> /■	<input type="checkbox"/>		23	
		79	260	VDE, UL, CSA		8412NH	8414NH		<input checked="" type="checkbox"/>	<input type="checkbox"/>		23	
80x80x32		32	105	VDE, UL, CSA		8312L	8314L		<input type="checkbox"/> /■	<input type="checkbox"/>		25	
		48	160	VDE, UL, CSA		8312M	8314M		<input type="checkbox"/> /■	<input type="checkbox"/>		25	
		54	180	VDE, UL, CSA		8312	8314	8318		<input type="checkbox"/> /■	<input type="checkbox"/>		25
		67	220	VDE, UL, CSA		8312HL	8314HL	8318HL		<input checked="" type="checkbox"/>	<input type="checkbox"/>		25
80	260	VDE, UL, CSA			8314H	8318H		<input checked="" type="checkbox"/>	<input type="checkbox"/>		25		
92x92x25		61	210	VDE, UL, CSA		3412NL	3414NL		<input type="checkbox"/> /■	<input type="checkbox"/>		26	
		72	240	VDE, UL, CSA		3412NM	3414NM		<input type="checkbox"/> /■	<input checked="" type="checkbox"/>		26/27	
		84	280	VDE, UL, CSA		3412N	3414N		<input type="checkbox"/> /■	<input checked="" type="checkbox"/>		26/27	
		94	320	VDE, UL, CSA		3412NH	3414NH		<input type="checkbox"/> /■	<input type="checkbox"/>		26	
		102	340	VDE, UL, CSA		3412NHH	3414NHH		<input type="checkbox"/> /■	<input type="checkbox"/>		26	
92x92x32		56	185	VDE, UL, CSA		3312L	3314L		<input type="checkbox"/> /■	<input type="checkbox"/>		28	
		68	230	VDE, UL, CSA		3312M	3314M		<input type="checkbox"/> /■	<input type="checkbox"/>		28	
		80	260	VDE, UL, CSA		3312	3314	3318		<input type="checkbox"/> /■	<input type="checkbox"/>		28
		93	315	VDE, UL, CSA		3312-177	3314-140		<input checked="" type="checkbox"/>	<input type="checkbox"/>		28	
		107	360	VDE*, UL*, CSA*			3314H	3318H		<input checked="" type="checkbox"/>	<input type="checkbox"/>		28
119x119x25		94	315			4412FGL	4414FL		<input type="checkbox"/>	<input type="checkbox"/>		29	
		114	385	VDE, UL, CSA		4412FGML			<input type="checkbox"/>	<input type="checkbox"/>		29	
		140	475	VDE, UL, CSA		4412FM	4414FM		<input type="checkbox"/> /■	<input type="checkbox"/>		29	
		170	580	VDE, UL, CSA		4412F	4414F	4418F		<input type="checkbox"/> /■	<input type="checkbox"/>		29
119x119x32		93	315	VDE, UL, CSA		4312NL	4314NL		<input type="checkbox"/> /■	<input type="checkbox"/>		30	
		137	465	VDE, UL, CSA		4312NM	4314NM		<input type="checkbox"/> /■	<input type="checkbox"/>		30	
		166	560	VDE, UL, CSA		4312NN	4314NN	4318NGN		<input type="checkbox"/> /■	<input type="checkbox"/>		30
		176	600	VDE, UL, CSA		4312NH	4314NH		<input checked="" type="checkbox"/>	<input type="checkbox"/>		30	
		198	670	VDE, UL, CSA		4312NHH	4314NHH		<input checked="" type="checkbox"/>	<input type="checkbox"/>		30	
		95	325	VDE, UL, CSA		4312L	4314L		<input type="checkbox"/> /■	<input type="checkbox"/>		31	
140		475	VDE, UL, CSA		4312M	4314M	4318M		<input type="checkbox"/> /■	<input checked="" type="checkbox"/>		31/32	
		580	VDE, UL, CSA		4312	4314	4318		<input type="checkbox"/> /■	<input checked="" type="checkbox"/>		31/32	
		610	VDE, UL, CSA		4312-143	4314-147		<input checked="" type="checkbox"/>	<input type="checkbox"/>		31		
		690	VDE, CSA		4312-179	4314-180		<input checked="" type="checkbox"/>	<input type="checkbox"/>		31		

100 200 300 Air Flow → 500 600 700 m³/h

* Approvals partially released or in registration



	Dimensions	Air Flow	Disipation max.	Approvals	12 Volt	24 Volt	48 Volt	Slimec-Sleeve Bearings	Ball Bearings	VARIOFAN	TURBOFAN	Page	
	mm	m3/h	Watt		Type	Type	Type	□/■	V	T			
DC-AXIAL	119x119x38	100	340	VDE, UL, CSA	4212NL	4214NL		□/■				33	
		127	430	VDE, UL, CSA	4212NML	4214NML		□/■				33	
		144	485	VDE, UL, CSA	4212NM	4214NM		□/■				33	
		165	560	VDE, UL, CSA	4212NN	4214NN	4218NN	□/■				33	
		180	600	VDE, UL, CSA	4212NH	4214NH	4218NH	■				33	
		205	700	VDE, UL, CSA	4212NHH	4214NHH		■				33	
		86	290	VDE, UL, CSA	4212L	4214L		■				34	
		127	420	VDE, UL, CSA	4212M			□/■				34	
		165	560	VDE, UL, CSA	4212	4214	4218	□/■				34	
		184	600	VDE, UL, CSA	4212H	4214H	4218H	■				34	
		160	550	VDE, UL, CSA	4182NGX	4184NGX	4188NXM	□/■				35	
		180	600	VDE, UL, CSA	4182NX	4184NX		■				35	
		237	790	VDE, UL, CSA		4184NXH		■				35	
		127x127x38	187	630	VDE*, UL, CSA	5212NM	5214NM	5218NM	■				36
			216	730	VDE*, UL, CSA	5212NN	5214NN	5218NN	■				36
		252	850	VDE*, UL, CSA	5212NH	5214NH	5218NH	■				36	
	135x135x38	122	400				5118NL	■				38	
		250	830	VDE, UL, CSA	5112N	5114N	5118N	■				38	
	150Øx38	360	1200	VDE, UL, CSA	7112N	7114N	7118N	■				39	
		420	1400			7114NH		■				39	
	150Øx55	360	1200	VDE, UL, CSA	7212N	7214N	7218N	■				40	
	172Øx51	350	1100	VDE, UL, CSA	6212NM	6224NM	6248NM	■				41	
		410	1370	VDE, UL, CSA		6224N	6248N	■	V	T		41/42	
		480	1650	VDE, UL, CSA		6224NH	6248NH	■				41	
	172Øx51	350	1100	VDE, UL, CSA	6412M	6424M	6448M	■				45	
		410	1370	VDE, UL, CSA		6424	6448	■	V			45	
		480	1650	VDE, UL, CSA		6424H	6448H	■				45	
DC-Diagonal													
	127x127 x 38	270	900	VDE, UL, CSA	DV 5212	DV 5214	DV 5218	■				37	
	172Øx51	540	1800	VDE, UL, CSA		DV 6224	DV 6248	■		T		43/44	
DC-RADIAL													
	121x121x37	40	135	VDE, UL, CSA	RL90-18/12N	RL90-18/14N		□/■				46	
	135x135x38	55	185	VDE, UL, CSA	RG90-18/12N	RG90-18/14N	RG90-18/18N	□/■				47	
	180x180x40	60	200	VDE, UL, CSA	RG125-19/12NM	RG125-19/14NM		■				48	
		87,5	300	VDE, UL, CSA	RG125-19/12N	RG125-19/14N	RG125-19/18N	■				48	
	220x220x56	139	470	VDE, UL, CSA	RG160-28/12NM	RG160-28/14NM		■				49	
		209	700	VDE, UL, CSA	RG160-28/12N	RG160-28/14N	RG160-28/18N	■		T		49/50	
	100Øx32	57	190		RER100-25/12	RER100-25/14		■				51	
	138Øx35	110	370	VDE, UL, CSA	RER125-19/12N	RER125-19/14N		■				52	
	176Øx54	240	800	VDE, UL, CSA	RER 160-28/12N	RER 160-28/14N	RER160-28/18N	■		T		53/54	
DC-CROSS													
	203x50x48	75	250	VDE, UL, CSA	QG030-148/12	QG030-148/14		■				55	
	260x50x48	100	335	VDE, UL, CSA	QG030-198/12	QG030-198/14		■				55	
	365x50x48	140	465	VDE, UL, CSA	QG030-303/12	QG030-303/14		■				55	
	415x50x48	155	515	VDE, UL, CSA	QG030-353/12	QG030-353/14		■				55	



* Approvals partially released or in registration

Overview

DC Fans



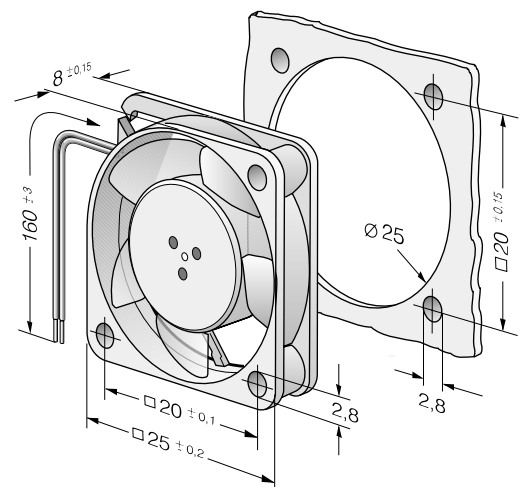
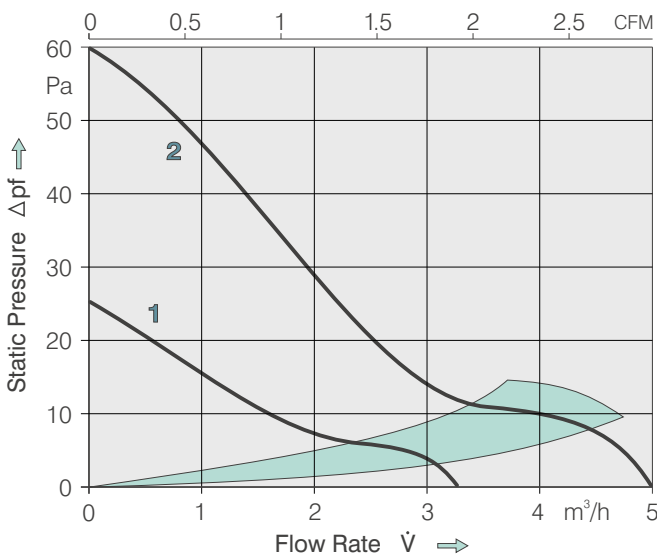
- DC micro-fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity. The fan only operates when the polarity is correct. Impedance-protected against blocking and overloading.
- Fan of fibreglass reinforced 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.

Series 250

25 x 25 x 8 mm

Air flow		Nominal Voltage	Voltage Range	Noise		Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
m ³ /h	CFM			V DC	V DC						dB(A)	bels			
3.2	1.9	5	4.5...5.5	15	<3	□	0.4	9000	-10...+70	40000*/12000*	1	255 N	58		
5.0	2.9	5	4.5...5.5	28	4.4	□	0.6	12000	-10...+55	35000*/10000*	2	255 H	58		
3.2	1.9	12	10...14	15	<3	□	0.5	9000	-10...+70	40000*/12000*	1	252 N	58		

*preliminary data





- 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 blocking 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 (27 g).

Series 400F 40 x 40 x 10 mm

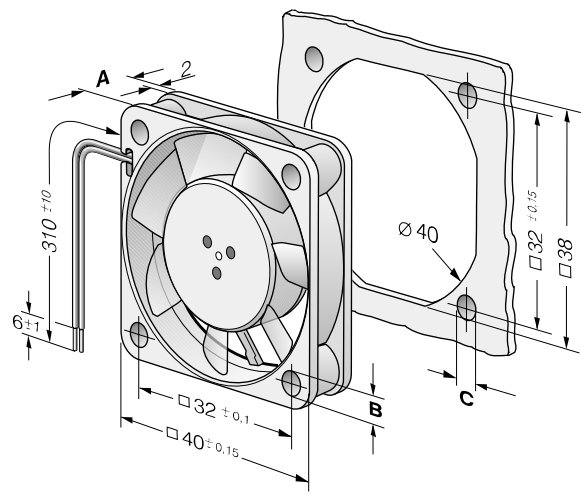
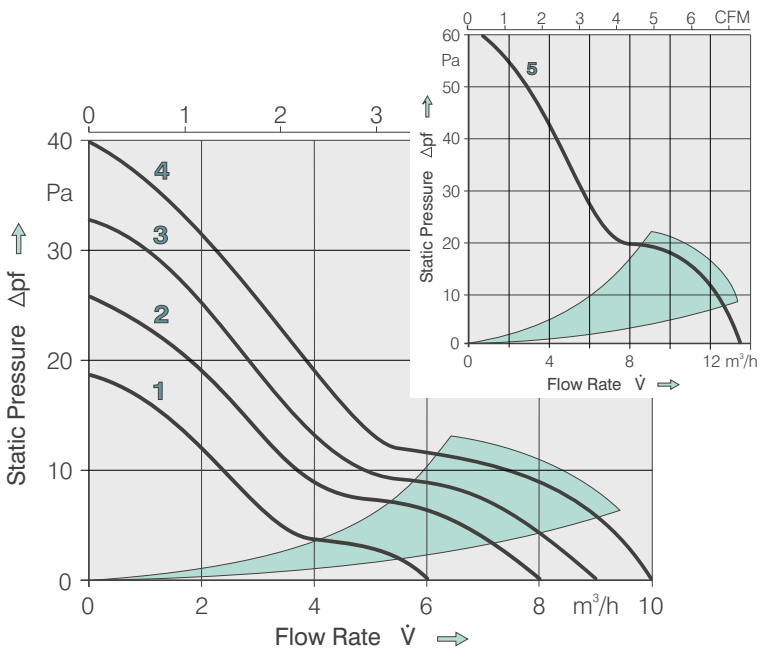
Air flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings		Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
m ³ /h	CFM				V DC	V DC				bels	□/■			
8	4.7	5	4.5...5.5	26	4.5	□	0.7	5400	-20...+70	45 000/15 000		2	405 F	58
9	5.3	5	4.5...5.5	29	4.9	□	0.9	6000	-20...+70	45 000/15 000		3	405 FH	
6	3.5	12	10...14	19	4.0	□	0.6	4300	-20...+70	45 000/15 000		1	412 FM	
8	4.7	12	10...14	26	4.5	□	0.7	5400	-20...+70	45 000/15 000		2	412 F	
9	5.3	12	10...14	29	4.9	□	0.8	6000	-20...+70	45 000/15 000		3	412 FH	58
8	4.7	24	20...28	26	4.5	□	0.8	5400	-20...+70	45 000/15 000		2	414 F	

Series 400 40 x 40 x 20 mm

10	5.9	5	4.5...5.5	18	3.8	□	0.9	6000	-20...+70	50 000/20 000		4	405	58
10	5.9	12	10...14	18	3.8	□	1.0	6000	-20...+70	50 000/20 000		4	412	58
13.5	8.0	12	10...14	29	3.8	□	1.6	8100	-20...+60	45 000/15 000		5	412 H	
10	5.9	24	20...28	18	3.8	□	1.0	6000	-20...+70	50 000/20 000		4	414	58
13.5	8.0	24	20...26.5	29	4.7	□	1.6	8100	-20...+60	45 000/15 000		5	414 H	58

*Type 412 H and 414 H with electronic protection against blocking

Type	Dimension:	A	B	C
400F		10 ^{+0.3} _{-0.1}	Ø3.5 ±0.1	Ø3.5 ±0.1
400		20 ±0.15	Ø4.3 ±0.1	Ø4.3 ±0.1



DC Axial Fans

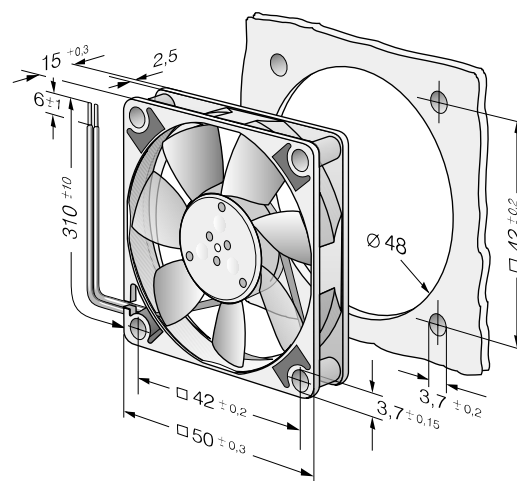
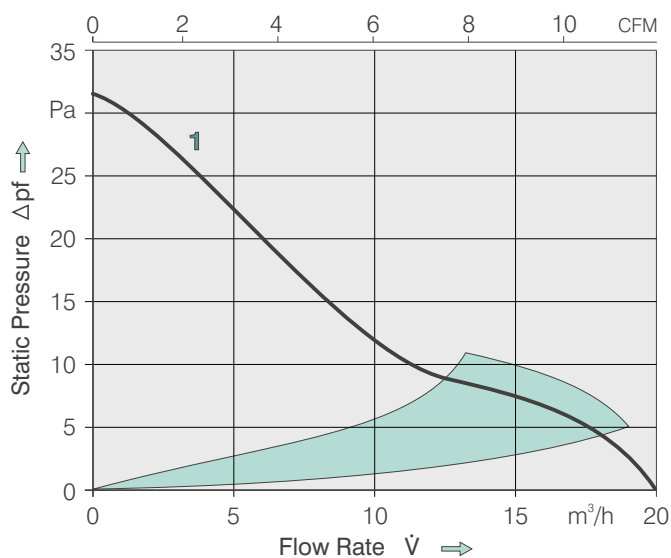


- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity. The fan only operates when the polarity is correct. Impedance-protected against blocking and overloading.
- Fan of fibreglass reinforced plastic. 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.

Series 500F

50 x 50 x 15 mm

Air flow		Nominal Voltage	Voltage Range		Noise		Sinter-Sleeve Bearings		Power Input	Nominal Speed	Temperature Range		Service Life L ₁₀		Curve	Type	Specials
m ³ /h	CFM		V DC	V DC	dB(A)	bels	□/■	Watt			min ⁻¹	°C	Hours	Hours			
20	11.8	12	10.8...13.2	30	4.5	□	1.0	5000	-20...+70	50 000 / 20 000		1	512F	58			
20	11.8	24	21.6...26.4	30	4.5	□	1.0	5000	-20...+70	50 000 / 20 000		1	514F				





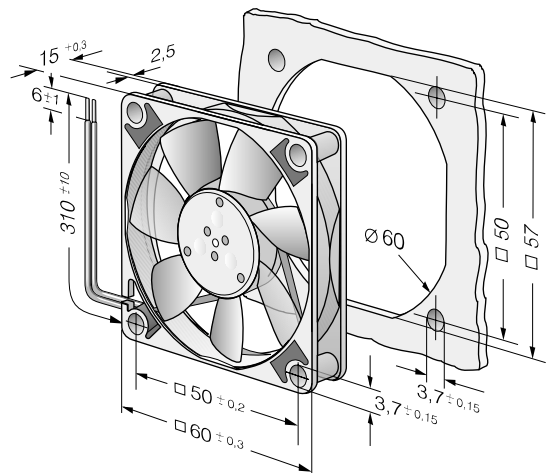
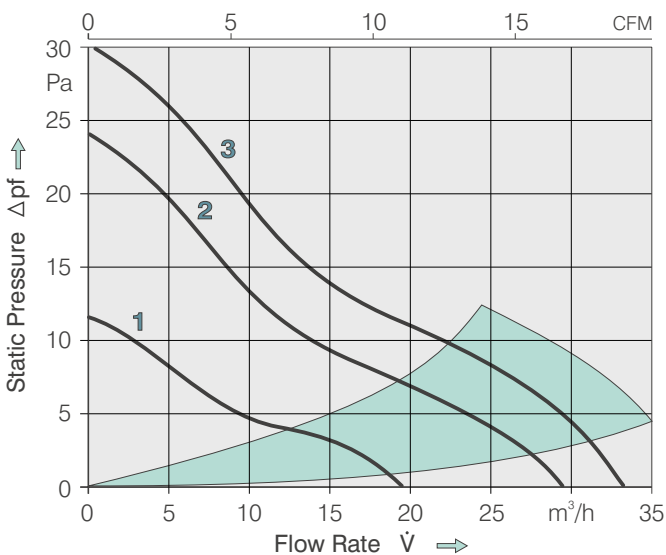
- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity. The fan only operates when the polarity is correct. Impedance-protected against blocking* and overloading.

- 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.

Series 600F 60 x 60 x 15 mm

Air flow		Nominal Voltage	Voltage Range	Noise		Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
m ³ /h	CFM			V DC	V DC						dB(A)	bels			
29	17.1	5	4.5...5.2	27	4.4	□	1.1	4000	-20...+50	50 000/	—	2	605F		
19	11.2	12	11.5...13.2	16	3.6	□	0.4	2650	0...+70	50 000/20 000		1	612FL		
29	17.1	12	10.8...13.2	27	4.4	□	1.1	3900	-20...+70	50 000/20 000		2	612F	58	
33	19.5	12	10.0...13.2	31	4.8	□	1.4	4500	-20...+60	45 000/15 000		3	612FH		
29	17.1	24	21.6...26.4	27	4.4	□	1.1	3900	-20...+70	50 000/20 000		2	614F		

*Type 612FH with electronic protection against blocking

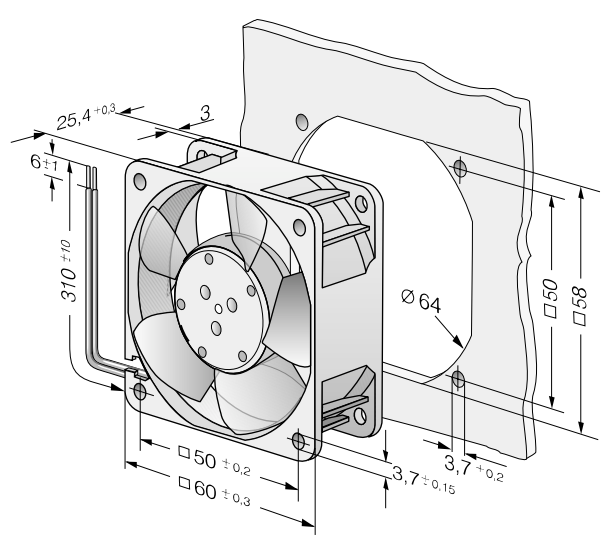
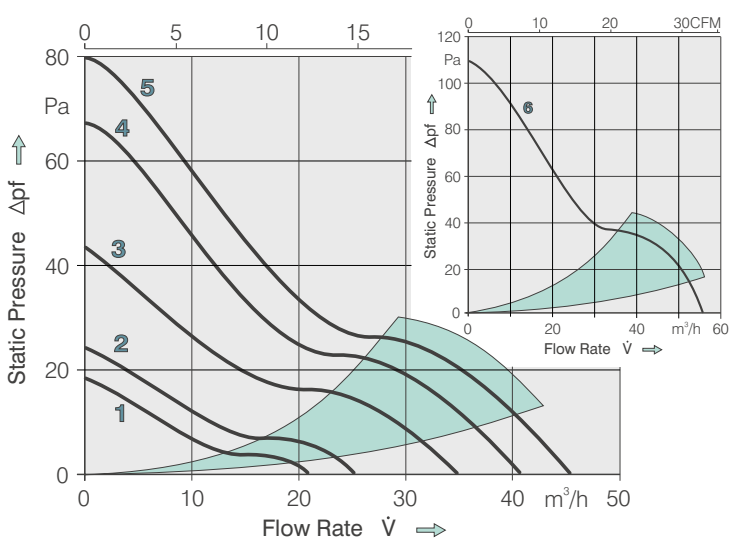




- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, blocking and over-loading.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- Air exhaust over struts. Rotational direction CW looking at rotor.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 85 g.

Series 600N 60 x 60 x 25 mm

Air flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
m ³ /h	CFM									V DC	V DC			
21	12.4	12	8...15	16	3.6	□	0.7	2500	-20...+70	80 000/40 000	1	612 NGL		
21	12.4	12	8...15	16	3.6	■	0.6	2500	-20...+70	80 000/40 000	1	612 NL		
25	14.7	12	8...15	19	3.9	□	0.9	3000	-20...+70	80 000/40 000	2	612 NGML		
25	14.7	12	8...15	19	3.9	■	0.8	3000	-20...+70	80 000/40 000	2	612 NML		
35	20.6	12	8...15	28	4.6	□	1.3	4100	-20...+70	80 000/40 000	3	612 NGM		
35	20.6	12	8...15	28	4.6	■	1.1	4100	-20...+70	80 000/40 000	3	612 NM		
42	24.7	12	8...15	35	5.2	■	1.6	5100	-20...+70	70 000/35 000	4	612 NN		
46	27.1	12	8...15	38	5.5	■	2.0	5600	-20...+70	70 000/35 000	5	612 NH		
21	12.4	24	18...28	16	3.6	□	1.0	2500	-20...+70	80 000/40 000	1	614 NGL		
21	12.4	24	18...28	16	3.6	■	0.9	2500	-20...+70	80 000/40 000	1	614 NL		
25	14.7	24	18...28	19	3.9	□	1.2	3000	-20...+70	80 000/40 000	2	614 NGML		
25	14.7	24	18...28	19	3.9	■	1.0	3000	-20...+70	80 000/40 000	2	614 NML		
35	20.6	24	18...28	28	4.6	□	1.7	4100	-20...+70	80 000/40 000	3	614 NGM	60	
35	20.6	24	18...28	28	4.6	■	1.4	4100	-20...+70	80 000/40 000	3	614 NM	58	
42	24.7	24	18...28	35	5.2	■	1.8	5100	-20...+70	70 000/35 000	4	614 NN		
46	27.1	24	18...26	38	5.5	■	2.1	5600	-20...+70	70 000/35 000	5	614 NH		
56	33.0	24	18...26	43	6.3	■	3.0	6850	-20...+70	60 000/30 000	6	614 NHH		
42	24.7	48	36...56	35	5.2	■	2.1	5100	-20...+65	70 000/40 000	4	618 NN	60	





- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, blocking and over-loading.
- 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 85 g.

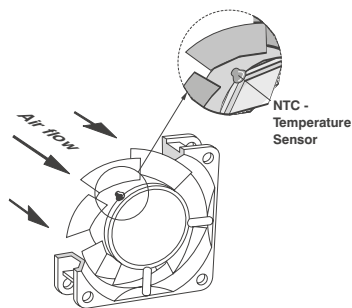
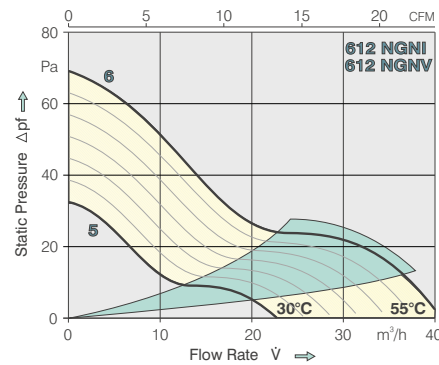
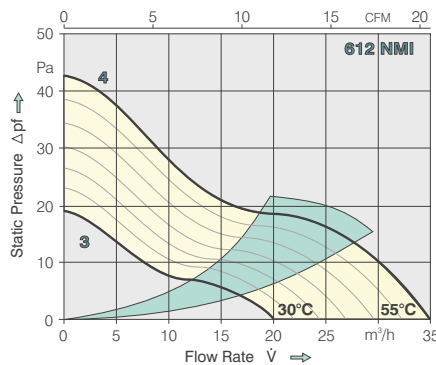
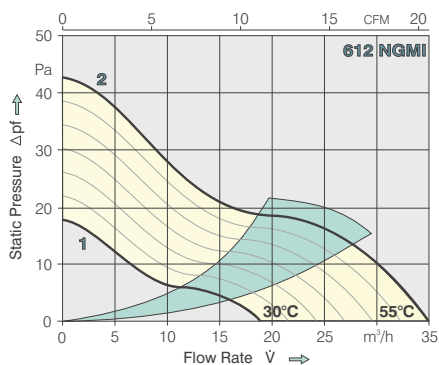
Series 600N

60 x 60 x 25 mm VARIOFAN

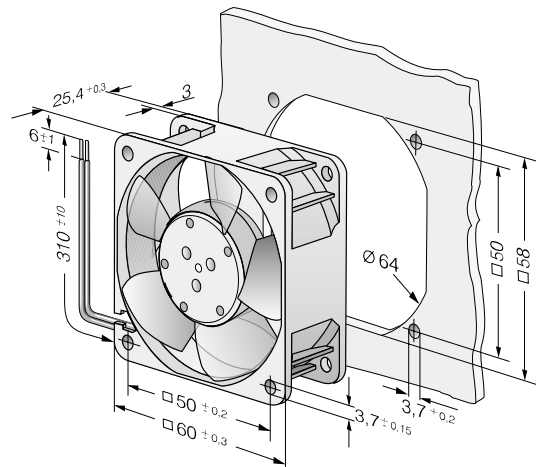
	Air flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
	m ³ /h	CFM									V DC	V DC			
30-55 °C	18	10.6	12	8...12.6	-	-	□	1.3	2 150	-20...+65	80 000 / 45 000		1	612 NGMI	
	35	20.6													
30-55 °C	20	11.8	12	8...12.6	-	-	■	1.0	2 400	-20...+65	80 000 / 45 000		3	612 NMI	
	35	20.6													
30-55 °C	23	13.5	12	8...12.6	-	-	□	1.7	2 900	-20...+65	70 000 / 40 000		5	612 NGNI	
	41	24.1													

Variants with additional 3rd lead for external temperature sensor

30-55 °C	23	13.5	12	8...12.6	-	-	□	1.7	2 900	-20...+65	70 000 / 40 000		5	612 NGNV	65
	41	24.1													



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





- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, blocking 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 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 85 g.

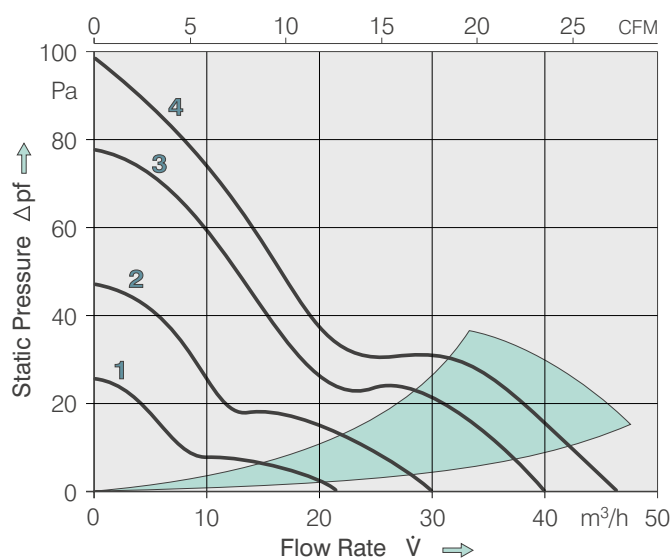
Series 600

60 x 60 x 25 mm

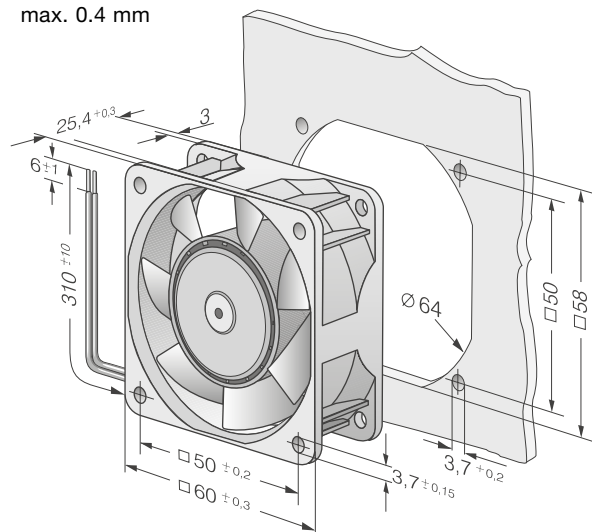
Air flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
m ³ /h	CFM									V DC	V DC			
21	12.4	5	4.5...6	26	4.0	■	0.8	3000	-20...+65	80 000 / 45 000	1	605L		
21	12.4	12	6...15	24	3.7	□	1.0	3000	-20...+65	80 000 / 45 000	1	612GL		
21	12.4	12	6...15	26	4.0	■	0.7	3000	-20...+65	80 000 / 45 000	1	612L		
30	17.6	12	6...15	32	4.5	□	1.3	4100	-20...+65	80 000 / 45 000	2	612GM		
30	17.6	12	6...15	33	4.6	■	1.3	4100	-20...+65	80 000 / 45 000	2	612M		
40	23.5	12	6...15	40	5.1	□	2.8	5300	-20...+65	70 000 / 40 000	3	612G		
40	23.5	12	6...15	40	5.1	■	2.5	5300	-20...+65	70 000 / 40 000	3	612		
21	12.4	24	12...30	24	3.7	□	1.2	3000	-20...+65	80 000 / 45 000	1	614GL		
21	12.4	24	12...30	26	4.0	■	0.8	3000	-20...+65	80 000 / 45 000	1	614L		
30	17.6	24	12...30	33	4.6	■	1.4	4100	-20...+65	80 000 / 45 000	2	614M		
40	23.5	24	12...30	40	5.1	□	2.9	5300	-20...+65	70 000 / 40 000	3	614G		
40	23.5	24	12...30	40	5.1	■	2.5	5300	-20...+65	70 000 / 40 000	3	614		
46	27.0	24	12...27.5	44	5.5	■	3.4	6400	-20...+65	70 000 / 40 000	4	614H		

Attention:

In the foreseeable future the 600 fan series will be removed from the range and replaced by the products of the new series 600N.



Rotor protrusion max. 0.4 mm



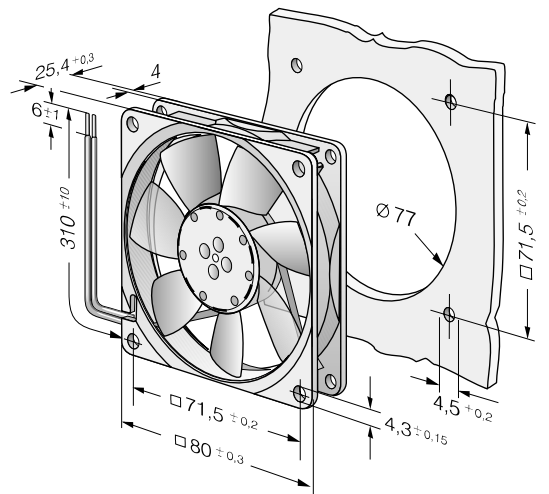
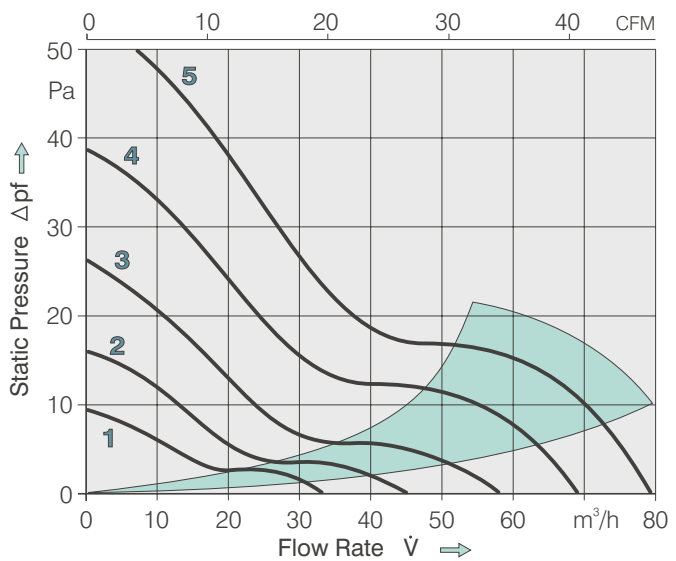


- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, blocking and overloading; partially impedance protected.

- 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.

Series 8400N 80 x 80 x 25 mm

Air flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
m ³ /h	CFM									V DC	V DC			
33	19.4	12	8...15	12	3.5	□	0.6	1500	-20...+70	80 000/40 000	1	8412 NGL	58	
33	19.4	12	8...15	17	3.7	■	0.6	1500	-20...+70	80 000/40 000	1	8412 NL		
45	26.5	12	8...15	19	3.9	□	0.9	2050	-20...+70	80 000/40 000	2	8412 NGML		
45	26.5	12	8...15	21	4.0	■	0.9	2050	-20...+70	80 000/40 000	2	8412 NML		
58	34.1	12	8...15	26	4.3	□	1.3	2600	-20...+70	80 000/40 000	3	8412 NGM	58	
58	34.1	12	8...15	27	4.4	■	1.3	2600	-20...+70	80 000/40 000	3	8412 NM		
69	40.6	12	8...15	32	4.7	□	2.0	3100	-20...+70	70 000/35 000	4	8412 NG	58	
69	40.6	12	8...15	32	4.7	■	2.0	3100	-20...+70	70 000/35 000	4	8412 N		
79	46.5	12	8...13.2	37	5.0	■	2.2	3600	-20...+70	70 000/35 000	5	8412 NH		
33	19.4	24	18...28	12	3.5	□	0.7	1500	-20...+70	80 000/40 000	1	8414 NGL	58	
33	19.4	24	18...28	17	3.7	■	0.7	1500	-20...+70	80 000/40 000	1	8414 NL		
45	26.5	24	18...28	19	3.9	□	1.1	2050	-20...+70	80 000/40 000	2	8414 NGML		
45	26.5	24	18...28	21	4.0	■	1.1	2050	-20...+70	80 000/40 000	2	8414 NML		
58	34.1	24	18...28	26	4.3	□	1.4	2600	-20...+70	80 000/40 000	3	8414 NGM	58	
58	34.1	24	18...28	27	4.4	■	1.4	2600	-20...+70	80 000/40 000	3	8414 NM		
69	40.6	24	18...28	32	4.7	□	2.0	3100	-20...+70	70 000/35 000	4	8414 NG	58	
69	40.6	24	18...28	32	4.7	■	2.0	3100	-20...+70	70 000/35 000	4	8414 N	58	
79	46.5	24	18...26	37	5.0	■	2.4	3600	-20...+70	70 000/35 000	5	8414 NH		



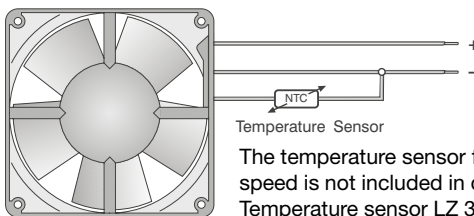
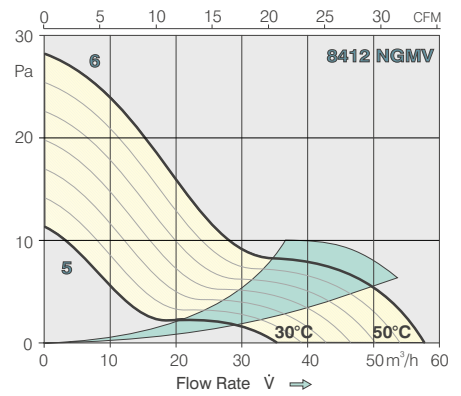
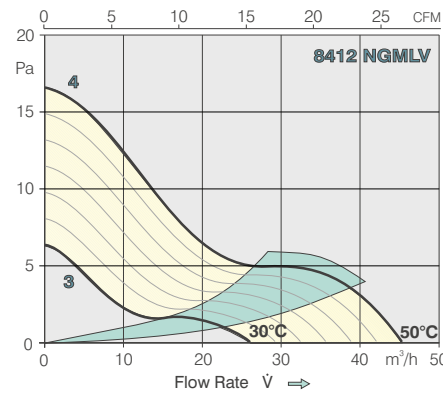
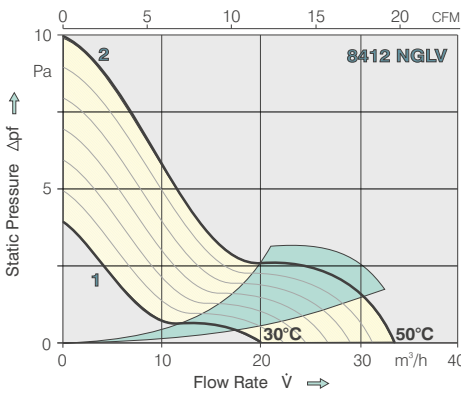
DC Axial Fans



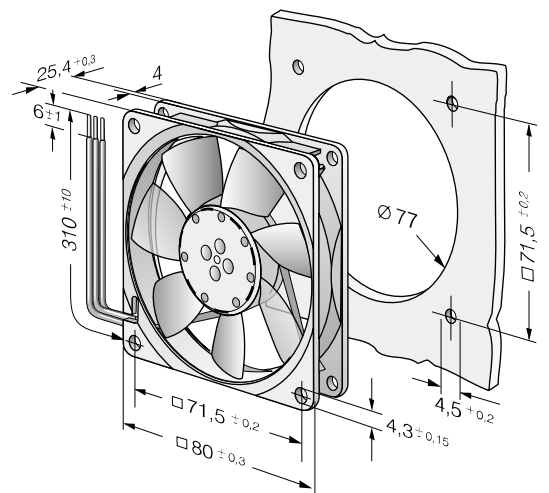
- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, blocking and overloading; partially impedance protected.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- Air exhaust over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

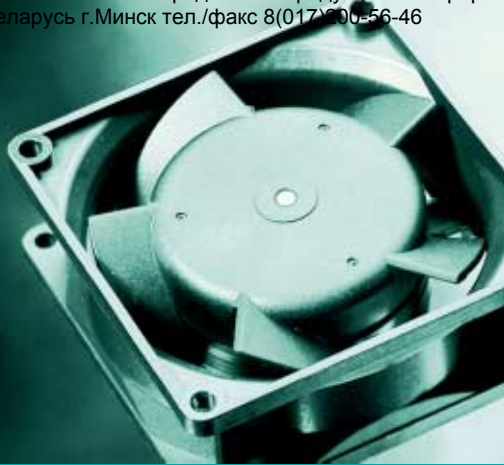
Series 8400N 80 x 80 x 25 mm VARIOFAN

	Air flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
	m ³ /h	CFM									V DC	V DC			
30-50 °C	20	11.8	12	10...14	< 10	< 3	□	0.9	900	-20...+70	80 000 / 40 000		1	8412 NGLV	
	33	19.4			12	3.7		1.1	1 500		2				
30-50 °C	27	15.9	12	8...14	< 10	2.8	□	1.1	1 200	-20...+70	80 000 / 40 000		3	8412 NGMLV	65
	45	26.5			19	4.4		1.5	2 050		4				
30-50 °C	35	20.6	12	8...14	< 13	3.3	□	1.4	1 600	-20...+70	80 000 / 35 000		5	8412 NGMV	
	58	34.1			26	4.7		2.0	2 600		6				



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



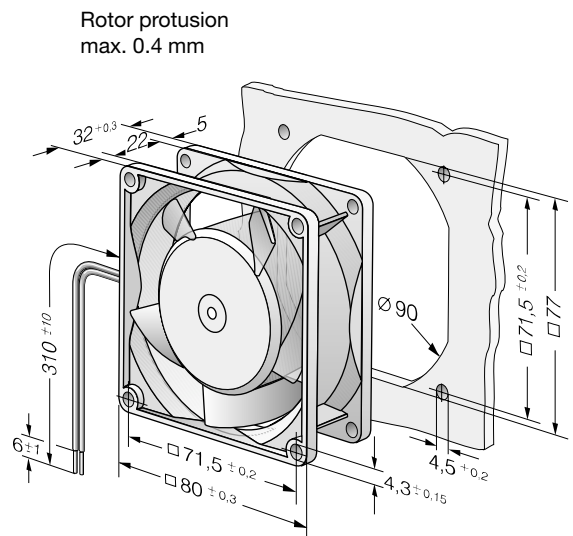
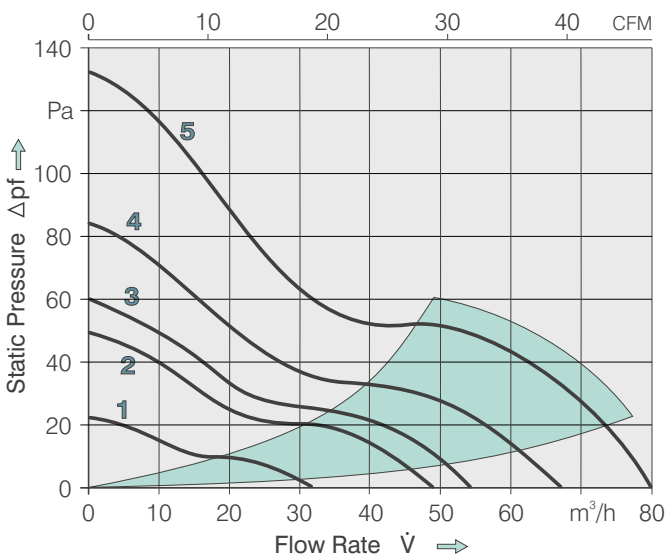


- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, blocking and overloading by PTC-resistor; partially impedance protected.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- Air exhaust over struts. Rotational direction CW looking at rotor.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 170 g.

Series 8300

80 x 80 x 32 mm

Air flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings		Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
m ³ /h	CFM				V DC	V DC				dB(A)	bels			
32	18.8	12	6...15	24	4.0	□	1.0	2000	-20...+75	80 000/35 000	1	8312 GL		
32	18.8	12	6...15	24	4.0	■	1.0	2000	-20...+75	80 000/35 000	1	8312 L		
48	28.3	12	6...15	34	5.0	□	1.8	3000	-20...+75	70 000/30 000	2	8312 GM		
48	28.3	12	6...15	34	5.0	■	1.8	3000	-20...+75	70 000/30 000	2	8312 M		
54	31.8	12	6...15	36	5.2	□	2.5	3300	-20...+75	70 000/30 000	3	8312 G		
54	31.8	12	6...15	36	5.2	■	2.2	3300	-20...+75	70 000/30 000	3	8312	60	
67	39.4	12	6...15	43	5.8	■	4.0	4200	-20...+75	62 500/27 500	4	8312 HL	58	
32	18.8	24	12...28	24	4.0	■	1.0	2000	-20...+75	80 000/35 000	1	8314 L		
48	28.3	24	12...28	34	5.0	■	2.1	3000	-20...+75	70 000/30 000	2	8314 M		
54	31.8	24	12...28	36	5.2	□	2.5	3300	-20...+75	70 000/30 000	3	8314 G		
54	31.8	24	12...28	36	5.2	■	2.5	3300	-20...+75	70 000/30 000	3	8314	58/60	
67	39.4	24	12...28	43	5.8	■	4.3	4200	-20...+75	62 500/27 500	4	8314 HL		
80	47.1	24	20...26.5	48	6.2	■	6.0	5000	-20...+75	55 000/25 000	5	8314 H	60/64	
54	31.8	48	36...56	36	5.2	■	2.6	3300	-20...+75	70 000/30 000	3	8318	58/62	
67	39.4	48	36...56	43	5.8	■	4.3	4200	-20...+75	62 500/27 500	4	8318 HL	58/60	
80	47.1	48	36...56	48	6.2	■	5.8	5000	-20...+65	55 000/30 000	5	8318 H	60	

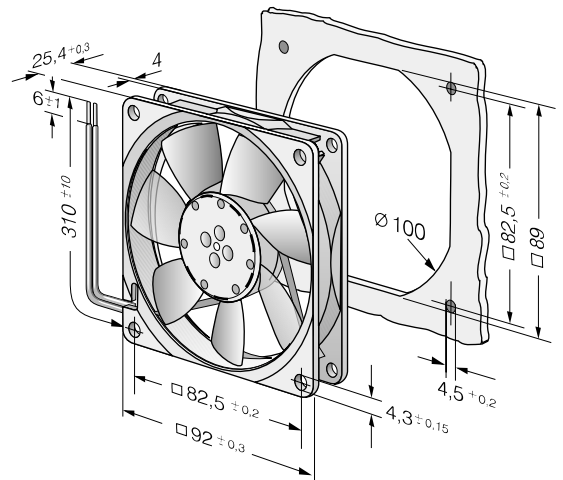
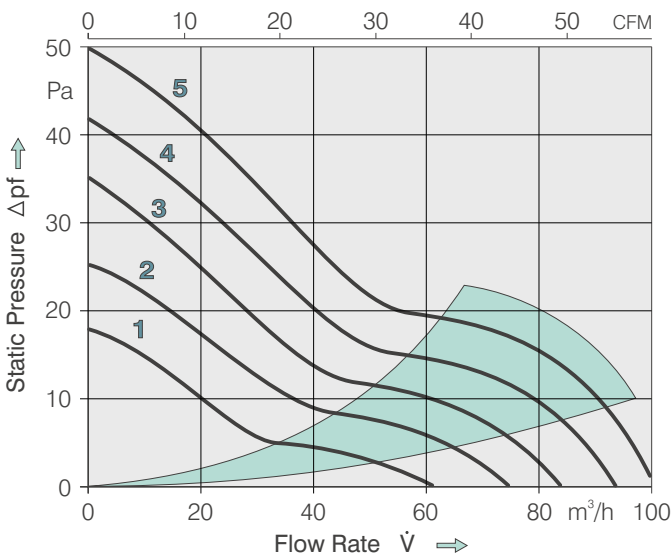




- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, blocking and overloading; partially impedance protected.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- Air exhaust over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

Series 3400N 92 x 92 x 25 mm

Air flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings		Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
m ³ /h	CFM				V DC	V DC				dB(A)	bels			
61	35.9	12	8...15	23	4.0	□	1.2	1950	-20...+70	80 000/40 000	1	3412 NGL	58	
61	35.9	12	8...15	23	4.0	■	1.2	1950	-20...+70	80 000/40 000	1	3412 NL		
72	42.4	12	8...15	28	4.3	□	1.6	2300	-20...+70	75 000/37 500	2	3412 NGM	58	
72	42.4	12	8...15	28	4.3	■	1.6	2300	-20...+70	75 000/37 500	2	3412 NM		
84	49.4	12	8...15	32	4.7	□	2.2	2700	-20...+70	70 000/35 000	3	3412 NG	58	
84	49.4	12	8...15	32	4.7	■	2.2	2700	-20...+70	70 000/35 000	3	3412 N	66	
94	55.3	12	8...15	36	5.0	□	2.5	3000	-20...+70	70 000/35 000	4	3412 NGH		
94	55.3	12	8...15	36	5.0	■	2.5	3000	-20...+70	70 000/35 000	4	3412 NH		
102	60.0	12	8...13.2	39	5.1	□	3.2	3250	-20...+60	70 000/45 000	5	3412 NGHH	58	
102	60.0	12	8...13.2	39	5.1	■	3.2	3250	-20...+60	70 000/45 000	5	3412 NHH		
61	35.9	24	18...28	23	4.0	□	1.4	1950	-20...+70	80 000/40 000	1	3414 NGL		
61	35.9	24	18...28	23	4.0	■	1.4	1950	-20...+70	80 000/40 000	1	3414 NL		
72	42.4	24	18...28	28	4.3	□	1.8	2300	-20...+70	75 000/37 500	2	3414 NGM		
72	42.4	24	18...28	28	4.3	■	1.8	2300	-20...+70	75 000/37 500	2	3414 NM		
84	49.4	24	18...28	32	4.7	□	2.3	2700	-20...+70	70 000/35 000	3	3414 NG		
84	49.4	24	18...28	32	4.7	■	2.3	2700	-20...+70	70 000/35 000	3	3414 N		
94	55.3	24	18...26	36	5.0	□	3.0	3000	-20...+70	70 000/35 000	4	3414 NGH	58	
94	55.3	24	18...26	36	5.0	■	3.0	3000	-20...+70	70 000/35 000	4	3414 NH		
102	60.0	24	18...26	39	5.1	□	3.2	3250	-20...+70	70 000/35 000	5	3414 NGHH		
102	60.0	24	18...26	39	5.1	■	3.2	3250	-20...+70	70 000/35 000	5	3414 NHH		

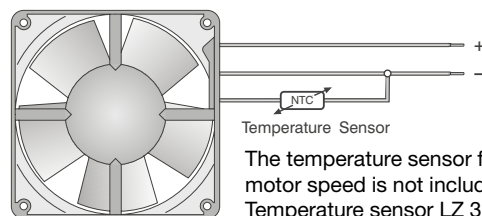
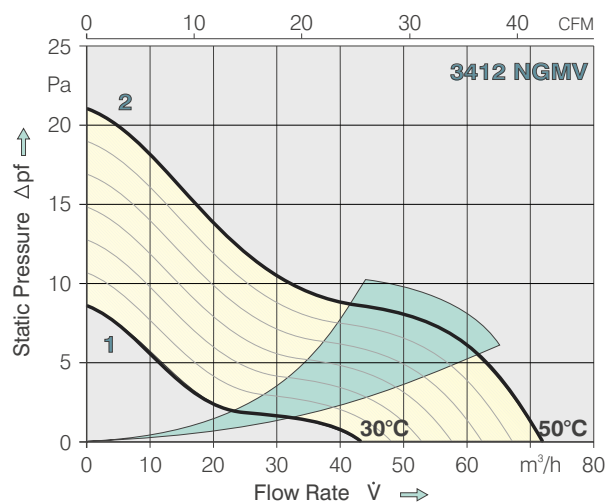




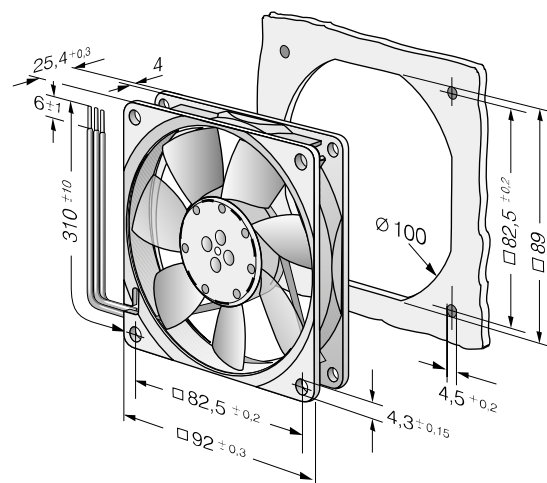
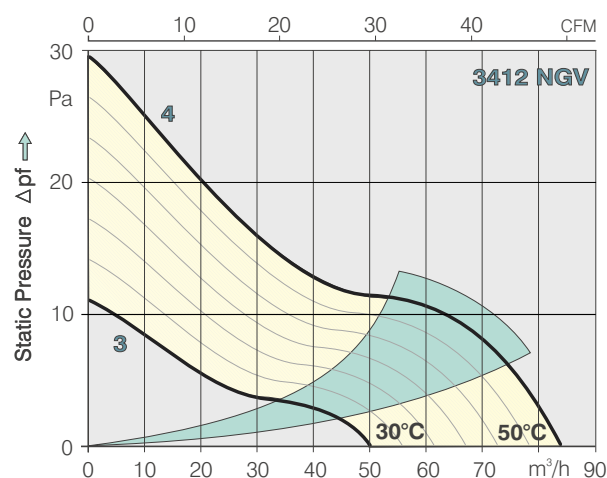
- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, blocking and overloading; partially impedance protected.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- Air exhaust over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

Series 3400N 92 x 92 x 25 mm VARIOFAN

	Air flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
	m ³ /h	CFM									V DC	V DC			
30-50 °C	44	25.9	12	8...14	14	3.5	□	1.5	1400	-20...+70	75 000/37 500		1	3412 NGMV	65
	72	42.4			28	4.6		2.0	2300		2				
30-50 °C	50	29.5	12	8...12.6	16	3.7	□	1.6	1600	-20...+70	75 000/37 500		3	3412 NGV	65
	84	49.4			32	5.0		2.5	2700		4				



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





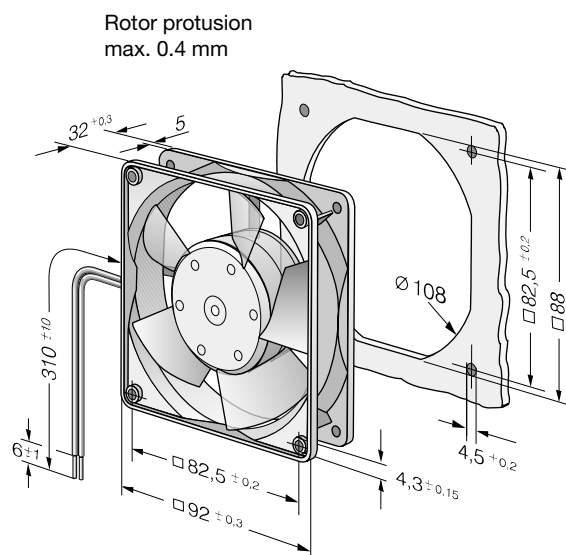
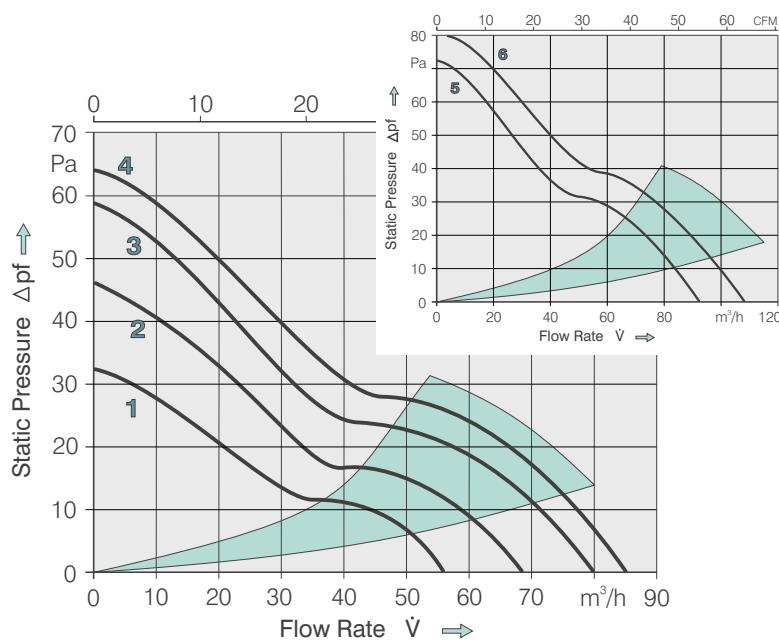
- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, blocking and overloading by PTC-resistor; partially impedance-protected.

- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- Air exhaust over struts. Rotational direction CW looking at rotor.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 190 g.

Series 3300

92 x 92 x 32 mm

Air flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L_{10}		Curve	Type	Specials
m ³ /h	CFM									V DC	V DC			
56	33.0	12	6...15	29	4.5	□	1.4	2 150	-20...+75	80 000/35 000		1	3312 GL	
56	33.0	12	6...15	29	4.5	■	1.4	2 150	-20...+75	80 000/35 000		1	3312 L	
68	40.0	12	6...15	34	4.8	□	1.7	2 600	-20...+75	70 000/30 000		2	3312 GM	
68	40.0	12	6...15	34	4.8	■	1.7	2 600	-20...+75	70 000/30 000		2	3312 M	
80	47.1	12	6...15	37	5.2	□	2.4	3 000	-20...+75	70 000/30 000		3	3312 G	
80	47.1	12	6...15	37	5.2	■	2.4	3 000	-20...+75	70 000/30 000		3	3312	58/62
93	54.7	12	6...15	43	5.7	■	3.5	3 500	-20...+75	65 000/27 500		5	3312-177	
56	33.0	24	12...28	29	4.5	■	1.4	2 150	-20...+75	80 000/35 000		1	3314 L	
68	40.0	24	12...28	34	4.8	■	1.7	2 600	-20...+75	70 000/30 000		2	3314 M	
80	47.1	24	12...28	37	5.2	□	2.4	3 000	-20...+75	70 000/30 000		3	3314 G	
80	47.1	24	12...28	37	5.2	■	2.4	3 000	-20...+75	70 000/30 000		3	3314	
85	50.0	24	12...28	40	5.4	■	3.0	3 200	-20...+75	60 000/25 000		4	3314-140	
107	63.0	24	12...28	47	6.0	■	5.3	4 000	-20...+75	57 500/25 000		6	3314 H	
80	47.1	48	36...56	37	5.2	■	2.7	3 000	-20...+75	70 000/30 000		3	3318	58
107	63.0	48	36...56	47	6.0	■	5.5	4 000	-20...+75	57 500/25 000		6	3318 H	60/62



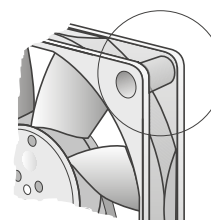


- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, blocking and overloading by PTC-resistor; partially impedance protected.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- 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.

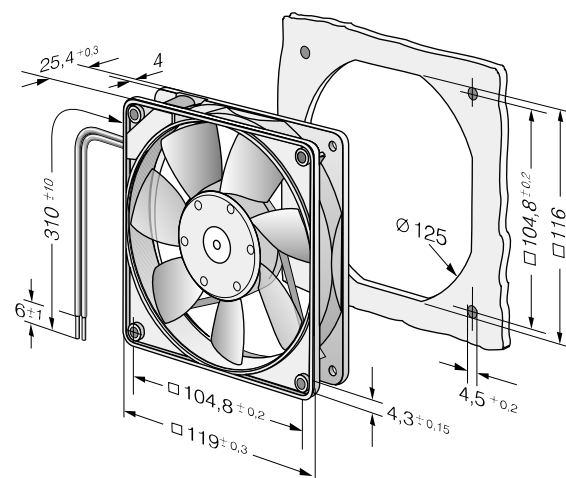
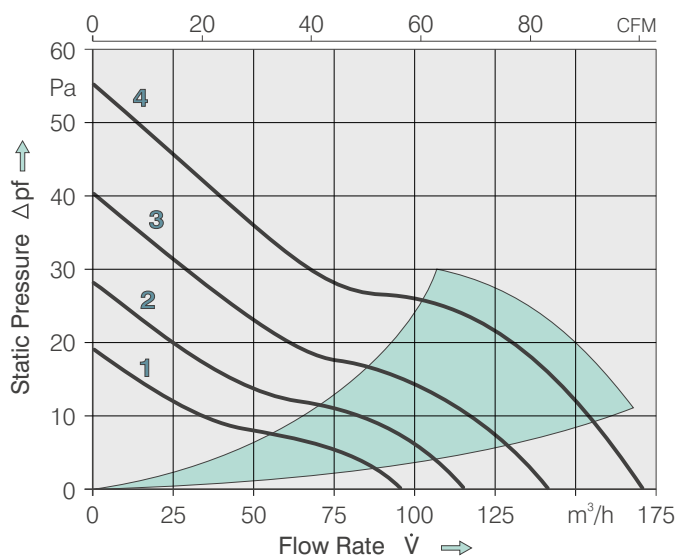
Series 4400 F 119 x 119 x 25 mm

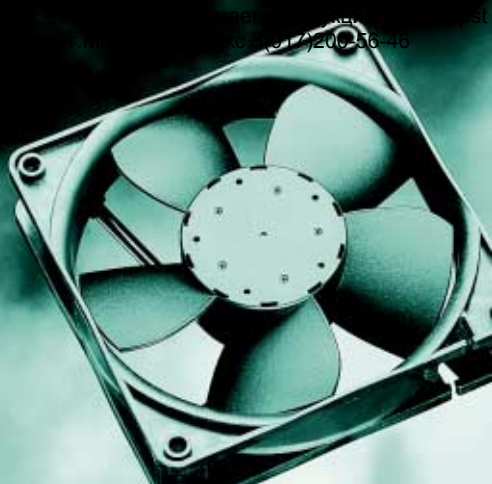
Air flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
m ³ /h	CFM									V DC	V DC			
94	55.3	12	7...14	26	3.9	□	1.25	1600	-20...+75	80 000/35 000		1	4412FGL	59
114	67.1	12	7...12.6	32	4.3	□	2.0	1950	-20...+75	75 000/32 500		2	4412FGML	59/60
140	82.4	12	7...12.6	38	4.8	□	3.2	2400	-20...+75	70 000/30 000		3	4412FGM	60
140	82.4	12	7...12.6	38	4.8	■	3.2	2400	-20...+75	70 000/30 000		3	4412FM	59
170	100.1	12	8...12.6	43	5.3	■	5.3	2900	-20...+60	60 000/37 500		4	4412F	59
94	55.3	24	18...28	26	3.9	■	1.0	1600	-20...+75	80 000/35 000		1	4414FL	59
140	82.4	24	12...28	38	4.8	■	3.2	2400	-20...+75	70 000/30 000		3	4414FM	59
170	100.1	24	12...28	43	5.3	□		2900	-20...+75	62 500/27 500		4	4414FG	59
170	100.1	24	12...28	43	5.3	■	5.0	2900	-20...+60	60 000/37 500		4	4414F	59/60
170	100.1	48	43...53	43	5.3	■	5.5	2900	-20...+60	60 000/37 500		4	4418F	59/60/66

DC Axial Fans



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

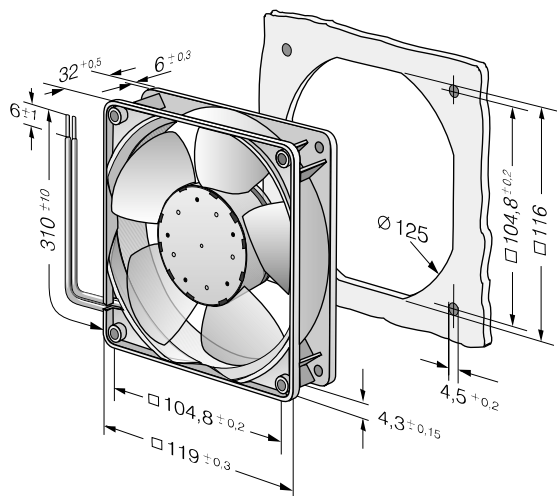
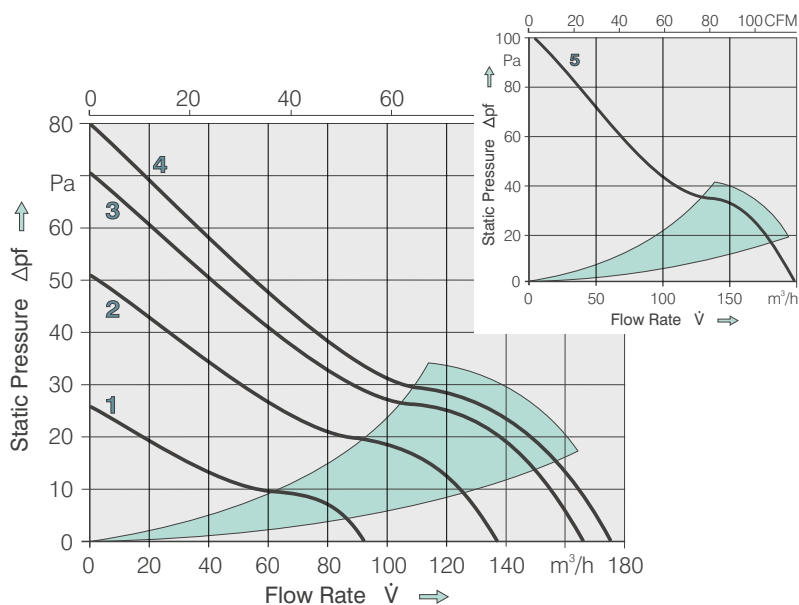




- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, blocking and overloading; partially impedance protected.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- Air exhaust over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

Series 4300N 119x119x32 mm

Air flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
m ³ /h	CFM									V DC	V DC			
93	54.7	12	7...14.5	27	4.1	□	1.2	1650	-20...+70	80 000/40 000	1	4312 NGL		
93	54.7	12	7...14.5	27	4.1	■	1.2	1650	-20...+70	80 000/40 000	1	4312 NL		
137	80.6	12	7...14.5	37	5.1	□	2.6	2450	-20...+70	70 000/35 000	2	4312 NGM		
137	80.6	12	7...14.5	37	5.1	■	2.6	2450	-20...+70	70 000/35 000	2	4312 NM		
166	97.7	12	7...14.5	43	5.6	□	4.0	3000	-20...+70	60 000/30 000	3	4312 NGN		
166	97.7	12	7...14.5	43	5.6	■	4.0	3000	-20...+70	60 000/30 000	3	4312 NN		
176	103.4	12	7...14.5	45	5.8	■	4.5	3150	-20...+70	60 000/30 000	4	4312 NH	59	
198	116.5	12	7...14.5	49	6.2	■	6.5	3600	-20...+60	57 500/35 000	5	4312 NHH		
93	54.7	24	12...28	27	4.1	□	1.2	1650	-20...+70	80 000/40 000	1	4314 NGL		
93	54.7	24	12...28	27	4.1	■	1.2	1650	-20...+70	80 000/40 000	1	4314 NL		
137	80.6	24	12...28	37	5.1	□	2.6	2450	-20...+70	70 000/35 000	2	4314 NGM		
137	80.6	24	12...28	37	5.1	■	2.6	2450	-20...+70	70 000/35 000	2	4314 NM		
166	97.7	24	12...28	43	5.6	□	4.3	3000	-20...+70	60 000/30 000	3	4314 NGN		
166	97.7	24	12...28	43	5.6	■	4.3	3000	-20...+70	60 000/30 000	3	4314 NN		
176	103.4	24	12...28	45	5.8	■	4.5	3150	-20...+70	60 000/30 000	4	4314 NH		
198	116.5	24	12...28	49	6.2	■	6.0	3600	-20...+70	57 500/27 500	5	4314 NHH		
166	97.7	48	36...56	43	5.6	□	4.1	3000	-20...+70	60 000/30 000	3	4318 NGN		





- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, blocking 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 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 220 g.

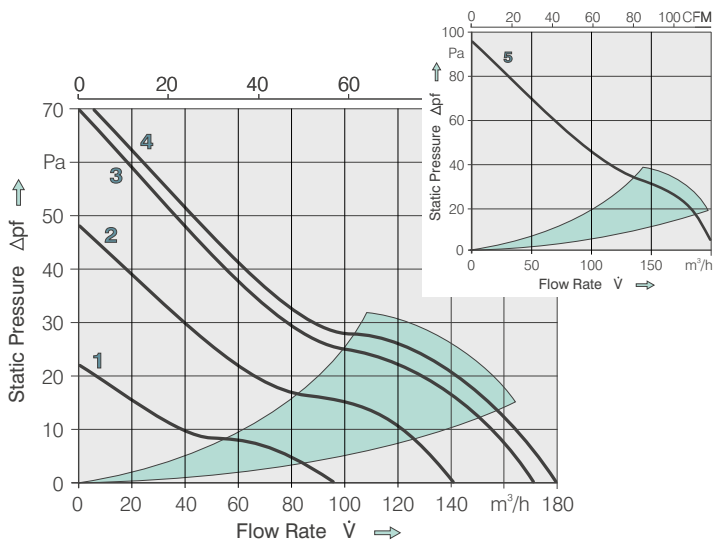
Series 4300

119 x 119 x 32 mm

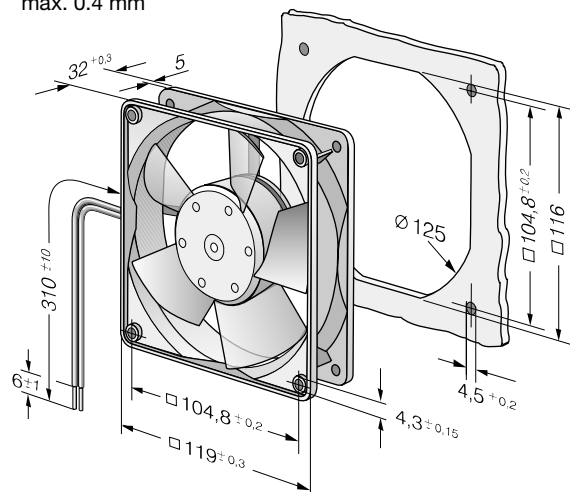
Air flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
m ³ /h	CFM									V DC	V DC			
95	55.9	12	6...15	30	4.3	□	1.2	1550	-20...+75	80 000/35 000		1	4312 GL	
95	55.9	12	6...15	30	4.3	■	1.2	1550	-20...+75	80 000/35 000		1	4312 L	60/62
140	82.4	12	6...15	39	5.3	□	2.6	2300	-20...+75	70 000/30 000		2	4312 GM	
140	82.4	12	6...15	39	5.3	■	2.6	2300	-20...+75	70 000/30 000		2	4312 M	60
170	100.1	12	6...15	45	5.8	□	5.0	2800	-20...+75	62 500/27 500		3	4312 G	
170	100.1	12	6...15	45	5.8	■	5.0	2800	-20...+75	62 500/27 500		3	4312	59/64
180	105.9	12	6...15	47	6.1	■	5.8	3000	-20...+75	57 500/25 000		4	4312-143	
204	120.1	12	6...13.2	51	6.4	■	8.5	3400	-20...+75	47 500/20 000		5	4312-179	
95	55.9	24	12...28	30	4.3	■	1.2	1550	-20...+75	80 000/35 000		1	4314 L	
140	82.4	24	12...28	39	5.3	■	2.6	2300	-20...+75	70 000/30 000		2	4314 M	
170	100.1	24	12...28	45	5.8	□	5.0	2800	-20...+75	62 500/27 500		3	4314 G	59
170	100.1	24	12...28	45	5.8	■	5.0	2800	-20...+75	62 500/27 500		3	4314	59/60/62
180	105.9	24	12...28	47	6.1	■	5.8	3000	-20...+75	57 500/25 000		4	4314-147	
204	120.1	24	12...26.5	51	6.4	■	9.5	3400	-20...+75	45 000/20 000		5	4314-180	
140	82.4	48	36...56	39	5.3	■	3.5	2300	-20...+75	70 000/30 000		2	4318 M	59
170	100.1	48	36...53	45	5.8	□	5.0	2800	-20...+75	62 500/27 500		3	4318 G	59
170	100.1	48	36...53	45	5.8	■	5.0	2800	-20...+75	62 500/27 500		3	4318	59/60/62

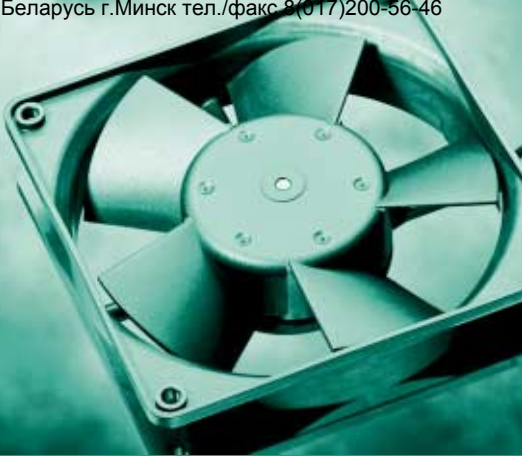
Attention:

In the foreseeable future the 4300 fan series will be removed from the range and replaced by the products of the new series 4300 N.



Rotor protrusion max. 0.4 mm



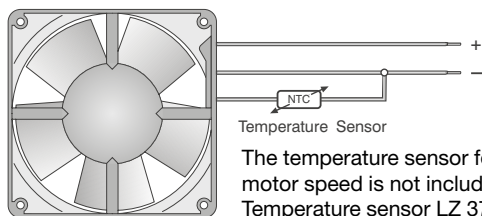
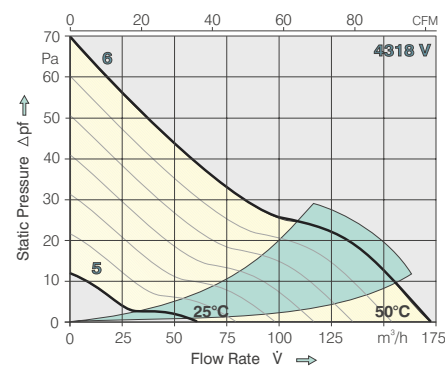
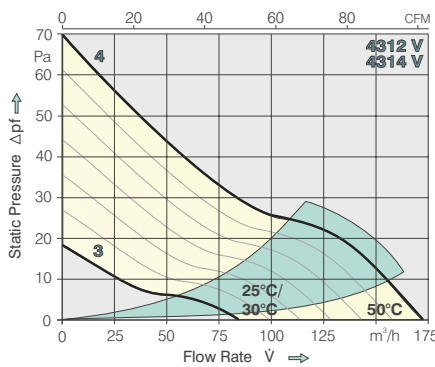
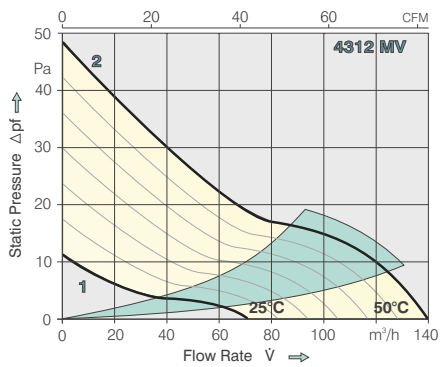


- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, blocking and overloading by PTC-resistor; partially impedance protected.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- 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.

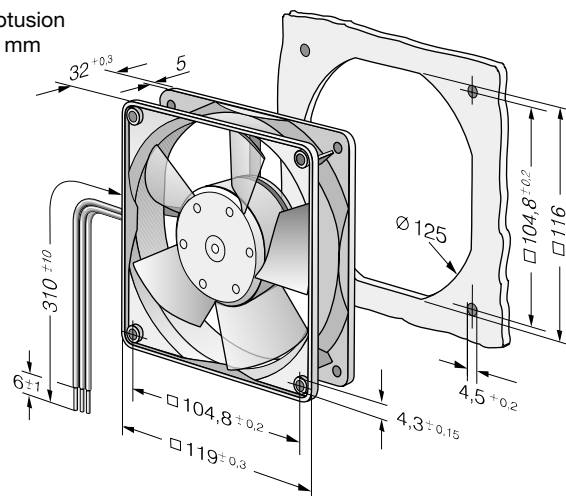
Series 4300

119 x 119 x 32 mm VARIOFAN

	Air flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
	m ³ /h	CFM									V DC	V DC			
25-50 °C	68	40.0	12	8...15	22	3.7	■	1.5	1 150	-20...+65	70 000 / 40 000		1	4312 MV	63
	140	82.4			39	5.3		3.0	2 300		2				
25-50 °C	85	50.0	12	8...13.2	29	4.2	■	2.4	1 400	-20...+65	65 000 / 35 000		3	4312 V	63
	170	100.0			45	5.8		5.5	2 800		4				
30-50 °C	85	50.0	24	21...27	29	4.2	■	3.0	1 400	-20...+65	65 000 / 35 000		3	4314 V	63
	170	100.0			45	5.8		5.4	2 800		4				
25-50 °C	61	35.9	48	40...53	21	-	■	2.6	1 000	-20...+65	65 000 / 35 000		5	4318 V	63
	170	100.0			45	5.8		5.4	2 800		6				



Rotor protrusion max. 0.4 mm

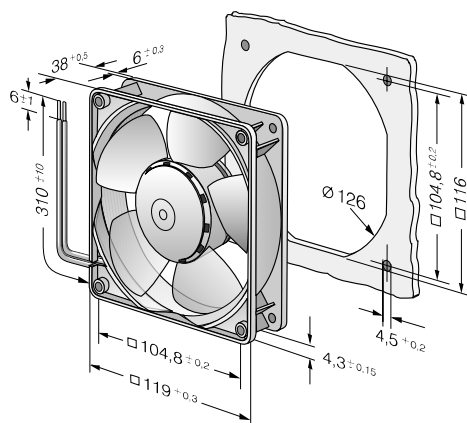
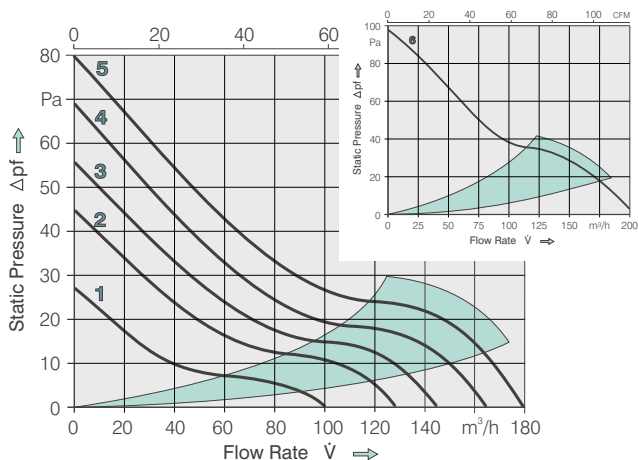




- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, blocking and overloading; partially impedance protected.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- Air exhaust over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

Series 4200N 119 x 119 x 38 mm

Air flow		Nominal Voltage	Voltage Range	Noise	Sintec-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
m ³ /h	CFM									V DC	V DC			
100	58.9	12	7...14.5	28	4.3	□	1.4	1700	-20...+70	80 000/40 000	1	4212 NGL		
100	58.9	12	7...14.5	28	4.3	■	1.1	1700	-20...+70	80 000/40 000	1	4212 NL		
127	74.8	12	7...14.5	35	4.8	□	2.3	2150	-20...+70	70 000/35 000	2	4212 NGML		
127	74.8	12	7...14.5	35	4.8	■	1.9	2150	-20...+70	70 000/35 000	2	4212 NML		
144	84.8	12	7...14.5	38	5.1	□	3.1	2450	-20...+70	70 000/35 000	3	4212 NGM		
144	84.8	12	7...14.5	38	5.1	■	2.8	2450	-20...+70	70 000/35 000	3	4212 NM		
165	97.1	12	7...14.5	42	5.4	□	4.3	2750	-20...+70	60 000/30 000	4	4212 NGN	59	
165	97.1	12	7...14.5	42	5.4	■	4.0	2750	-20...+70	60 000/30 000	4	4212 NN		
180	105.9	12	7...14.5	45	5.7	■	4.8	3050	-20...+70	60 000/30 000	5	4212 NH		
205	120.7	12	7...14.5	49	6.1	■	7.5	3500	-20...+60	50 000/30 000	6	4212 NHH		
100	58.9	24	12...28	28	4.3	□	1.4	1700	-20...+70	80 000/40 000	1	4214 NGL		
100	58.9	24	12...28	28	4.3	■	1.2	1700	-20...+70	80 000/40 000	1	4214 NL		
127	74.8	24	12...28	35	4.8	□	2.3	2150	-20...+70	70 000/35 000	2	4214 NGML		
127	74.8	24	12...28	35	4.8	■	1.9	2150	-20...+70	70 000/35 000	2	4214 NML		
144	84.8	24	12...28	38	5.1	□	3.1	2450	-20...+70	70 000/35 000	3	4214 NGM		
144	84.8	24	12...28	38	5.1	■	2.6	2450	-20...+70	70 000/35 000	3	4214 NM		
165	97.1	24	12...28	42	5.4	□	4.3	2750	-20...+70	60 000/30 000	4	4214 NGN	59	
165	97.1	24	12...28	42	5.4	■	3.6	2750	-20...+70	60 000/30 000	4	4214 NN		
180	105.9	24	12...28	45	5.7	■	4.8	3050	-20...+70	60 000/30 000	5	4214 NH	59	
205	120.7	24	12...28	49	6.1	■	7.5	3500	-20...+70	50 000/25 000	6	4214 NHH		
165	97.1	48	36...56	42	5.4	□	4.0	2750	-20...+70	60 000/30 000	4	4218 NGN	59	
165	97.1	48	36...56	42	5.4	■	3.6	2750	-20...+70	60 000/30 000	4	4218 NN		
180	105.9	48	36...56	45	5.7	■	4.8	3050	-20...+70	60 000/30 000	5	4218 NH		





- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, blocking 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 22, TR 64. Stripped and tinned ends.
- Mass 290 g.

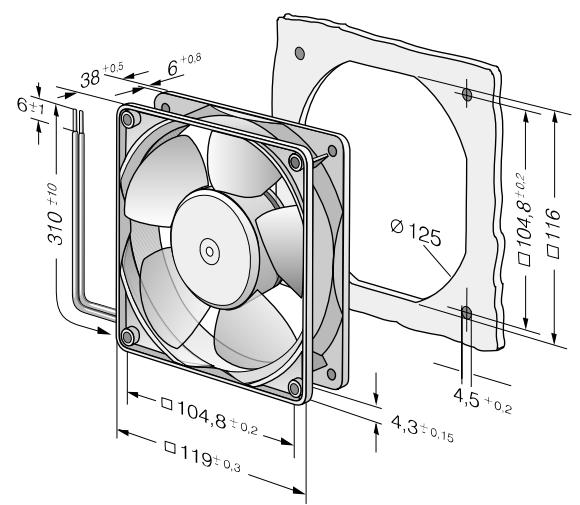
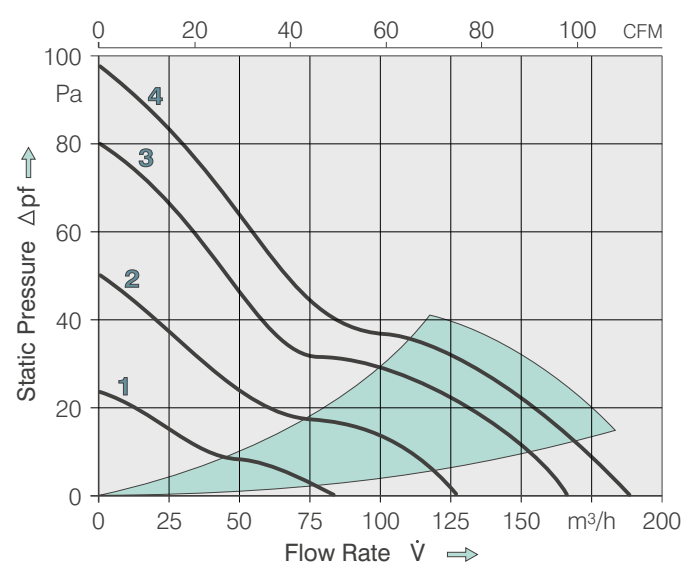
Series 4200

119 x 119 x 38 mm

Air flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings		Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
m ³ /h	CFM				V DC	V DC				dB(A)	bels			
86	50.6	12	7...14.5	29	4.2	■	1.2	1600	-20...+75	80 000 / 35 000		1	4212 L	60
127	74.7	12	7...14.5	38	4.9	□	2.2	2350	-20...+75	70 000 / 30 000		2	4212 GM	
127	74.7	12	7...14.5	38	4.9	■	2.2	2350	-20...+75	70 000 / 30 000		2	4212 M	59/64
165	97.1	12	7...14.5	45	5.6	■	4.3	3050	-20...+75	62 500 / 27 500		3	4212	59/60
184	108.3	12	7...14.5	49	5.9	■	5.3	3400	-20...+65	60 000 / 32 500		4	4212 H	59/60
86	50.6	24	12...28	29	4.2	■	1.2	1600	-20...+75	80 000 / 35 000		1	4214 L	
165	97.1	24	12...28	45	5.6	□	4.3	3050	-20...+75	62 500 / 27 500		3	4214 G	
165	97.1	24	12...28	45	5.6	■	4.3	3050	-20...+75	62 500 / 27 500		3	4214	59/60/64
184	108.3	24	12...28	49	5.9	■	5.3	3400	-20...+65	60 000 / 32 500		4	4214 H	59/60
165	97.1	48	36...56	45	5.6	■	4.3	3050	-20...+75	62 500 / 27 500		3	4218	59/60
184	108.3	48	36...56	49	5.9	■	5.6	3400	-20...+65	60 000 / 32 500		4	4218 H	59/60

Attention:

In the foreseeable future the 4200 fan series will be removed from the range and replaced by the products of the new series 4200N.





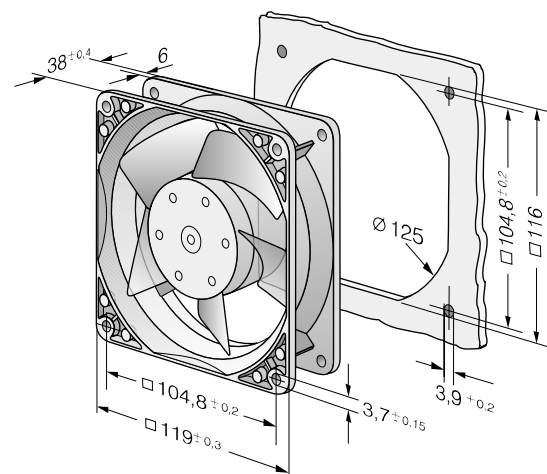
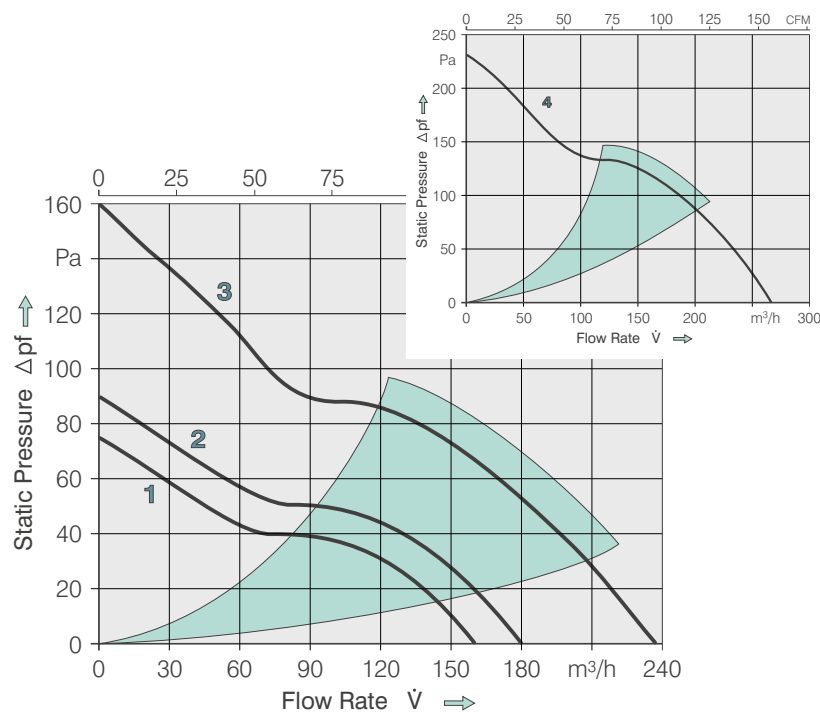
- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, blocking and overloading by PTC-resistor; partially impedance protected.

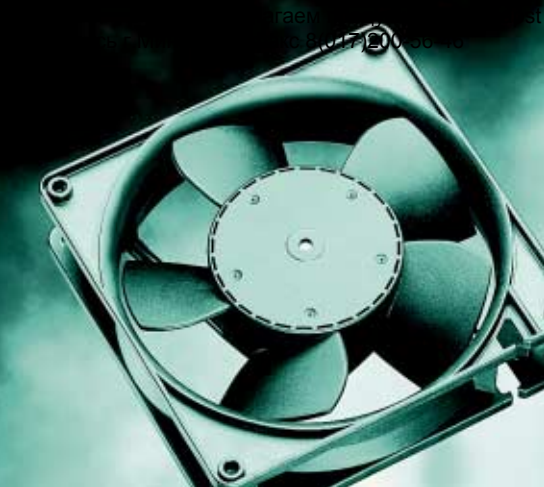
- Metal fan housing. Impeller of fibre-glass reinforced plastic PA. Housing with ground lug for screw M4.
- Air intake over struts. Rotational direction CW looking at rotor.
- Electrical connection via 2 flat pins 2,8 x 0,5 mm.
- Mass 390 g.

Series 4100N 119 x 119 x 38 mm

Air flow		Nominal Voltage	Voltage Range	Noise		Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
m ³ /h	CFM			V DC	V DC						dB(A)	bels			
160	94.2	12	7...15	44	5.3	□	3.5	2800	-10...+75	85 000/37 500		1	4182	NGX	
180	105.9	12	7...15	49	5.7	■	4.5	3200	-30...+75	85 000/37 500		2	4182	NX	60
160	94.2	24	12...30	44	5.3	□	3.5	2800	-10...+75	85 000/37 500		1	4184	NGX	
180	105.9	24	12...29	49	5.7	■	4.5	3200	-30...+75	85 000/37 500		2	4184	NX	59
237	139.5	24	12...25	59	6.5	■	11	4400	-30...+55	70 000/50 000		3	4184	NXH	59
160	94.2	48	36...56	44	5.3	■	3.5	2800	-30...+75	85 000/37 500		1	4188	NXM	
Programmable fan Vario-Pro (electr. connection via leads)															
270	158.9	12	11...13	64	7.0	■	15.5	5000	-20...+50	70 000/55 000		4	4112	NHH	68

⊕ 48V Type with grounding screw M4x8 (Torx).

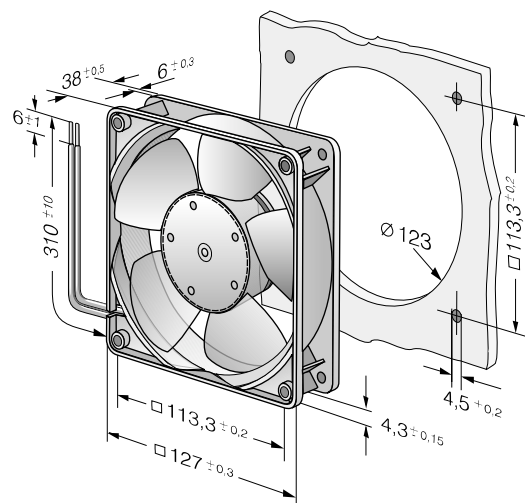
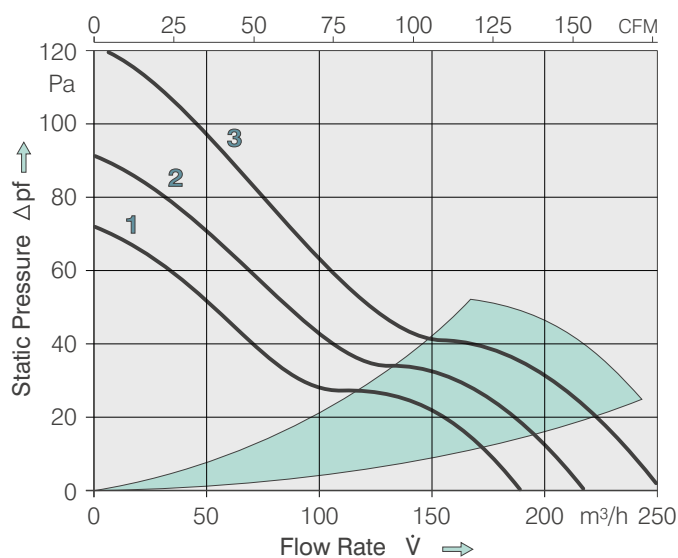




- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, blocking and over-loading.
- Fan of fibreglass reinforced plastic. PBTP housing, PA impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 310 g.

Series 5200N 127 x 127 x 38 mm

Air flow		Nominal Voltage	Voltage Range	Noise		Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L_{10}		Curve	Type	Specials
m^3/h	CFM			V DC	V DC						dB(A)	bels			
187	110.1	12	7...14.5	43	5.3	■	4.6	2750	-20...+75	62 500/27 500	1	5212 NM			
216	127.1	12	7...14	46	5.6	■	6.0	3150	-20...+75	57 500/25 000	2	5212 NN	68		
252	148.3	12	7...14	51	6.0	■	9.8	3650	-20...+70	45 000/22 500	3	5212 NH			
187	110.1	24	12...28	43	5.3	■	4.6	2750	-20...+75	62 500/27 500	1	5214 NM			
216	127.1	24	12...28	46	5.6	■	6.0	3150	-20...+75	57 500/25 000	2	5214 NN	68		
252	148.3	24	12...28	51	6.0	■	9.8	3650	-20...+70	45 000/22 500	3	5214 NH			
187	110.1	48	40...56	43	5.3	■	5.0	2750	-20...+75	62 500/27 500	1	5218 NM			
216	127.1	48	40...56	46	5.6	■	6.5	3150	-20...+65	57 500/32 500	2	5218 NN	68		
252	148.3	48	40...56	51	6.0	■	10.0	3650	-20...+55	45 000/32 500	3	5218 NH			



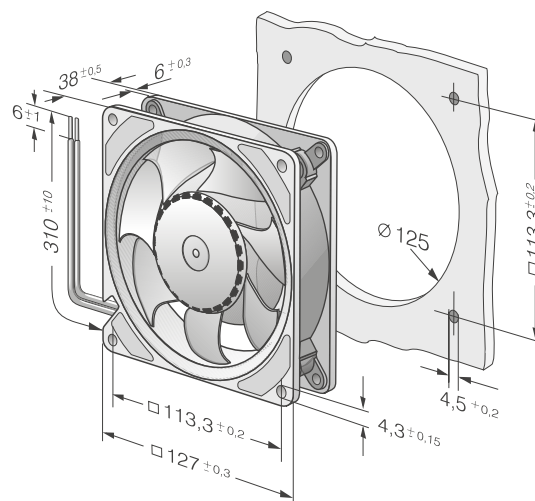
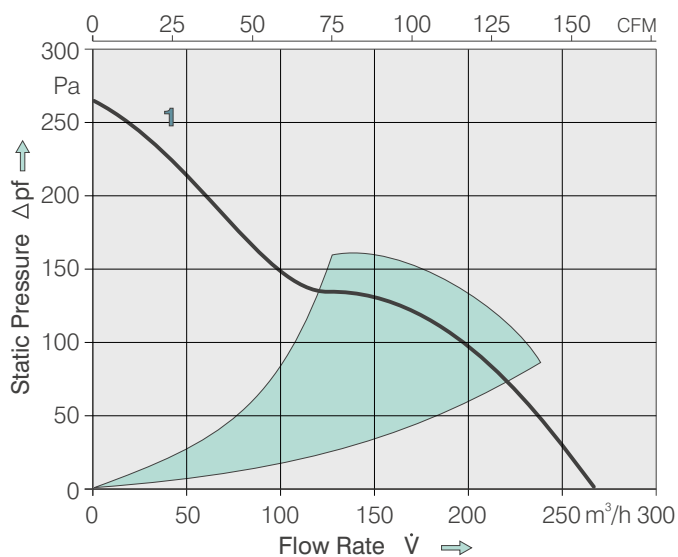


- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, blocking and over-loading.
- Metal fan housing, impeller of fibre-glass reinforced plastic PA.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 490 g.

Series DV5200 127 x 127 x 38 mm

Air flow		Nominal Voltage	Voltage Range	Noise	Sintec-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
m ³ /h	CFM									V DC	V DC			
270	158.9	12	10.8...13.2	56	6.4	■	20	5000	-20...+65	70000/40000			DV5212	68
270	158.9	24	21.6...26.4	56	6.4	■	20	5000	-20...+65	70000/40000			DV5214	68
270	158.9	48	43...53	56	6.4	■	22	5000	-20...+65	70000/40000			DV5218	68

DC Axial Fans



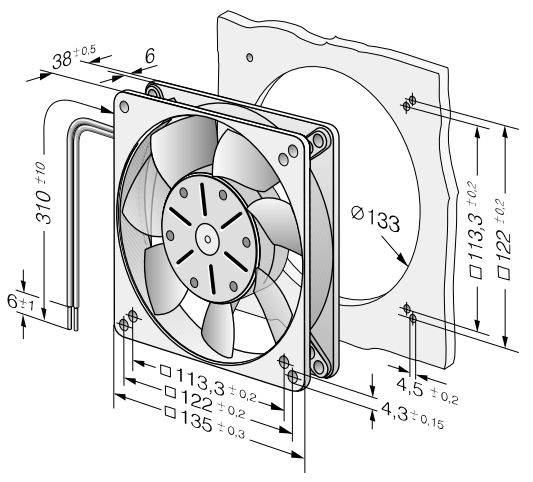
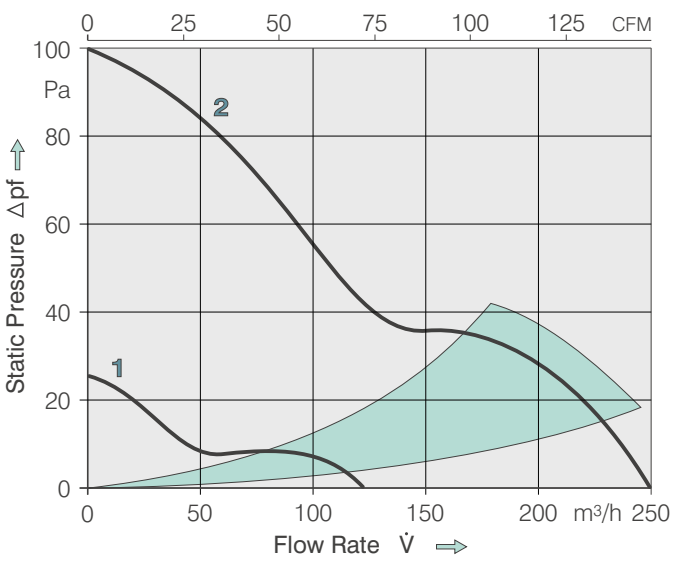


- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics. With electronic protection against reverse polarity and blocking.
- Metal fan housing and impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via leads AWG 22, TR 64. Stripped and tinned ends. Housing with ground lug for screw M4.
- Mass 650 g.

Series 5100N 135 x 135 x 38 mm

Air flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
m ³ /h	CFM									V DC	V DC			
250	147.2	12	6...15	48	6.1	■	9.5	2900	-25...+72	80 000 / 37 500	2	5112 N	59/63	
250	147.2	24	12...30	48	6.1	■	9.5	2900	-25...+72	80 000 / 37 500	2	5114 N	59	
122	21.8	48	24...60	28	4.1	■	2.6	1 400	-25...+72	85 000 / 40 000	1	5118 NL		
250	147.2	48	24...60	48	6.1	■	9.5	2900	-25...+72	80 000 / 37 500	2	5118 N	59/61	

⊕ 48V Type with grounding screw M4x6 7500C.

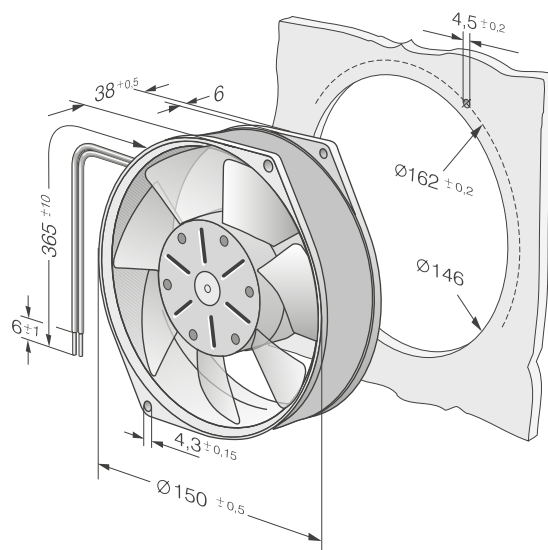
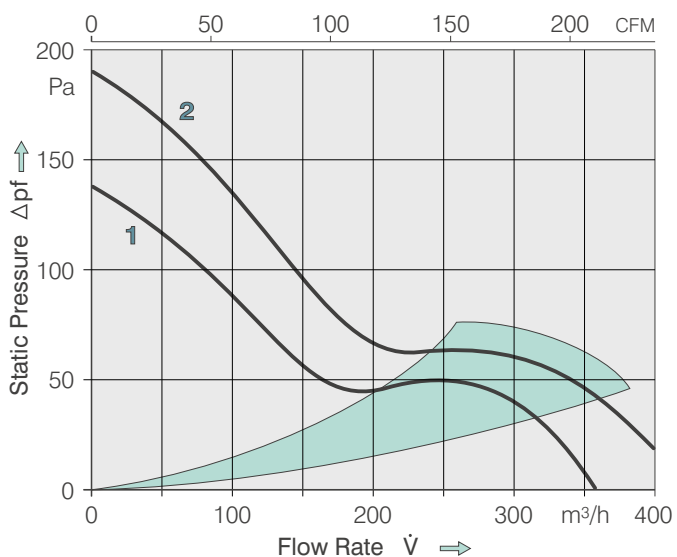


- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics. With electronic protection against reverse polarity and blocking.
- Metal fan housing and impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends. Housing with ground lug for screw M4.
- Mass 620 g.

Series 7100N 150 Ø x 38 mm

Air flow		Nominal Voltage	Voltage Range	Noise		Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
m ³ /h	CFM			V DC	V DC						dB(A)	bels			
360	211.9	12	6...15	55	6.5	■	12	2850	-25...+72	80 000/37 500		1	7112N	59	
360	211.9	24	12...30	55	6.5	■	12	2850	-25...+72	80 000/37 500		1	7114N	59/63	
420	247.2	24	12...26.5	59	7.0	■	19	3350	-25...+72	75 000/35 000		2	7114NH		
360	211.9	48	24...60	55	6.5	■	12	2850	-25...+72	80 000/37 500		1	7118N	59/61	

⊕ 48V Type with grounding screw M4x8 (TORX).



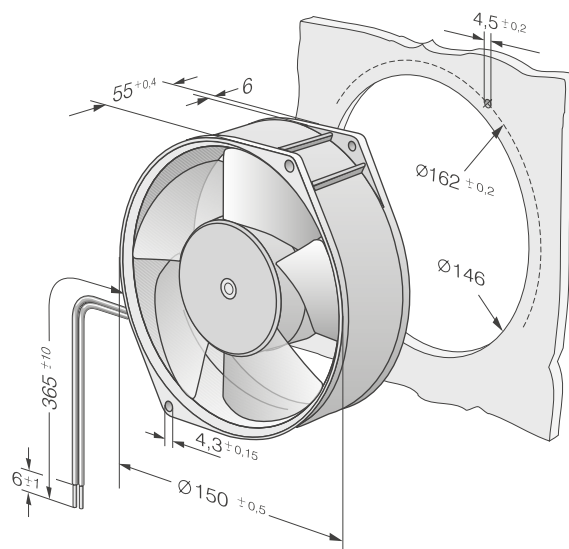
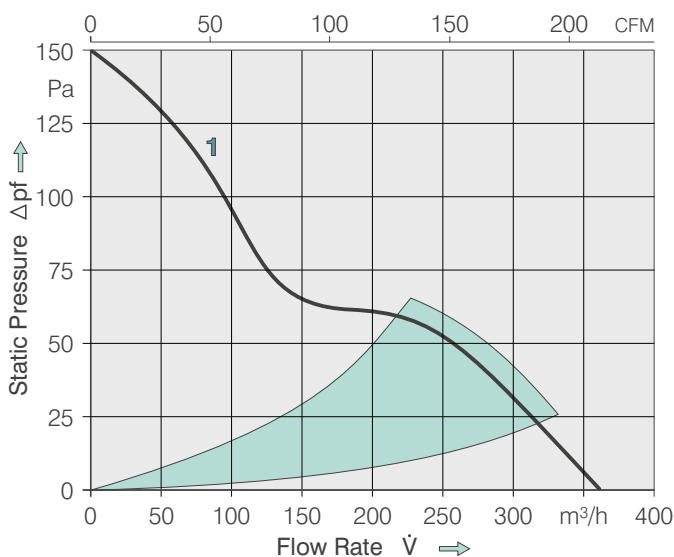


- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics. With electronic protection against reverse polarity and blocking.
- Metal fan housing. Impeller of fibre-glass reinforced plastic PA.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends. Housing with ground lug for screw M4.
- Mass 725 g.

Series 7200N 150 Ø x 55 mm

Air flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
m ³ /h	CFM									V DC	V DC			
360	211.9	12	6...15	50	6.2	■	12	3050	-25...+72	80 000/37 500	1	7212 N	68	
360	211.9	24	12...30	50	6.2	■	12	3050	-25...+72	80 000/37 500	1	7214 N	61/64/68	
360	211.9	48	24...60	50	6.2	■	12	3050	-25...+72	80 000/37 500	1	7218 N	68	

⊕ 48V Type with grounding screw M4 x 8 (TORX).





- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics. With electronic protection against reverse polarity and blocking; 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.
- Electrical connection via 2 flat pins 3 x 0.5 mm. Housing with ground lug and screw M4 x 8 (TORX).
- Mass 820 g.

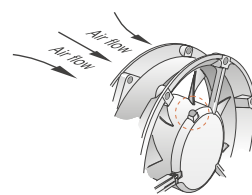
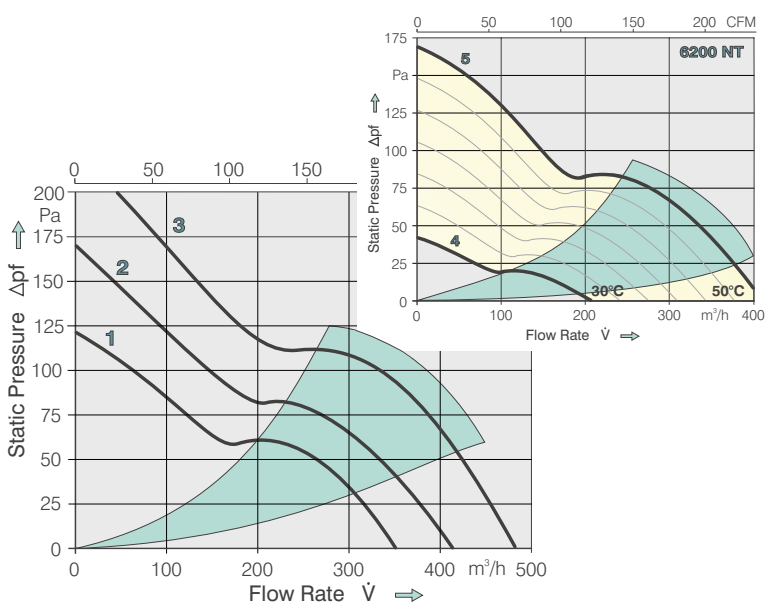
Series 6200N 172 Ø x 51 mm

Air flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
m ³ /h	CFM									V DC	V DC			
350	206.0	12	8...15	50	5.7	■	12.0	2850	-20...+72	80 000/37 500		1	6212 NM	68
350	206.0	24	12...32	50	5.7	■	12.0	2850	-20...+72	80 000/37 500		1	6224 NM	61/68
410	241.3	24	12...28	55	6.1	■	18.0	3400	-20...+72	75 000/35 000		2	6224 N	59/68
480	282.5	24	12...28	61	6.9	■	26.0	4000	-20...+55*	70 000/50 000		3	6224 NH	68
350	206.0	48	28...60	50	5.7	■	11.5	2850	-20...+72	80 000/37 500		1	6248 NM	68
410	241.3	48	28...60	55	6.1	■	17.0	3400	-20...+72	75 000/35 000		2	6248 N	59/61/68
480	282.5	48	36...56	61	6.9	■	26.0	4000	-20...+55*	70 000/50 000		3	6248 NH	68

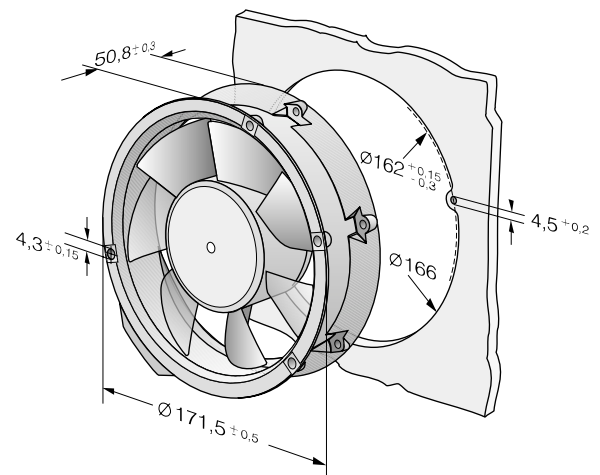
VARIOFAN – DC fans with temperature-dependent speed control

30-50 °C	205	120.6	24	12...28	35	4.5	■	8.5	1700	-10...+72	77 500/35 000		4	6224 NT	68
	410	241.3		55	6.1	18.0		3400	5						
30-50 °C	205	120.6	48	28...60	35	4.5	■	8.5	1700	-10...+72	77 500/35 000		4	6248 NT	61/68
	410	241.3		55	6.1	17.0		3400	5						

* 72 °C upon request



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





■ 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.

■ 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 and screw M4 x 8 (TORX).
 ■ Mass 820 g.

Series 6200NTD 172 Ø x 51 mm TURBOFAN

Air flow		Nominal Voltage	Voltage Range	Noise		Sinter-Sleeve Bearings		Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀ at 40 °C	Curve	Type	Specials
m ³ /h	CFM			V DC	dB(A)	bels	□/■							
min	90	53.0	48	40...55	18	—	■	2	800	-20...+60	70000	1	6248NTD...	67
max	600	353.0												

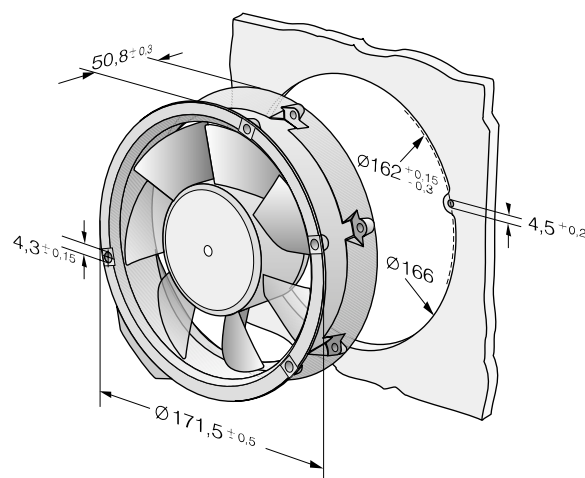
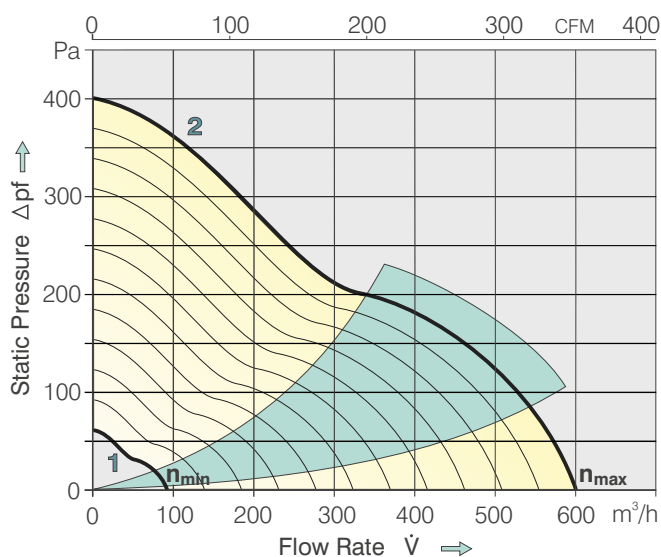
Type

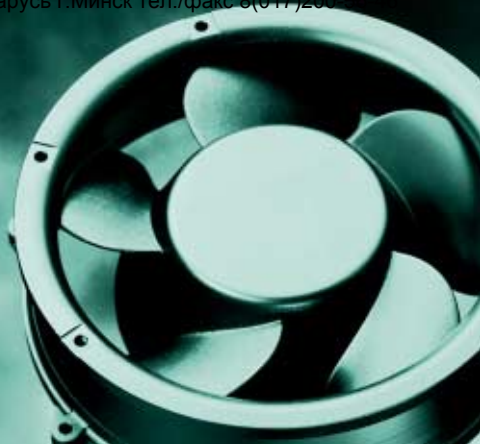
6248 NTDI
 6248 NTDI
 6248 NTDA
 6248 NTDP

Version

Temperature-controlled fan operation. NTC sensor integrated in fan
 Temperature-controlled fan operation. NTC sensor externally connected to separate lead
 Speed setting via control voltage
 Speed setting via PWM signal

24 V versions in preparation





■ DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics. With electronic protection against reverse polarity and blocking; electronic motor current limitation in the start-up phase and when rotor is blocked.

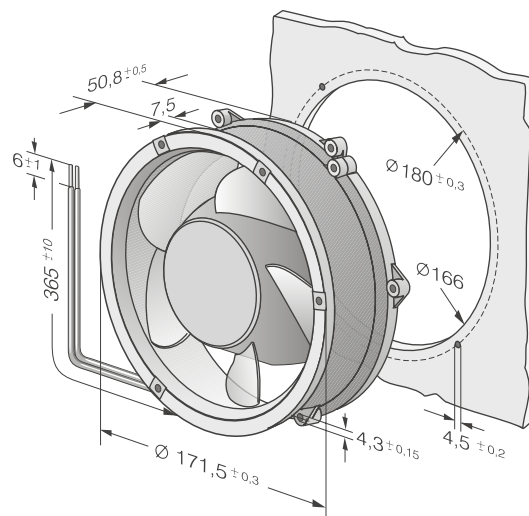
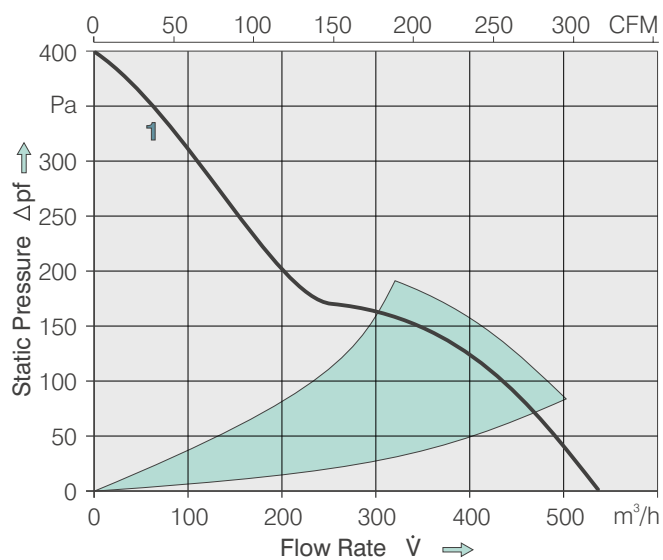
- Metal fan housing, impeller of fibre-glass reinforced plastic PA.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via leads AWG 22, TR 64. Stripped and tinned ends. Housing with ground lug and screw M4 x 8 (TORX).
- Mass 820 g.

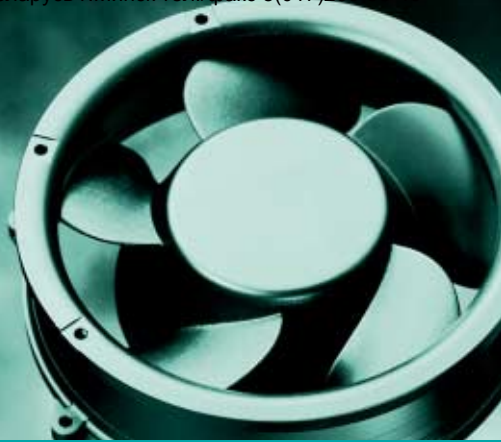
Series DV6200

172 Ø x 51 mm

Air flow		Nominal Voltage	Voltage Range		Noise		Sinter-Sleeve Bearings		Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
m ³ /h	CFM		V DC	V DC	dB(A)	bels	□/■	Watt				min ⁻¹	°C			
540	317.8	24	16...28	63	7.1	■	40.0	4 300	-20...+75	90 000 / 40 000	1	DV6224	59/61/63/64/68			
540	317.8	48	28...60	63	7.1	■	40.0	4 300	-20...+75	90 000 / 40 000	1	DV6248	61/68			

DC Axial Fans





- 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.

- Metal fan housing, impeller of fibre-glass reinforced plastic PA.
- Air exhaust over struts. CCW rotational direction looking at rotor.
- Electrical connection via leads. AWG 22, TR 64. Stripped and tinned ends. Housing with ground lug and screw M4x8 (TORX).
- Mass 820 g.

Series DV6200TD 172 Ø x 51 mm TURBOFAN

Air flow		Nominal Voltage	Voltage Range	Noise		Sinter-Sleeve Bearings		Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀ at 40 °C	Curve	Type	Specials
m ³ /h	CFM			V DC	V DC	dB(A)	bels							
min	100	59.0	48	40...55	29	—	■	20	800	-20...+60	65 000	1	DV6248 TD...	67
max	700	412.0												

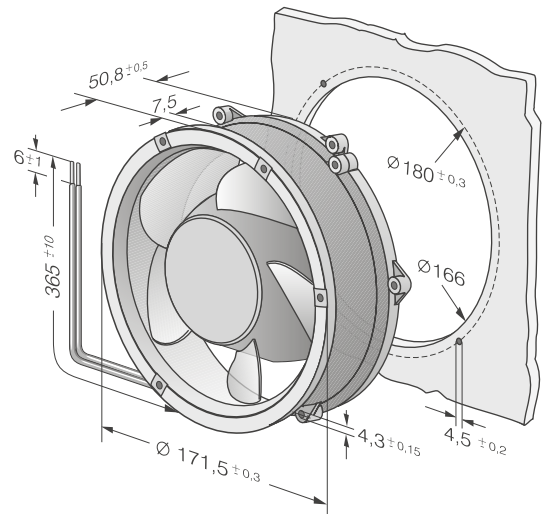
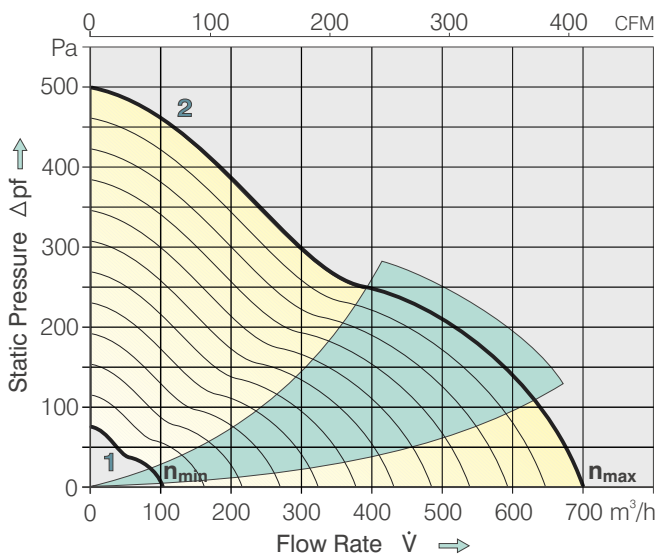
Type

DV 6248 TDI
DV 6248 TDT
DV 6248 TDA
DV 6248 TDP

Version

Temperature-controlled fan operation. NTC sensor integrated in fan
Temperature-controlled fan operation. NTC sensor externally connected to separate lead
Speed setting via control voltage
Speed setting via PWM signal

24 V versions in preparation





- DC fans with electronically commutated external rotor motor. Fully integrated commutation electronics. With electronic protection against reverse polarity and blocking; 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.
- Electrical connection via 2 flat pins 3 x 0.5 mm. Housing with ground lug and screw M4 x 8 (TORX).
- Mass 760 g.

Series 6400

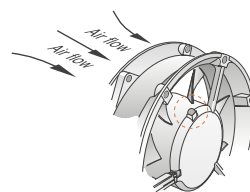
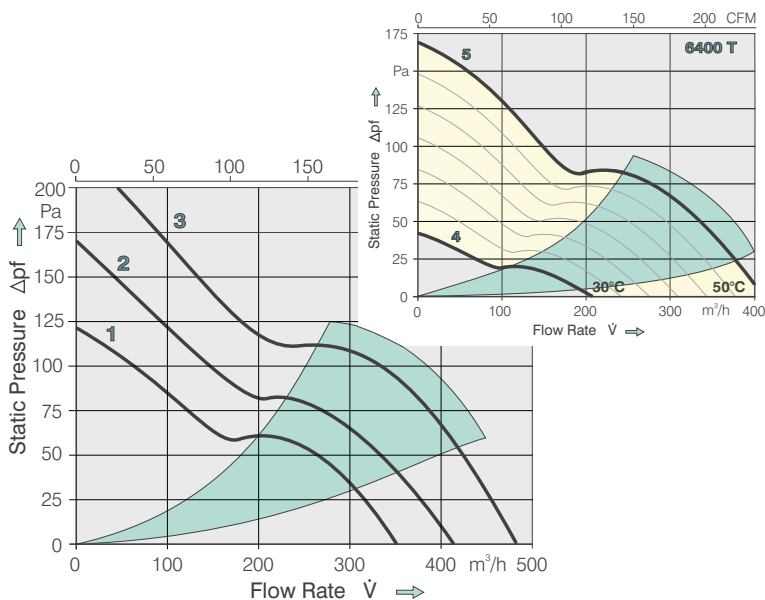
172 Ø x 51 mm

Air flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
m ³ /h	CFM									V DC	V DC			
350	206.0	12	8...15	52	6.0	■	12.0	2850	-20...+72	80 000/37 500		1	6412 M	68
350	206.0	24	12...32	52	6.0	■	12.0	2850	-20...+72	80 000/37 500		1	6424 M	68
410	241.3	24	12...28	57	6.4	■	18.0	3400	-20...+72	75 000/35 000		2	6424	68
480	282.5	24	12...28	63	7.1	■	26.0	4000	-20...+55*	70 000/50 000		3	6424 H	61/68
350	206.0	48	28...60	52	6.0	■	11.5	2850	-20...+72	80 000/37 500		1	6448 M	68
410	241.3	48	28...60	57	6.4	■	17.0	3400	-20...+72	75 000/35 000		2	6448	59/68
480	282.5	48	28...60	63	7.1	■	26.0	4000	-20...+55*	70 000/50 000		3	6448 H	68

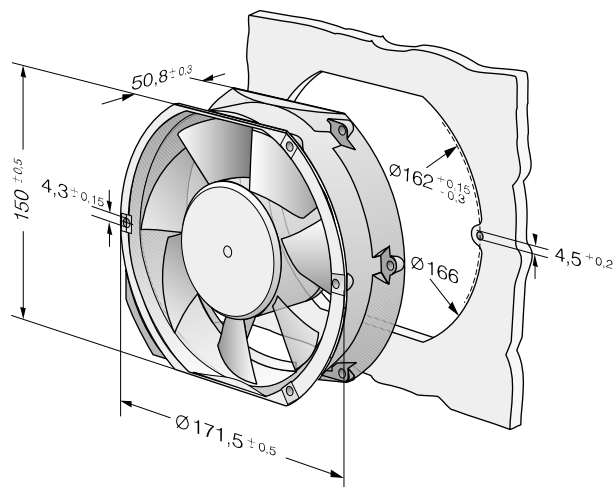
VARIOFAN – DC fans with temperature-dependent speed control

30-50 °C	205	120.6	24	12...28	37	4.9	■	8.5	1700	-10...+72	77 500/35 000		4	6424 T	68
	410	241.3		57	6.4	8.0		3400	5		68				
30-50 °C	205	120.6	48	28...60	37	4.9	■	8.5	1700	-10...+72	77 500/35 000		4	6448 T	59/68
	410	241.3		57	6.4	17.0		3400	5		68				

* 72 °C upon request



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

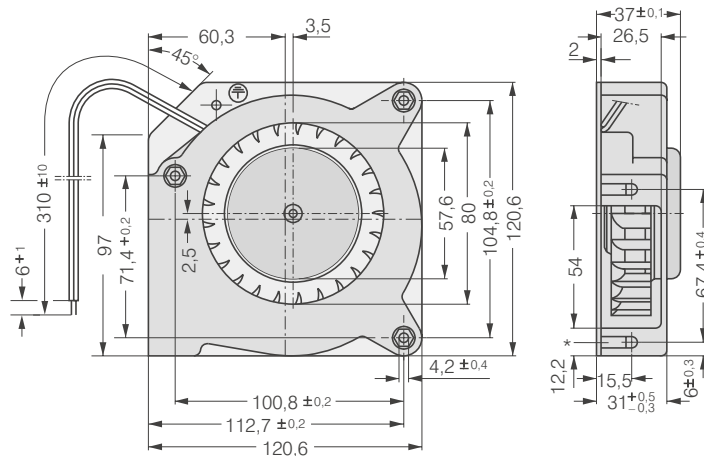
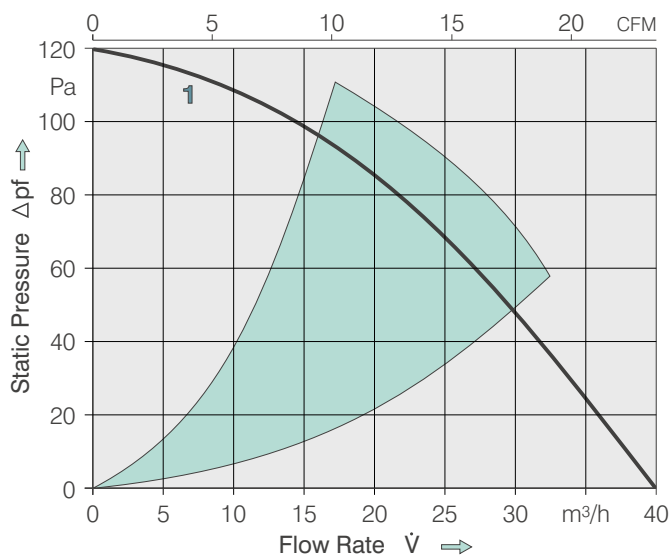




- DC radial blower with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, blocking and overloading by PTC-resistor; partially impedance protected.
- Spiral housing and blower wheel of fibreglass reinforced plastic. Housing base of galvanised steel plate.
- Radial air exhaust through housing port.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 420 g.

Series RL90N 121 x 121 x 37 mm

Air flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings		Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
m ³ /h	CFM				V DC	V DC				□/■	Watt			
40	23.5	12	7...15	5.8	□	5.5	2500	-10...+75	62 500/27 500	1	RL90-18/12 NG	68		
40	23.5	12	7...15	5.8	■	5.5	2500	-30...+75	62 500/27 500	1	RL90-18/12 N	59/68		
40	23.5	24	12...28	5.8	□	5.0	2500	-10...+75	62 500/27 500	1	RL90-18/14 NG	68		
40	23.5	24	12...28	5.8	■	5.0	2500	-30...+75	62 500/27 500	1	RL90-18/14 N	59/68		



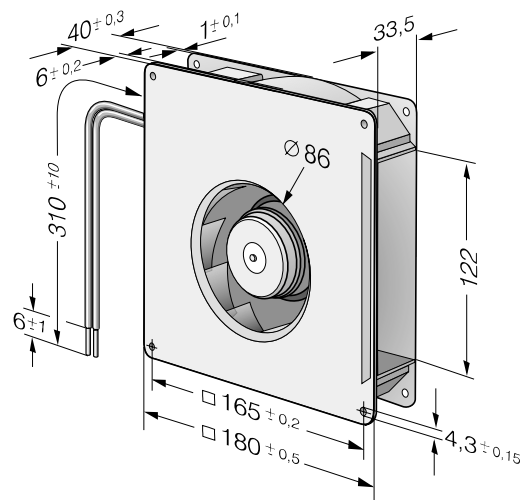
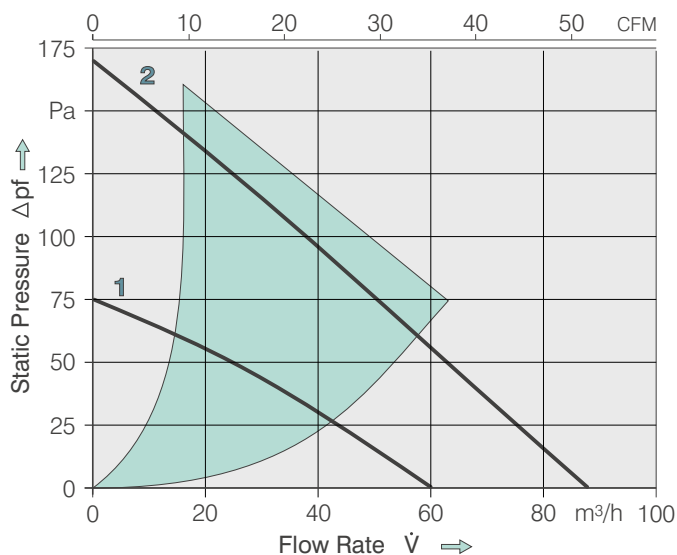


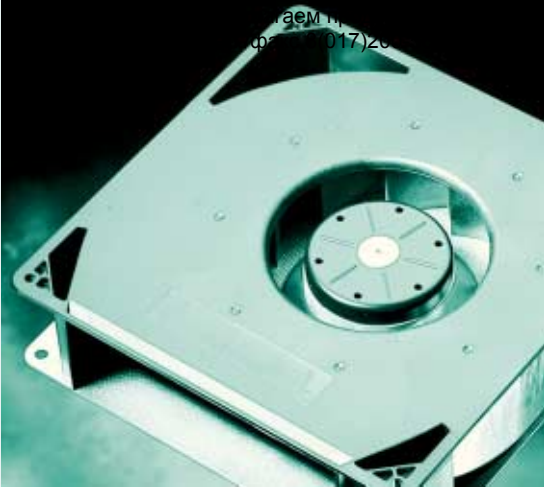
- DC radial blower with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, blocking and overloading by PTC-resistor; partially impedance protected.
- Spiral housing and blower wheel of fibreglass reinforced plastic. Housing base of galvanised steel plate.
- Radial air exhaust through housing port.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 730 g.

Series RG125N 180 x 180 x 40 mm

Air flow		Nominal Voltage	Voltage Range	Noise	Sintec-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
m ³ /h	CFM								V DC	V DC			
60	35.3	12	7...15	4.8	■	2.0	1750	-30...+75	70 000/30 000		1	RG125-19/12NM	
87.5	51.5	12	7...15	5.8	■	5.0	2550	-30...+75	62 500/27 500		2	RG125-19/12N	61/68
60	35.3	24	12...28	4.8	■	2.0	1750	-30...+75	70 000/30 000		1	RG125-19/14NM	
87.5	51.5	24	12...28	5.8	■	5.0	2550	-30...+75	62 500/27 500		2	RG125-19/14N	59/61/63/68
87.5	51.5	48	36...56	5.8	■	5.0	2550	-30...+75	62 500/27 500		2	RG125-19/18N	59/68

⊕ 48V Type: flat pin 6.3 x 0.8 for grounding wire.



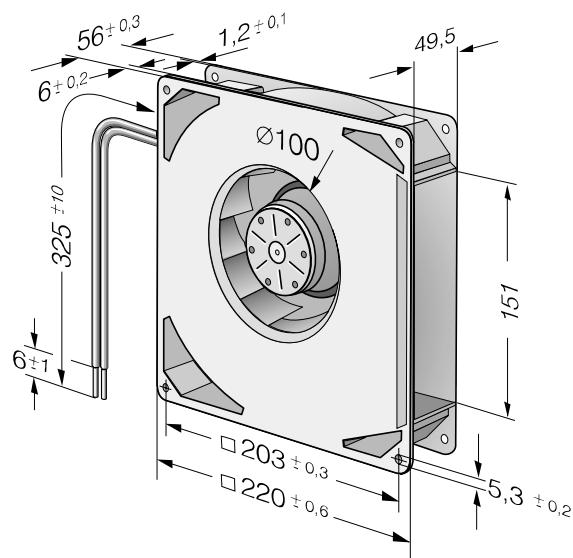
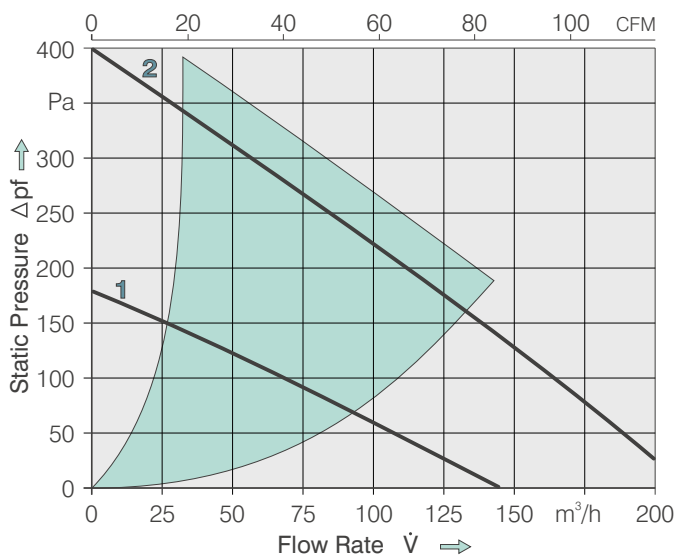


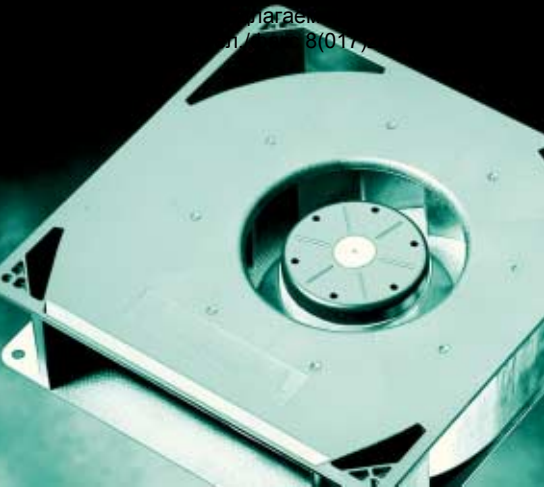
- DC radial blower with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity and overloading.
- Spiral housing and blower wheel of fibreglass reinforced plastic. Housing base of galvanised steel plate.
- Radial air exhaust through housing port.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 1.4 kg.

Series RG160N 220 x 220 x 56 mm

Air flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
m ³ /h	CFM								V DC	V DC			
139	81.8	12	7...14	5.6	■	7.5	1900	-20...+70	80000/40000	1	RG160-28/12NM		
209	123.0	12	7.5...14	6.6	■	21.0	2850	-20...+70	70000/35000	2	RG160-28/12N	61/68	
139	81.8	24	12...28	5.6	■	7.0	1900	-20...+70	80000/40000	1	RG160-28/14NM		
209	123.0	24	12...28	6.6	■	20.0	2850	-20...+70	70000/35000	2	RG160-28/14N	59/68	
209	123.0	48	28...60	6.6	■	20.0	2850	-20...+70	70000/35000	2	RG160-28/18N	61/68	

⊕ 48V Type: flat pin 6.3 x 0.8 for grounding wire.





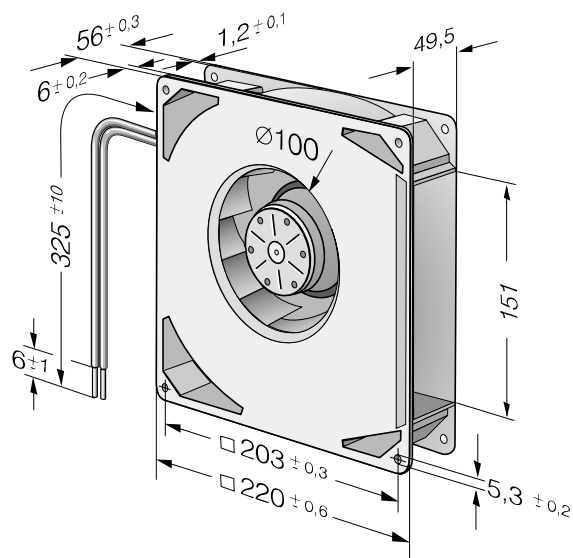
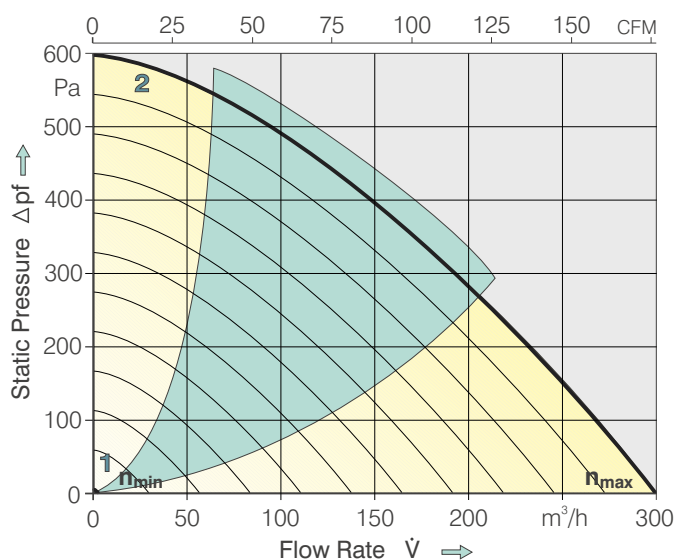
- DC radial blower with electronically commutated external rotor motor. Fully integrated commutation electronics with electronic protection against reverse polarity and overloading.
- Spiral housing and blower wheel of fibreglass reinforced plastic. Housing base of galvanised steel plate.
- Radial air exhaust through housing port.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 1.4 kg.

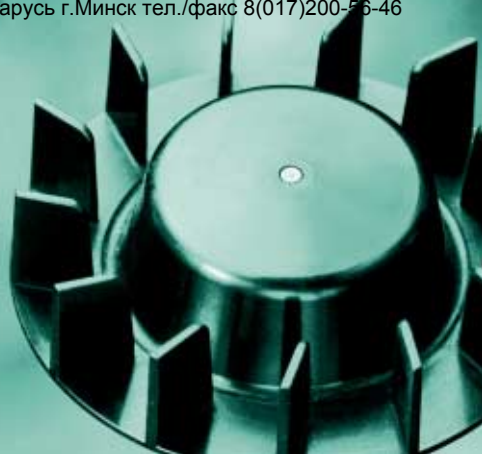
Series RG160TD 220 x 220 x 56 mm TURBOFAN

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	Curve	Type	Specials
m ³ /h	CFM											
10	5.9	48	38...57	—	■	1	100	-20...+70	55 000	1	RG160-28/18NTDI	
300	176.6											

Temperature-controlled Fan

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

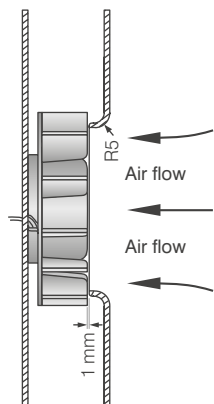




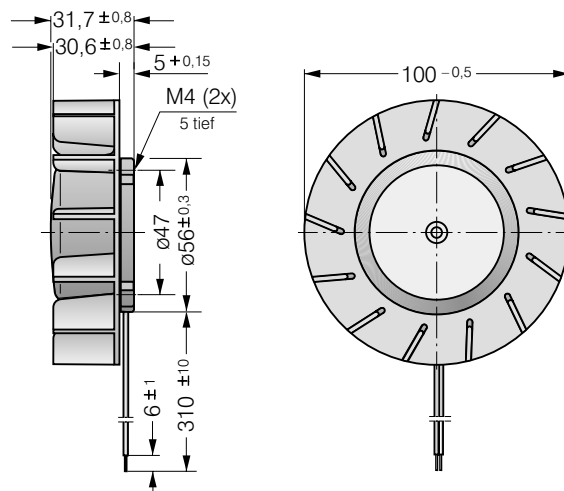
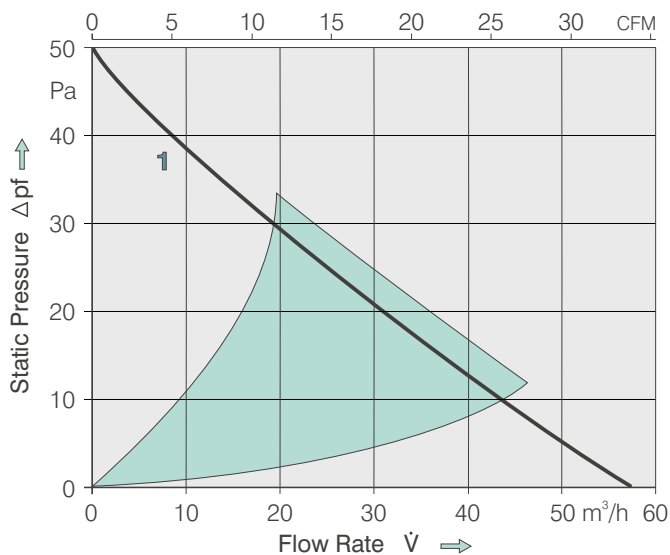
- DC radial blower with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, blocking and overloading.
- Blower wheel of fibreglass reinforced plastic.
- Air exhaust radial. Rotational direction CCW looking at rotor.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 180 g.

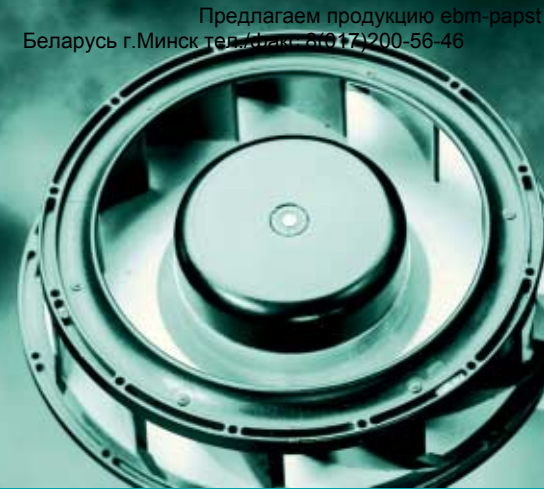
Series RER100 100 Ø x 32 mm

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 t _{max}	Curve	Type	Specials
m ³ /h	CFM	V DC	V DC	bels	□/■	Watt	min ⁻¹	°C	Hours	Hours				Page
57	33.6	12	6...13.2	4.7	■	4.0	1800	-20...+60	65 000/40 000	1		RER100-25/12	63	
57	33.6	24	12...28	4.7	■	4.0	1800	-20...+60	65 000/40 000	1		RER100-25/14		



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 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. Distance between blower and cover plate 1mm.



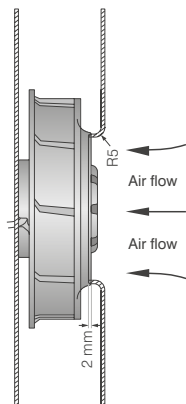


- DC radial blower with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity, blocking and overloading.

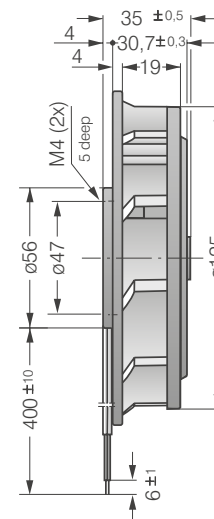
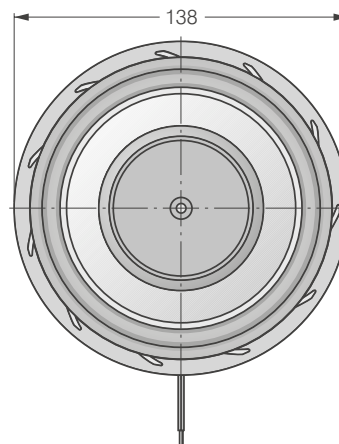
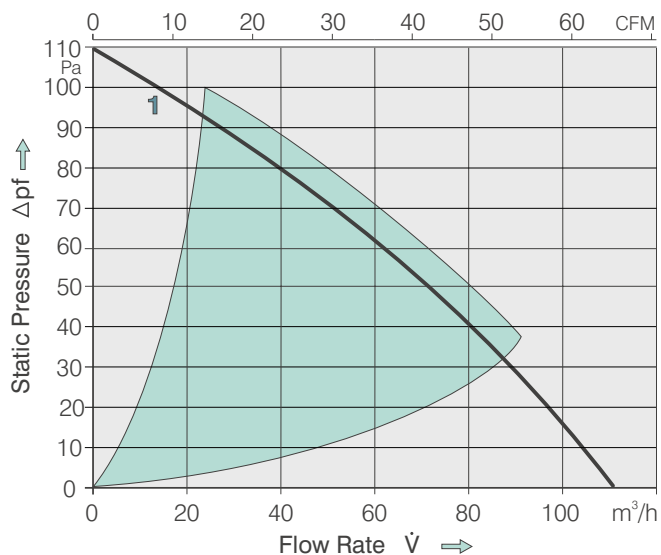
- Blower wheel of fibreglass reinforced plastic, with steel plate reinforced.
- Air exhaust radial. Rotational direction CW looking at rotor.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 320 g.

Series RER125N 138 Ø x 35 mm

Air flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
m ³ /h	CFM									V DC	V DC			
110	64.7	12	7...15	5.7	■	4.5	2650	-30...+75	62 500/27 500		1	RER125-19/12 N	68	
110	64.7	24	12...28	5.7	■	4.5	2650	-30...+75	62 500/27 500		1	RER125-19/14 N	68	



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.

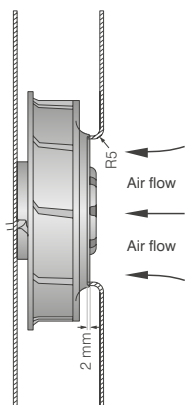




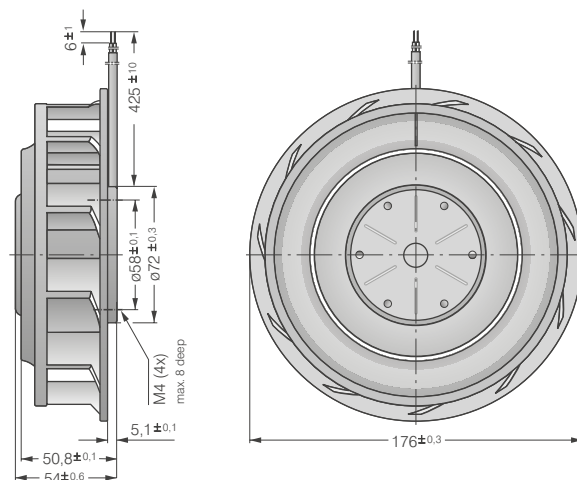
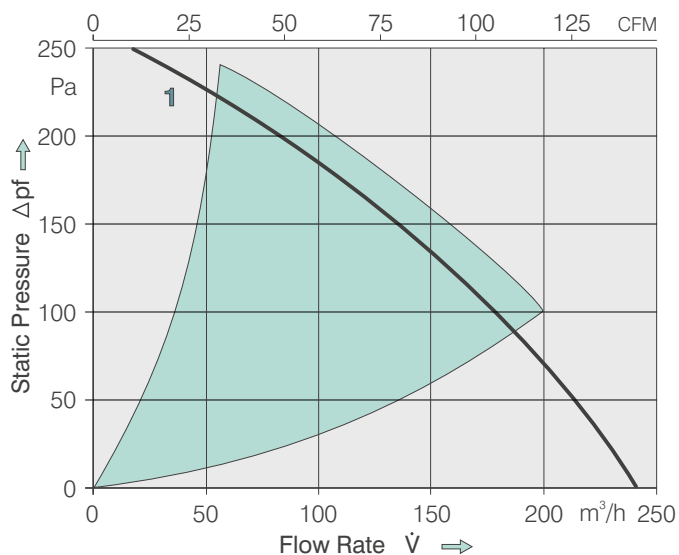
- DC radial blower with electronically commutated external rotor motor. Fully integrated commutation electronics.
- With electronic protection against reverse polarity and blocking.
- Blower wheel of fibreglass reinforced plastic, with steel plate reinforced.
- Air exhaust radial. Rotational direction CCW looking at rotor.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 670 g.

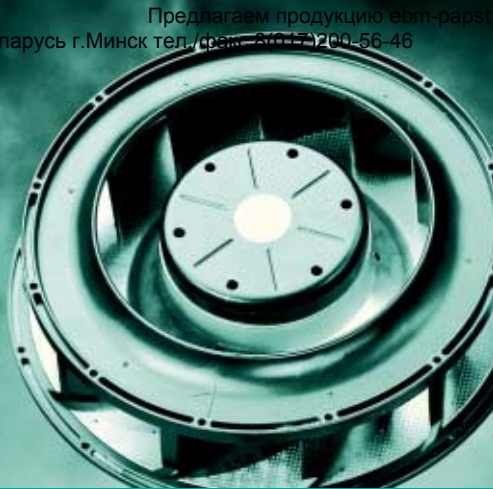
Series RER160N 176 Ø x 54 mm

Air flow		Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings		Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type	Specials
m ³ /h	CFM				V DC	V DC				bels	□/■			
240	141.3	12	7...14	6.8	■	18.5	3050	-20...+70	75 000/35 000		1	RER160-28/12N	61/68	
240	141.3	24	12...28	6.8	■	17.5	3050	-20...+70	75 000/35 000		1	RER160-28/14N	68	
240	141.3	48	28...60	6.8	■	18.5	3050	-20...+70	75 000/35 000		1	RER160-28/18N	61/68	



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 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.

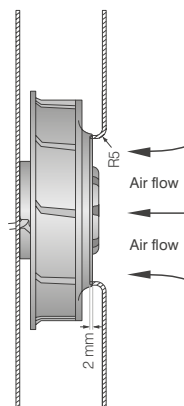
- Blower wheel of fibreglass reinforced plastic, with steel plate reinforced.
- Air exhaust radial. Rotational direction CCW looking at rotor.
- Electrical connection via 2 leads AWG 22, TR 64. Stripped and tinned ends.
- Mass 670 g.

Series RER160NTD 176 Ø x 54 mm TURBOFAN

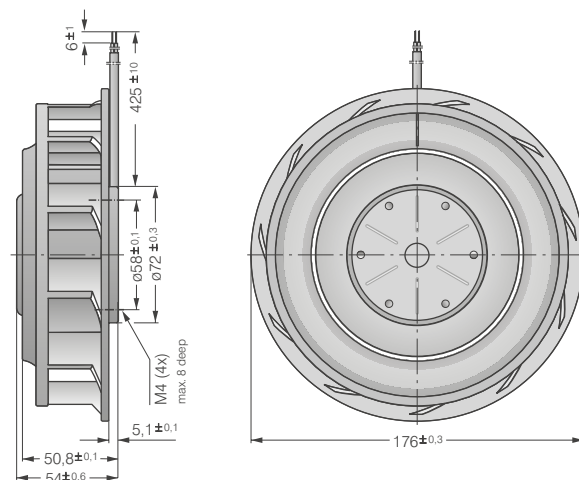
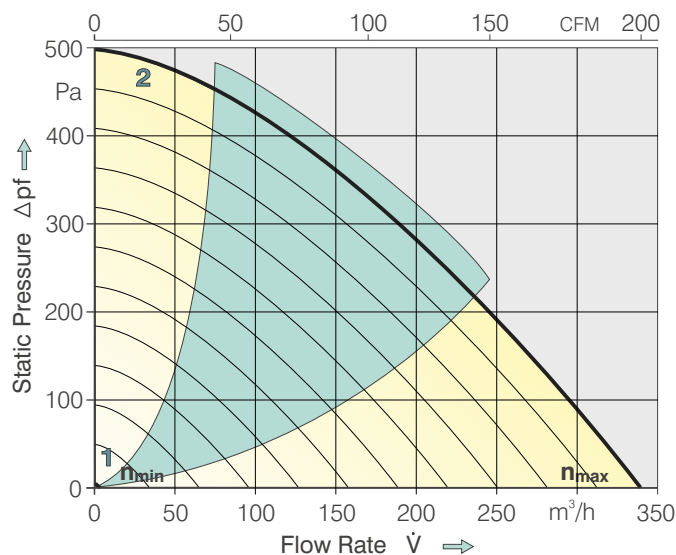
Air flow	Air flow	Nominal Voltage	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀ at 40 °C	Curve	Type	Specials
11	6.5	48	38...57	—	□	■	1	100	-20...+70	55 000	1	RER160-28/18NTDI	
340	200.1			7.7			50	4200			2		

Temperature-controlled Fan

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



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 Fans with Added Features

Greater power density, increasing miniaturization and extreme electronic component density are making 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.

PAPST provides intelligent cooling concepts which are optimally adapted to requirements. For example:

- DC fan with sensor signal. The integrated "electronic Tacho" continuously provides a signal of the actual speed.

- For applications which require monitored fan operation with alarm signal, PAPST has numerous alarm signal versions, either a static, already evaluated or interface-compatible long or short-term signal depending on the type of fan.
- DC fans with temperature-dependent speed adaptation via an integrated or randomly positioned external temperature sensor.
- Fans with 3-phase EC drives and fully integrated operating electronics.
- Fans with programmed intelligence thanks to software modules with customer-specific integrated functions. This "inside intelligence", common to e.g. Vario-Pro® makes electronic cooling even more flexible and economical. The tailor-made software configuration for intelligent future software applications.



Fans with alarm signal



Fans with sensor signal



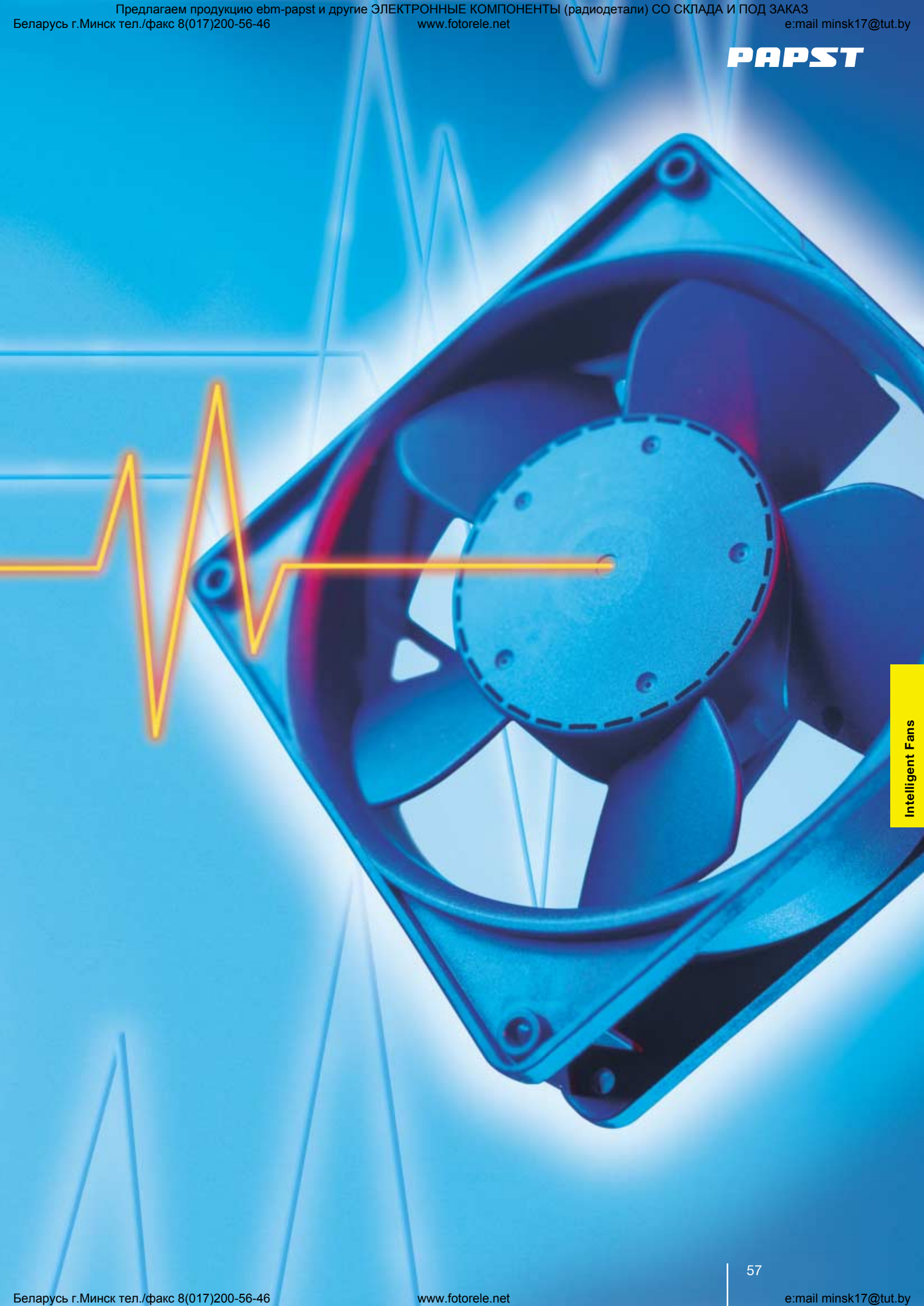
Fans with TD motor



Programmable fans Vario-Pro®



PAPST



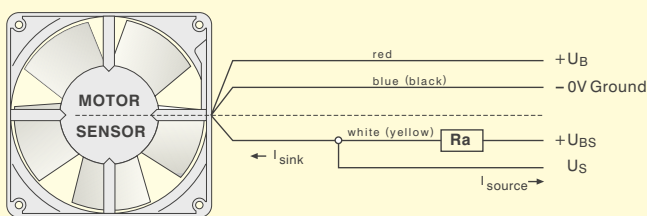
Intelligent Fans

- Speed-proportional rectangular pulse for external speed monitoring of fan motor
- 2 pulses per revolution
- 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 inter-connected fans.

Sensor Signal / 2



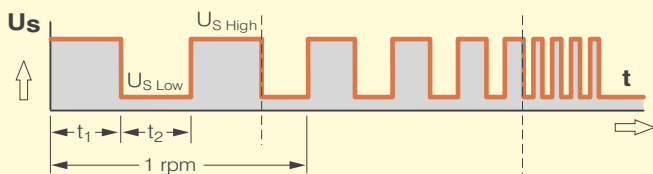
Electrical connection



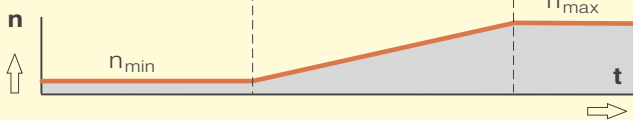
All voltages measured to ground.

External load resistance R_a from U_S to U_{BS} required.

Signal output voltage



Fan speed



Signal symmetry $[t_1, t_2] = 0.8 \dots 1.2$

Signal frequency $[F] = 2 \times n/60 \text{ Hz}$

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

Signal data

Type	Sensor signal $U_{S \text{ Low}}$		Condition : I_{sink}		Sensor signal $U_{S \text{ High}}$		Condition : I_{source}		Sensor operating voltage U_{BS}		Perm. sink current $I_{\text{sink max}}$		Fan description
	V DC	mA	V DC	mA	V DC	mA	mA	Page					
255 N/2	≤0.4	≤2	30	0	max. 30	2	16						
255 H/2	≤0.4	≤2	30	0	max. 30	2	16						
252 N/2	≤0.4	≤2	30	0	max. 30	2	16						
405 F/2	≤0.4	1	30	0	4-30	≤2	17						
412 F/2 H	≤0.4	1	30	0	4-30	≤2	17						
405 /2	≤0.4	1	30	0	4-30	≤2	17						
412 /2	≤0.4	1	30	0	4-30	≤2	17						
414 /2	≤0.4	1	30	0	4-30	≤2	17						
414 /2 H	≤0.4	1	30	0	4-30	≤2	17						
512 F/2	≤0.4	1	30	0	4-30	≤2	18						
612 F/2	≤0.4	1	30	0	4-30	≤2	19						
614 N/2 M	≤0.4	2	28	0	4-30	≤4	20						
8412 N/2 GL	≤0.4	2	28	0	4-30	≤4	23						
8412 N/2 GM	≤0.4	2	28	0	4-30	≤4	23						
8412 N/2 G	≤0.4	2	28	0	4-30	≤4	23						
8414 N/2 GL	≤0.4	2	28	0	4-30	≤4	23						
8414 N/2 GM	≤0.4	2	28	0	4-30	≤4	23						
8414 N/2 G	≤0.4	2	28	0	4-30	≤4	23						
8414 N/2	≤0.4	2	28	0	4-30	≤4	23						
8312 /2 HL	≤0.4	2	30	0	4-30	≤4	25						
8314 /2	≤0.4	2	30	0	4-30	≤4	25						
8318 /2	≤0.4	2	30	0	4-30	≤4	25						
8318 /2 HL	≤0.4	2	30	0	4-30	≤4	25						
3412 N/2 GL	≤0.4	2	28	0	4-28	≤4	26						
3412 N/2 GM	≤0.4	2	28	0	4-28	≤4	26						
3412 N/2 G	≤0.4	2	28	0	4-28	≤4	26						
3412 N/2 GHH	≤0.4	2	28	0	4-28	≤4	26						
3414 N/2 GH	≤0.4	2	28	0	4-28	≤4	26						
3312 /2	≤0.4	2	30	0	4-30	≤4	28						
3318 /2	≤0.4	2	30	0	4-30	≤4	28						



Available on request:

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

Type	Sensor signal U _S Low		Condition: I _{sink}		Sensor signal U _S High		Condition: I _{source}		Sensor operating voltage U _{ES}	Perm. sink current I _{sink} max.	Fan description
	DC	mA	V DC	mA	V DC	mA	V DC	mA	Page		
4412 F/2 GL	≤ 0.4	2	30	0	4-30	≤ 4	29				
4412 F/2 GML	≤ 0.4	2	30	0	4-30	≤ 4	29				
4412 F/2 M	≤ 0.4	2	30	0	4-30	≤ 4	29				
4412 F/2	≤ 0.4	2	30	0	4-30	≤ 4	29				
4414 F/2 L	≤ 0.4	2	30	0	4-30	≤ 4	29				
4414 F/2 M	≤ 0.4	2	30	0	4-30	≤ 4	29				
4414 F/2 G	≤ 0.4	2	30	0	4-30	≤ 4	29				
4414 F/2	≤ 0.4	2	30	0	4-30	≤ 4	29				
4418 F/2	≤ 0.4	2	30	0	4-30	≤ 4	29				
4312 N/2 H	≤ 0.4	2	30	0	4-30	≤ 4	30				
4312 /2	≤ 0.4	2	30	0	4-30	≤ 4	31				
4314 /2 G	≤ 0.4	2	30	0	4-30	≤ 4	31				
4314 /2	≤ 0.4	2	30	0	4-30	≤ 4	31				
4318 /2 G	≤ 0.4	2	30	0	4-30	≤ 4	31				
4318 /2 M	≤ 0.4	2	30	0	4-30	≤ 4	31				
4318 /2	≤ 0.4	2	30	0	4-30	≤ 4	31				
4212 N/2 GN	≤ 0.4	2	30	0	4-30	≤ 4	33				
4214 N/2 GN	≤ 0.4	2	30	0	4-30	≤ 4	33				
4214 N/2 H	≤ 0.4	2	30	0	4-30	≤ 4	33				
4218 N/2 GN	≤ 0.4	2	30	0	4-30	≤ 4	33				
4212 /2 M	≤ 0.4	2	30	0	4-30	≤ 4	34				
4212 /2	≤ 0.4	2	30	0	4-30	≤ 4	34				
4212 /2 H	≤ 0.4	2	30	0	4-30	≤ 4	34				
4214 /2	≤ 0.4	2	30	0	4-30	≤ 4	34				
4214 /2 H	≤ 0.4	2	30	0	4-30	≤ 4	34				
4218 /2	≤ 0.4	2	30	0	4-30	≤ 4	34				
4218 /2 H	≤ 0.4	2	30	0	4-30	≤ 4	34				
4184 N/2 X	≤ 0.4	2	30	0	4-30	≤ 4	35				
4184 N/2 XH	≤ 0.4	2	30	0	4-30	≤ 4	35				
5112 N/2	≤ 0.4	2	15	0	≤ 5	≤ 20	38				
5114 N/2	≤ 0.4	2	60	0	≤ 60	≤ 20	38				
5118 N/2	≤ 0.4	2	60	0	≤ 60	≤ 20	38				

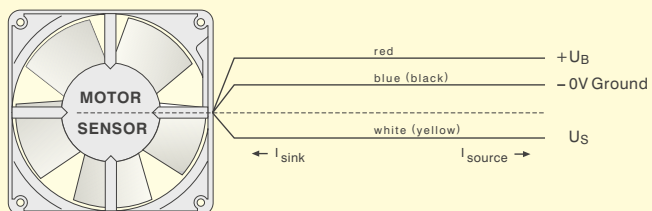
Type	Sensor signal U _S Low		Condition: I _{sink}		Sensor signal U _S High		Condition: I _{source}		Sensor operating voltage U _{ES}	Perm. sink current I _{sink} max.	Fan description
	DC	mA	V DC	mA	V DC	mA	V DC	mA	Page		
7112 N/2	≤ 0.4	2	60	0	≤ 60	≤ 20	39				
7114 N/2	≤ 0.4	2	30	0	≤ 30	≤ 20	39				
7118 N/2	≤ 0.4	2	60	0	≤ 60	≤ 20	39				
6224 N/2	≤ 0.4	8	30	0	≤ 30	≤ 20	41				
6248 N/2	≤ 0.4	8	60	0	≤ 30	≤ 20	41				
DV 6224 /2	≤ 0.4	2	30	0	≤ 60	≤ 20	43				
6448 /2	≤ 0.4	2	60	0	≤ 60	≤ 20	45				
6448 /2 T	≤ 0.4	2	60	0	≤ 60	≤ 20	45				
RL 90-18/12N/2	≤ 0.4	2	30	0	4-30	≤ 4	46				
RL 90-18/14N/2	≤ 0.4	2	30	0	4-30	≤ 4	46				
RG 90-18/12N/2	≤ 0.4	2	30	0	4-30	≤ 4	47				
RG 90-18/14N/2	≤ 0.4	2	30	0	4-30	≤ 4	47				
RG 125-19/14N/2	≤ 0.4	2	30	0	4-30	≤ 4	48				
RG 125-19/18N/2	≤ 0.4	2	60	0	4-30	≤ 4	48				
RG 160-28/14N/2	≤ 0.4	2	30	0	4-30	≤ 20	49				

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

- Speed-proportional rectangular pulse for external speed monitoring of fan motor
 - 2 pulses per revolution
 - 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.

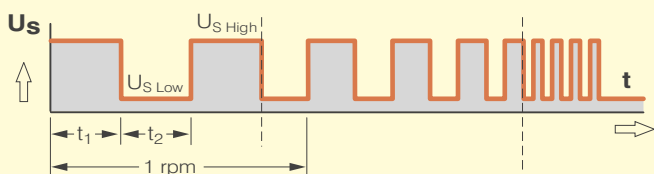
Sensor Signal / 12

Electrical connection

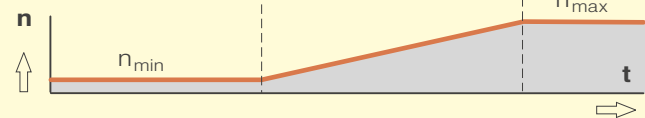


All voltages measured to ground.

Signal output voltage



Fan speed



Signal symmetry $[t_1, t_2] = 0.8 \dots 1.2$

Signal frequency $[F] = 2 \times n/60 \text{ Hz}$

Signal data

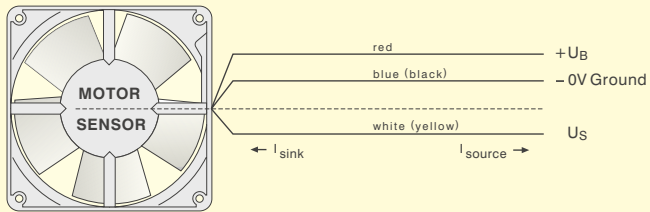
Type	Sensor signal $U_{S \text{ Low}}$		Sensor signal $U_{S \text{ High}}$		Perm. sink current $I_{\text{sink max}}$	Fan description
	V DC	mA	V DC	mA		
614 N/12 GM	≤ 0.4	1	2.5–5.5	1	1	20
618 N/12 N	≤ 0.4	1	2.5–5.5	1	1	20
8312 /12	≤ 0.4	1	2.5–5.5	1	1	25
8314 /12	≤ 0.4	1	2.5–5.5	1	1	25
8314 /12 H	≤ 0.4	1	2.5–5.5	1	1	25
8318 /12 HL	≤ 0.4	1	2.5–5.5	1	1	25
8318 /12 H	≤ 0.4	1	2.5–5.5	1	1	25
3318 /12 H	≤ 0.4	1	2.5–5.5	1	1	28
4412 F/12 GML	≤ 0.4	1	2.5–5.5	1	1	29
4412 F/12 GM	≤ 0.4	1	2.5–5.5	1	1	29
4414 F/12	≤ 0.4	1	2.5–5.5	1	1	29
4418 F/12	≤ 0.4	1	2.5–5.5	1	1	29
4312 /12 L	≤ 0.4	1	2.5–5.5	1	1	31
4312 /12 M	≤ 0.4	1	2.5–5.5	1	1	31
4314 /12	≤ 0.4	1	2.5–5.5	1	1	31
4318 /12	≤ 0.4	1	2.5–5.5	1	1	31
4212 /12 L	≤ 0.4	1	2.5–5.5	1	1	34
4212 /12	≤ 0.4	1	2.5–5.5	1	1	34
4212 /12 H	≤ 0.4	1	2.5–5.5	1	1	34
4214 /12	≤ 0.4	1	2.5–5.5	1	1	34
4214 /12 H	≤ 0.4	1	2.5–5.5	1	1	34
4218 /12	≤ 0.4	1	2.5–5.5	1	1	34
4218 /12 H	≤ 0.4	1	2.5–5.5	1	1	34
4182 N/12 X	≤ 0.4	1	2.5–5.5	1	1	35

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:

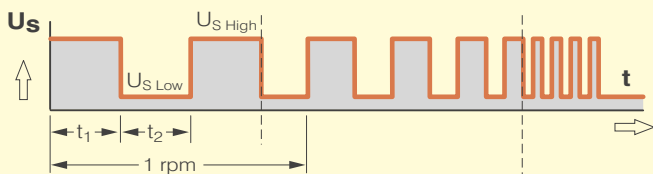
- Galvanically separated sensor and signal circuit
- Varying voltage potentials for power and logic circuit.

Electrical connection

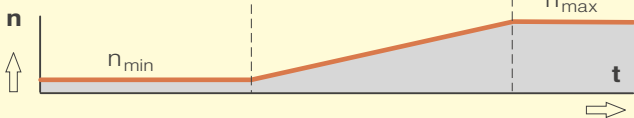


All voltages measured to ground.

Signal output voltage



Fan speed



Signal symmetry $[t_1, t_2] = 0.8 \dots 1.2$

Signal frequency $[F] = 2 \times n/60 \text{ Hz}$

Signal data

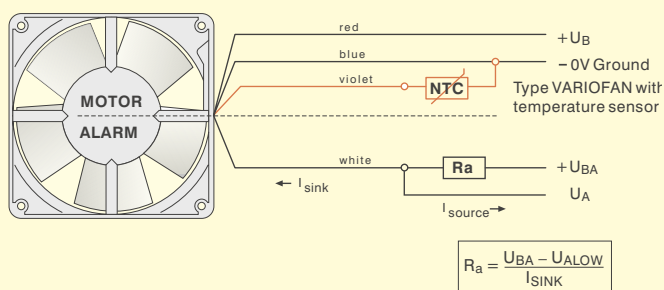
Type	Sensor signal	Condition: Isink	Sensor signal	Condition: Isource	Perm. sink current Isink max.	Fan description
	Us Low		Us High			
	V DC	mA	V DC	mA	mA	Page
5118 N/12	≤0.4	2	2.5–5.5	1	≤20	38
7118 N/12	≤0.4	2	2.5–5.5	1	≤20	39
7214 N/12	≤0.4	2	2.5–5.5	1	≤20	40
6224 N/12 M	≤0.4	2	2.5–5.5	1	≤20	41
6248 N/12	≤0.4	2	2.5–5.5	1	≤20	41
6248 N/12 T	≤0.4	2	2.5–5.5	1	≤5	41
DV 6224 /12	≤0.4	2	4.5–5.25	2	≤12	43
DV 6248 /12	≤0.4	2	4.5–5.25	2	≤12	43
6424 /12 H	≤0.4	2	2.5–5.5	1	≤20	45
RG 125-19/12N/12	≤0.4	1	2.5–5.5	1	≤1	48
RG 125-19/14N/12	≤0.4	1	2.5–5.5	1	≤1	48
RG 160-28/12N/12	≤0.4	2	2.5–5.5	1	≤5	49
RG 160-28/18N/12	≤0.4	2	2.5–5.5	1	≤20	49
RER 160-28/12N/12	≤0.4	2	2.5–5.5	1	≤5	53
RER 160-28/18N/12	≤0.4	2	2.5–5.5	1	≤20	53

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

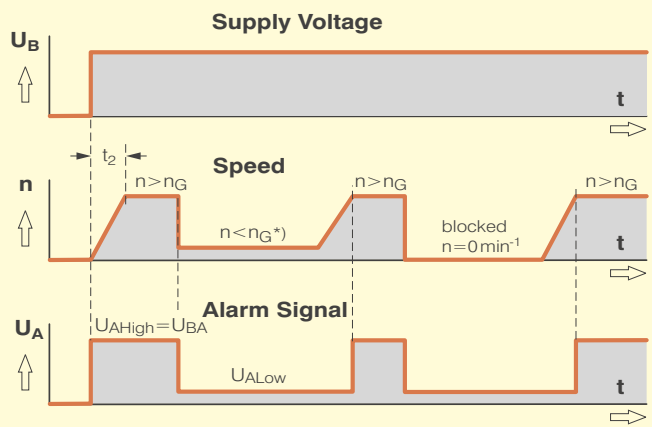
- Alarm signal for speed monitoring
- Signal output via open collector
- The fan emits a high continuous signal during trouble-free operation within the permissible voltage range
- Low signal when speed limit is not reached.
- After elimination of fault, the fan returns to its desired speed; the alarm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

Alarm Signal / 17

Electrical connection



$$R_a = \frac{U_{BA} - U_{ALOW}}{I_{SINK}}$$



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.

Type	Alarm signal data		Alarm output voltage $U_{A\ Low}$		Alarm output voltage $U_{A\ High}$		Alarm operating voltage $U_{BA\ max.}$	Max. permissible sink current	Alarm delay time t_2	Speed limit n_G	Fan description	
	Condition:	Condition: $I_{sink} =$	V DC	mA	V DC	mA						
8318/17	≤ 0.4	$n < n_G$	2	60	$n > n_G$	0	≤ 60	50	≤ 15	*	1500 ± 100	25
3312/17	≤ 0.4	$n < n_G$	2	60	$n > n_G$	0	≤ 60	20	≤ 15	*	1500 ± 100	28
3318/17 H	≤ 0.4	$n < n_G$	2	60	$n > n_G$	0	≤ 60	20	≤ 15	*	1500 ± 100	28
4312/17 L	≤ 0.4	$n < n_G$	2	60	$n > n_G$	0	≤ 60	20	≤ 15	*	850 ± 100	31
4314/17	≤ 0.4	$n < n_G$	2	60	$n > n_G$	0	≤ 60	20	≤ 15	*	1150 ± 100	31
4318/17	≤ 0.4	$n < n_G$	2	60	$n > n_G$	0	≤ 60	20	≤ 15	*	850 ± 100	31

* After switching on UB

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



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 Type	Low			High			Alarm operating voltage $U_{BA \text{ max.}}$	Max. permissible sink current	Alarm delay time t_2	Condition:	Speed limit n_g	Fan description
	Alarm output voltage U_A	Condition:	Condition: $I_{\text{sink}} =$	Alarm output voltage U_A	Condition:	Condition: $I_{\text{source}} =$						
	V DC		mA	V DC		mA	V DC	mA	s		min ⁻¹	Page
4312/17 MV VARIOFAN	≤ 0.4	n < nG	2	60	n > nG	0	≤ 60	20	≤ 15	*	1500 ± 100	32
4312/17 V VARIOFAN	≤ 0.4	n < nG	2	60	n > nG	0	≤ 60	20	≤ 15	*	1500 ± 100	32
4314/17 V VARIOFAN	≤ 0.4	n < nG	2	60	n > nG	0	≤ 60	20	≤ 15	*	1150 ± 100	32
4318/17 V VARIOFAN	≤ 0.4	n < nG	2	60	n > nG	0	≤ 60	20	≤ 15	*	850 ± 100	32
5112 N/17	≤ 0.4	n < nG	2	60	n > nG	0	≤ 60	20	≤ 15	*	1250 ± 50	38
7114 N/17	≤ 0.4	n < nG	2	60	n > nG	0	≤ 60	15	≤ 15	*	1330 ± 60	39
DV 6224/17	≤ 0.4	n < nG	2	60–28	n > nG	0	≤ 60	10	10 ± 4	*	1900 ± 100	43
RG 125-19/14N/17	≤ 0.4	n < nG	2	60	n > nG	0	≤ 60	20	≤ 15	*	1500 ± 100	48
RER 100-25/12/17	≤ 0.4	n < nG	2	60	n > nG	0	≤ 60	20	≤ 15	*	1150 ± 100	51

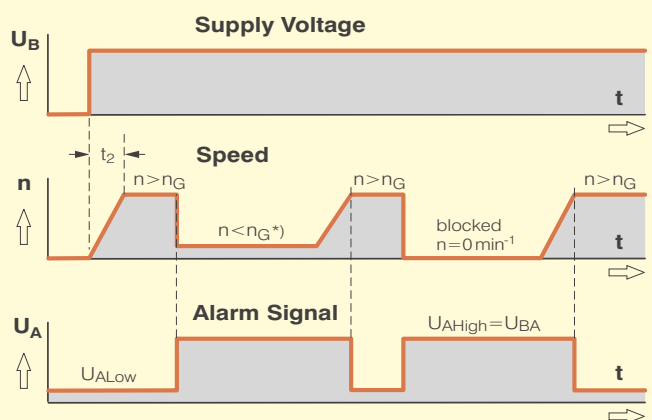
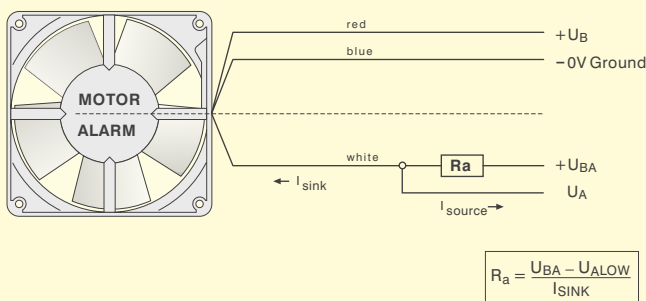
Attention: With these fan specials, deviations as regards temperature range, voltage range and power consumption are possible compared with standard fans.

* After switching on UB

- 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 / 19

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
* $n < n_G$ = Speed limit n_G by braking or blocking.

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.

Alarm signal data	Low			High			Alarm operating voltage U_{BA} max.	Max. permissible sink current	Alarm delay time t_2	Condition:	Speed limit n_G	Fan description
	Type	Alarm output voltage U_{ALow}	Condition:	Condition: $I_{sink} =$	Alarm output voltage U_{AHigh}	Condition:						
	V DC		mA	V DC		mA	V DC	mA	s		min ⁻¹	Page
8314/19 H	≤ 0.4	$n > n_G$	2	60	$n < n_G$	0	≤ 60	20	≤ 15	*	1500 ± 100	25
4312/19	≤ 0.4	$n > n_G$	2	60	$n < n_G$	0	≤ 60	20	≤ 15	*	1500 ± 100	31
4212/19 M	≤ 0.4	$n > n_G$	2	60	$n < n_G$	0	≤ 60	20	≤ 15	*	1500 ± 100	34
4214/19	≤ 0.4	$n > n_G$	2	60	$n < n_G$	0	≤ 60	20	≤ 15	*	1500 ± 100	34
7214 N/19	≤ 0.4	$n > n_G$	2	60	$n < n_G$	0	4.5–60	10	10 ± 4	*	1800 ± 20	40
DV 6224/19	≤ 0.4	$n > n_G$	2	≤ 28	$n < n_G$	0	16–28	10	10 ± 4	*	1900 ± 100	43

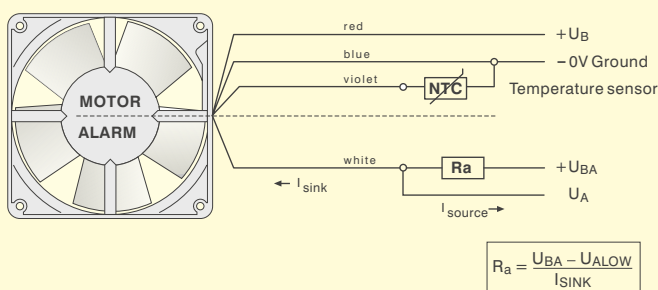
* After switching on UB

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

- 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.

Alarm Signal / 37

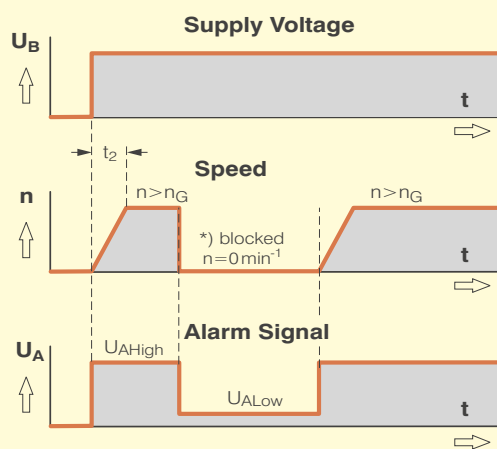
Electrical connection



All voltages measured to ground
External load resistance Ra from UA to UBA required.

Optional lieferbar:

- Alarm circuit TTL compatible



t₂ = Alarm signal suppression during start-up
* n < Speed limit n_G by braking or blocking.

Type	Alarm signal data			Alarm signal data			Alarm signal data			Speed limit n _G	Fan description	
	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 I _{sink}	Alarm delay time t ₂			Condition:
	V DC		mA	V DC		mA	V DC	mA	s		min ⁻¹	Page
612N/37GNV	≤ 0.4	n ≤ n _G	2	28	n > n _G	0	≤ 28	10	< 1	*	0	21
8412N/37GMLV	≤ 0.4	n ≤ n _G	2	28	n > n _G	0	≤ 28	10	< 1	*	0	24
3412N/37GMV	≤ 0.4	n ≤ n _G	2	28	n > n _G	0	≤ 28	10	< 1	*	0	27
3412N/37GV	≤ 0.4	n ≤ n _G	2	28	n > n _G	0	≤ 28	10	< 1	*	0	27

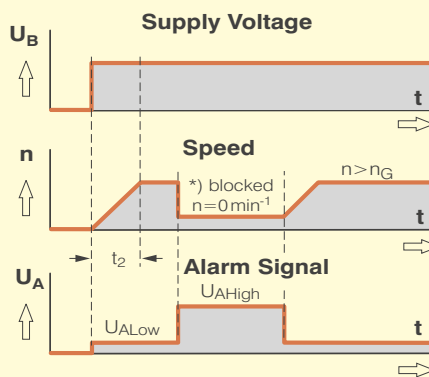
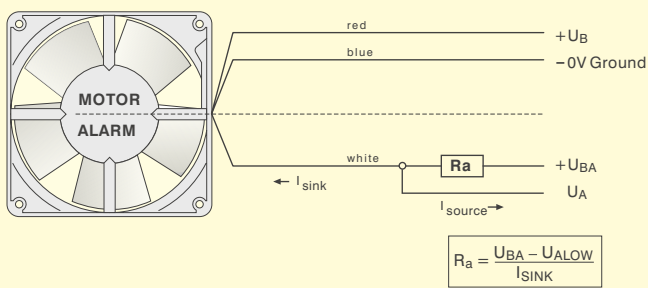
* After switching on UB

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

- 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 / 39

Electrical connection



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

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

Type	Alarm signal data			Alarm signal data			Alarm signal data		Alarm signal data		Speed limit n_G	Fan description
	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 I_{sink}	Alarm delay time t_2	Condition:		
	V DC		mA	V DC		mA	V DC	mA	s		min ⁻¹	Page
3412N/39 H	≤ 0.5	$n > n_G$	2	28	$n = n_G$	0	≤ 28	10	< 1	*	0	26
4418F/39	≤ 0.5	$n > n_G$	2	28	$n = n_G$	0	≤ 28	10	< 1	*	0	29

* After switching on UB

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



- TD motors with excellent control response and high speed range for air and pressure demands.
- Speed control and drive electronics fully integrated in the fan hub.

- For load-dependent speed control
- With highly intelligent motor management and with higher power and speed ranges for sophisticated high-end cooling applications.

TURBOFAN

TD fan drive

The motor technology of the PAPST TURBOFAN is treading new paths in fan construction. With TD motors, the fans can be operated within an extremely wide speed range with high precision speed control.

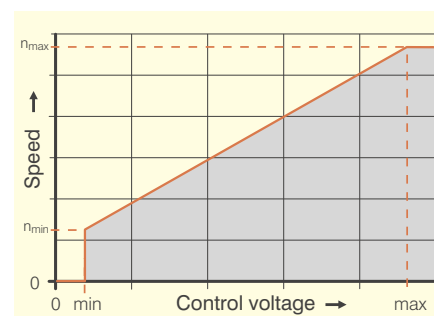
The extremely compact drive unit with microprocessor controlled motor manager and FET power output stage, is equipped with an internal speed controller. This means maximum flexibility for the user as the fan can be either voltage or speed controlled. The output stage can also be de-energized (motor enable) or the actual speed monitored via an open collector frequency output.

Description

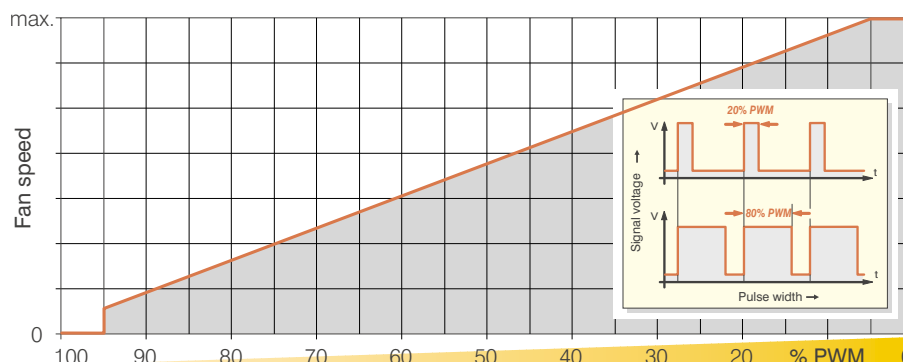
- DC fans with 3-phase, electronically commutated drive
- Extremely efficient motor electronics : Power and control circuit are space-savingsly mounted on only one PCB
- Microprocessor-controlled motor management. High operating efficiency thanks to FET output stage
- Locked rotor protection and peak current limiter.
- Designed for maintenance-free, long-term continuous operation
- With NTC connection for temperature-controlled fan operation
- Available on request: Selectable direction. In reverse operation the fan reaches speed-dependent 75% of its maximum fan performance
- Available on request: Additional motor control input for braking

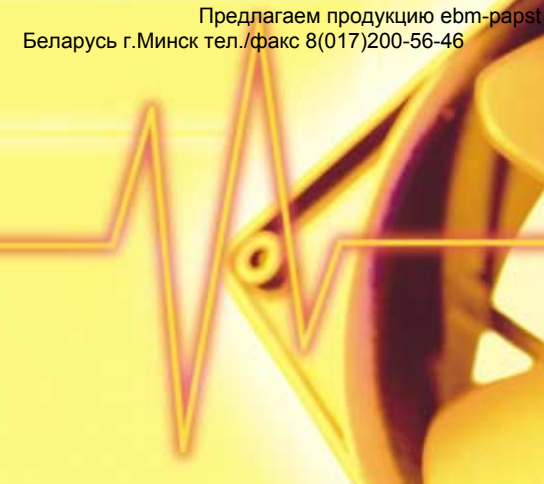
Versions

- Type T with external NTC connection for temperature-controlled fan operation
- Type I with NTC connection integrated in the rotor hub for temperature-controlled fan operation.
- Type A: Speed setting via control voltage. Simple speed control via separate DC low voltage interface (0-10 VDC).



- Type P: Speed setting via PWM signal which is user generated via a standard interface as a control variable. PWM signal: 2 kHz (0-100%).





V a r i o - P r o[®]

- "Software instead of hardware" – aptly describes the worldwide unique new fan concept by PAPST – in other words – fans are equipped at the plant with tailor-made intelligence for cooling electronics.

- Flexible configuration on a software basis, quicker availability and sampling ex factory and readiness to supply customer-specific solutions in every batch size are the major advantages.

The way to your Vario-Pro – easier than you thought

■ You decide which performance profile your fan should have. First, select the hardware on which the customer-specific configuration will be based from the wide range of fans. The most important selection criteria are:

What is the appropriate size for the device?

What nominal voltage is available?

And what is the maximum air flow performance that is required?

Additional functions e.g. alarm signal, temperature/speed, speed limits must also be defined.

■ The second stage is devoted to equipping the fan with its specific intelligence. The desired functionalities e.g. output data and operating parameters are quickly and precisely programmed as software modules in the brain of the fan via a data line.

The software takes over the work that analogue components have performed so far.

Your Vario-Pro features

Speed profiles

- Description of speed curve with up to 14 freely selectable interpolation points. Linear interpolation between the points.

Temperature as a speed control variable

- Randomly definable speed profile in the temperature range of -20 to +80 °C
- Temperature sensor integrated or externally, randomly positionable
- 0 rpm. possible.
- Recognition of sensor tear-off: In case of loss of sensor, the fan operates at freely programmable (fail-safe) speed.

Interface for external speed setting

- Random curve also possible with external set value by PWM signal or control voltage

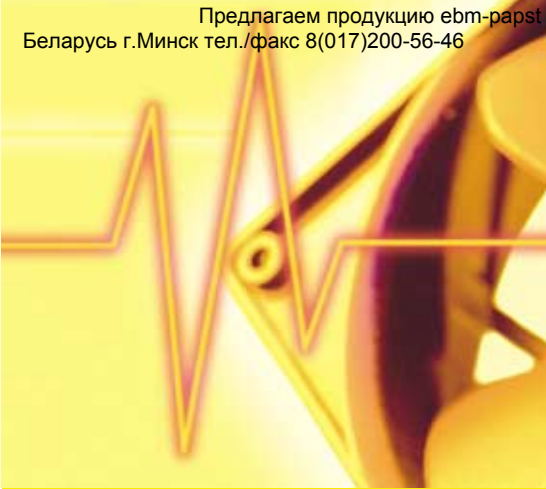
Alarm and tachometer functions

- Optional alarm/or tachometer function
- Freely selectable alarm speed limit (with hysteresis) and alarm delay time

- Storage of alarm signal
- Delay only when starting or permanently active
- Output signal "High" or "Low" in case of alarm
- Optional alarm when temperature sensor torn off.
- Optional alarm in case of excess temperature

Motor management

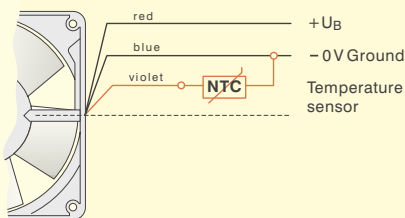
- High control accuracy thanks to digital motor management
- Higher operating efficiency thanks to optimum adaptation of motor hardware and software.
- Speed calibration during final test in some cases possible.
- 3-stage current limitation for adaptation for L-, N- and H-winding in some cases possible.
- Reduction of power input and operating temperature thanks to digital drive leads to increased service life of the product.



Vario-Pro®

Speed Setting

Temperature-dependent speed control



Temperature sensor Type T

- Speed control via external temperature sensor (not included in scope of delivery)
- Temperature range from -20 ... +80°C

Temperature sensor Type I

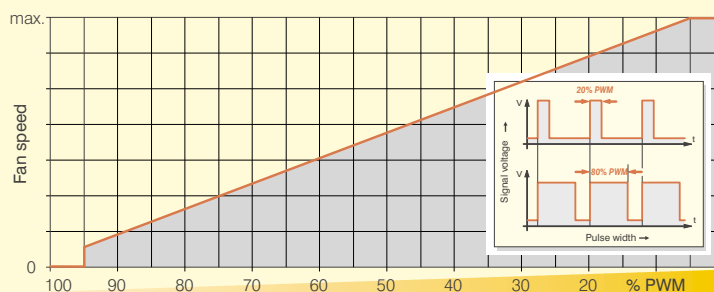
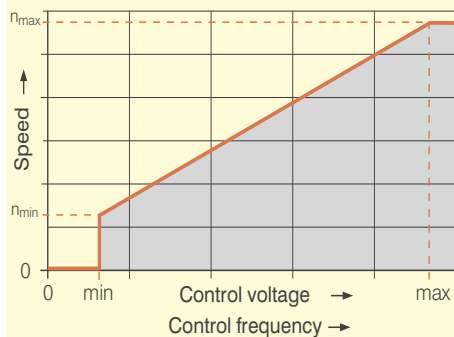
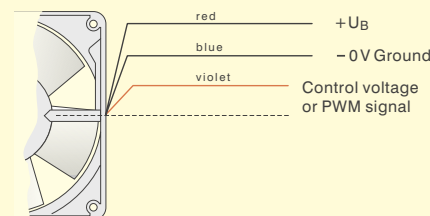
- Speed control via temperature sensor integrated in fan hub
- Temperature range from -20 ... +80°C

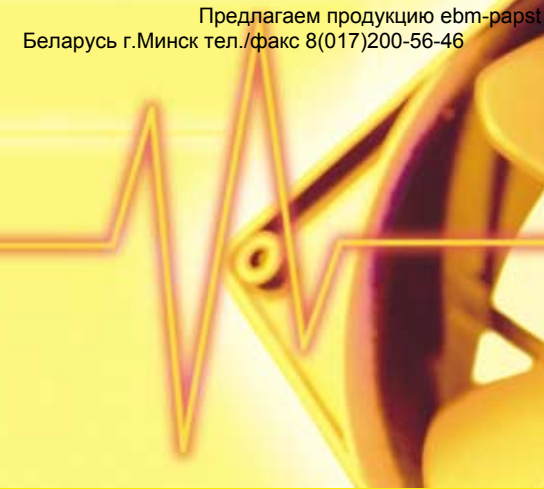
Control voltage Type A

- Speed setting via control voltage. Simple speed control via separate DC low voltage interface
- Speed setting via control frequency. Is generated as controlled variable on the user side. Frequency signal: 0...5 kHz. ! Only series 4100, RL 90, RG 90, RER 125, RG 125

PWM signal Type P

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

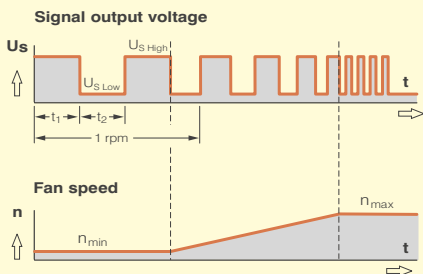




Vario-Pro®

Sensor Signal

Sensorsignals



Signal symmetry $[t_1, t_2] = 0.8 \dots 1.2$

Signal frequency $[f] = 2 \times n / 60 \text{ Hz}$

Slew rate of sensor output voltage $[t_r, t_f] = 0.5 \text{ V}/\mu\text{s}$, TTL

$t_r = \text{Low/high edge}$, $t_f = \text{High/low edge}$

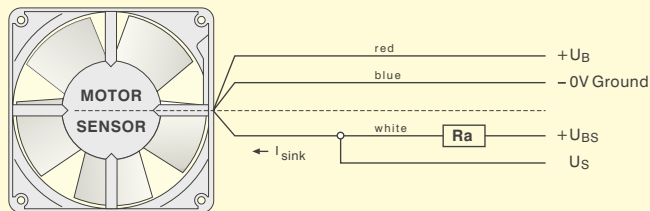
Sensor signal Type /2

- Speed-proportional rectangular pulse for externally monitoring speed of fan motor
- 2 pulses per rpm.
- Open collector signal output
- Extremely wide operating voltage range (5 ... 60 V)

Sensor signal Type /12

- Speed-proportional rectangular pulse for externally monitoring the speed of the fan motor.
- 2 pulses per r.p.m.
- TTL compatible, signal already processed for TTL interface. Integrated pull-up resistor

Electrical connection



All voltages measured to ground
Sensor signal type /12: external load resistance R_a from U_S to U_{BS} required

$$R_a = \frac{U_{BS} - U_{SLOW}}{I_{SINK}}$$

Sensor signal data									
Sensor signal	Fan	Sensor signal $U_{S\ Low}$		Sensor signal $U_{S\ High}$		Sensor operating voltage U_{BS}	Permissible sink current I_{SINK}	Fan description	Page
		Condition	Condition	Condition	Condition				
Type		V DC	mA	V DC	mA	V DC	mA		
/2	Series: 4100N	≤ 0.4	2.0	$= U_{BS}$	0	x ...60	max. 4	35	
	Series: 5200N / DV5200	≤ 0.4	2.0	$= U_{BS}$	0	x ...60	max. 4	36 / 37	
	Series: RL90N / RG90N	≤ 0.4	2.0	$= U_{BS}$	0	x ...60	max. 4	46 / 47	
	Series: RG125N/ RER125N	≤ 0.4	2.0	$= U_{BS}$	0	x ...60	max. 4	48 / 49	
	Series: 6200N / DV6200	≤ 0.4	2.0	$= U_{BS}$	0	x ...60	max. 20	41 / 43	
	Series: 7200 / 6400	≤ 0.4	2.0	$= U_{BS}$	0	x ...60	max. 20	40 / 45	
	Series: RG160N/ RER160N	≤ 0.4	2.0	$= U_{BS}$	0	x ...60	max. 20	49 / 53	
/12	Series: 4100N	≤ 0.4	2.0	2.5...5.5	max. 1	—	max. 1	35	
	Series: 5200N / DV5200	≤ 0.4	2.0	2.5...5.5	max. 1	—	max. 1	36 / 37	
	Series: RL90N / RG90N	≤ 0.4	2.0	2.5...5.5	max. 1	—	max. 1	46 / 47	
	Series: RG125N/ RER125N	≤ 0.4	2.0	2.5...5.5	max. 1	—	max. 1	48 / 49	
	Series: 6200N / DV6200	≤ 0.4	2.0	2.5...5.5	1 (max. 3)	—	max. 20	41 / 43	
	Series: 7200 / 6400	≤ 0.4	2.0	2.5...5.5	1 (max. 3)	—	max. 20	40 / 45	
	Series: RG160N/ RER160N	≤ 0.4	2.0	2.5...5.5	1 (max. 3)	—	max. 20	49 / 53	

Vario-Pro®

Alarm Signal

Alarm signals

Alarm signal Type /17

Alarm signal Type /19

- Alarm signal with integrated speed monitoring
- Signal output via open collector
- The fan emits a low continuous signal during trouble-free operation within the permissible voltage range.
- Low signal when fan speed does not reach the defined speed limit.

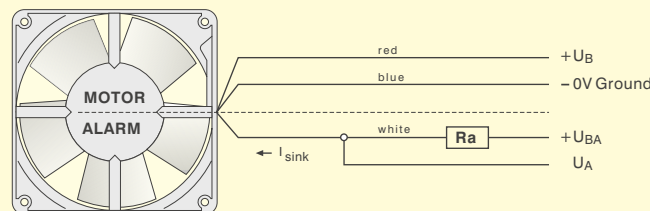
- Alarm signal description as Type /17 – however with low continuous signal during trouble-free operation
- High signal when fan speed does not reach the defined speed limit.

Electrical connection

All voltages measured to ground

External load resistance R_a from U_A to U_{BA} required

$$R_a = \frac{U_{BA} - U_{ALOW}}{I_{SINK}}$$



Sensor signal data		Sensor signal U_A Low		Sensor signal U_A High		Sensor operating voltage U_{BA}	Permissible sink current I_{sink}	Fan description
Sensor signal	Fan	Condition	Condition	Condition	Condition			
Type		V DC	mA	V DC	mA	V DC	mA	Page
/17	Series: 4100N	≤ 0.4	2.0	$= U_{BA}$	0	x...60	max. 20	35
	Series: 5200N / DV5200	≤ 0.4	2.0	$= U_{BA}$	0	x...60	max. 20	36 / 37
	Series: RL90N / RG90N	≤ 0.4	2.0	$= U_{BA}$	0	x...60	max. 20	46 / 47
	Series: RG125N/ RER125N	≤ 0.4	2.0	$= U_{BA}$	0	x...60	max. 20	48 / 49
	Series: 6200N / DV6200	≤ 0.4	2.0	$= U_{BA}$	0	x...60	max. 20	41 / 43
	Series: 7200 / 6400	≤ 0.4	2.0	$= U_{BA}$	0	x...60	max. 20	40 / 45
	Series: RG160N/ RER160N	≤ 0.4	2.0	$= U_{BA}$	0	x...60	max. 20	49 / 53
/19	Series: 4100N	≤ 0.4	2.0	$= U_{BA}$	0	x...60	max. 20	35
	Series: 5200N / DV5200	≤ 0.4	2.0	$= U_{BA}$	0	x...60	max. 20	36 / 37
	Series: RL90N / RG90N	≤ 0.4	2.0	$= U_{BA}$	0	x...60	max. 20	46 / 47
	Series: RG125N/ RER125N	≤ 0.4	2.0	$= U_{BA}$	0	x...60	max. 20	48 / 49
	Series: 6200N / DV6200	≤ 0.4	2.0	$= U_{BA}$	0	x...60	max. 20	41 / 43
	Series: 7200 / 6400	≤ 0.4	2.0	$= U_{BA}$	0	x...60	max. 20	40 / 45
	Series: RG160N/ RER160N	≤ 0.4	2.0	$= U_{BA}$	0	x...60	max. 20	49 / 53

PAPST AC Fans: The Standard in the World of Fans

The renowned 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.

Models and technical features of the AC fans

- 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.
- Fan drive by shaded-pole or capacitor motors most of which incorporate the world-famous 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.
- 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.
- 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.
- All PAPST fans conform to the requirements of IP 20. Fans conforming to IP 54 and special types of protection class are also available.
- The line of AC fans for Euro voltage according to IEC 38 (230 V + 6%, -10%) is basically also available for 115 V.
- AC fans can be operated at frequencies of 50 Hz or 60 Hz. However their technical data then change accordingly.
- Fans driven by capacitor external motors provide particularly high operating efficiency. Generally, the required phase-shift capacitor is already integrated in the fan housing.
- 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".



PAPST



AC Axial Fans

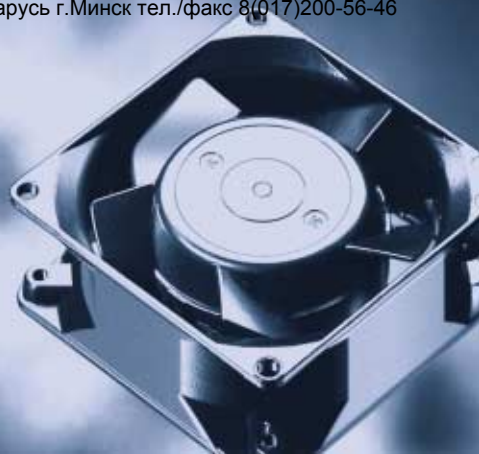


Gerätelüfter für Wechselspannung

Abmessung	Volumenstrom	Sicherheitszulassungen	über Stege blasend über Stege saugend	230 V/50 Hz	Variante für 115 V/60 Hz	Traversstyp ohne Außengeräuse	Sinter-Gleitlager Kugellager	Seite	
mm	m³/h			Typ	Typ	Typ	□/■		
AC-AXIAL	80x80x38	29	VDE, UL, CSA	•	8880A	•	•	□	75/77
		36	VDE, UL, CSA	•	8850A	•	•	□	75/77
		48	VDE, UL, CSA	•	8550A	•	•	□	75/77
		48	VDE, UL, CSA	•	8556A	•	•	■	75/77
		30	VDE, UL, CSA	•	8880N	•	•	□	76/78
		37	VDE, UL, CSA	•	8850N	•	•	□	76/78
		50	VDE, UL, CSA	•	8550N	•	•	□	76/78
		50	VDE, UL, CSA	•	8556N	•	•	■	76/78
	92x92x25	31	VDE*, UL, CSA	•	3950L	•	•	□	79
		45	VDE*, UL, CSA	•	3950M	•	•	□	79
		59	VDE*, UL, CSA	•	3950	•	•	□	79
		31	VDE, UL, CSA	•	3956L	•	•	■	79
		45	VDE, UL, CSA	•	3956M	•	•	■	79
		59	VDE, UL, CSA	•	3956	•	•	■	79
	92x92x38	49	VDE, UL, CSA	•	3850	•	•	□	80
		54	VDE, UL, CSA	•	3856	•	•	■	80
		67	VDE, UL, CSA	•	3550	•	•	□	80
		67	VDE, UL, CSA	•	3556	•	•	■	80
		75	VDE, UL, CSA	•	3650	•	•	□	80
		75	VDE, UL, CSA	•	3656	•	•	■	80
119x119x25	84	VDE, UL, CSA	•	9956L	•	•	■	81	
	104	VDE, UL, CSA	•	9956M	•	•	■	81	
	117	VDE*, UL, CSA	•	9950	•	•	□	81	
	117	VDE, UL, CSA	•	9956	•	•	■	81	
119x119x38	80	VDE, UL, CSA	•	4890N	•	•	□	82	
	100	VDE, UL, CSA	•	4850N	•	•	□	82	
	123	VDE, UL, CSA	•	4580N	•	•	□	82	
	145	VDE, UL, CSA	•	4550N	•	•	□	82	
	160	VDE, UL, CSA	•	4650N	•	•	□	82/84	
	160	VDE, UL, CSA	•	4656N	•	•	■	82/84	
	100	VDE, UL, CSA	•	4850Z	•	•	□	83	
	115	VDE, UL, CSA	•	4580Z	•	•	□	83	
	160	VDE, UL, CSA	•	4650Z	•	•	□	83/85	
	160	VDE, UL, CSA	•	4656Z	•	•	■	83/85	
127x127x38	150	VDE, UL, CSA	•	5988	•	•	■	86	
	180	VDE, UL, CSA	•	5950	•	•	□	86	
	180	VDE, UL, CSA	•	5958	•	•	■	86	
135x135x38	235	VDE, UL, CSA	•	5656S	•	•	■	87	
150x172x38	330	VDE, UL, CSA	•	7056ES	•	•	■	88	
150∅x55	325	VDE, UL, CSA	•	7855ES	•	•	■	89	
	325	VDE, UL, CSA	•	7856ES	•	•	■	89	
	390	VDE, UL, CSA	•	7450ES	•	•	■	90	
172∅x51	375	VDE, UL, CSA	•	6058ES	•	•	■	91	
	420	VDE, UL, CSA	•	6078ES	•	•	■	91	
AC-RADIAL	121x121x37	40	VDE, UL, CSA		RL90-18/50	•	□/■	92	
	135x135x38	54	VDE, UL, CSA		RG90-18/50	•	□/■	93	
	180x180x40	86	VDE, UL, CSA		RG125-19/56	•	■	94	
	220x220x56	202	VDE, UL, CSA		RG160-28/56S	•	■	95	
	138∅x40	104	VDE, UL, CSA		RER125-19/56	•	■	96	
	176∅x54	234	VDE, UL, CSA		RER 160-28/56S	•	■	97	

Volumenstrom → 50 100 150 200 250 300 m³/h

* Sicherheitszulassungen teilweise erteilt oder in Anmeldung



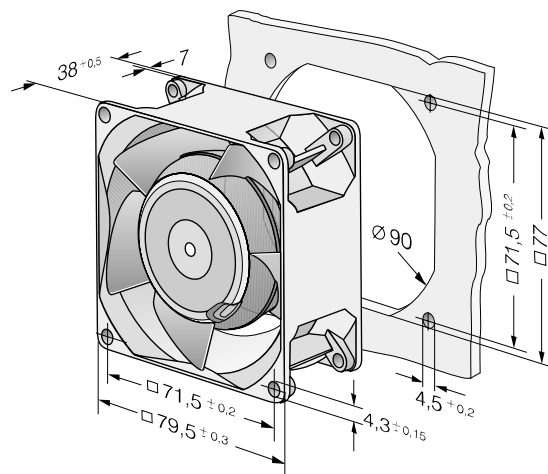
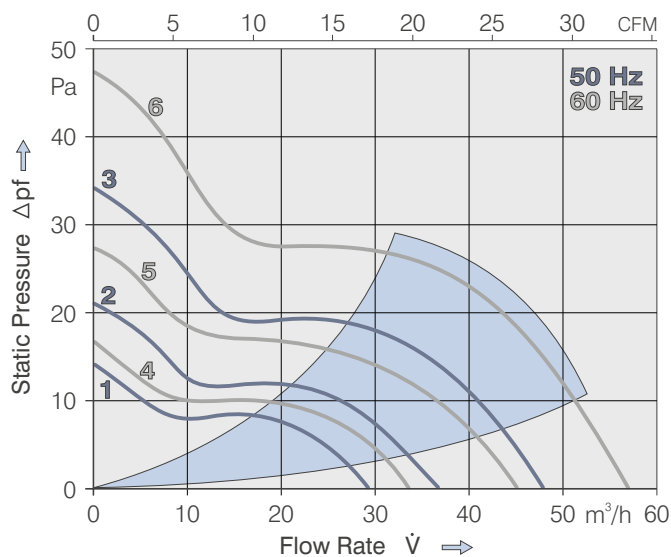
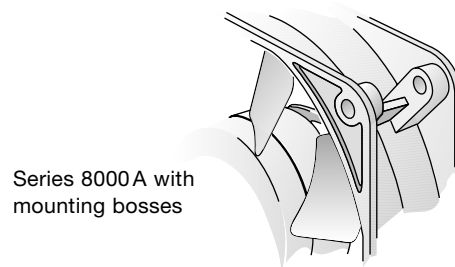
- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Metal fan housing and impeller.
- Air intake over struts. Rotational direction CW looking at rotor.
- Electrical connection via 2 flat pins 2.8 x 0.5 mm.
- Fan housing with ground lug and screw M4x8 (TORX).
- Mass 490 g.

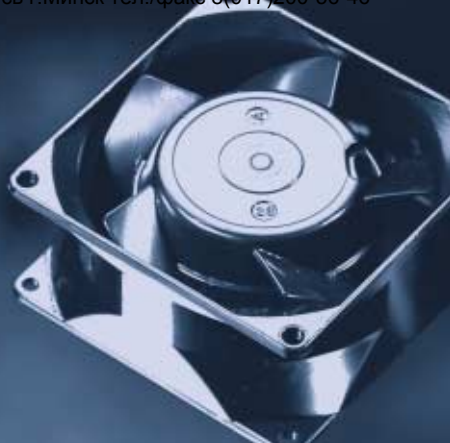
Series 8000A 80 x 80 x 38 mm

Air Flow		Nominal Voltage	Frequency	Noise		Sinter-Sleeve Bearings		Power Input	Nominal Speed	Temperature Range	Service Life L_{10}		Curve	Type
m ³ /h	CFM			V	Hz	dB(A)	bels				□/■	Watt		
29	17.1	230	50	26	26	□	9	1750	-10...+80	60000 / 25000		1	8880A	
36	21.2	230	50	31	31	□	12.5	2150	-10...+70	52500 / 25000		2	8850A	
48	28.3	230	50	36	36	□	12	2700	-10...+70	52500 / 25000		3	8550A	
48	28.3	230	50	37	37	■	12	2800	-40...+90	52500 / 15000		3	8556A	
34	20.0	115	60	29	29	□	8	1950	-10...+80	62500 / 25000		4	8830A	
45	26.5	115	60	34	34	□	11	2500	-10...+70	55000 / 27500		5	8800A	
57	33.6	115	60	41	41	□	11	3200	-10...+75	55000 / 25000		6	8500A	
57	33.6	115	60	42	42	■	11	3300	-40...+95	55000 / 15000		6	8506A	

Available on request:

- electrical connection via single leads
- air exhaust over struts, rotational direction CW



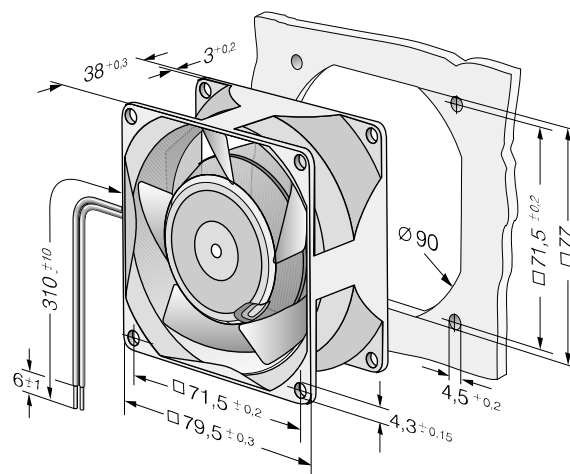
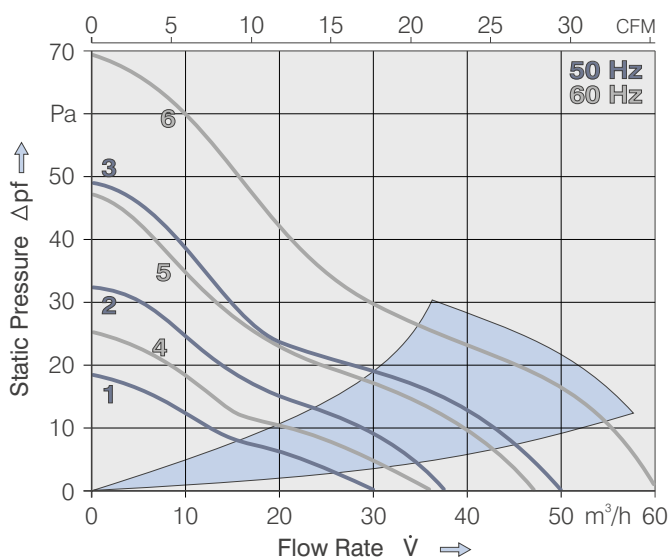


- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Metal fan housing and impeller.
- Air exhaust over struts. Rotational direction CW looking at rotor.
- Electrical connection via 2 leads. Stripped and tinned ends.
- Fan housing with ground lug for screw M4x8 (TORX).
- Mass 490 g.

Series 8000N 80x80x38 mm

Air Flow		Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L_{10}		Curve	Type
m ³ /h	CFM									V	Hz		
30	17.7	230	50	18	3.3	□	9	1750	-10...+80	60 000 / 25 000	1	8880N	
37	21.8	230	50	24	3.9	□	12.5	2150	-10...+70	52 500 / 25 000	2	8850N	
50	29.4	230	50	30	4.4	□	12	2700	-10...+70	52 500 / 25 000	3	8550N	
50	29.4	230	50	31	4.5	■	12	2800	-40...+90	52 500 / 15 000	3	8556N	
36	21.2	115	60	21	3.7	□	8	1950	-10...+80	62 500 / 25 000	4	8830N	
47	27.7	115	60	28	4.3	□	11	2500	-10...+70	55 000 / 27 500	5	8800N	
61	35.9	115	60	34	4.8	□	11	3200	-10...+75	55 000 / 25 000	6	8500N	
61	35.9	115	60	35	5.0	■	11	3300	-40...+95	55 000 / 15 000	6	8506N	

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





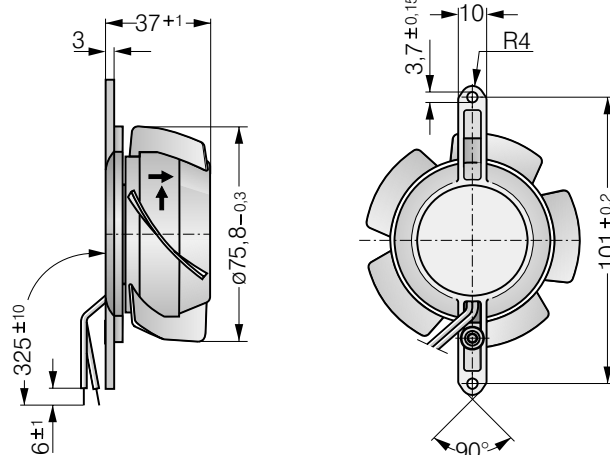
- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Impeller and mounting bracket of metal.
- Air intake over mounting bracket. Rotational direction CW looking at rotor.
- Electrical connection via 2 leads. Stripped and tinned ends.
- Mass 370 g.

Series 8000TA 76 Ø x 37 mm

Air Flow		Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type
m ³ /h	CFM									V	Hz		
23	13.5	230	50	15	□	9	1 650	-10...+80	60 000 / 25 000	-	-	8880 TA	
30	17.6	230	50	19	□	12	2 100	-10...+70	52 500 / 25 000	-	-	8850 TA	
38	22.4	230	50	25	□	12	2 650	-10...+70	52 500 / 25 000	-	-	8550 TA	
38	22.4	230	50	26	■	12	2 750	-40...+90	52 500 / 15 000	-	-	8556 TA	
26	15.3	115	60	18	□	8	1 850	-10...+80	62 500 / 25 000	-	-	8830 TA	
34	20.0	115	60	23	□	11	2 450	-10...+70	55 000 / 27 500	-	-	8800 TA	
45	26.5	115	60	30	□	11	3 150	-10...+75	55 000 / 25 000	-	-	8500 TA	
45	26.5	115	60	31	■	11	3 250	-40...+95	55 000 / 15 000	-	-	8506 TA	

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 8000A 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





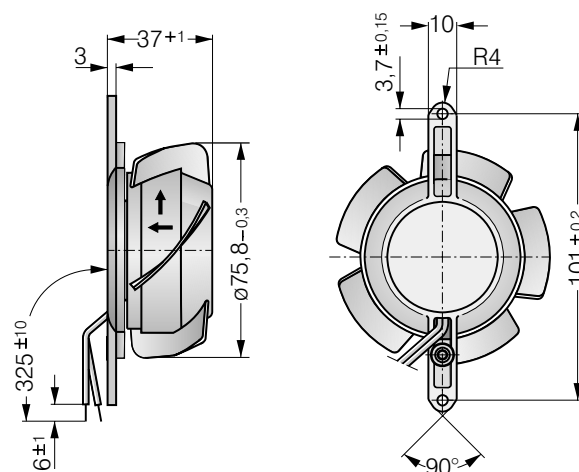
- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Impeller and mounting bracket of metal.
- Air exhaust over struts. Rotational direction CW looking at rotor.
- Electrical connection via 2 leads. Stripped and tinned ends.
- Mass 370 g.

Series 8000TV 76 Ø x 37 mm

Air Flow		Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type
m ³ /h	CFM									V	Hz		
24	14.1	230	50	15	□	9	1 650	-10...+80	60 000 / 25 000	-	-	8880 TV	
31	18.3	230	50	20	□	12	2 100	-10...+70	52 500 / 25 000	-	-	8850 TV	
40	23.5	230	50	27	□	12	2 650	-10...+70	52 500 / 25 000	-	-	8550 TV	
40	23.5	230	50	28	■	12	2 750	-40...+90	52 500 / 15 000	-	-	8556 TV	
27	15.9	115	60	18	□	8	1 850	-10...+80	62 500 / 25 000	-	-	8830 TV	
36	21.2	115	60	24	□	11	2 450	-10...+70	55 000 / 27 500	-	-	8800 TV	
47	27.7	115	60	32	□	11	3 150	-10...+75	55 000 / 25 000	-	-	8500 TV	
47	27.7	115	60	33	■	11	3 250	-40...+95	55 000 / 15 000	-	-	8506 TV	

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 8000N 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



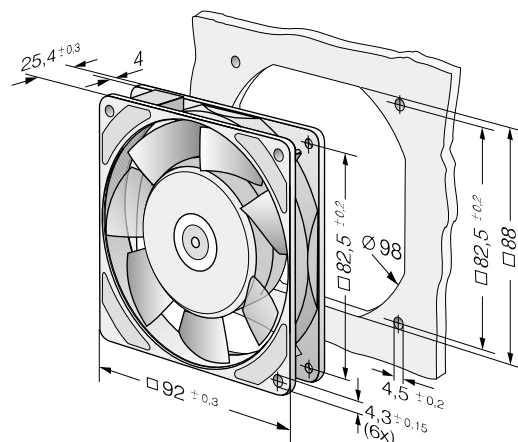
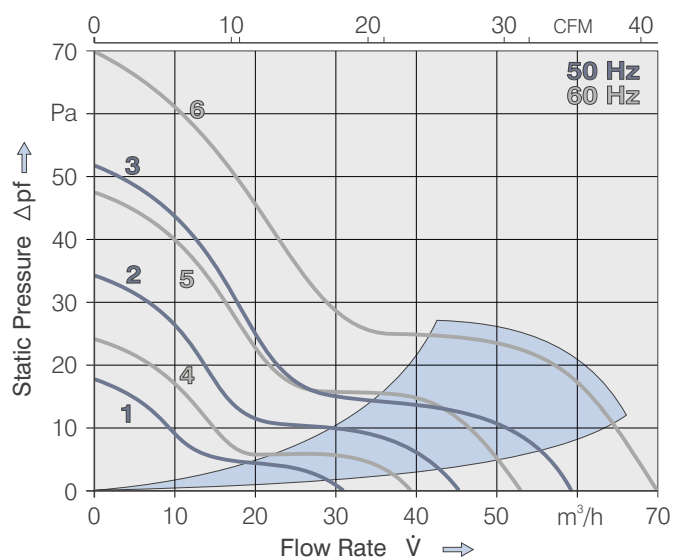


- AC fans with internal rotor shaded-pole motor. Impedance protected against overloading.
- Metal fan housing, impeller of mineral-reinforced plastic PA.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via 2 flat pins 2.8 x 0.5 mm.
- Fan housing with ground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

Series 3900

92 x 92 x 25 mm

Air Flow		Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L_{10}		Curve	Type
m ³ /h	CFM									at 40 °C	at t_{max}		
31	18.3	230	50	24	3.8	□	6	1550	-10...+80	70000 / 27500	1	3950L	
31	18.3	230	50	24	3.8	■	6	1550	-40...+80	70000 / 27500	1	3956L	
45	26.5	230	50	29	4.2	□	6	2150	-10...+80	70000 / 27500	2	3950M	
45	26.5	230	50	29	4.2	■	6	2150	-40...+80	70000 / 27500	2	3956M	
59	34.7	230	50	35	4.7	□	11	2650	-20...+80	55000 / 20000	3	3950	
59	34.7	230	50	35	4.7	■	11	2650	-40...+80	55000 / 20000	3	3956	
39	23.0	115	60	27	4.0	□	5	1850	-10...+80	70000 / 27500	4	3900L	
39	23.0	115	60	27	4.0	■	5	1850	-40...+80	70000 / 27500	4	3906L	
53	31.2	115	60	34	4.6	□	5	2600	-10...+80	70000 / 27500	5	3900M	
53	31.2	115	60	34	4.6	■	5	2600	-40...+80	70000 / 27500	5	3906M	
70	41.2	115	60	40	5.1	□	9	3150	-20...+80	60000 / 22500	6	3900	
70	41.2	115	60	40	5.1	■	9	3150	-40...+80	60000 / 22500	6	3906	





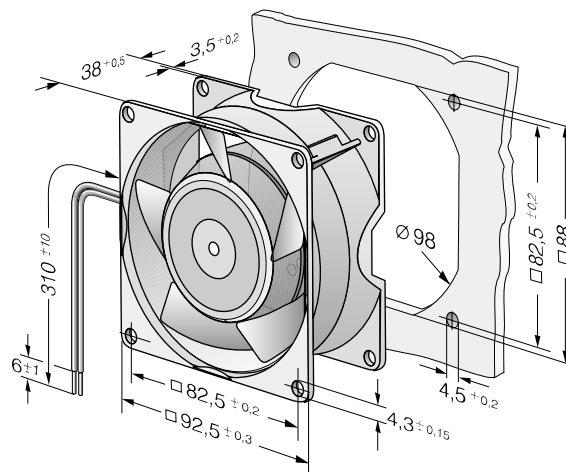
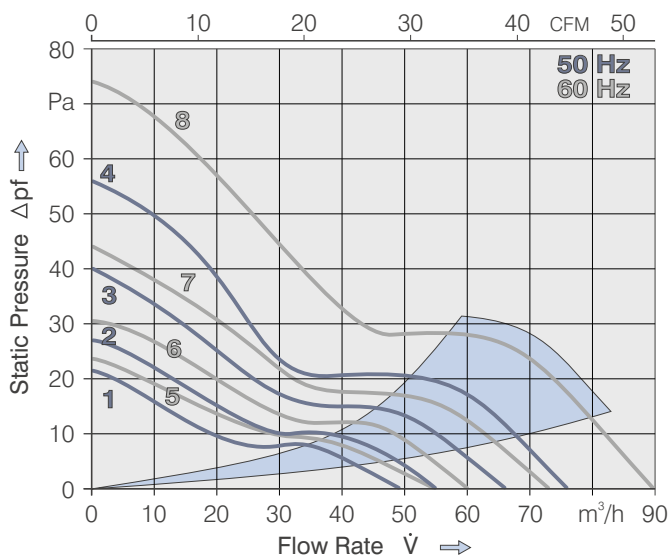
- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Metal fan housing and impeller.
- Air exhaust over struts. Rotational direction CW looking at rotor.
- Electrical connection via 2 leads. Stripped and tinned ends.
- Fan housing with ground lug and screw M4x8 (TORX).
- Mass 420 g.

Series 3000

92 x 92 x 38 mm

Air Flow		Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L_{10}		Curve	Type
m ³ /h	CFM									V	Hz		
49	28.8	230	50	24	3.7	□	9	1750	-10...+75	60 000 / 27 500	1	3850	
54	31.8	230	50	26	3.9	■	9	1950	-40...+90	60 000 / 20 000	2	3856	
67	39.4	230	50	32	4.4	□	9	2300	-10...+80	60 000 / 25 000	3	3550	
67	39.4	230	50	33	4.5	■	9	2400	-40...+90	60 000 / 20 000	3	3556	
75	44.1	230	50	36	4.8	□	12	2650	-10...+55	52 500 / 37 500	4	3650	
75	44.1	230	50	37	4.9	■	12	2700	-40...+75	52 500 / 22 500	4	3656	
54	31.8	115	60	26	3.9	□	8	1900	-10...+80	62 500 / 25 000	5	3800	
60	35.3	115	60	29	4.2	■	8	2150	-40...+95	62 500 / 17 500	6	3806	
73	43.0	115	60	35	4.6	□	8	2500	-10...+80	62 500 / 25 000	7	3500	
73	43.0	115	60	36	4.7	■	8	2600	-40...+95	62 500 / 17 500	7	3506	
89	52.4	115	60	41	5.1	□	11	3100	-10...+65	55 000 / 30 000	8	3600	
89	52.4	115	60	42	5.2	■	11	3200	-40...+75	55 000 / 25 000	8	3606	

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





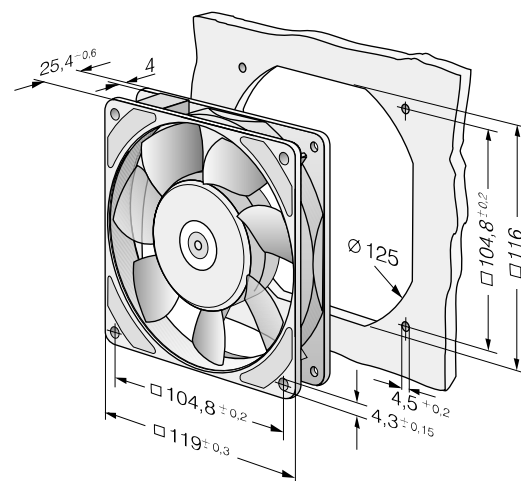
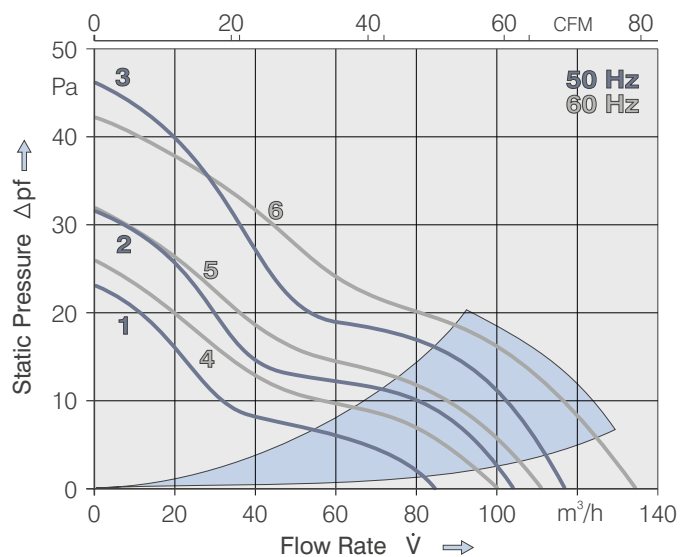
- AC fans with internal rotor shaded-pole motor. Impedance protected against overloading.
- Metal fan housing, impeller of mineral-reinforced plastic PA.
- Air exhaust over struts. Rotational direction CCW looking at rotor.

- Electrical connection via 2 flat pins 2.8 x 0.5 mm.
- Fan housing with ground lug for screw M4.
- Mass 325 g.

Series 9900

119x119x25 mm

Air Flow		Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L_{10}		Curve	Type
m ³ /h	CFM									at 40 °C	at t_{max}		
84	49.4	230	50	29.5	4.4	■	9.5	1850	-40...+80	57 500 / 22 500		1	9956 L
104	61.2	230	50	35.5	4.7	■	10	2250	-40...+80	57 500 / 22 500		2	9956 M
117	68.9	230	50	37	5.0	□	14	2450	-20...+70	47 500 / 22 500		3	9950
117	68.9	230	50	37	5.0	■	14	2450	-40...+70	47 500 / 22 500		3	9956
100	58.9	115	60	34.5	4.6	■	8	2100	-40...+80	62 500 / 25 000		4	9906 L
111	65.3	115	60	37	5.0	■	8	2450	-40...+80	62 500 / 25 000		5	9906 M
135	79.5	115	60	42	5.4	□	12	2850	-20...+70	52 500 / 25 000		6	9900
135	79.5	115	60	42	5.4	■	12	2850	-40...+70	52 500 / 25 000		6	9906



AC Axial Fans



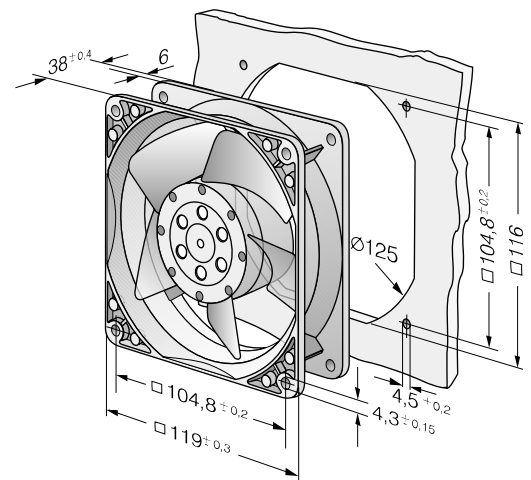
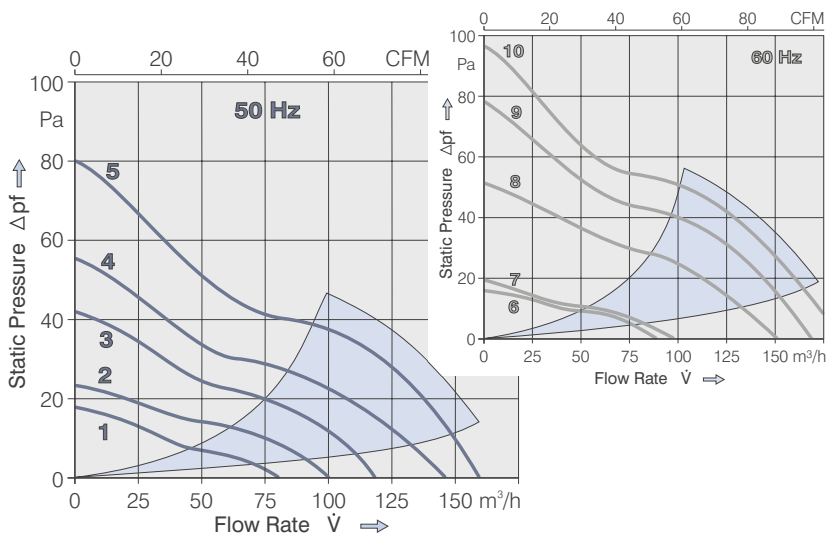
- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Metal fan housing and impeller
- Air intake over struts. Rotational direction CW looking at rotor. Types 4890N and 4840N air exhaust over struts.
- Electrical connection via 2 flat pins 3.0 x 0.5 mm.
- Fan housing with ground lug for screw M4 and UNC.
- Mass 550 g.

Series 4000N 119x119x38 mm

Air Flow		Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type
m ³ /h	CFM									at 40 °C	at t _{max}		
80	47.1	230	50	25	4.0	□	11	1550	-10...+70	55 000 / 27 500		1	4890N
100	58.9	230	50	32	4.4	□	10	1800	-10...+70	57 500 / 27 500		2	4850N
123	72.4	230	50	41	5.2	□	18	2350	-10...+55	40 000 / 27 500		3	4580N
145	85.3	230	50	44	5.4	□	16.5	2550	-10...+55	42 500 / 30 000		4	4550N
160	94.2	230	50	46	5.4	□	19	2650	-10...+55	37 500 / 27 500		5	4650N
160	94.2	230	50	47	5.5	■	19	2650	-40...+85	37 500 / 15 000		5	4656N
85	50.0	115	60	26	4.1	□	10	1650	-10...+75	57 500 / 25 000		6	4840N
97	57.1	115	60	32	4.3	□	9	1750	-10...+75	60 000 / 27 500		7	4800N
151	88.9	115	60	45	5.4	□	16	2700	-10...+65	42 500 / 25 000		8	4530N
169	99.5	115	60	48	5.7	□	15	3000	-10...+65	47 500 / 25 000		9	4500N
180	105.9	115	60	50	5.7	□	18	3100	-10...+60	40 000 / 25 000		10	4600N
180	105.9	115	60	51	5.8	■	18	3100	-40...+90	40 000 / 15 000		10	4606N

Available on request:

- Fan housing with mounting bosses.
- Electrical connection via 2 single leads.





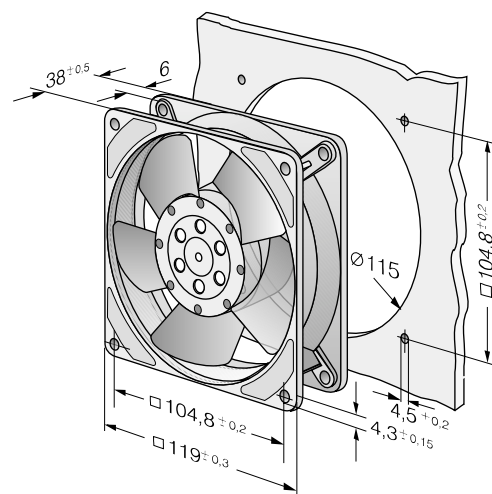
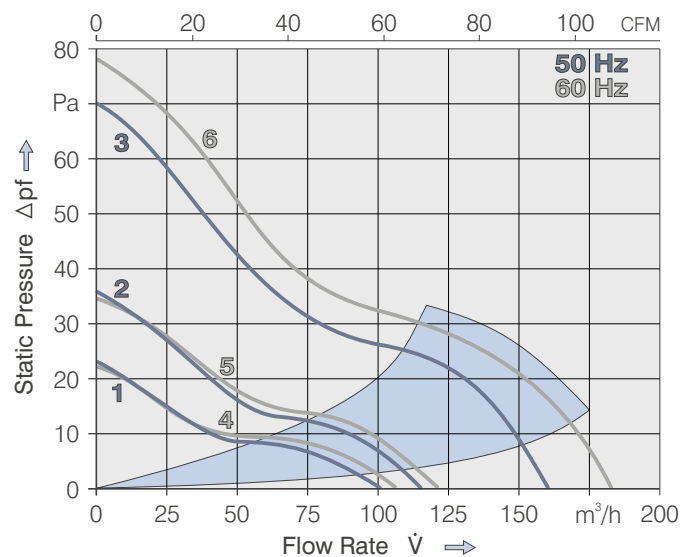
- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Metal fan housing and impeller
- Air exhaust over struts. Rotational direction CW looking at rotor.
- Electrical connection via 2 flat pins 2.8 x 0.5 mm.
- Fan housing with ground lug and screw M4x8 (TORX).
- Mass 540 g.

Series 4000Z 119x119x38 mm

Air Flow		Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L_{10}		Curve	Type
m ³ /h	CFM									at 40 °C	at t_{max}		
100	58.9	230	50	26	4.0	□	13	1700	-10...+65	50000 / 27500		1	4850Z
115	67.7	230	50	30	4.3	□	13	1900	-10...+65	50000 / 27500		2	4580Z
160	94.2	230	50	40	5.3	□	19	2650	-10...+50	37500 / 30000		3	4650Z
160	94.2	230	50	40	5.3	■	19	2650	-40...+75	37500 / 17500		3	4656Z
105	61.8	115	60	28	4.1	□	12	1800	-10...+70	52500 / 25000		4	4800Z
120	70.6	115	60	32	4.4	□	12	2000	-10...+70	52500 / 25000		5	4530Z
180	105.9	115	60	45	5.6	□	18	3100	-10...+60	40000 / 25000		6	4600Z
180	105.9	115	60	45	5.6	■	18	3100	-40...+85	40000 / 15000		6	4606Z

Available on request:

- Electrical connection via 2 single leads 310 mm long.



AC Axial Fans



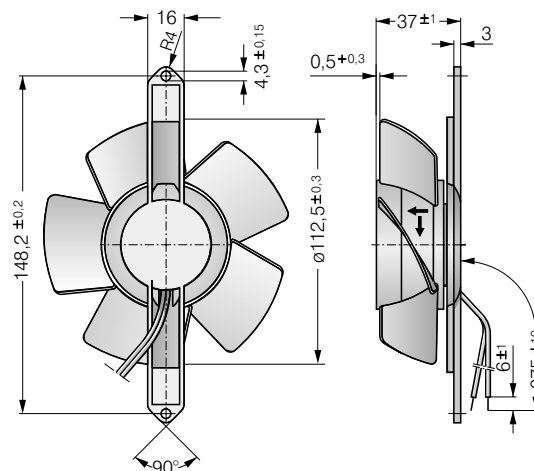
- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Impeller and mounting bracket of metal.
- Air exhaust over mounting bracket. Rotational direction CW looking at rotor.
- Electrical connection via 2 leads. Stripped and tinned ends.
- Mass 430 g.

Series 4600TA 113 Ø x 37 mm

Air Flow		Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L_{10}		Curve	Type
m ³ /h	CFM									V	Hz		
138	81.2	230	50	41	□	19	2550	-10...+45	37500 / 32500	-	-	4650 TA	
138	81.2	230	50	42	■	19	2550	-40...+75	37500 / 17500	-	-	4656 TA	
147	86.5	115	60	43	□	18	2900	-10...+50	40000 / 32500	-	-	4600 TA	
147	86.5	115	60	44	■	18	2900	-40...+80	40000 / 17500	-	-	4606 TA	

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 4600N 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





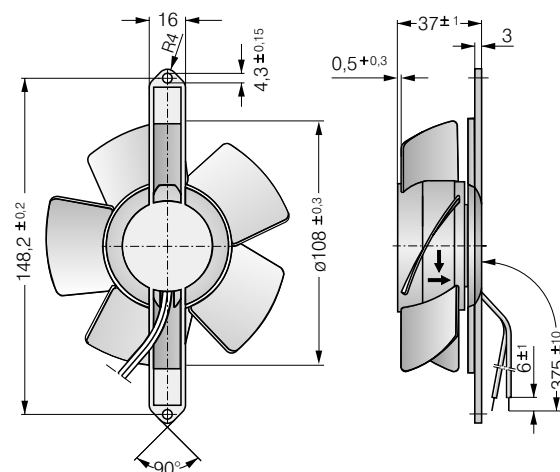
- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Impeller and mounting bracket of metal.
- Air exhaust over struts. Rotational direction CW looking at rotor.
- Electrical connection via 2 leads. Stripped and tinned ends.
- Mass 430 g.

Series 4600TZ 108 Ø x 37 mm

Air Flow		Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L_{10}		Curve	Type
m ³ /h	CFM									V	Hz		
125	73.6	230	50	42	□	19	2600	-10...+50	37500 / 37500	-	-	4650TZ	
125	73.6	230	50	42	■	19	2600	-40...+65	37500 / 20000	-	-	4656TZ	
140	82.4	115	60	45	□	18	2950	-10...+50	40000 / 32500	-	-	4600TZ	
140	82.4	115	60	45	■	18	2950	-40...+75	40000 / 17500	-	-	4606TZ	

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 4000Z is achievable. The noise in the optimal operating range can only be measured for these fans in a specific application.

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





- AC fans with internal rotor shaded-pole motor. Impedance protected against overloading.
- Metal fan housing and impeller of fibreglass reinforced plastic PA.

- 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 M4x6 DIN 7500-C.
- Mass 570 g.

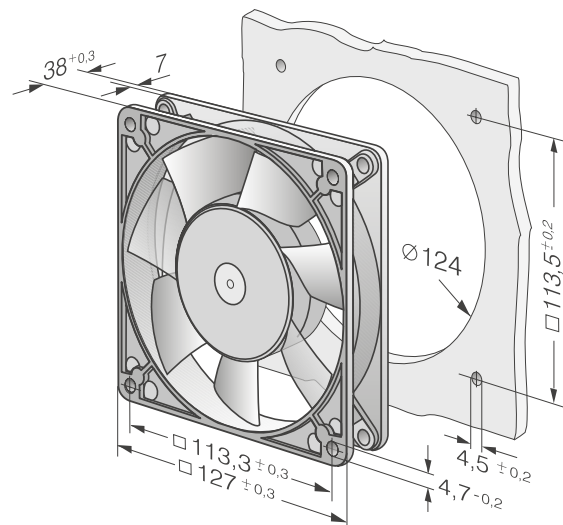
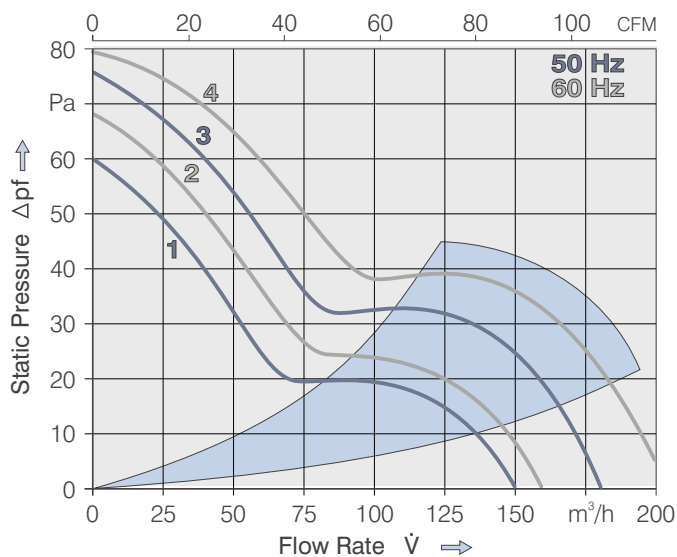
Series 5900

127x127x38 mm

Air Flow		Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L_{10}		Curve	Type
m ³ /h	CFM									at 40 °C	at t_{max}		
150	88.9	230	50	37	5.0	■	13	2250	-30...+55	35 000 / 20 000	1	5988	
180	105.9	230	50	43	5.4	□	18	2700	-20...+50	40 000 / 32 500	3	5950	
180	105.9	230	50	44	5.5	■	18	2750	-30...+60	40 000 / 25 000	3	5958	
162	95.3	115	60	39	5.1	■	12	2400	-30...+55	35 000 / 20 000	2	5938	
206	121.3	115	60	46	5.7	□	17	3050	-20...+55	42 500 / 30 000	4	5900	
206	121.3	115	60	47	5.8	■	17	3100	-30...+75	42 500 / 20 000	4	5908	

Available on request:

- Electrical connection via 2 single leads.





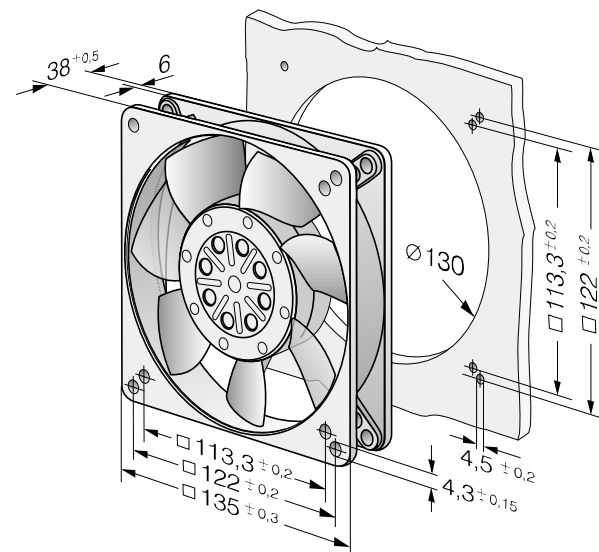
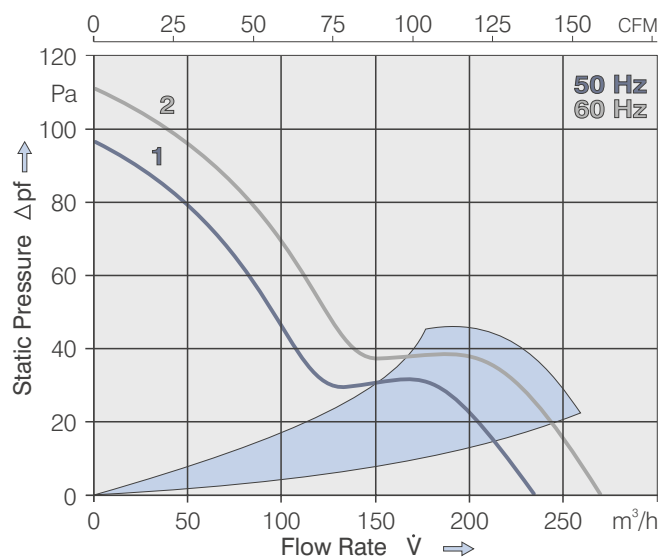
- AC fans with external rotor shaded-pole motor and thermal cutout.
- Metal fan housing and impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.

- Electrical connection via 2 flat pins 2.8 x 0.5 mm.
- Fan housing with ground lug and screw M4x8 (TORX).
- Mass 800 g.

Series 5600

135x135x38 mm

Air Flow		Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L_{10} at t_{max}		Curve	Type
m ³ /h	CFM									V	Hz		
235	138.3	230	50	46	5.9	■	30	2700	-35...+70	45 000 / 20 000		1	5656 S
270	158.9	115	60	50	6.2	■	26	3100	-35...+80	47 500 / 20 000		2	5606 S



AC Axial Fans



- 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.

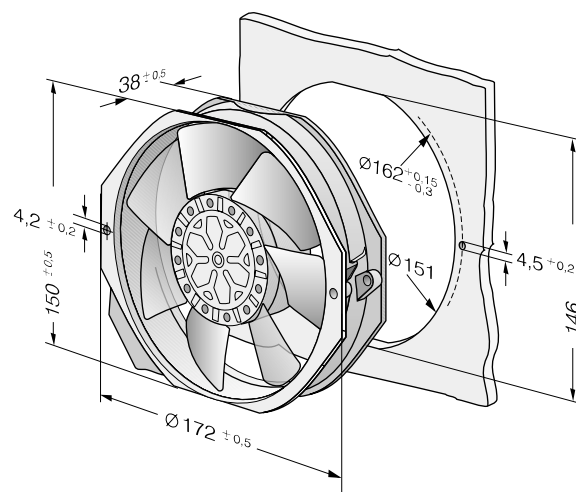
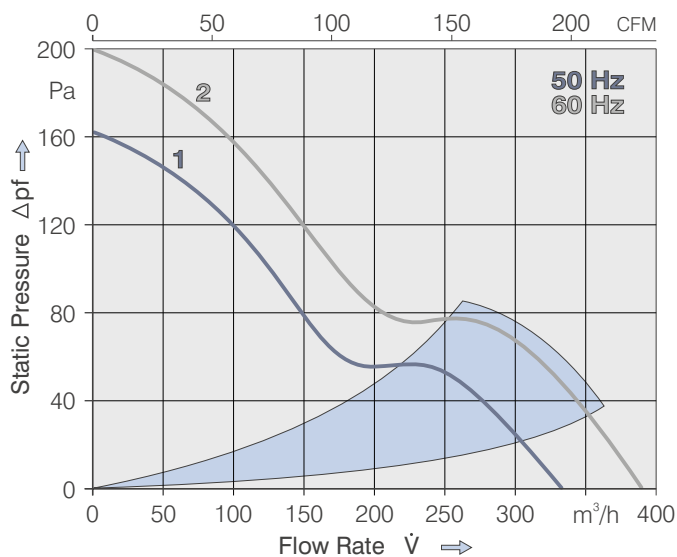
- Electrical connection via 2 flat pins 2.8 x 0.5 mm.
- Fan housing with ground lug and screw M4x6 DIN 7500-C.
- Mass 900 g.

Series 7000

150x172x38 mm

Air Flow		Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L_{10}		Curve	Type
m ³ /h	CFM									V	Hz		
330	194.2	230	50	52	6.4	■	29	2800	-30...+65	60 000 / 32 000		1	7056 ES
390	229.6	115	60	57	6.8	■	24	3300	-30...+80	55 000 / 18 000		2	7006 ES

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





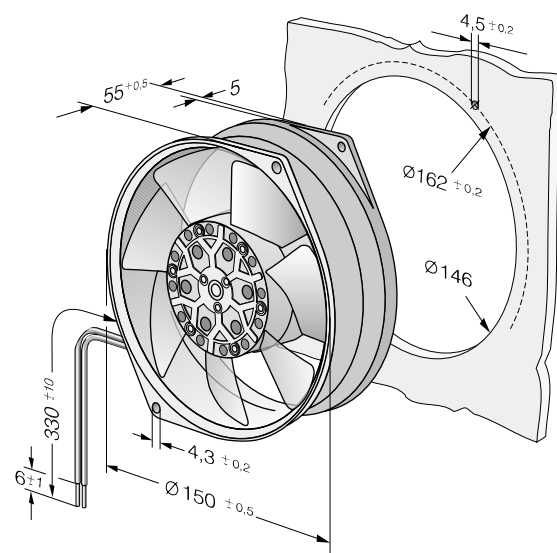
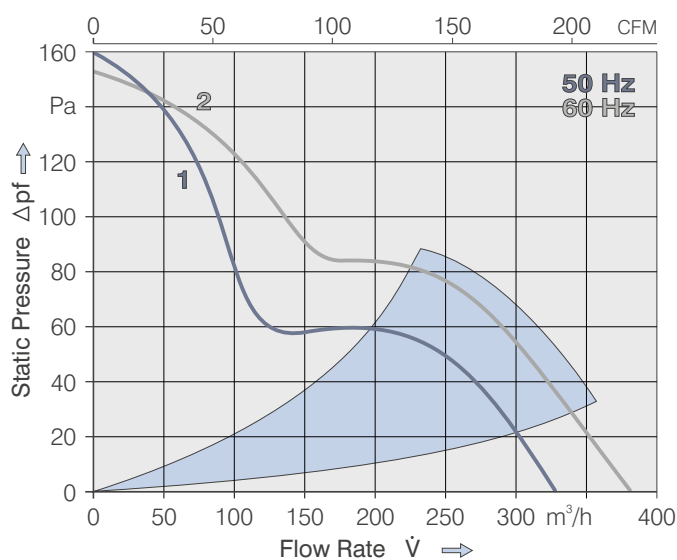
- AC fans with external rotor shaded-pole motor. Protected against overloading by integrated thermal cutout.
- Metal fan housing and impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via 2 leads. Stripped and tinned ends.
- Fan housing with ground lug and screw M4x6 DIN 7500-C.
- Mass 1.1 kg.

Series 7800

150 Ø x 55 mm

Air Flow		Nominal Voltage	Frequency	Noise	Silttec-Sleeve Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L_{10}		Curve	Type
m ³ /h	CFM								at 40 °C	at t_{max}		
325	191.3	230	50	48	6.0	45	2800	-30...+50	40000 / 21000	1	7855 ES	
325	191.3	230	50	48	6.0	45	2800	-30...+70	40000 / 12000	1	7856 ES	
380	223.7	115	60	52	6.4	38	3250	-30...+75	40000 / 19000	2	7805 ES	
380	223.7	115	60	52	6.4	38	3250	-30...+90	40000 / 12500	2	7806 ES	

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



AC Axial Fans



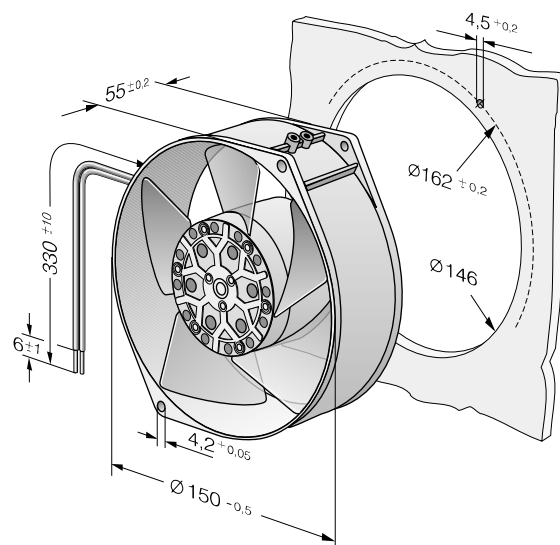
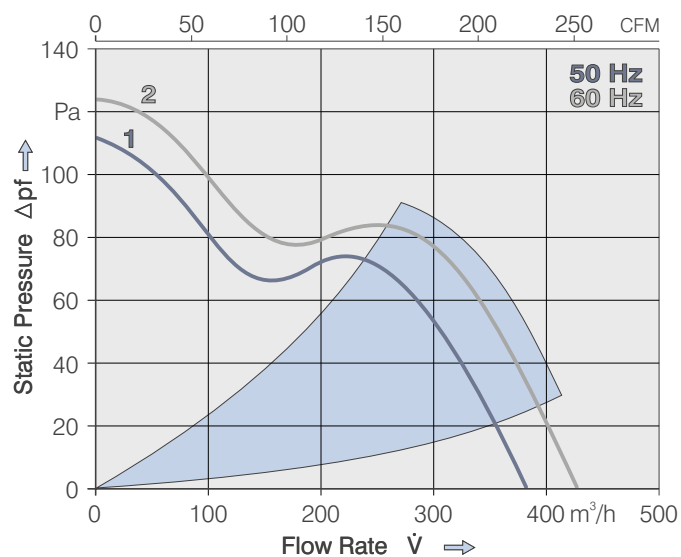
- AC fans with external rotor shaded-pole motor. Protected against overloading by integrated thermal cutout.
- Metal fan housing and impeller.
- Air intake over struts. Rotational direction CCW looking at rotor.
- Electrical connection via 2 leads. Stripped and tinned ends.
- Fan housing with ground lug and screw M4x6 DIN 7500-C.
- Mass 1.1 kg.

Series 7400

150 Ø x 55 mm

Air Flow		Nominal Voltage	Frequency	Noise		Sinter-Sleeve Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L_{10} at 40 °C		Curve	Type
m ³ /h	CFM			V	Hz					dB(A)	bels		
390	229.6	230	50	58	6.8	■	47	2700	-30...+60	40000 / 18000	1	7450 ES	
445	261.9	115	60	60	6.9	■	46	3050	-30...+80	38000 / 15000	2	7400 ES	

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





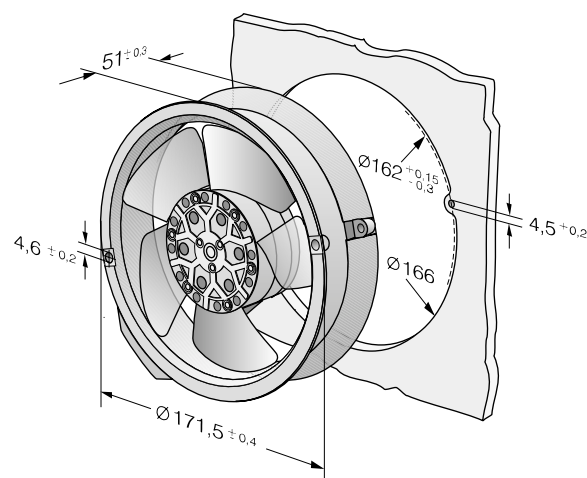
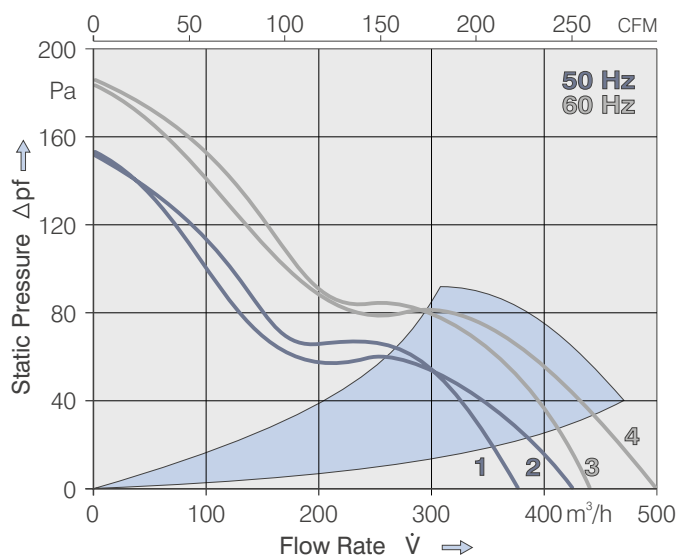
- AC fans with external rotor capacitor motor. Protected against overloading by integrated thermal cutout.
- Metal fan housing and impeller.
- Air exhaust over struts. Rotational direction CCW looking at rotor.
- Electrical connection via 2 flat pins 2.8 x 0.5 mm.
- Fan housing with ground lug and screw M4x6 DIN 7500-C.
- Mass 1.0 kg.

Series 6000

172 Ø x 51 mm

Air Flow		Nominal Voltage	Frequency	Noise		Silitec-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve	Type
m ³ /h	CFM			V	Hz						dB(A)	bels		
375	220.7	230	50	54	5.9	■	24	2800	-30...+70	48000 / 32000		1	6058 ES	
420	247.2	230	50	54	6.3	■	26	2800	-30...+75	37500 / 20000		2	6078 ES	
440	259.0	115	60	58	6.4	■	26	3300	-30...+70	42000 / 28000		3	6008 ES	
500	294.3	115	60	58	6.7	■	29	3300	-30...+75	40000 / 20000		4	6028 ES	

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





- 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.

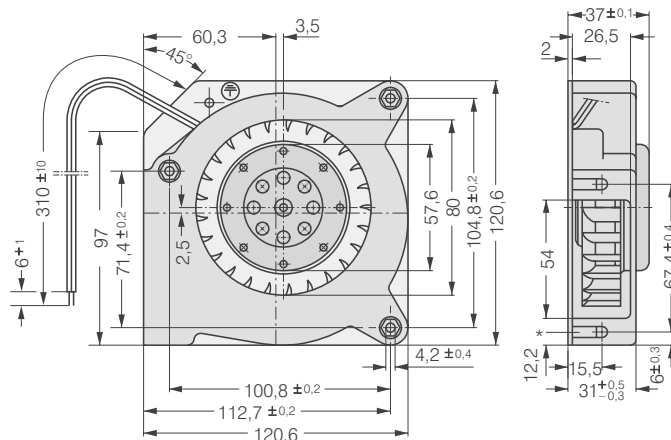
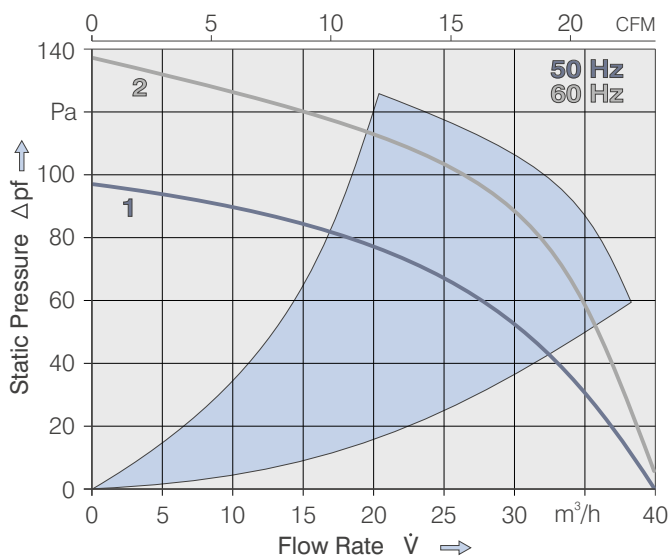
Series RL90

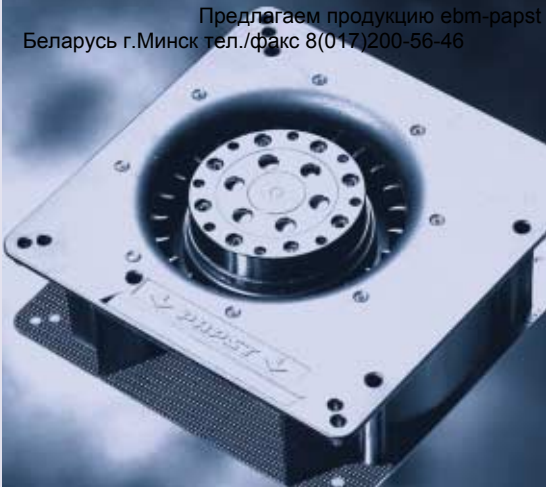
121x121x37 mm

Air Flow		Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L_{10} at 40 °C		Curve	Type
m ³ /h	CFM									V	Hz		
40	23.5	230	50	5.6	□	20	2 450	-10...+50	37 500 / 30 000	1	1	RL90-18/50	
40	23.5	230	50	5.6	■	20	2 450	-30...+70	37 500 / 20 000	1	1	RL90-18/56	
42	24.7	115	60	6.0	□	19.5	2 550	-10...+60	37 500 / 25 000	2	2	RL90-18/00	
42	24.7	115	60	6.0	■	19.5	2 550	-30...+85	37 500 / 15 000	2	2	RL90-18/06	

⊕ Housing base with flat pin 6.3x0.8 for grounding wire.

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



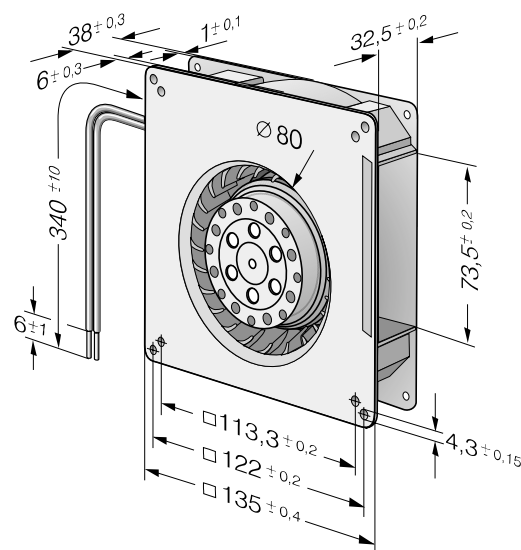
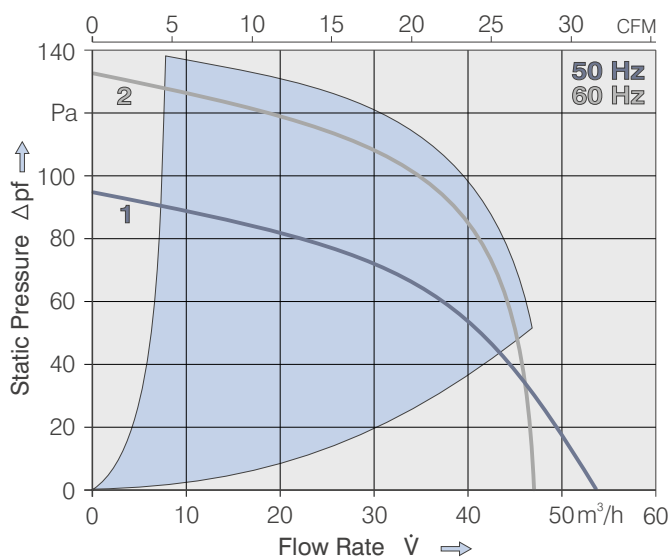


- AC radial blower with external rotor shaded-pole motor. Impedance protected against overloading.
- Spiral housing and blower wheel of fibreglass-reinforced plastic. Housing base of galvanised steel plate.
- Air exhaust radial, through housing port. Rotational direction CW looking at rotor.
- Electrical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

Series RG 90

135x135x38 mm

Air Flow		Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L_{10}		Curve	Type
m ³ /h	CFM								at 40 °C	at t_{max}		
54	31.8	230	50	5.8	□	22	2200	-30...+60	35 000 / 20 000	1	RG90-18/50	
54	31.8	230	50	5.8	■	22	2200	-30...+60	35 000 / 20 000	1	RG90-18/56	
47	27.7	115	60	6.2	□	22	1900	-30...+65	35 000 / 20 000	2	RG90-18/00	
47	27.7	115	60	6.2	■	22	1900	-30...+65	35 000 / 20 000	2	RG90-18/06	

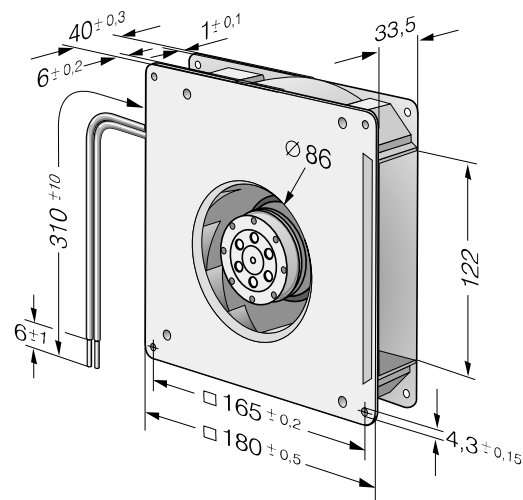
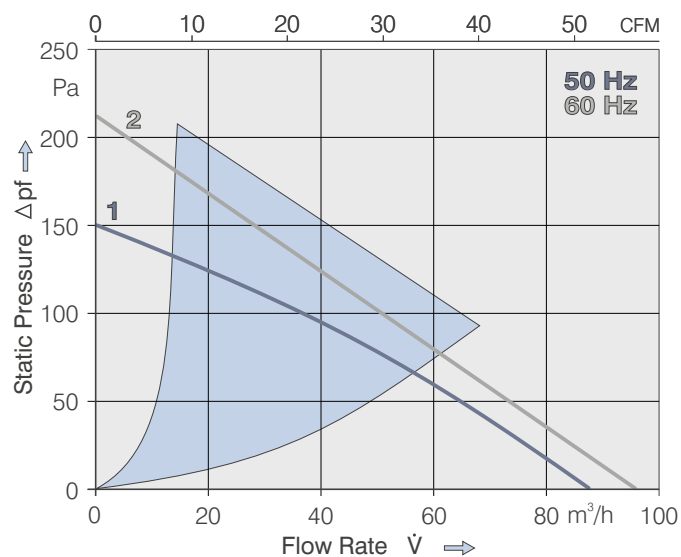




- AC radial blower with external rotor shaded-pole motor. Impedance protected against overloading.
- Spiral housing and blower wheel of fibreglass-reinforced plastic. Housing base of galvanised steel plate.
- Air exhaust radial, through housing port. Rotational direction CW looking at rotor.
- Electrical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

Series RG125 180x180x40 mm

Air Flow		Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L_{10} at 40 °C		Curve	Type
m ³ /h	CFM									at t_{max}	Hours		
86	50.6	230	50	5.8	■	20	2550	-30...+70	37 500 / 20 000	1	RG125-19/56		
94	55.3	115	60	6.0	■	19	2750	-30...+80	40 000 / 15 000	2	RG125-19/06		

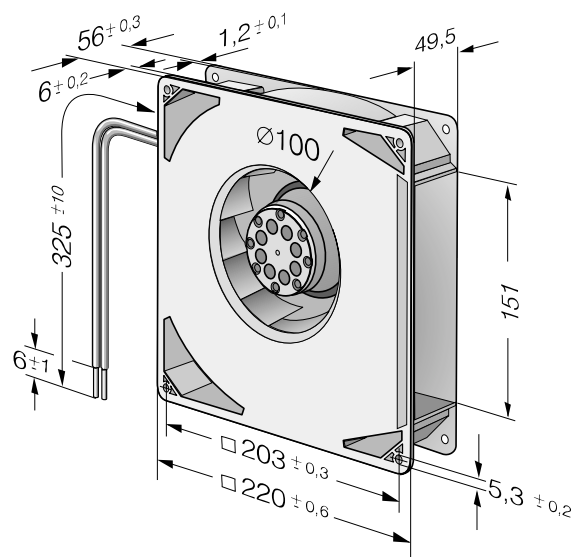
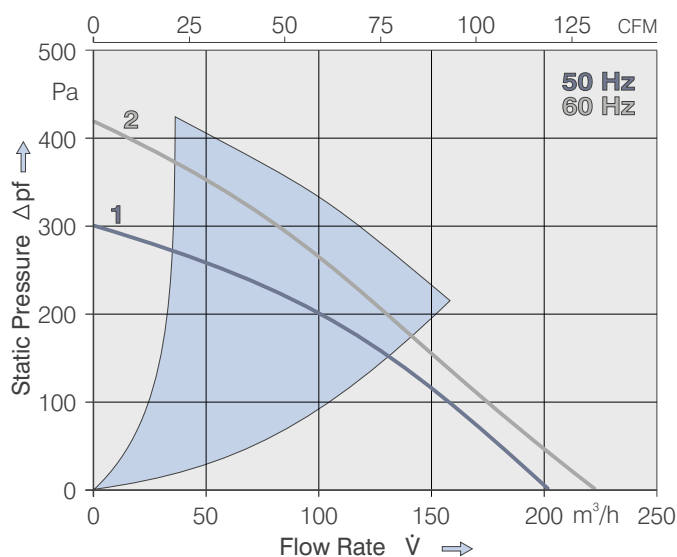




- AC radial blower with external rotor shaded-pole motor. Thermal contactor as protection against thermal overloading.
- Spiral housing and blower wheel of fibreglass-reinforced plastic. Housing base of galvanised steel plate.
- Air exhaust radial, through housing port. Rotational direction CCW looking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

Series RG160 220x220x56 mm

Air Flow		Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L_{10} at 40 °C		Curve	Type
m ³ /h	CFM								Hours	Hours		
202	118.9	230	50	6.6	■	47	2750	-30...+70	30000 / 15000	1	RG160-28/56S	
223	131.3	115	60	6.9	■	50	3050	-30...+80	27500 / 12500	2	RG160-28/06S	



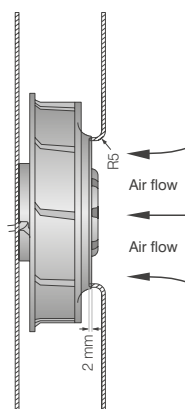
AC Radial Fans



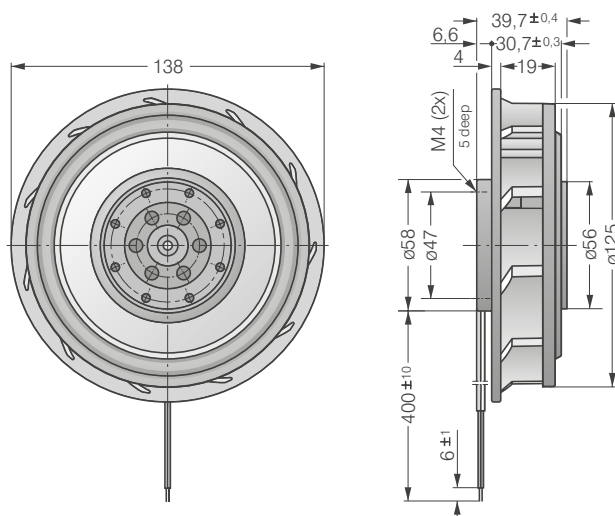
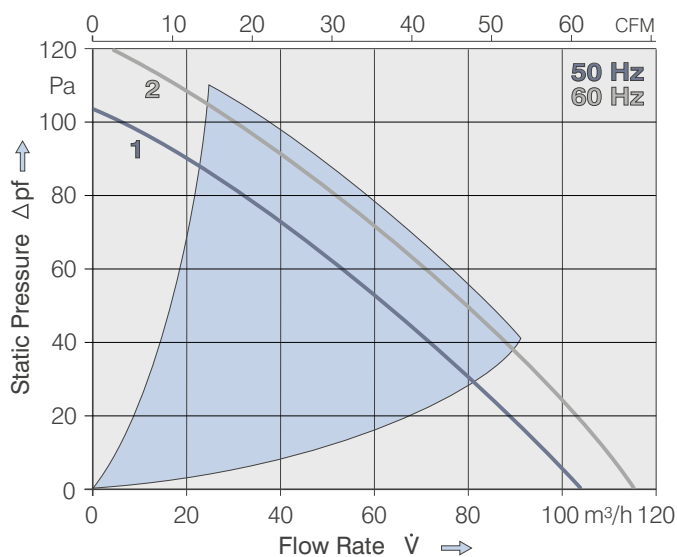
- AC radial blower with external rotor shaded-pole motor. Impedance protected against overloading.
- Blower wheel of fibreglass-reinforced plastic, with steel plate reinforced.
- Air exhaust radial. Rotational direction CW looking at rotor.
- Electrical connection via leads AWG 22. Stripped and tinned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

Series RER 125 138 Ø x 40 mm

Air Flow		Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L_{10} at 40 °C		Curve	Type
m ³ /h	CFM								V	Hz		
104	61.2	230	50	6.2	■	19	2 600	-30...+60	37 500 / 22 500		1	RER 125-19/56
115	67.6	115	60	6.5	■	18	2 850	-30...+70	40 000 / 20 000		2	RER 125-19/06



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.

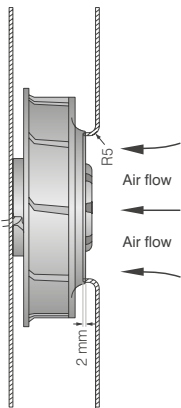




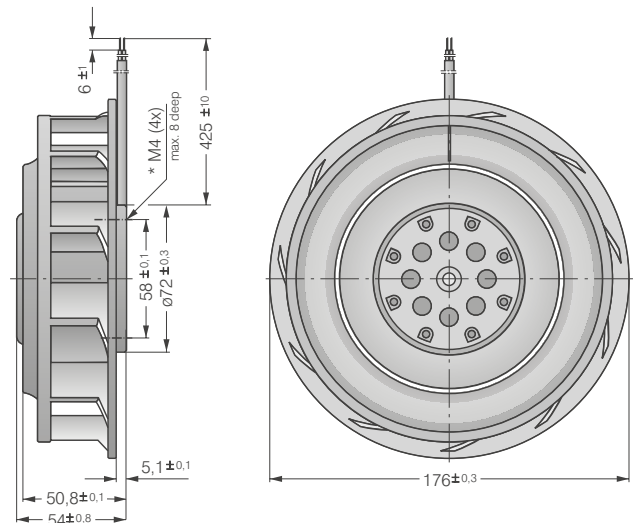
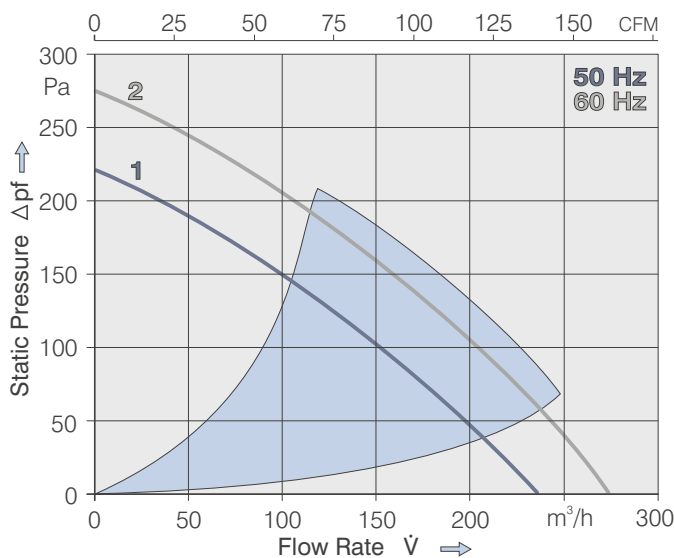
- AC radial blower with external rotor shaded-pole motor. Impedance protected against overloading.
- Blower wheel of fibreglass-reinforced plastic, with steel plate reinforced.
- Air exhaust radial. Rotational direction CCW looking at rotor.
- Electrical connection via leads AWG 18. Stripped and tinned ends.
- Mass 1.0 kg.

Series RER 160 176 Ø x 54 mm

Air Flow		Nominal Voltage	Frequency	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀ at 40 °C		Curve	Type
m ³ /h	CFM									V	Hz		
234	137.6	230	50	6.6	■	45	2800	-30...+60	30 000 / 20 000		1	RER 160-28/56S	
274	161.2	115	60	6.8	■	46	3250	-30...+70	30 000 / 15 000		2	RER 160-28/06S	



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.

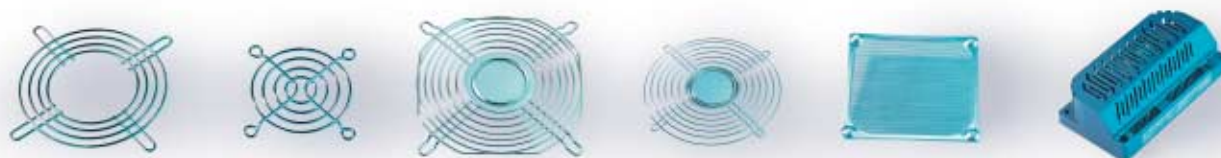


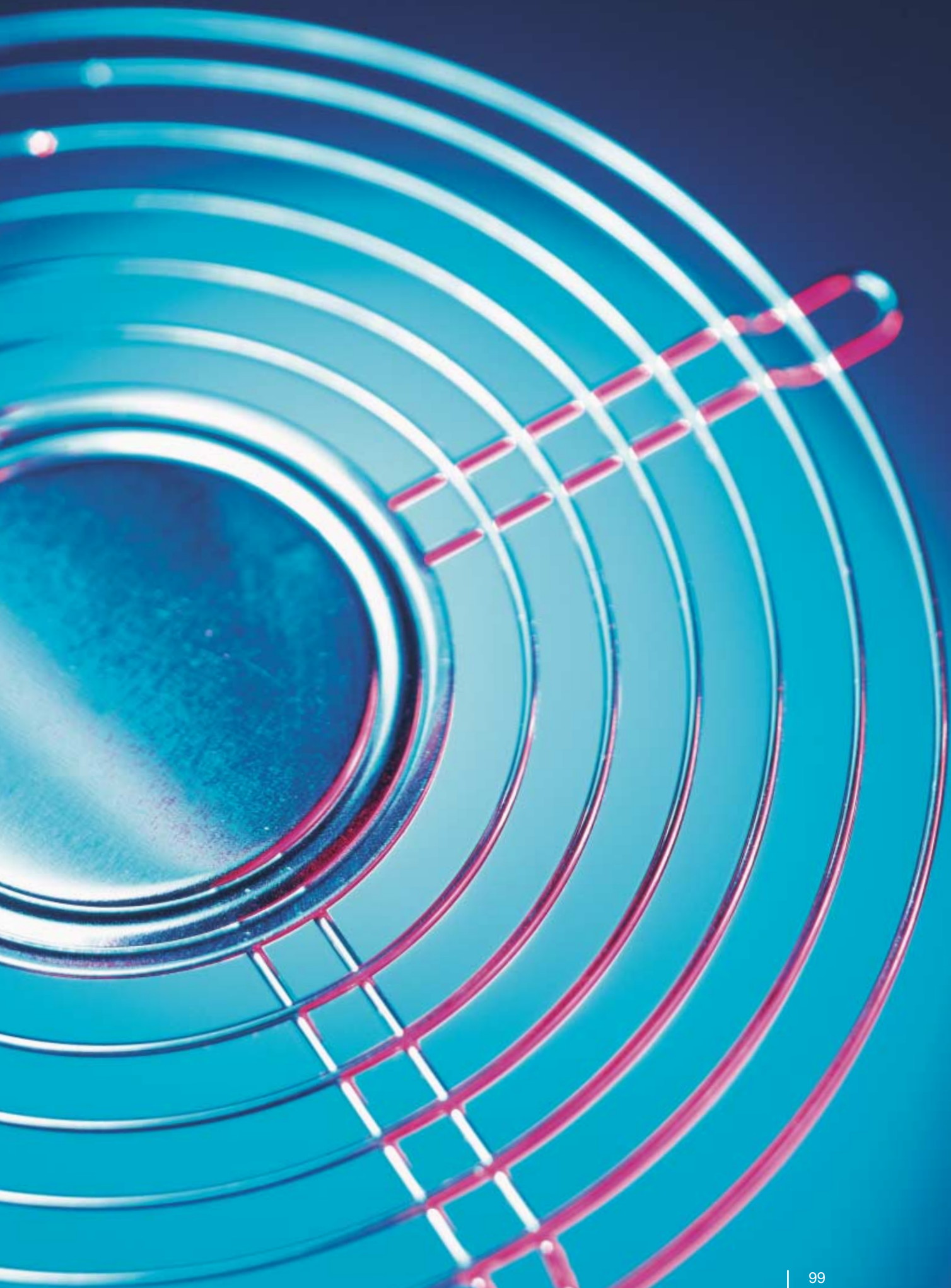
All the Accessories You Require:

Everything that you need for your fan.

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, PAPST also supplies numerous special parts for fan operation. The sales experts at 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 PAPST.



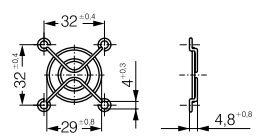




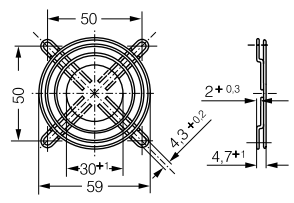
- Finger guards as per EN 294, of rust-proof steel wire for equipment fans.
- Further finger guards that do not conform to EN 294 can be supplied on request.

Finger Guards

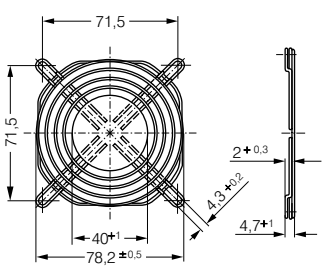
LZ29-1 Fan series 400



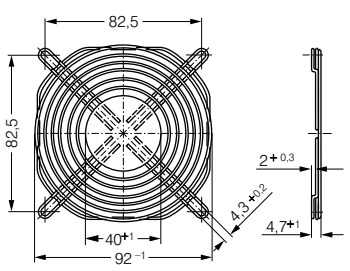
LZ28-1 Fan series 600



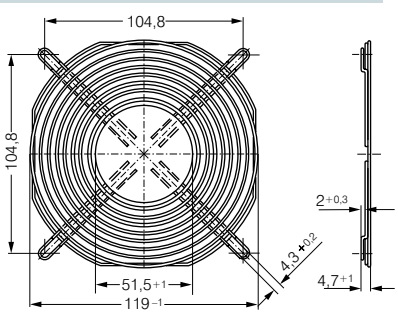
LZ32-4 Fan series 8000



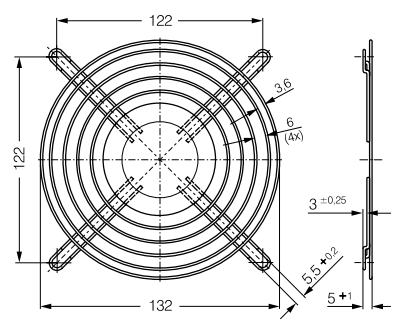
LZ23-1 Fan series 3000



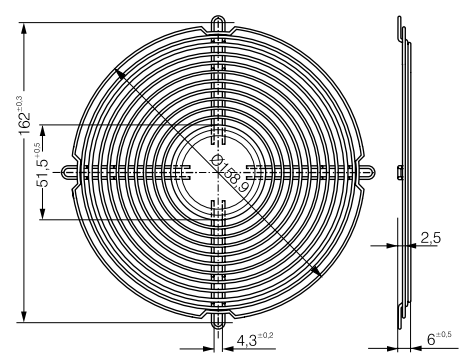
LZ30-4 Fan series 9000/4000



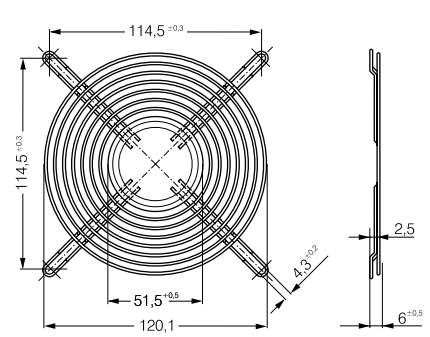
LZ25 Series 5100/5600



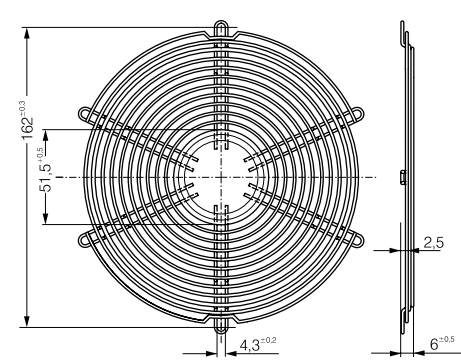
LZ37 Fan series 6000



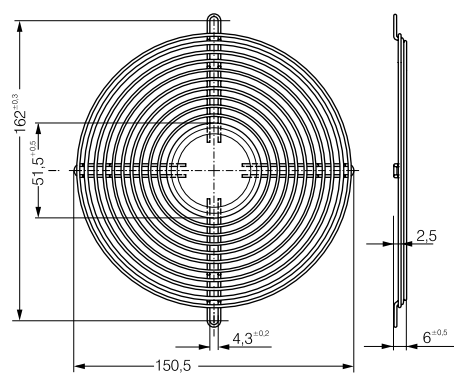
LZ35 Series 5200/5900



LZ38 Fan series 6400



LZ36 Fan series 7000





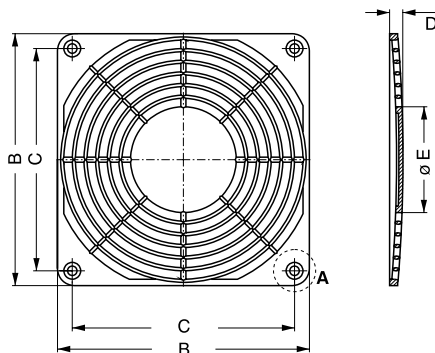
- Finger guards for axial fans and crossflow blower of black, fibre-glass reinforced plastic. These finger guards conform to EN 294.

Finger Guards

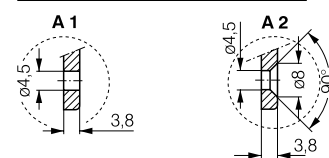
Finger Guards	Fan series
LZ32-2	8000
LZ32-3	8000
LZ32P	8000
LZ23-2	3000
LZ23-3	3000
LZ30-5	9000
LZ30-6	9000
LZ30P	9000
LZ30-5	4000
LZ30-6	4000
LZ30P	4000
LZ33-1	5200
LZ33-2	5200
LZ33-1	5900
LZ33-2	5900
LZ34	RG125

Dimensions LZ 32..

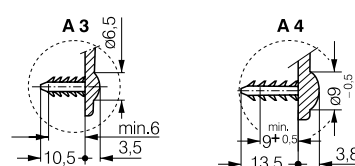
Finger Guards	Mounting	B	C	D	E
LZ32-2	A 1	80 ^{-0,5}	71,5 ^{+0,2}	7,0	34
LZ32-3	A 3	80 ^{-0,5}	71,5 ^{+0,2}	7,0	34
LZ23-2	A 1	92,5 ^{-0,5}	82,5 ^{+0,2}	6,5	46
LZ23-3	A 3	92,5 ^{-0,5}	82,5 ^{+0,2}	6,5	46
LZ30-5	A 2	119 ^{-0,5}	105 ^{+0,2}	6,5	50
LZ30-6	A 4	119 ^{-0,5}	105 ^{+0,2}	6,5	50
LZ33-1	A 2	127 ^{-0,5}	113,5 ^{+0,2}	6,5	50
LZ33-2	A 4	127 ^{-0,5}	113,5 ^{+0,2}	6,5	50



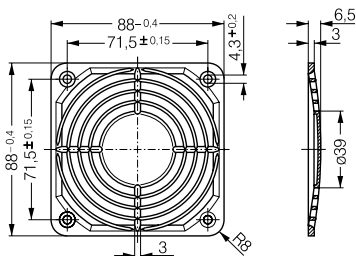
Screw connection



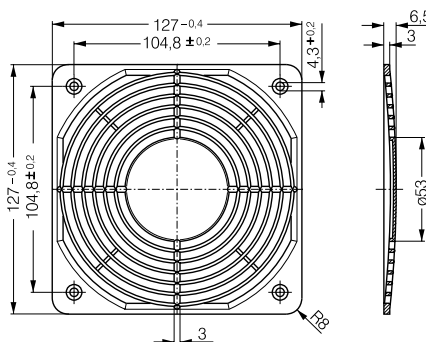
Barbed inserts



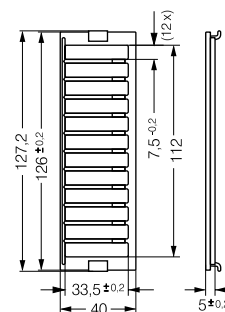
LZ32P



LZ30P



LZ34





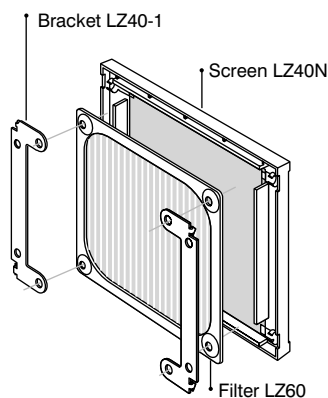
In addition to the accessories and assembly parts listed in this catalogue, PAPST also supplies numerous special parts for fan operation. The sales experts at PAPST will be happy to assist you in your enquiries concerning fan assembly and application.

Accessories

Finger Guards	Fan Series
LZ212	8300
LZ260	8300
LZ261	8400
LZ212	3300
LZ260	3300
LZ210	9000
LZ40N	9000
LZ40-1	9000
LZ60	9000
LZ210	4000
LZ40N	4000
LZ40-1	4000
LZ60	4000
LZ212	4300
LZ260	4300
LZ210	5100
LZ210	5600
LZ210	5200
LZ210	5900
LZ210	7000
LZ370	VARIOFAN

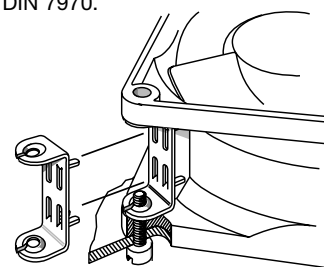
LZ40N / LZ40-1 / LZ60

LZ40N of black, fibre-glass reinforced plastic with inserted aluminium wire mesh LZ60. Mounting with brackets LZ40-1.



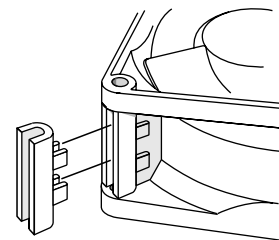
LZ212

Screw clip of rust-resistant spring steel. For mounting fans with threaded pin 3.5 DIN 7970.



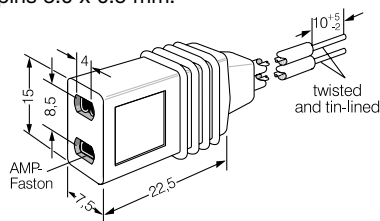
LZ260 / LZ261

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



LZ120

Connecting cable with moulded plug, (PVC, black). Stranded wires with multi-core cable ends. For all types of fan with flat pins 3.0 x 0.5 mm.



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

LZ370

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



Required performance date:

R ₂₅	= 100 KΩ ±5%
B-value	= 4190 ± 2%
P _{max}	= 0,25 W

LZ210

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

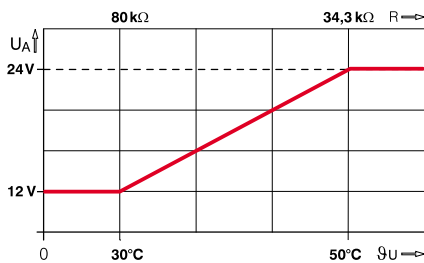




- Convection-cooled switched-mode power supply, specially designed for operating electronically commutated fans or motors.
- Up to 6 consumers with a total of 60 watts power consumption can be directly connected to the output plug connector.
- 24 VDC nominal voltage. Output voltage adjustable from 12 to 24 V via external resistor or potentiometer.
- Temperature-dependent fan operation. The required voltage is set via an external temperature sensor.
- Plastic housing.

Power Supply PS60

The power unit features a control input for selecting the voltage. The output voltage can be set via an external resistor from 12 to 24 V. When using a 100 kΩ NTC sensor (Accessory LZ 370) a temperature/voltage curve of 30 to 50 °C is produced. An efficient and practice-oriented reduction of the air flow performance and noise emitted by the fan can be achieved in this temperature range.



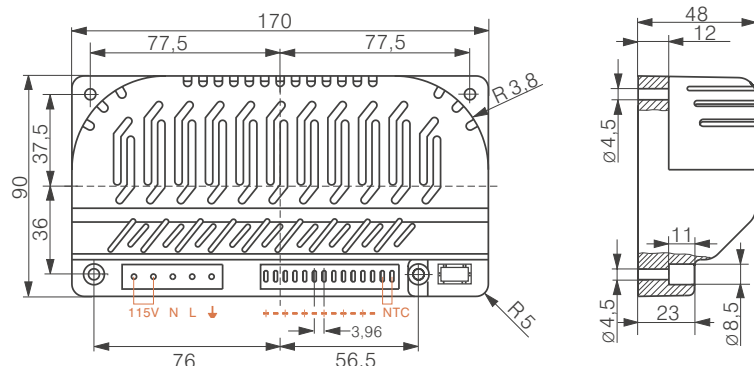
If the control input is open or the sensor has been torn off, 24 VDC are available at the output.

Option: PCB with additional functions e.g. speed monitoring with alarm signal output for critical speeds.

The power unit is an integrated device. For installation and operation, observe the relevant DIN/VDE (German Industrial Standards/Association of German Electricians) and country-specific regulations.

For optimum cooling vertical assembly; observe clearance of min. 80 mm. The place of installation must fulfill the conditions for fireproof housings as per EN 60335 and EN 60950. Installation should only be carried out by skilled personnel.

Electrical connection	Mains input:	N / L / PE
		Bridge for 115V mains voltage
	Outputs:	6x plus / minus
	Connection:	Standard plug e.g.: AMP
		MTA-connector SL156
Nominal input voltage	115VAC 60Hz or 230VAC 50HZ switchable	
Voltage range	110VAC (-10% +15%), 57Hz ... 63Hz	
110V nominal voltage	Operation down to 90VAC with limited output	
Voltage range	230VAC (-20% +15%), 47Hz ... 53Hz	
230V Nominal voltage		
Nominal output voltage	24V ±2%	(12 ... 24V ±2%)
Starting inrush current	<20A (cold start)	
Control line / load	≤ 0.2%	≤ 0.1%
Output current / output power	2.5A with VA = 24V	60W with VA = 24V
	1.25A with VA = 12V	30W with VA = 12V
Operating efficiency	>85% at nominal load	
Reliability (Siemens Standard)	L10 = 70000h at 40°C / 40000h at 70°C	
Protection type and class	IP20 / 1	
Degree of contamination	2 (EN50178)	
Galvanic separation	3000VAC	
Basic safety standards	EN60950 / VDE0805 / UL1950 / CE	
Protective functions	Output – free running and short circuit proof	
Operating mode	Continuous operation	
Operating temperature	-25°C ... +55°C	
Max. operating temperature	+70°C housing temperature	
EMV: Emission / noise immunity	EN 50081-1 / EN 50081-2	
Mass	300g	



Definitions

Nominal Voltage - Volt -

The voltage at which the nominal values (the tabular values listed in this catalogue) were determined. The fan operation for DC fans is not limited to the nominal voltage. Fan speed and fan performance can vary according to the permissible voltage range that is specified on the nameplate of each fan.

Frequency -Hz -

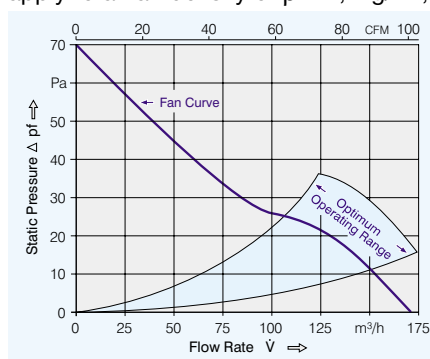
PAPST AC fans are equipped for operating frequencies of 50 Hz or 60 Hz. Their technical data alters accordingly.

Volumetric Flow Rate - m³/h -

The air flow performance of the fan in free air operation, i.e. the fan blows into the free space without static pressure.

Fan Curves

The fan curves are determined in accordance with DIN 24 163 specifications on a dual-chamber test stand with intake-side measurement. This measurement technique closely approximates the operating conditions experienced in typical applications for fans and yields realistic performance curves. The curves apply to an air density of $\rho = 1,2\text{kg/m}^3$,



corresponding to an air pressure of 1013 mbar at 20 °C. Variations in air density affect pressure generation but not the flow rate. The pressure generated at other air densities may be estimated with the formula $\Delta p_2 = \Delta p_1 (\rho_2 / \rho_1)$. The nominal speed values, airflow and power input listed in the table were measured in free air operation with horizontal shaft at an ambient temperature of 20 +5 °C, air density $\rho = 1,2 \text{ kg/m}^3$ after a warm-up period of 5 min.

Optimum Application

During operation fans are required to produce an airflow with a simultaneous increase of pressure. These operating conditions are described in the section "Optimum Operating Range".

The optimum operating range is thereby always indicated in this catalogue in blue. In this range the fans operate best with respect to efficiency and noise level. Within this optimum operating range the noise level only fluctuates insignificantly.

Noise - dB(A), bels -

1. Noise Pressure Level – dB(A)

Noise ratings of the fan in free air operation, i.e. at maximum flow rate.

2. Sound Power Level – bels

Extent of the overall sound radiation of the fan. The sound power level is determined in the optimum operating range.

Sintec® Sleeve Bearings

A particularly efficient bearing system with excellent qualities:

- Very precise, large sintered bearings
- Low running noise
- High service life expectancy
- Insensitive to shock and vibration

Ball Bearings

Precision ball bearings for particularly high ambient temperatures and high service life expectancy.

Power Input

-Watt -

Input performance of the fan motor when operating at nominal voltage.

Temperature Range -°C -

The permissible ambient temperature range within which the fan can be expected to run continuously.

Service Life

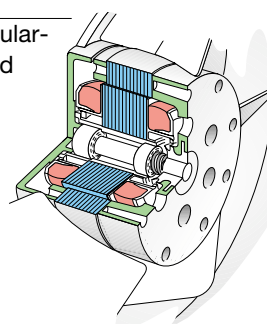
The service life expectancy L_{10} at an ambient temperature of 40 °C. The ambient temperature strongly influences the service life of the fan: High temperatures reduce the service life, low temperatures increase it.

Subject to technical alterations.

German and international patents, registered designs and utility models.

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Ball Bearings



Sleeve Bearings

