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[ebm papst, аналог, замена , Минске, каталог, описание, технические, характеристики, datasheet,](#)
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max. 565 m³/h

DC centrifugal fans

Series RER 133 TD 133 Ø x 91 mm



Highlights:

- 3-phase fan drive with high degree of running smoothness.
- Very high pressure build-up.
- Backward curved impeller.
- Available as standard with PWM control input and speed signal. Additional inputs and outputs on request.

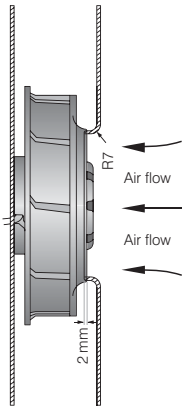
General characteristics:

- Impeller of fibreglass-reinforced plastic.
- Fully integrated electronic commutation.
- Direction of rotation: CW seen on rotor.
- Direction of air flow: axial air intake, centrifugal air exhaust out of the outlet.
- Connection via single strands AWG 22, TR 64. Bared and tin-plated.
- Mass: 890 g.

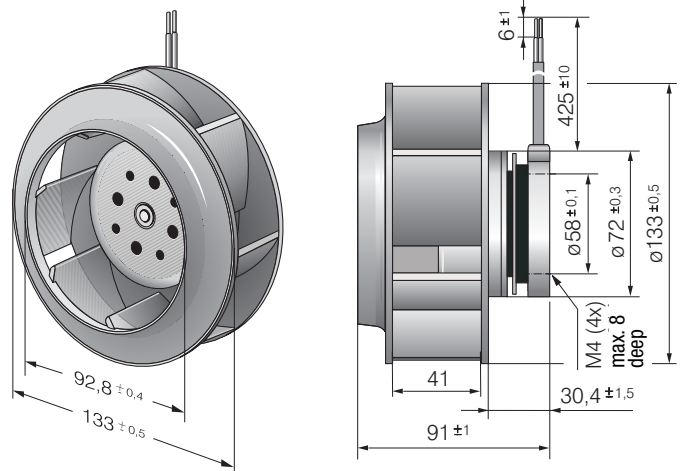
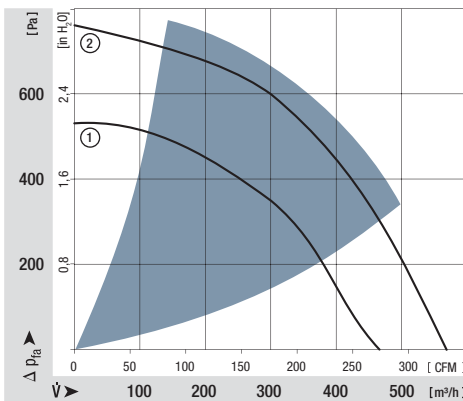
Nominal data		Air flow	Air flow	Nominal voltage	Voltage range	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀ (40 °C) ebm-papst-Standard	Service life L ₁₀ (T _{max}) ebm-papst-Standard	Life expectancy L ₁₀ Δ (40 °C) see P. 15	Curve	Specials
Type		m ³ /h	CFM	VDC	VDC	Bel(A)	□ / ■	Watts	RPM	°C	Hours	Hours			
NEW	RER 133-41/14/2 TDMP	460	270,6	24	16...30	tbd	■	53	5 000	-20...+65	72 500 / 40 000	145 000	1		
NEW	RER 133-41/14/2 TDP*	565	332,4	24	16...36	tbd	■	90	6 000	-20...+65	70 000 / 37 500	140 000	2		
NEW	RER 133-41/18/2 TDMP*	460	270,6	48	36...57	tbd	■	50	5 000	-20...+65	72 500 / 40 000	145 000	1		
NEW	RER 133-41/18/2 TDP	565	332,4	48	36...72	8,2	■	87	6 000	-20...+65	70 000 / 37 500	140 000	2		

*Preliminary

Speed control range from 800 rpm at 7 % PWM up to nominal speed at > 90 % PWM. Standstill at 0 % PWM, max. speed if control cable is interrupted.



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 140 x 140 mm.
Cover plate 140 x 140 mm with an air inlet of Ø 87 mm, concentric to the impeller.



max. 255 m³/h

DC centrifugal fans

Series RER 160 N 165 Ø x 51 mm



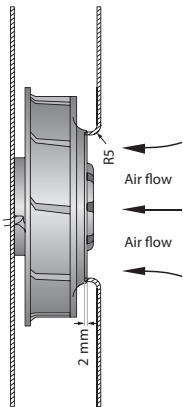
Highlights:

- Optional Vario-Pro: Highly adaptable software configuration of the fan enables a tailor-made solution to the specific requirements of your applications.
- Backward curved impeller.

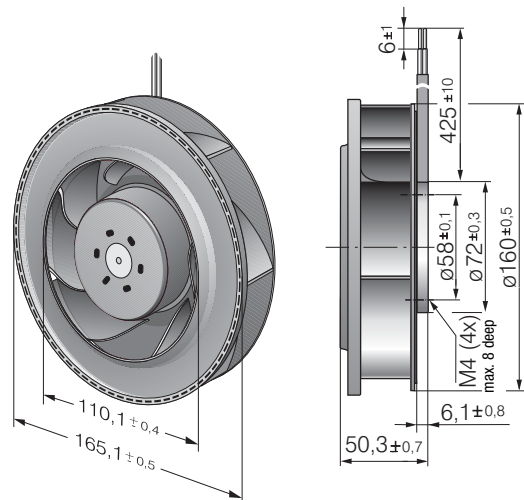
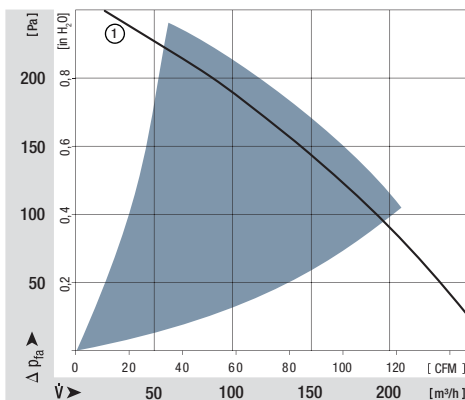
General characteristics:

- Fibreglass-reinforced plastic scroll housing and impeller.
- Fully integrated electronic commutation.
- Protected against reverse polarity and locking.
- Direction of air flow radial, direction of rotation clockwise, seen on rotor.
- Connection via single strands AWG 22, TR 64. Bared and tin-plated.
- Mass: 590 g.

Nominal data	Air flow		Nominal voltage	Voltage range	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀ (40 °C) ebm-papst Standard	Service life L ₁₀ (T _{max}) ebm-papst Standard	Life expectancy L ₁₀ Δ (40 °C) see P. 15	Curve	Specials
	m ³ /h	CFM												
RER 160-28/12 N	255	150,1	12	7...14	6,4	■	19,0	3 000	-20...+70	75 000 / 35 000	140 000	1	/12	
RER 160-28/14 N	255	150,1	24	12...28	6,4	■	19,0	3 000	-20...+70	75 000 / 35 000	140 000	1		
RER 160-28/18 N	255	150,1	48	28...60	6,4	■	19,0	3 000	-20...+70	75 000 / 35 000	140 000	1	/12	



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



max. 505 m³/h

DC centrifugal fans

Series RER 160 NTD 165 Ø x 51 mm



Highlights:

- Control inputs, alarm and speed signals available on request.
- 3-phase fan drive with high degree of running smoothness.
- High pressure build-up.
- Backward curved impeller.

General characteristics:

- Fibreglass-reinforced plastic scroll housing and impeller; Housing base of steel plate.
- Fully integrated electronic commutation.
- Direction of air flow: axial air intake, centrifugal air exhaust out of the outlet.
- Connection via single strands AWG 22, TR 64. Bared and tin-plated.
- Mass: 590 g.

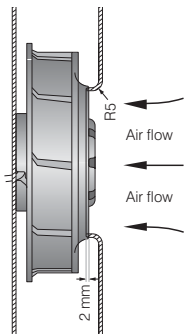
Nominal data		Air flow	Air flow	Nominal voltage	Voltage range	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀ (40 °C) ebm-papst-Standard	Service life L ₁₀ (T _{max}) ebm-papst-Standard	Life expectancy L ₁₀ Δ (40 °C) see P. 15	Curve	Specials
Type		m ³ /h	CFM	VDC	VDC	Bel(A)	□ / ■	Watts	RPM	°C	Hours	Hours		P.	
NEW	RER 160-28/14N/2TDA	370	217	24	16...28	7,4	■	51	4 200	-20...+60	55 000 / 27 500	110 000	2		
NEW	RER 160-28/18N/2TDHHP*	505	297,5	48	36...60	8,5	■	142	6 000	-20...+65	40 000 / 22 500	80 000	3		
min.	RER 160-28/18 NTD...	66	18,3	48	38...57	—	□	2,0	800	-20...+70	55 000 / 27 500	110 000	1		
max.															

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

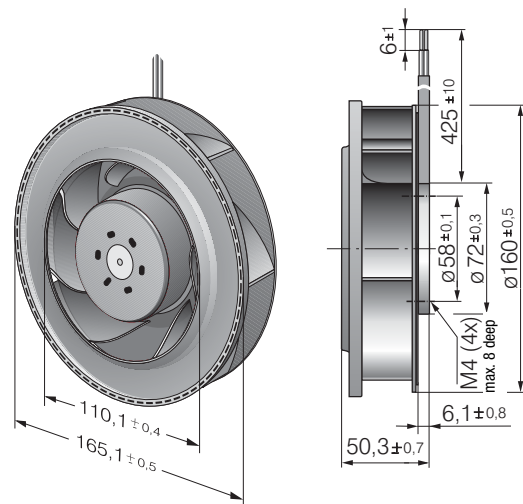
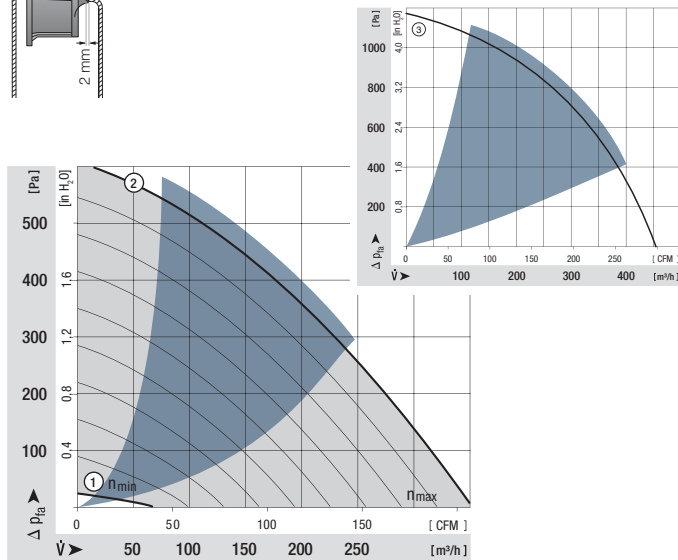
The data specified here are technically feasible benchmark values. The fans can be specially adapted to your application with signal outputs and control inputs.

*The specific service life is valid when an external capacitor is wired between the plus and minus strands.

Please note the wiring suggestion.



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 impeller.



max. 800 m³/h

DC centrifugal fans

Series REF 175 TD 175 Ø x 55 mm



Highlights:

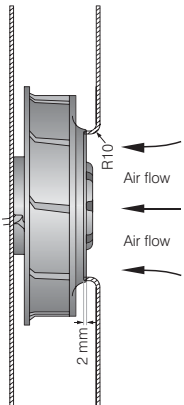
- 3-phase fan drive with high degree of running smoothness.
- Very high pressure build-up. Backward curved impeller.
- Available as standard with PWM control input and speed signal. Additional inputs and outputs on request.

General characteristics:

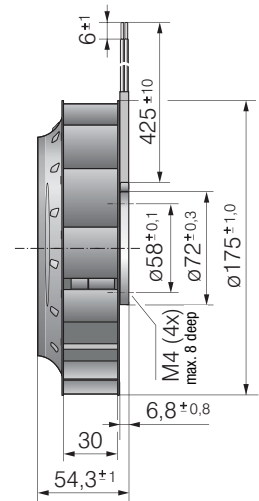
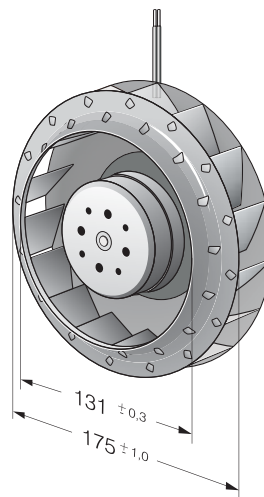
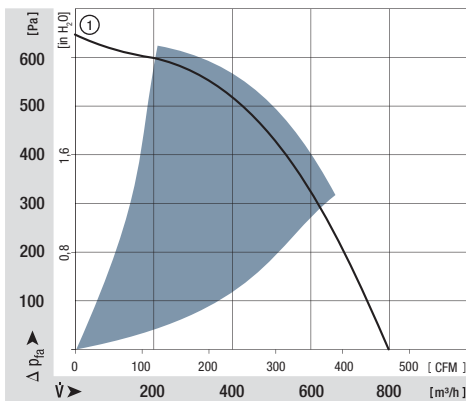
- Impeller of galvanised steel plate.
- Fully integrated electronic commutation.
- Direction of rotation: CW seen on rotor.
- Direction of air flow: axial air intake, centrifugal air exhaust out of the outlet.
- Connection via single strands AWG 20, TR 64, speed signal and control input AWG 22, bared and tin-plated.
- Mass: 930 g.

Nominal data		Air flow	Air flow	Nominal voltage	Voltage range	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀ (40 °C) ebm-papst Standard	Service life L ₁₀ (T _{max}) ebm-papst Standard	Life expectancy L ₁₀ Δ (40 °C) see P. 15	Curve	Specials
Type		m ³ /h	CFM	VDC	VDC	Bel(A)	□ / ■	Watts	RPM	°C	Hours	Hours			
NEW	REF 175-30/18/2TDP	800	470	48	36 ... 72	8,3	■	121	4 400	-20...+60	65 000 / 37 500	130 000	1		

Speed control range from 800 rpm at 7 % PWM up to nominal speed at > 90 % PWM. Standstill at 0 % PWM, max. speed if control cable is interrupted.



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 180 x 180 mm.
Cover plate 180 x 180 mm with an air inlet of Ø 125,5 mm, concentric to the impeller.



max. 980 m³/h

DC centrifugal fans

Series RER 175 TD 175 Ø x 69 mm



Highlights:

- 3-phase fan drive with high degree of running smoothness.
- Very high pressure build-up. Backward curved impeller.
- Available as standard with PWM control input and speed signal. Additional inputs and outputs on request.

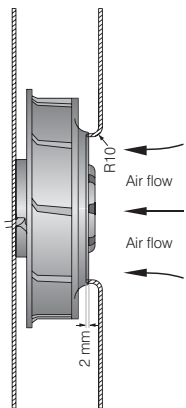
General characteristics:

- Impeller of fibreglass-reinforced plastic.
- Fully integrated electronic commutation.
- Direction of rotation: CW seen on rotor.
- Direction of air flow: axial air intake, centrifugal air exhaust out of the outlet.
- Connection via single strands AWG 18, 20 or AWG 22, TR 64, speed signal and control input AWG 22, bared and tin-plated.
- Mass: 775 g.

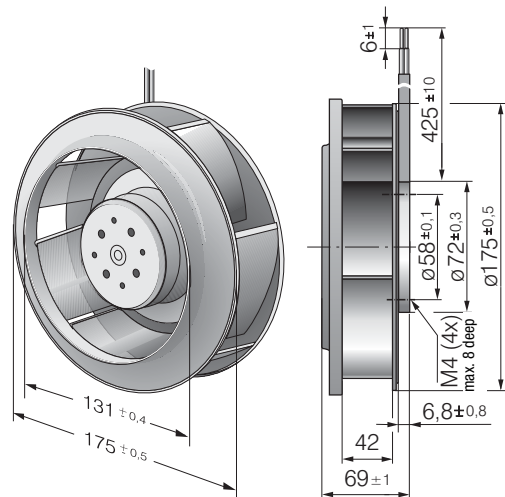
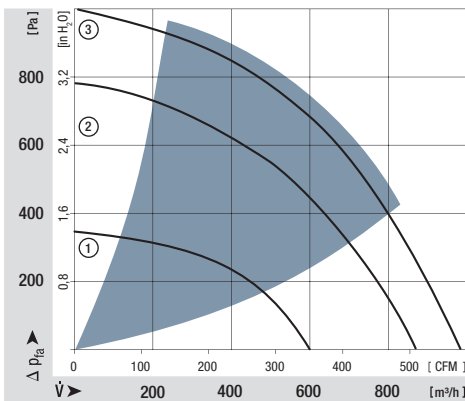
Nominal data		Air flow	Air flow	Nominal voltage	Voltage range	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀ (40 °C) ebm-papst-Standard	Service life L ₁₀ (T _{max}) ebm-papst-Standard	Life expectancy L ₁₀ Δ (40 °C) see P. 15	Curve	Specials
Type		m ³ /h	CFM	VDC	VDC	Bel(A)	□ / ■	Watts	RPM	°C	Hours	Hours			
NEW	RER 175-42/14/2 TDMLP	600	353,0	24	16...30	7,3	■	45	3 400	-20...+65	72 500 / 45 000	145 000	1		
NEW	RER 175-42/14/2 TDMP	865	508,8	24	16...36	8,2	■	110	4 800	-20...+65	70 000 / 40 000	140 000	2		
NEW	RER 175-42/18/2 TDMLP	600	353,0	48	36...57	7,3	■	46	3 400	-20...+65	72 500 / 45 000	145 000	1		
NEW	RER 175-42/18/2 TDMP*	865	508,8	48	36...72	8,2	■	110	4 800	-20...+65	70 000 / 40 000	140 000	2		
NEW	RER 175-42/18/2 TDP	980	576,8	48	36...72	8,5	■	166	5 400	-20...+65	60 000 / 32 500	115 000	3		

* preliminary data

Speed control range from 800 rpm at 7 % PWM up to nominal speed at > 90 % PWM. Standstill at 0 % PWM, max. speed if control cable is interrupted.



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 180 x 180 mm.
Cover plate 180 x 180 mm with an air inlet of Ø 125,5 mm, concentric to the impeller.



max. 970 m³/h

DC centrifugal fans

Series RER 190 TD 190 Ø x 69 mm



Highlights:

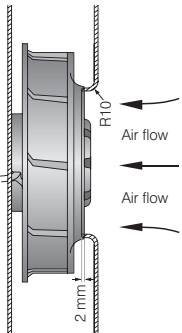
- 3-phase fan drive with high degree of running smoothness.
- Very high pressure build-up.
- Backward curved RadiCal impeller with maximum efficiency.
- Standard models available with multifunctional control input for analogue, PWM and speed signal.

General characteristics:

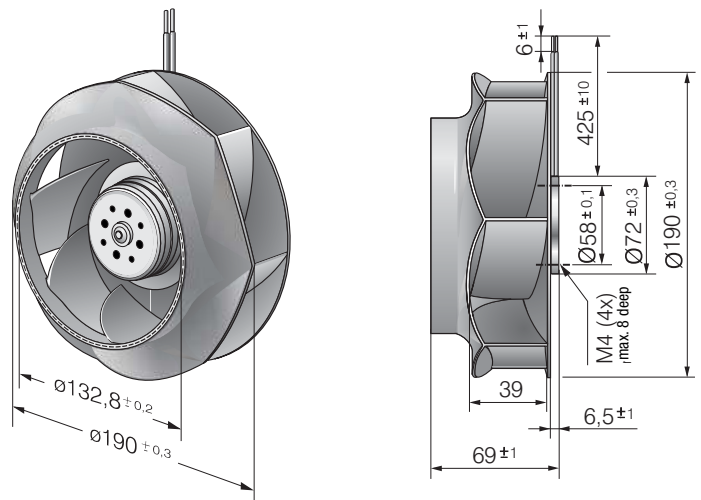
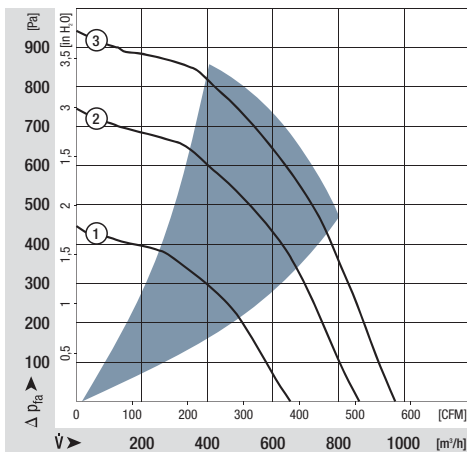
- Impeller of fibreglass-reinforced plastic.
- Fully integrated electronic commutation.
- Direction of rotation: CW seen on rotor.
- Direction of air flow: axial air intake, centrifugal air exhaust out of the outlet.
- Connection via single strands AWG 18, 20 or AWG 22, TR 64, speed signal and control input AWG 22, bared and tin-plated.
- Mass: 870 g.

Nominal data		Air flow	Air flow	Nominal voltage	Voltage range	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀ (40 °C) ebm-papst Standard	Service life L ₁₀ (T _{max}) ebm-papst Standard	Life expectancy L ₁₀ Δ (40 °C) see P. 15	Curve	Specials
Type		m ³ /h	CFM	VDC	VDC	Bel(A)	□ / ■	Watts	RPM	°C	Hours	Hours	Hours		
NEW	RER 190-39/14/2TDMLO	650	382,4	24	16...30	7,6	■	58	3 000	-20...+60	55 000 / 35 000	110 000	110 000	1	
NEW	RER 190-39/14/2TDMO	860	505,9	24	16...36	7,9	■	110	3 900	-20...+65	52 500 / 30 000	105 000	105 000	2	
NEW	RER 190-39/18/2TDMLO	650	382,4	48	36...57	7,6	■	56	3 000	-20...+65	55 000 / 35 000	110 000	110 000	1	
NEW	RER 190-39/18/2TDMO	860	505,9	48	36...72	7,9	■	105	3 900	-20...+65	52 500 / 30 000	105 000	105 000	2	
NEW	RER 190-39/18/2TDO	970	570,6	48	36...72	8,3	■	148	4 400	-20...+65	40 000 / 22 500	80 000	80 000	3	

Speed control range from 800 rpm at 7 % PWM up to nominal speed at > 90 % PWM. Standstill at 0 % PWM, standstill if control cable is interrupted.



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 195 x 195 mm.
Cover plate 195 x 195 mm with an air inlet of Ø 125,5 mm, concentric to the impeller.



max. 1280 m³/h

DC centrifugal fans

Series RER 220 TD 221 Ø x 71 mm



Highlights:

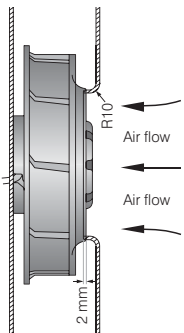
- 3-phase fan drive with high degree of running smoothness.
- Very high pressure build-up.
- Backward curved impeller.
- Standard models available with multifunctional control input for analogue, PWM and speed sign.

General characteristics:

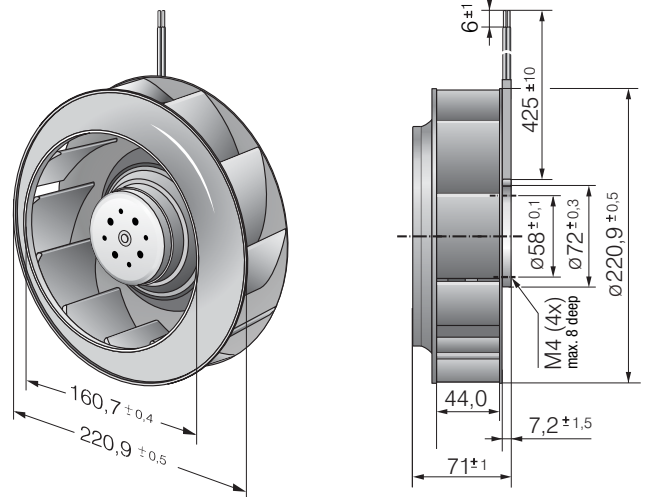
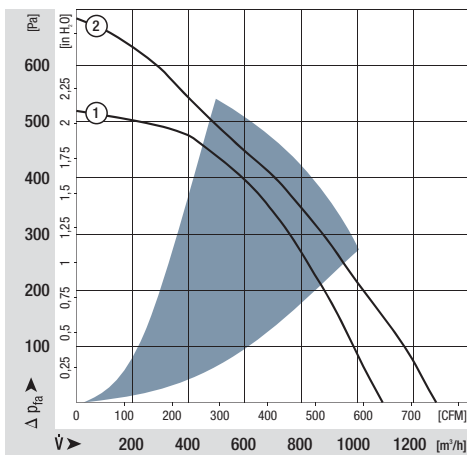
- Impeller of fibreglass-reinforced plastic.
- Fully integrated electronic commutation.
- Direction of rotation: CW seen on rotor.
- Direction of air flow: axial air intake, centrifugal air exhaust out of the outlet.
- Connection via single strands AWG 18, 20 or AWG 22, TR 64, speed signal and control input AWG 22, bared and tin-plated.
- Mass: 940 g.

Nominal data		Air flow	Air flow	Nominal voltage	Voltage range	Sound power level	Sintec sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀ (40 °C) ebm-papst-Standard	Service life L ₁₀ (T _{max}) ebm-papst-Standard	Life expectancy L ₁₀ Δ (40 °C) see P. 15	Curve	Specials
Type		m ³ /h	CFM	VDC	VDC	Bel(A)	□ / ■	Watts	RPM	°C	Hours	Hours	Hours		
NEW	RER 220-44/14/2TDMO	1090	641,2	24	16...36	7,7	■	82	3 000	-20...+55	75 000 / 52 500	150 000	150 000	1	
NEW	RER 220-44/18/2TDMO	1090	641,2	48	36...72	7,7	■	80	3 000	-20...+55	75 000 / 52 500	150 000	150 000	1	
NEW	RER 220-44/18/2TDO	1280	752,9	48	36...72	8,0	■	140	3 500	-20...+55	55 000 / 40 000	110 000	110 000	2	

Speed control range from 800 rpm at 7 % PWM up to nominal speed at > 90 % PWM. Standstill at 0 % PWM, standstill if control cable is interrupted.



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 230 x 230 mm.
Cover plate 230 x 230 mm with an air inlet of Ø 146 mm, concentric to the impeller.



max. 1600 m³/h

DC centrifugal fans

Series RER 225 TD 225 Ø x 99 mm



Highlights:

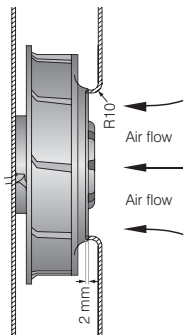
- 3-phase fan drive with high degree of running smoothness.
- Very high pressure build-up.
- TDM and TDML model with backward-curved RadiCal impeller with maximum efficiency.
- Standard models available with multifunctional control input for analogue, PWM and speed signal.

General characteristics:

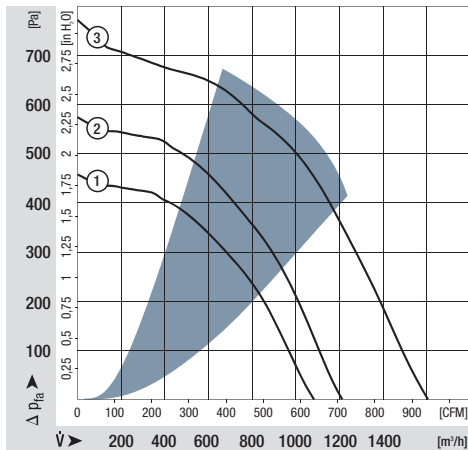
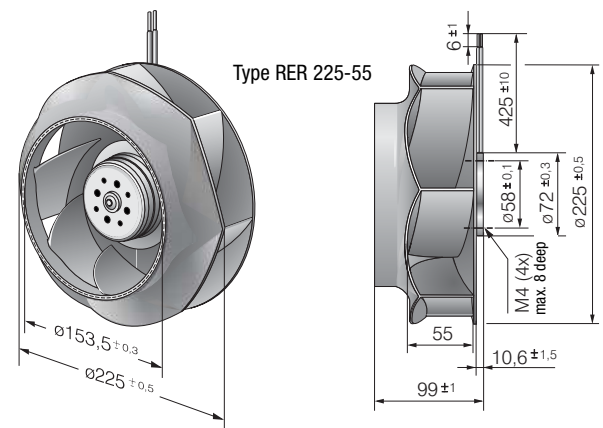
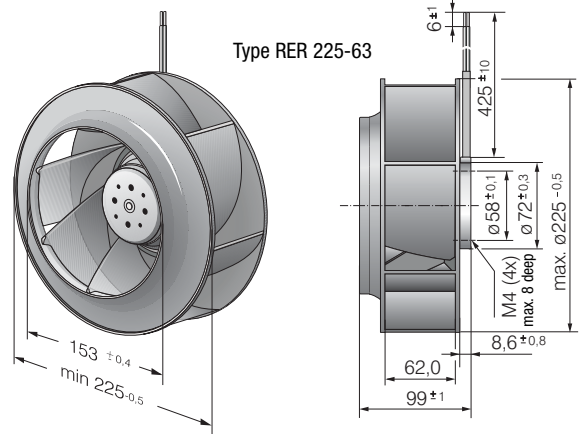
- Impeller of fibreglass-reinforced plastic.
- Fully integrated electronic commutation.
- Direction of rotation: CW seen on rotor.
- Direction of air flow: axial air intake, centrifugal air exhaust out of the outlet.
- Connection via single strands AWG 18, 20 or AWG 22, TR 64, speed signal and control input AWG 22, bared and tin-plated.
- Mass: 1030 g.

Nominal data		Air flow	Air flow	Nominal voltage	Voltage range	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀ (40 °C) ebm-papst Standard	Service life L ₁₀ (T _{max}) ebm-papst Standard	Life expectancy L ₁₀ Δ (40 °C) see P. 15	Curve	Specials
Type		m ³ /h	CFM	VDC	VDC	Bel(A)	□ / ■	Watts	RPM	°C	Hours	Hours	Hours		
NEW	RER 225-55/18/2TDML0	1080	635,4	48	36...72	7,5	■	82	2 500	-20...+55	70 000 / 50 000	140 000	140 000	1	
NEW	RER 225-55/18/2TDM0	1210	711,9	48	36...72	7,9	■	120	2 800	-20...+55	55 000 / 40 000	110 000	110 000	2	
NEW	RER 225-63/18/2TDP-402	1600	941,3	48	36...72	8,1	■	165	3 300	-20...+55	52 500 / 37 500	105 000	105 000	3	

Speed control range from 800 rpm at 7 % PWM up to nominal speed at > 90 % PWM. Standstill at 0% PWM, Type O: standstill at sensor break. Type P: maximum speed at sensor break.



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 230 x 230 mm.
Cover plate 230 x 230 mm with an air inlet of Ø 146 mm, concentric to the impeller.



max. 155 m³/h

DC tangential fan

Series QG 030 201...413 x 50 x 48 mm

Highlights:

- Tangential fans with high air flow.
- Large air outlet.

General characteristics:

- Motor with ball bearing system. Impeller mounting plate with sleeve bearings.
- Fan housing and impeller of aluminium. Plastic housing side parts.
- Fully integrated electronic commutation.
- Protected against reverse polarity and locking.
- Air exhaust out of the outlet.
- Connection via single strands. Bared and tin-plated.
- Mass: 235 / 290 / 380 / 415 g.



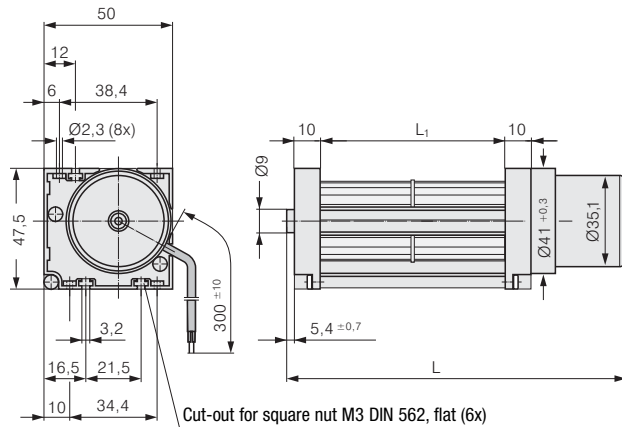
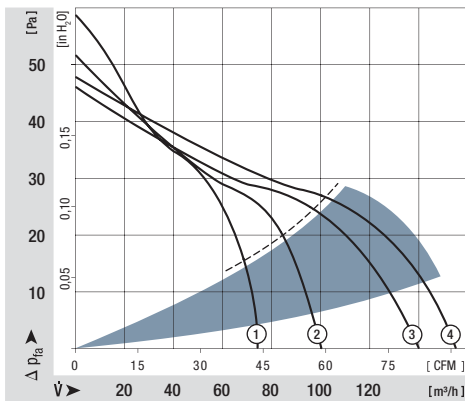
Nominal data

Type	Air flow		Nominal voltage	Voltage range	Sound pressure level	Sound power level	Sleeve bearings Ball bearings	Power input	Temperature range	Service life L ₁₀ (40 °C) ebm-papst-Standard	Service life L ₁₀ (T _{max}) ebm-papst-Standard	Life expectancy L ₁₀ ^Δ (40 °C) see P. 15	Curve	Specials
	m ³ /h	CFM												
QG 030-148/12	75	44,1	12	8...14	49	5,7	□/■	6,2	-20...+60	30 000 / 10 000	32 500	32 500	1	
QG 030-198/12	100	58,9	12	8...14	51	5,8	□/■	8,0	-20...+60	30 000 / 10 000	32 500	32 500	2	
QG 030-303/12	140	82,4	12	8...14	51	5,8	□/■	8,7	-20...+60	30 000 / 10 000	32 500	32 500	3	
QG 030-353/12	155	91,3	12	8...14	51	5,9	□/■	9,6	-20...+60	30 000 / 10 000	32 500	32 500	4	
QG 030-148/14	75	44,1	24	16...28	49	5,7	□/■	6,2	-20...+60	30 000 / 10 000	32 500	32 500	1	
QG 030-198/14	100	58,9	24	16...28	51	5,8	□/■	8,0	-20...+60	30 000 / 10 000	32 500	32 500	2	
QG 030-303/14	140	82,4	24	16...28	51	5,8	□/■	8,7	-20...+60	30 000 / 10 000	32 500	32 500	3	
QG 030-353/14	155	91,3	24	16...28	51	5,9	□/■	9,6	-20...+60	30 000 / 10 000	32 500	32 500	4	

Tangential fans are only suitable for operation with high rate and low back pressure.

Type	Dimension:	L	L ₁
QG 030-148/ ..		201 ^{+1,5}	148
QG 030-198/ ..		258 ^{+1,5}	198
QG 030-303/ ..		363 ^{+1,5}	303
QG 030-353/ ..		413 ^{+1,5}	353

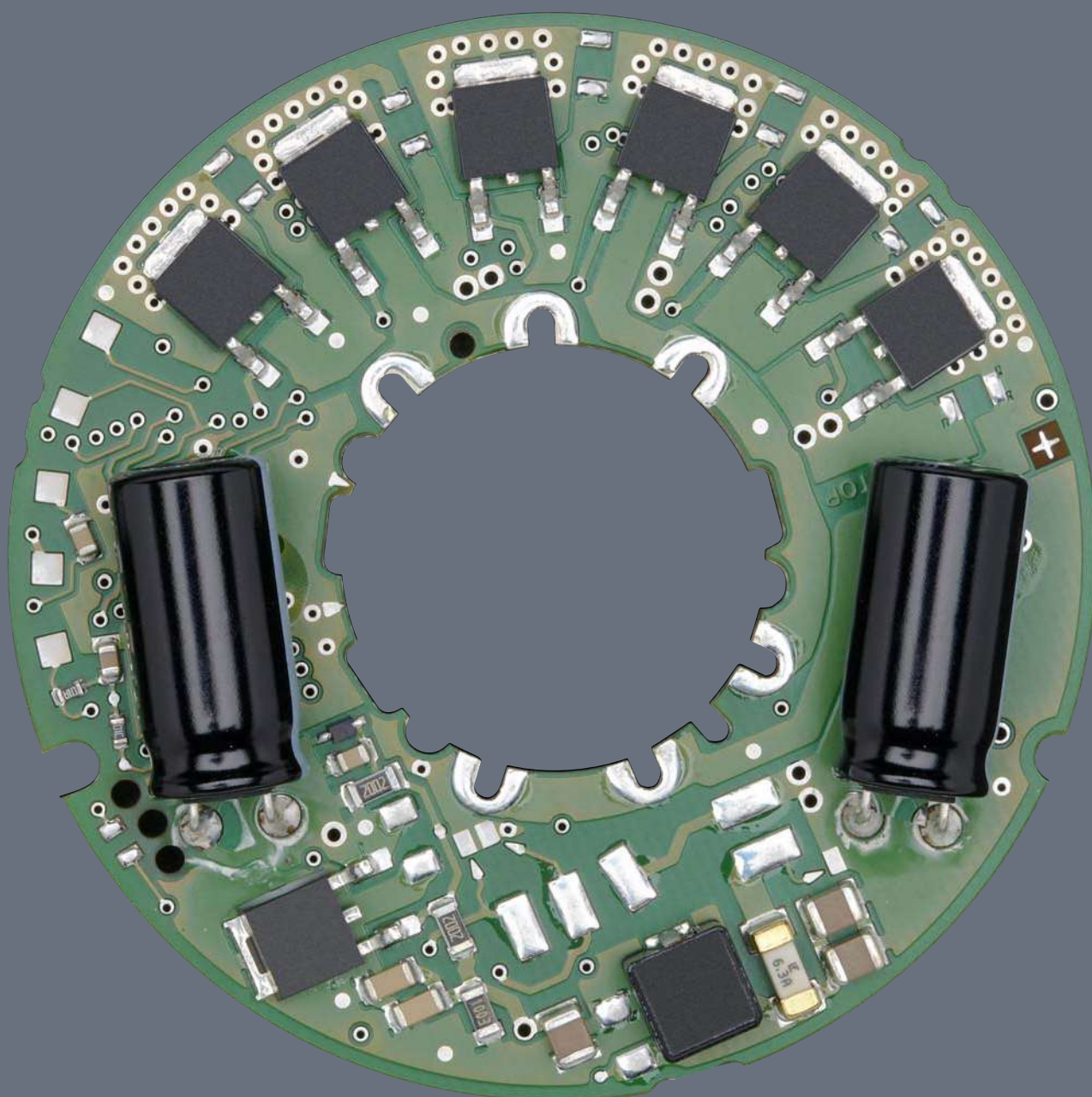
The service life values refer to horizontal installation of the fan.





DC fans - specials

■	Sensor signal	110
■	Alarm signal	114
■	Vario-Pro / Speed setting / Control input	119
■	Protection against ambient influences	123



Technical information

Cooling capacity and efficiency

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

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

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

1. Speed adaptation via NTC sensor

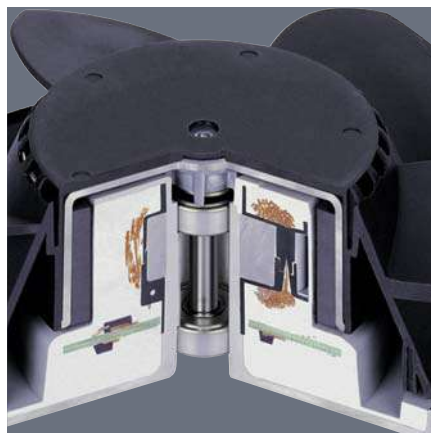
Standard fans in electronics cooling— tried and tested by the millions and nevertheless a temporary solution, because standard fans have a distinct disadvantage: With constant speed and a corresponding high noise factor, they continuously provide the air flow required in extreme cases. This extreme case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

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

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

2. DC fans with separate control input

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





Technical information

3. Sensor signal

DC fans with sensor signal.

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

4. Alarm signal

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

5. Turbo drives

Fans with three-phase EC drives and micro-processor-controlled motor electronics. These three-phase motors whose torque is virtually non-reliant on the rotor position are used for extremely high running smoothness. The speed of these fans can be controlled over a very wide range with PWM, analogue voltage or temperature. Optionally, the fans can be supplied with reversible direction of rotation and active brake operation.

6. Vario-Pro fans

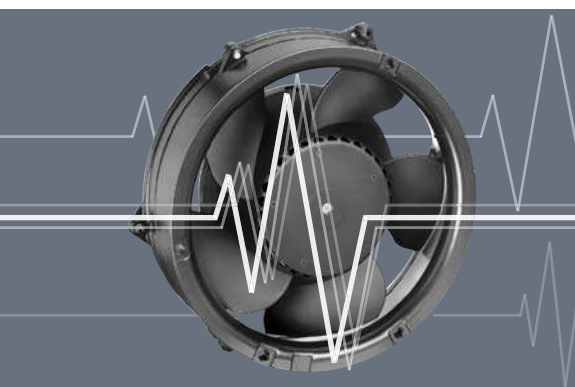
This high-end fan concept by ebmpapst with programmed intelligence and customer-specific integrated functions makes your electronics cooling even more versatile and competitive. Vario-Pro ensures a fresh economic breeze for all demanding cooling tasks – e.g. where greater reliability, more flexibility and intelligent function features such as alarm function, speed control etc. are required.

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

7. Protection against environmental influences

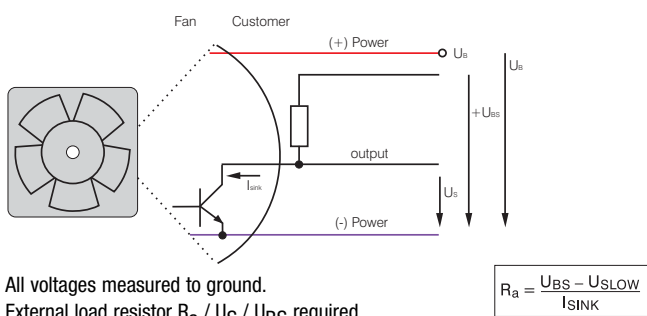
Some applications place particular demands on the fans' resistance to ambient influences, such as dust, moisture, water and salt. ebm-papst offer solutions for adapting fans to these ambient conditions.

Speed signal /2



- Speed-proportional rectangular pulse for external speed monitoring of fan motor.
- 2, 3 or 6 pulses per revolution.
- Open collector signal output.
- Extremely wide operating voltage range.
- Easy adaptation to user interface.
- Connection via separate lead.
- The sensor signal also serves as a major comparison variable for setting and maintaining the setpoint speed for interactive or controlled cooling with one or several interconnected fans.

Electrical connection

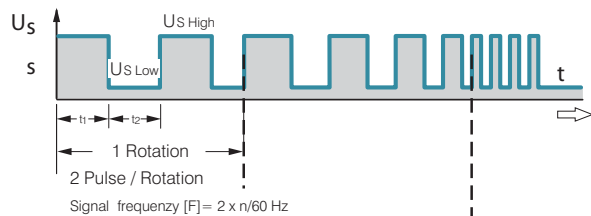


All voltages measured to ground.
External load resistor $R_a / U_S / U_{BS}$ required.

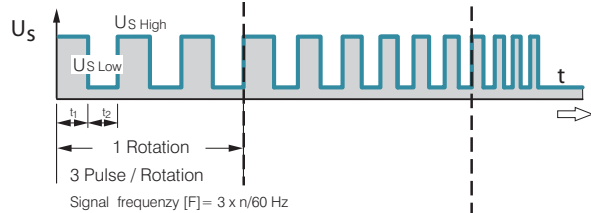
$$R_a = \frac{U_{BS} - U_{SLOW}}{I_{SINK}}$$

Signal output voltage

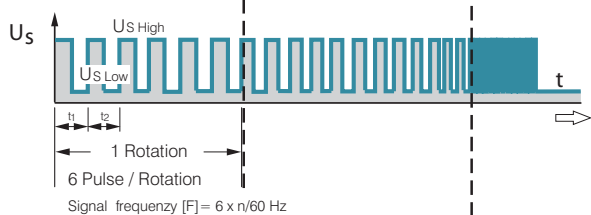
Standard signal for all models (exceptions see below)



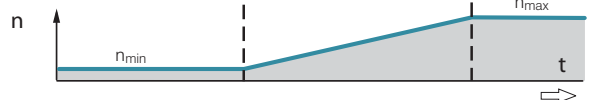
only for 4100 NH7 and NH8



All TD fans. Ex.: 6400 TD



Fan Speed



Signal data	Speed signal $U_{S\ Low}$	Condition: I_{SINK}	Speed signal $U_{S\ High}$	Condition: I_{SOURCE}	Sensor operating voltage U_{BS}	Perm. sink current $I_{SINK\ max.}$	Pulses per revolution	Fan description
Type	VDC	mA	VDC	mA	VDC	mA	Page	
250	≤ 0,4	≤ 2	30	0	≤ 30	2	2	23
400 F	≤ 0,4	1	30	0	≤ 30	≤ 2	2	24
400	≤ 0,4	1	30	0	≤ 30	≤ 2	2	25
400 J	≤ 0,4	2	30	0	≤ 30	≤ 4	2	26
500 F	≤ 0,4	1	30	0	≤ 30	≤ 2	2	27
600 F	≤ 0,4	1	30	0	≤ 30	≤ 2	2	28
620	≤ 0,4	2	30	0	≤ 30	≤ 4	2	29
630 U	≤ 0,4	2	30	0	≤ 30	≤ 4	2	30
600 N	≤ 0,4	2	28	0	≤ 28	≤ 4	2	31
600 J	≤ 0,4	2	30	0	≤ 30	≤ 4	2	33
700 F	≤ 0,4	2	30	0	≤ 30	≤ 4	2	34
8450	≤ 0,4	2	28	0	≤ 28	≤ 4	2	35
8400 N	≤ 0,4	2	28	0	≤ 28	≤ 4	2	36
8400 N VARIOFAN	≤ 0,4	2	30	0	≤ 30	≤ 4	2	37
8300	≤ 0,4	2	30	0	≤ 30	≤ 4	2	38
8200 J	≤ 0,4	2	30	0	≤ 30	≤ 4	2	39
3400 N	≤ 0,4	2	28	0	≤ 28	≤ 4	2	40
3400 N VARIOFAN	≤ 0,4	2	30	0	≤ 30	≤ 4	2	41
3300	≤ 0,4	2	30	0	≤ 30	≤ 4	2	42
3212 J / 3214 J	≤ 0,4	2	30	0	≤ 30	≤ 4	2	43
3218 J	≤ 0,4	2	60	0	≤ 60	≤ 4	2	43
4412 F / 4414 F	≤ 0,4	2	30	0	≤ 30	≤ 4	2	44
4418 F	≤ 0,4	2	60	0	≤ 60	≤ 4	2	44
4400 FN	≤ 0,4	2	30	0	≤ 30	≤ 4	2	45
4312 / 4314	≤ 0,4	2	30	0	≤ 30	≤ 4	2	46
4318	≤ 0,4	2	60	0	≤ 60	≤ 4	2	46
4312 / 4314 VARIOFAN	≤ 0,4	2	30	0	≤ 30	≤ 4	2	47
4318 VARIOFAN	≤ 0,4	2	60	0	≤ 60	≤ 4	2	47
4400	≤ 0,4	2	30	0	≤ 30	≤ 4	2	48
4100 N	≤ 0,4	2	30	0	≤ 30	≤ 4	2	49
4100 NHH...NH6	≤ 0,4	2	≤ 60	0	≤ 60	≤ 10	2	50
4100 NH7...NH8	≤ 0,4	2	≤ 60	0	≤ 60	≤ 20	3	51
DV 4100	≤ 0,4	2	30	0	≤ 30	≤ 4	2	52
5200 N	≤ 0,4	2	30	0	≤ 30	≤ 4	2	53

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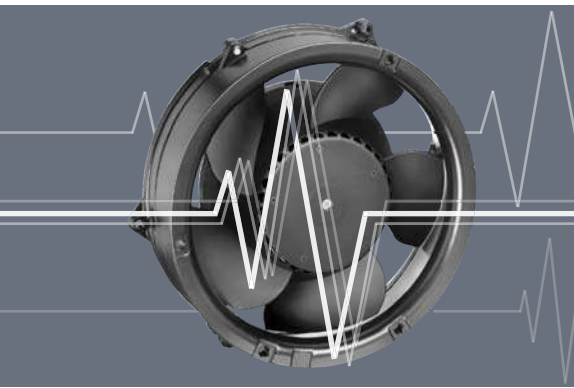
- Electrically isolated sensor and signal circuit.
- Varying voltage potentials for power and logic circuit.

Signal data	Speed signal U_S Low	Condition: I_{SINK}	Speed signal U_S High	Condition: I_{SOURCE}	Sensor operating voltage U_{BS}	Perm. sink current I_{SINK} max.	Pulses per revolution	Fan description
Type	VDC	mA	VDC	mA	VDC	mA		Page
DV 5200	≤ 0,4	2	30	0	≤ 30	≤ 4	2	54
5112 N	≤ 0,4	2	15	0	≤ 5	≤ 20	2	55
5114 N / 5118 N	≤ 0,4	2	60	0	≤ 60	≤ 20	2	55
5300	≤ 0,4	2	≤ 72	0	≤ 72	≤ 4	2	56
5300 TD	≤ 0,4	2	72	0	≤ 72	≤ 20	6	57
7112 N / 7118 N	≤ 0,4	2	60	0	≤ 60	≤ 20	2	58
7114 N	≤ 0,4	2	30	0	≤ 30	≤ 20	2	58
7200 N	≤ 0,4	2	15	0	≤ 15	≤ 20	2	59
6300	≤ 0,4	2	≤ 72	0	≤ 72	≤ 20	2	61
6300 TD	≤ 0,4	2	72	0	≤ 72	≤ 20	6	62
DV 6200	≤ 0,4	2	30	0	≤ 60	≤ 20	2	64
6400	≤ 0,4	2	60	0	≤ 60	≤ 20	2	66
2200 FTD	≤ 0,4	2	72	0	≤ 72	≤ 20	6	70
RL 48	≤ 0,4	2	3	0	≤ 30	≤ 4	2	81
RL 65	≤ 0,4	2	30	0	≤ 30	≤ 4	2	82
RL 90 N	≤ 0,4	2	30	0	≤ 30	≤ 4	2	83
RLF 100	≤ 0,4	2	30	0	≤ 30	≤ 4	2	84
RG 90 N	≤ 0,4	2	30	0	≤ 30	≤ 4	2	85
RG 125 N	≤ 0,4	2	30	0	≤ 30	≤ 4	2	86
RG 160 N	≤ 0,4	2	30	0	≤ 30	≤ 20	2	87
RG 160 TD	≤ 0,4	2	60	0	≤ 60	≤ 20	6	88
RG 190 TD	≤ 0,4	2	72	0	≤ 72	≤ 20	6	89
RG 220 TD	≤ 0,4	2	72	0	≤ 72	≤ 20	6	90
RG 225 TD	≤ 0,4	2	72	0	≤ 72	≤ 20	6	91
RET 97 TD	≤ 0,4	2	72	0	≤ 72	≤ 20	6	92
REF 100	≤ 0,4	2	30	0	≤ 30	≤ 4	2	93
RER 120 TD	≤ 0,4	2	72	0	≤ 72	≤ 20	6	95
RER 133 TD	≤ 0,4	2	72	0	≤ 72	≤ 20	6	97
RER 160 TD	≤ 0,4	2	60	0	≤ 60	≤ 20	6	99
REF 175 TD	≤ 0,4	2	72	0	≤ 72	≤ 20	6	100
RER 175 TD	≤ 0,4	2	72	0	≤ 72	≤ 20	6	101
RER 190 TD	≤ 0,4	2	72	0	≤ 72	≤ 20	6	102
RER 220 TD	≤ 0,4	2	72	0	≤ 72	≤ 20	6	103
RER 225 TD	≤ 0,4	2	72	0	≤ 72	≤ 20	6	104

Attention:

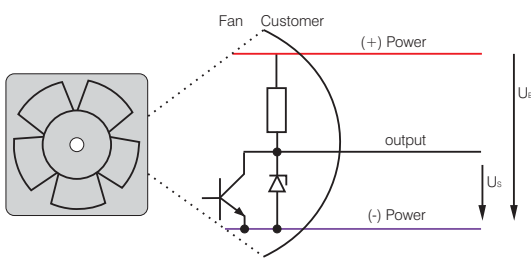
With these fan options, deviations in regard to temperature range, voltage range and power consumption are possible compared with standard fan data.

Speed signal /12



- Speed-proportional rectangular pulse for external speed monitoring of fan motor.
- 2, 3 or 6 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 setpoint speed for interactive or controlled cooling with one or more interconnected fans.

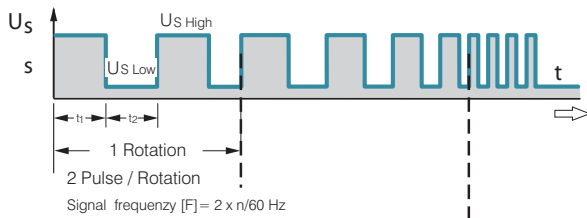
Electrical connection



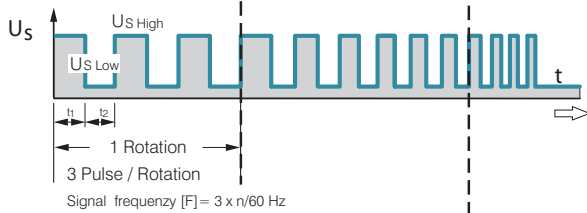
All voltages measured to ground.

Signal output voltage

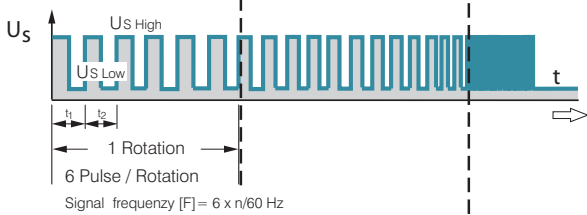
Standard signal for all models (exceptions see below)



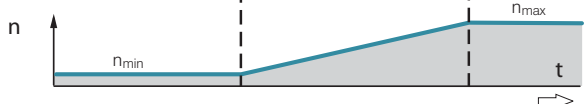
only for 4100 NH7 and NH8



All TD fans. Ex.: 6400 TD



Fan Speed



Signal data	Speed signal U _S Low	Condition: I _{sink}	Speed signal U _S High	Condition: I _{source}	Perm. sink current I _{sink} max.	Fan description
Type	VDC	mA	VDC	mA	mA	Page
614 N/12 GM	≤ 0,4	1	2,5–5,5	1	1	31
618 N/12 N	≤ 0,4	1	2,5–5,5	1	1	31
8412 N/12 H	≤ 0,4	1	2,5–5,5	1	1	36
4412 F/12 GM	≤ 0,4	1	2,5–5,5	1	1	44
4418 F/12	≤ 0,4	1	2,5–5,5	1	1	44
4312 /12 M	≤ 0,4	1	2,5–5,5	1	1	46
4314 /12	≤ 0,4	1	2,5–5,5	1	1	46
4182 N/12 X	≤ 0,4	1	2,5–5,5	1	1	49

Attention:

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

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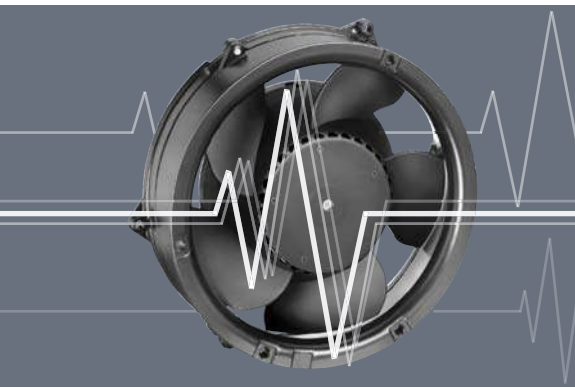
- Electrically isolated sensor and signal circuit.
- Varying voltage potentials for power and logic circuit.

Signal data	Speed signal U _S Low	Condition: I _{sink}	Speed signal U _S High	Condition: I _{source}	Perm. sink current I _{sink} max.	Fan description
Type	VDC	mA	VDC	mA	mA	Page
7214 N/12	≤0,4	2	2,5–5,5	1	≤20	59
DV 6224 /12	≤0,4	2	4,5–5,25	2	≤12	64
6424 /12 H	≤0,4	2	2,5–5,5	1	≤20	66
DV 6424 /12	≤0,4	2	4,5–5,25	2	≤12	68
DV 6448 /12	≤0,4	2	4,5–5,25	2	≤12	68
RG 125-19/12N/12	≤0,4	1	2,5–5,5	1	≤1	86
RG 160-28/12N/12	≤0,4	2	2,5–5,5	1	≤5	87
RG 160-28/18N/12	≤0,4	2	2,5–5,5	1	≤20	87
RER 125-19/12N/12	≤0,4	1	2,5–5,5	1	≤1	96
RER 160-28/12N/12	≤0,4	2	2,5–5,5	1	≤5	98
RER 160-28/18N/12	≤0,4	2	2,5–5,5	1	≤20	98

Attention:

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

Alarm signal /17

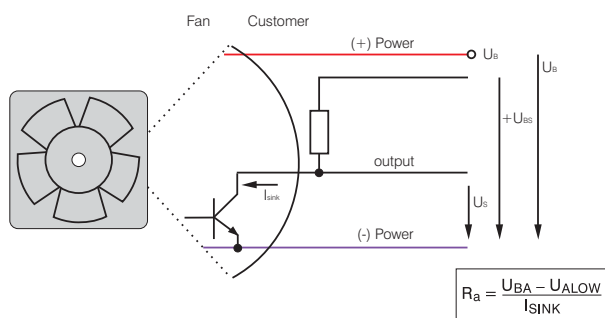


- Alarm signal for speed monitoring.
- Signal output via open collector.
- The fan emits a high continuous signal during trouble-free operation within the permissible voltage range.
- Low signal when speed limit is not reached.
- After elimination of fault, the fan returns to its setpoint speed; the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

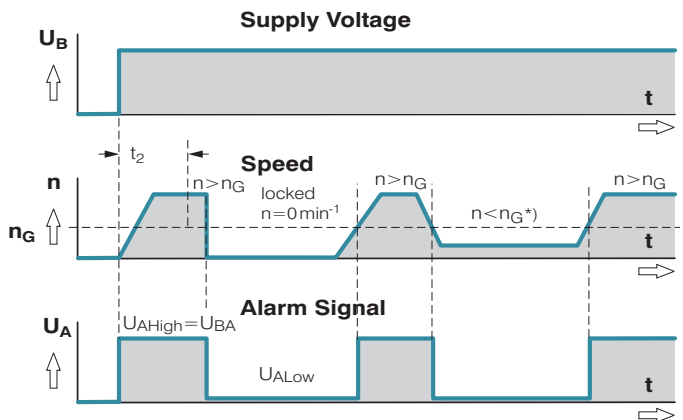
Alarm signal data	Alarm output voltage U_A Low	Condition:	Condition: $I_{sink} =$	Alarm output-voltage U_A High	Condition:	Condition: I_{source}	Alarm operating-voltage U_{BA} max.	Max. permissible Sink current	Alarm delay time t_2	Condition:	Speed limit n_G	Fan description
Type	VDC		mA	VDC		mA	VDC	mA	S		min^{-1}	Page
8318 /17	$\leq 0,4$	$n < n_G$	2	60	$n > n_G$	0	≤ 60	20	≤ 15	*	1500 ± 100	38
8318 /17 H	$\leq 0,4$	$n < n_G$	2	60	$n > n_G$	0	≤ 60	20	≤ 15	*	1500 ± 100	38
3314 /17	$\leq 0,4$	$n < n_G$	2	60	$n > n_G$	0	≤ 60	20	≤ 15	*	1500 ± 100	42
3318 /17 H	$\leq 0,4$	$n < n_G$	2	60	$n > n_G$	0	≤ 60	20	≤ 15	*	1500 ± 100	42
4318 /17	$\leq 0,4$	$n < n_G$	2	60	$n > n_G$	0	≤ 60	20	≤ 15	*	850 ± 100	46
4184 N /17 X	$\leq 0,4$	$n < n_G$	2	60	$n > n_G$	0	≤ 60	20	≤ 15	*	1500 ± 100	49

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

Electrical connection



All voltages measured to ground.
 External load resistor 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 locking.

Available on request:

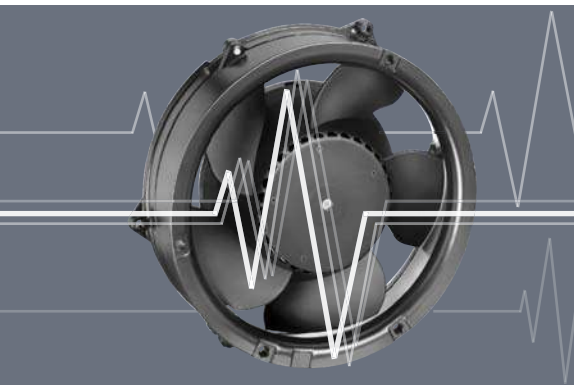
- With integrated signal latching for subsequent recognition of short-time faults.
- Alarm circuit open collector or TTL.
- Electrically isolated for maximum device safety;
Defects in the power circuit do not affect the alarm circuit.

Alarm signal data	Alarm output voltage U_A Low	Condition:	Condition: $I_{\text{sink}} =$	Alarm output-voltage U_A High	Condition:	Condition: $I_{\text{source}} =$	Alarm operating-voltage U_{BA} max.	Max. permissible Sink current	Alarm delay-time t_2	Condition:	Speed limit n_G	Fan description
Type	VDC		mA	VDC		mA	VDC	mA	S		min^{-1}	Page
4312/17 MV VARIOFAN	$\leq 0,4$	$n < n_G$	2	60	$n > n_G$	0	≤ 60	20	≤ 15	*	1500 ± 100	47
4312/17 T VARIOFAN	$\leq 0,4$	$n < n_G$	2	60	$n > n_G$	0	≤ 60	20	≤ 15	*	1500 ± 100	47
4314/17 T VARIOFAN	$\leq 0,4$	$n < n_G$	2	60	$n > n_G$	0	≤ 60	20	≤ 15	*	1150 ± 100	47
4318/17 V VARIOFAN	$\leq 0,4$	$n < n_G$	2	60	$n > n_G$	0	≤ 60	20	≤ 15	*	850 ± 100	47
7214 N/17	$\leq 0,4$	$n < n_G$	2	60	$n > n_G$	0	≤ 60	15	≤ 15	*	1330 ± 60	59

* After switching on U_B **Attention:**

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

Alarm signal /19



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

Alarm signal data	Alarm output voltage U_A Low	Condition:	Condition: $I_{sink} =$	Alarm output voltage U_A High	Condition:	Condition: $I_{source} =$	Alarm operating-voltage U_{BA} max.	Max. permissible Sink current	Alarm delay-time t_2	Condition:	Speed limit n_G	Fan description
Type	VDC		mA	VDC		mA	VDC	mA	S		min^{-1}	Page
8314 /19 H	$\leq 0,4$	$n > n_G$	2	60	$n < n_G$	0	≤ 60	20	≤ 15	*	1500 ± 100	38
4312 /19	$\leq 0,4$	$n > n_G$	2	60	$n < n_G$	0	≤ 60	20	≤ 15	*	1500 ± 100	46
7214 N /19	$\leq 0,4$	$n > n_G$	2	60	$n < n_G$	0	4,5–60	10	10 ± 4	*	1800 ± 20	59
RLF 100-11/14 /19	$\leq 0,4$	$n > n_G$	2	≤ 28	$n < n_G$	0	16–28	10	10 ± 4	*	1900 ± 100	84
RER 101-36/18N /19 HH	$\leq 0,4$	$n > n_G$	2	≤ 28	$n < n_G$	0	16–28	10	10 ± 4	*	1900 ± 100	94

* After switching on U_B

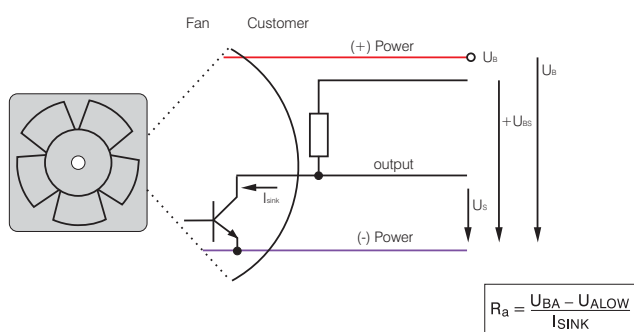
Attention:

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

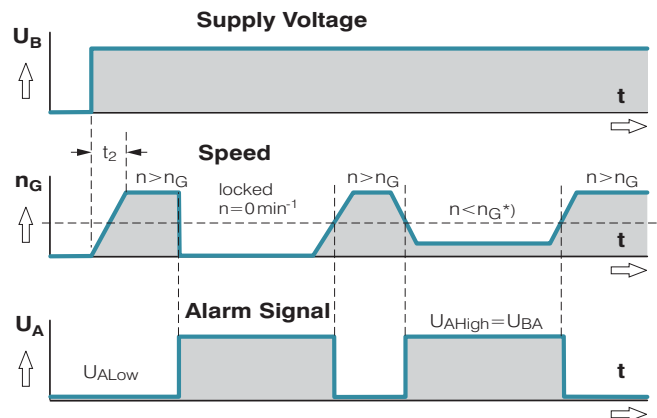
Available on request:

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

Electrical connection

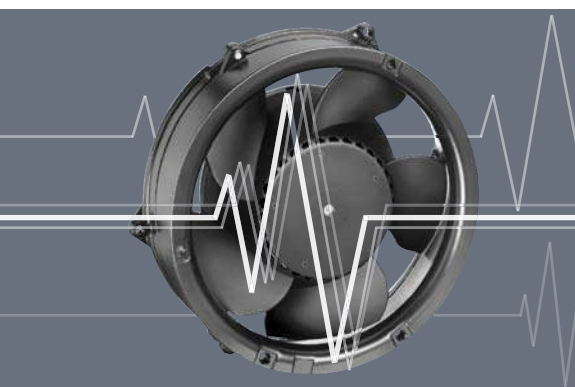


All voltages measured to ground.
External load resistor R_a from U_A to U_{BA} required.



t_2 = Alarm signal suppression during start-up.
* $n <$ Speed limit n_G by braking or locking.

Alarm signal /37



- 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 setpoint speed; the alarm signal reverts to high.

Available on request:

- Alarm circuit TTL compatible.

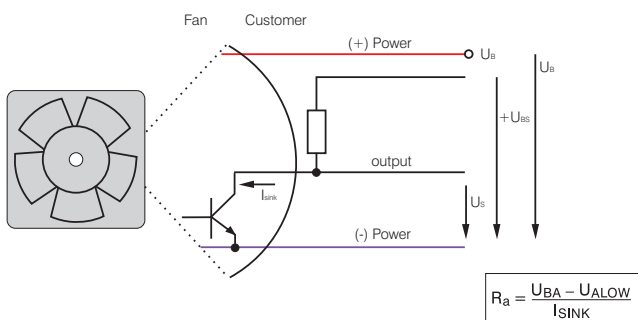
Alarm signal data	Alarm output voltage U_A Low	Condition:	Condition: $I_{sink} =$	Alarm output voltage U_A High	Condition:	Condition: $I_{source} =$	Alarm operating-voltage U_{BA} max.	Max. permissible Sink current I_{sink}	Alarm delay-time t_2	Condition:	Speed limit n_G	Fan description
Type	VDC		mA	VDC		mA	VDC	mA	S		min^{-1}	Page
8412 N/37 GMLV	$\leq 0,4$	$n \leq n_G$	2	28	$n > n_G$	0	≤ 28	10	< 1	*	0	36
3412 N/37 GV	$\leq 0,4$	$n \leq n_G$	2	28	$n > n_G$	0	≤ 28	10	< 1	*	0	40

* After switching on U_B

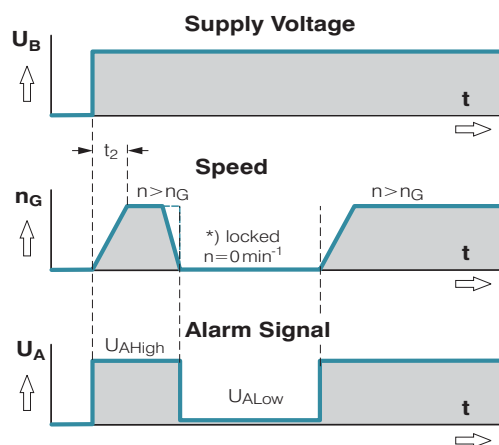
Attention:

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

Electrical connection

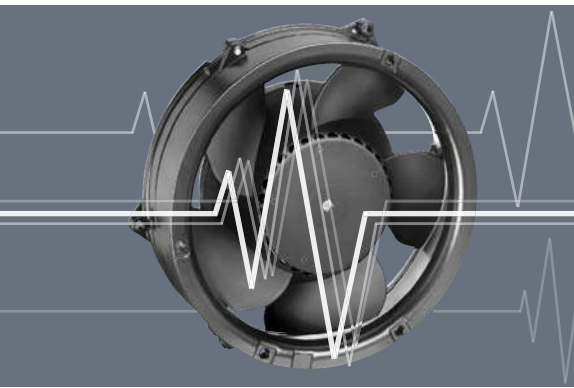


All voltages measured to ground.
External load resistor R_a from U_A to U_{BA} required.



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

Alarm signal /39



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

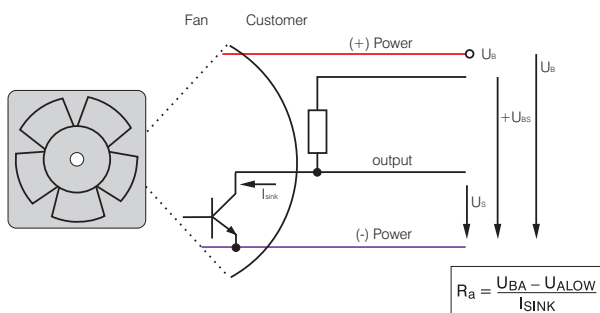
Alarm signal data	Alarm output voltage U_A Low	Condition:	Condition: $I_{sink} =$	Alarm output voltage U_A High	Condition:	Condition: $I_{source} =$	Alarm operating-voltage U_{BA} max.	Max. permissible Sink current I_{sink}	Alarm delay-time t_2	Condition:	Speed limit n_G	Fan description
Type	VDC		mA	VDC		mA	VDC	mA	S		min^{-1}	Page
412 /39	$\leq 0,5$	$n > n_G$	2	28	$n = n_G$	0	≤ 28	10	< 1	*	0	25
612 F/39 H	$\leq 0,5$	$n > n_G$	2	28	$n = n_G$	0	≤ 28	10	< 1	*	0	28
614 N /39 M	$\leq 0,5$	$n > n_G$	2	28	$n = n_G$	0	≤ 28	10	< 1	*	0	31
618 N /39 N	$\leq 0,5$	$n > n_G$	2	28	$n = n_G$	0	≤ 28	10	< 1	*	0	31
3412 N/39 H	$\leq 0,5$	$n > n_G$	2	28	$n = n_G$	0	≤ 28	10	< 1	*	0	40
3414 N/39 HH	$\leq 0,5$	$n > n_G$	2	28	$n = n_G$	0	≤ 28	10	< 1	*	0	40
4412 F/39 GL	$\leq 0,5$	$n > n_G$	2	28	$n = n_G$	0	≤ 28	10	< 1	*	0	44
4412 F/39 M	$\leq 0,5$	$n > n_G$	2	28	$n = n_G$	0	≤ 28	10	< 1	*	0	44
4414 F/39	$\leq 0,5$	$n > n_G$	2	28	$n = n_G$	0	≤ 28	10	< 1	*	0	44
4414 FN/39 H	$\leq 0,4$	$n > n_G$	2	≤ 30	$n = n_G$	0	≤ 30	4	< 1	*	0	44

* after switching on U_B

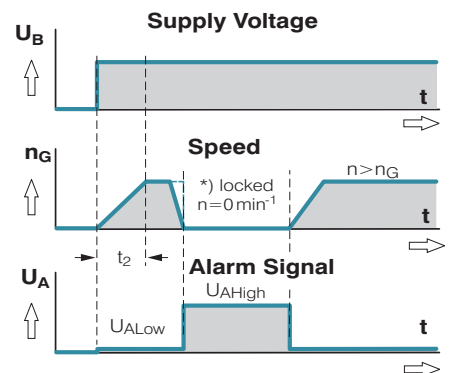
Attention:

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

Electrical connection

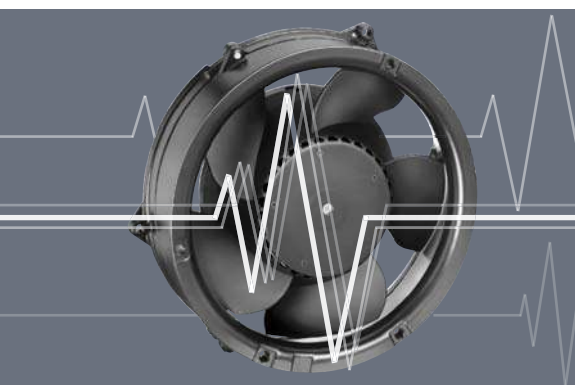


All voltages measured to ground
External load resistor R_a from U_A to U_{BA} required.



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

Vario-Pro®



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

Vario-Pro-Features

External Speed setting

- Speed setting via temperature, PWM or analogue control voltage. See page 120 (Speed setting).
- Description of speed curve with up to 14 selectable interpolation points. Linear interpolation between the points.
- Zero speed possible.
- Recognition of sensor failure: In case of loss of sensor, the fan operates at programmable (fail-safe) speed.

Alarm and tachometer functions

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

Motor management

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

Fan series	Page
620	29
8400 N	36
8300	38
8200 J	39
3400 N	40
3300	42
3200 J	43
4400 FN	45
4300	40
4100 N	49
4100 NH	50
4100 NH 7-8	51

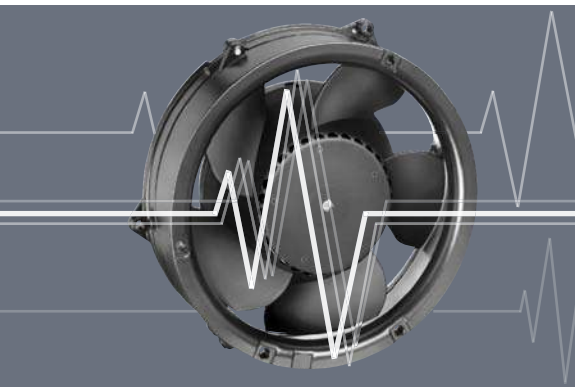
Fan series	Page
DV 4100	52
5200 N	53
DV 5200	54
5100 N	55
5300	56
7100 N	58
7200 N	59
6100	60
6300	61
DV 6200	64
6400	66
DV 6400	68

Fan series	Page
RL 90 N	83
RLF 100	84
RG 90 N	85
RG 125 N	86
RG 160 N	87
REF 100	93
RER 101	94
RER 125 N	96
RER 160 N	98

Speed setting via temperature sensor

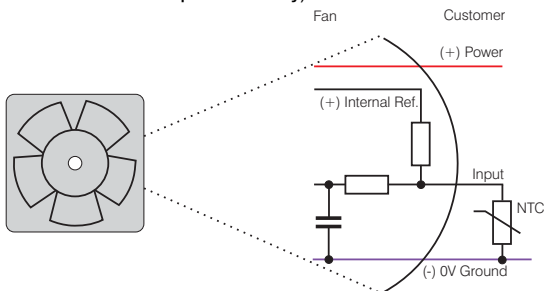


- The control variable is a temperature sensor that is either integrated into the fan or connected to an additional control wire.



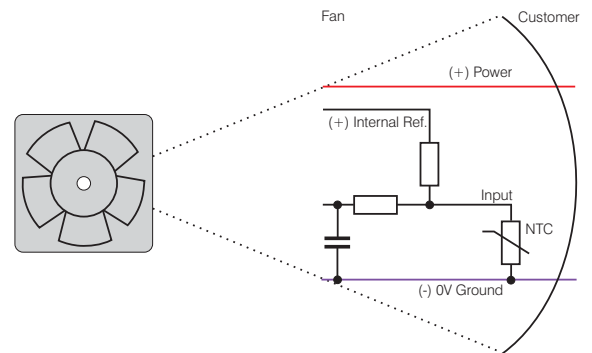
External temperature sensor Type T

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

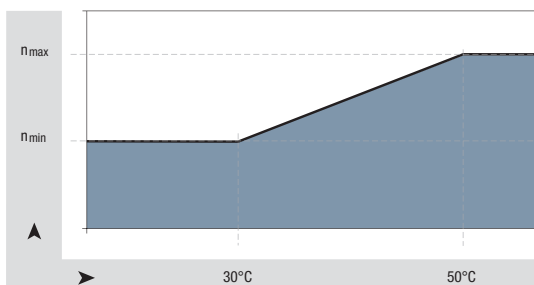


Internal temperature sensor Type I

- NTC integrated in fan hub.

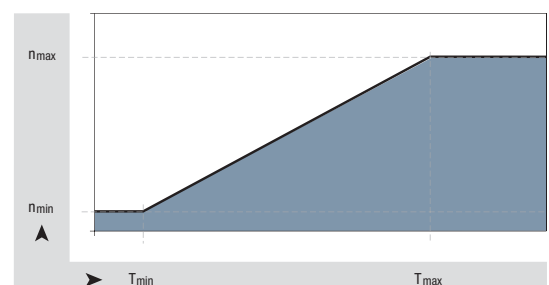


Standard speed-temperature curve for type T and type I



$$\begin{aligned} n_{\min} &\approx \frac{1}{2} n_{\max} \\ T_{\min} &\approx 30 \text{ }^{\circ}\text{C}; T_{\max} = 50 \text{ }^{\circ}\text{C} \end{aligned}$$

Optionally available with user-selectable temperature-speed curve control

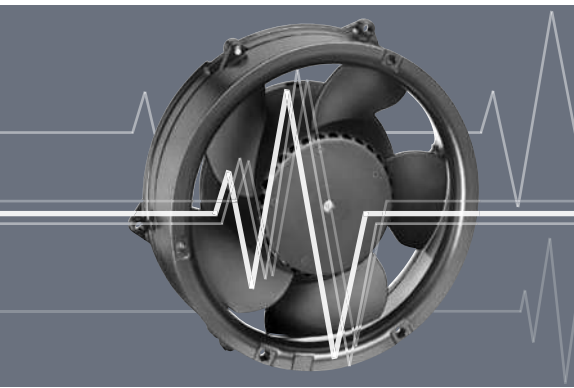


$$\begin{aligned} n_{\min} &\approx 800 \text{ } \frac{1}{\text{min}} \quad n_{\max} \text{ model-dependent} \\ T_{\min} &\approx 5 \text{ }^{\circ}\text{C} \quad T_{\max} \leq 85 \text{ }^{\circ}\text{C, model-dependent} \end{aligned}$$

Speed setting with control voltage or PWM

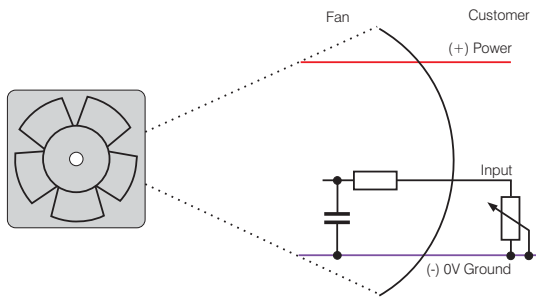


– The control variable is a PWM signal or analogue control voltage.

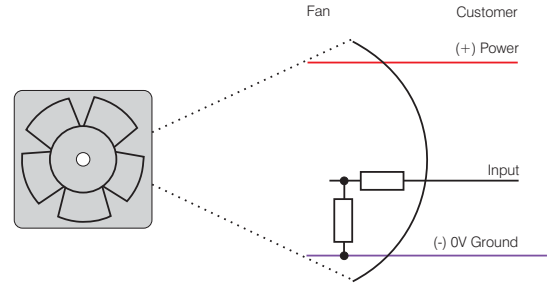


Speed setting via control voltage Type A

– Standard control range 0 ... 5 V.

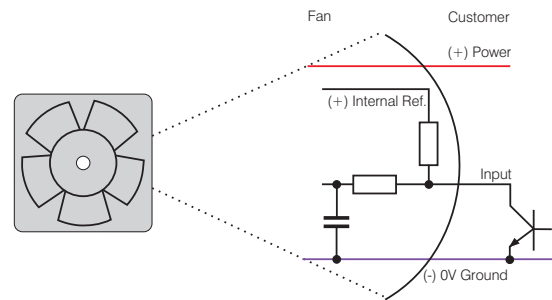


– Optional control range 0 ... 10 V.

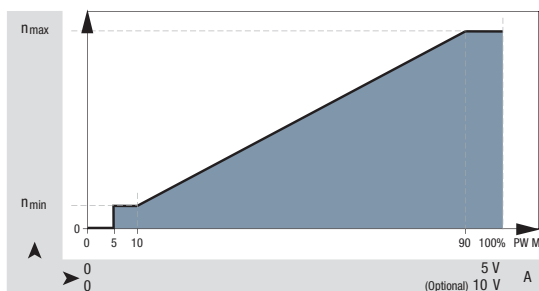


Speed setting via PWM Type P

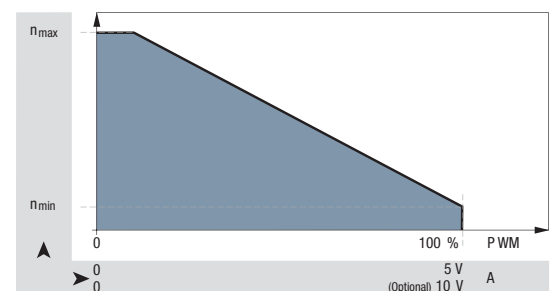
- Standard PWM signal in 2 versions
 - a) PWM frequency 2kHz (0-100%), Open collector input
 - b) 4-Wire interface to Intel specification for 12 VDC fan, PWM frequency 20 kHz, incl. speed signal /2



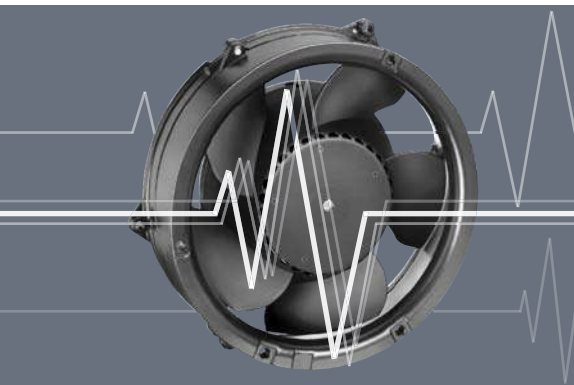
Standard curve P / A



Optional – selectable curve P / A

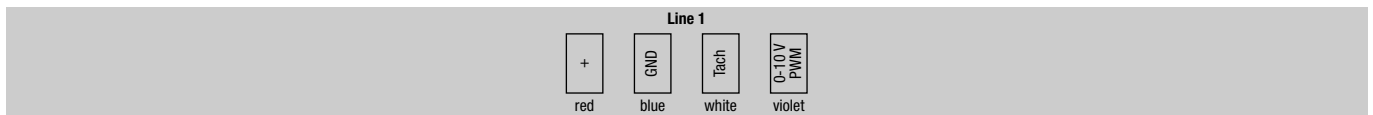
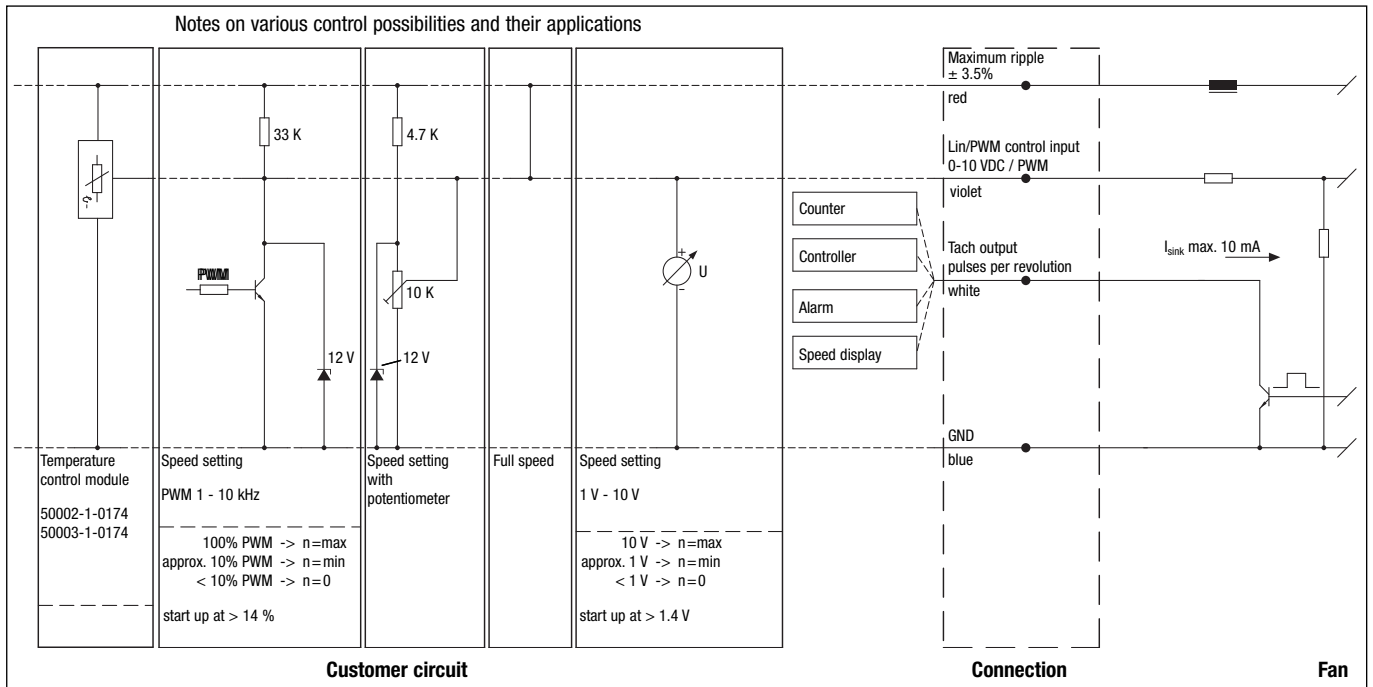


Speed setting via multi-option control input



- Customer can operate input either with PWM signal, analogue voltage, external temperature control module or resistor.
- The control signal-speed characteristics of the fan differ from the standard curve of the A and P inputs (see p. 121).
- To attain the maximum speed, the control wire must be switched against UB.
- The control input is usually combined with an open collector tachometer (Type /2, see page 110).

Speed setting via multi-option control input



Line	Connection	Colour	Assignment / function
1	+	red	Maximum ripple ± 3.5 %
	GND	blue	GND

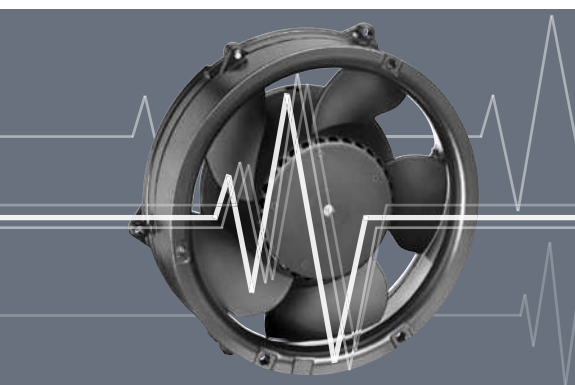
Line	Connection	Colour	Assignment / function
1	Tach	white	Tach output: 3 pulses / revolution
	0-10 V / PWM	violet	Control input (Impedance 100 kΩ)

Protected fans

against environmental influences



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



Moisture protection

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

IP 54 protection

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

Salt spray fog protection

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

Stainless steel bearings

Special bearings made of stainless steel provide additional protection.

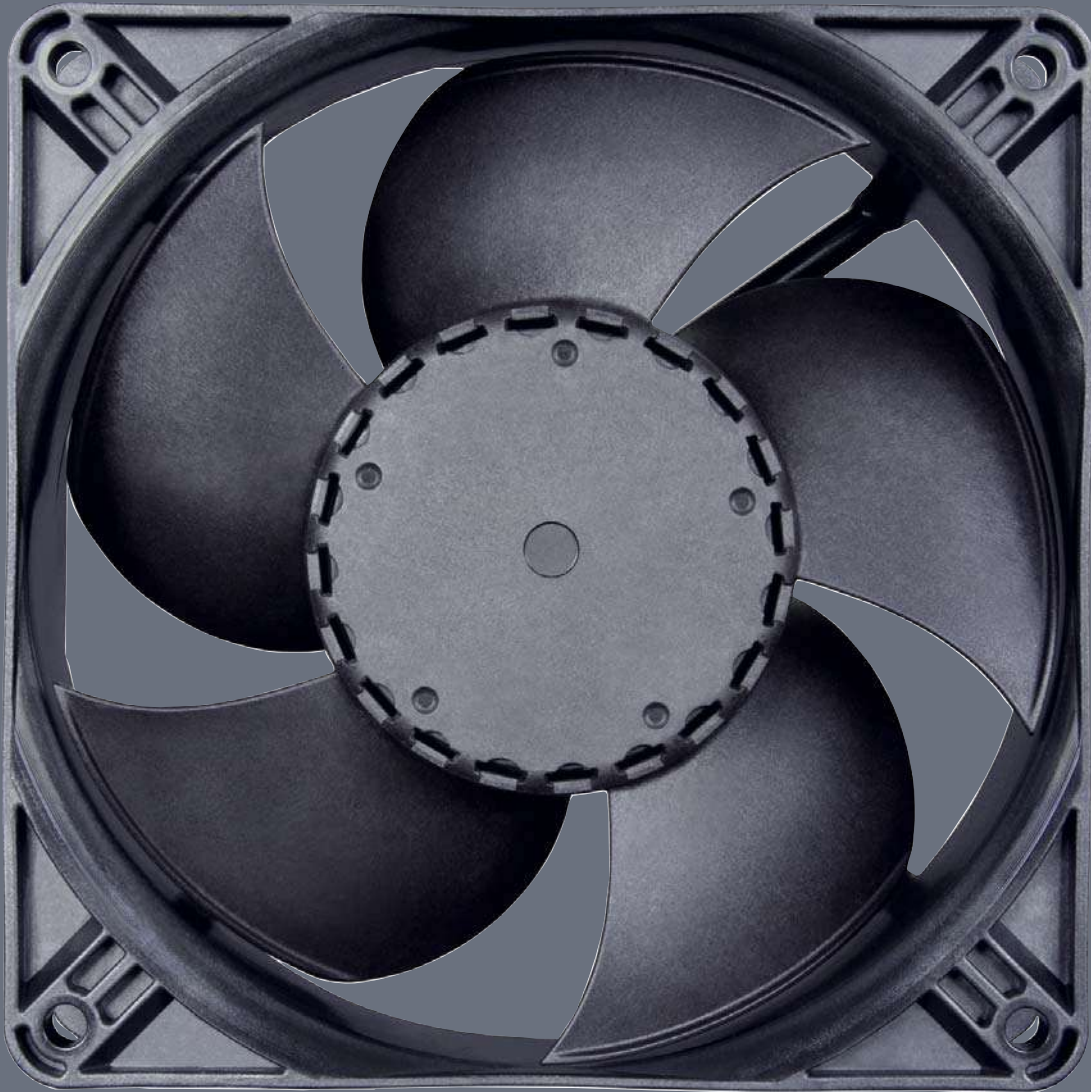
The solutions that are available and in use can differ depending on size. We would be glad to develop solutions tailored to the demands of your application.





ACmaxx / GreenTech EC-compact fans

ACmaxx / GreenTech EC-compact fans technical information	126
ACmaxx / GreenTech EC-compact fans overview	130
ACmaxx / GreenTech EC-compact fans axial fans	131



Technical information

Progress made by ebm-papst

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

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

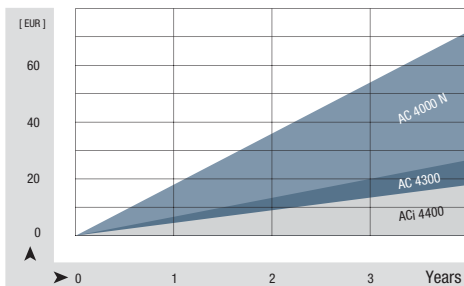
ebm-papst offers two generations of ACmaxx products that meet different needs.



What ACmaxx and GreenTech EC-compact fan have in common:

Energy efficiency

The drive concept is based on state-of-the-art GreenTech EC technology with outstanding motor efficiency. Compared to AC fans of the same size, ACmaxx energy consumption is up to 77% lower—for higher cooling capacity! The energy balance alone means that the products pay for themselves after only a few months. The savings over the entire service life, especially in systems with multiple fans, is considerable.

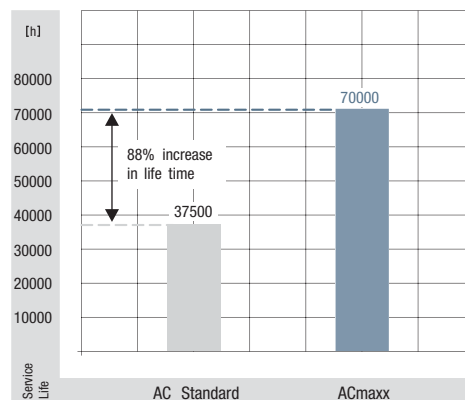


Independent of mains frequency and mains voltage

The ACmaxx and GreenTech EC-compact fans are prepared for direct connection to all AC voltages and frequencies. The speed, and thus important properties of the fan such as air flow and noise, are independent of the power frequency and do not change, even within the defined voltage range. Voltage fluctuations in the power system are automatically compensated for.

Long service life

The efficiency of ACmaxx and GreenTech EC-compact fan motors is up to 75% higher than that of conventional AC fan variants. This not only saves energy, it also means less intrinsic heating in the motor. The reduced heating has a direct, positive effect on the bearing system, which is why the fans have a service life that is up to 85% longer! This also lengthens the service and maintenance intervals significantly. The expense of replacement fans, and even more expensive downtimes, are kept to a manageable minimum.



Safety

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

Ambient influences

AC fans are extremely common and are used in a wide variety of applications. In control cabinet cooling, beer coolers, cooling cabinets, wood-burning stoves, medical devices – all have different requirements for resistance to ambient influences. ACmaxx and GreenTech EC-compact fans offer the same features for protection against moisture, splash water and rough ambient conditions.

Particular design features of the GreenTech EC-compact fans (ACi 4400):

GreenTech EC-compact fans is more compact!

As large as existing AC fans – and not a bit larger. This is the most outstanding feature of the new GreenTech EC-compact fans ACi 4400. Even in the hub area, the fan does not differ from typical 119x119x38 mm AC fans. Out with the AC, in with the GreenTech EC-compact fans ACi 4400 – it's that simple.

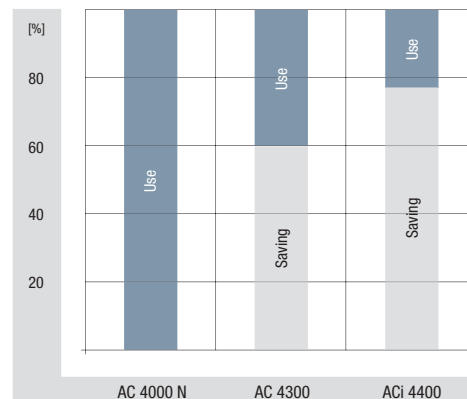


ACmaxx

GreenTech EC-compact fans

GreenTech EC-compact fans is more efficient!

ACmaxx saves energy, and the GreenTech EC-compact fans generation saves even more. While an AC fan at 50 Hz can barely reach an overall efficiency of 5-6%, the ACmaxx makes it to approx. 20-25%. With the new GreenTech EC-compact fans ACi 4400, a remarkable level of up to 30% is reached. This is the result of the optimisation of the entire package made up of drive, electronics, AC/DC conversion and aerodynamics. Thus the new GreenTech EC-compact fans series boasts energy savings of almost 75% compared to the corresponding AC fan, thus providing significantly higher savings than the 40% level of the old AC 4300 generation.



GreenTech EC-compact fan is quieter!

The GreenTech EC-compact fan ACi 4400 is quieter! Quieter than AC fans and quieter than the existing ACmaxx generation. The reason for this is the optimised aerodynamics and the drive, which is optimised for minimum structure-borne noise. Thus the fan is only half as loud at comparable air performance, and is up to 6 dB(A) quieter at some operating points.

Speed independent of voltage and frequency

For the GreenTech EC-compact fans ACi 4400, the speed, and thus the air flow and operating noise, are independent of the supply voltage and power frequency.

Versions are available for 115 VAC with a voltage range from 85 to 132 VAC and 230 VAC with a voltage range of 195 to 265 VAC. Voltage fluctuations and frequency differences in the power system are compensated for automatically.

Technical information

Particular design features of the ACmaxx:

Prepared for all AC voltages

These models have a very wide voltage range from 85 to 265 VAC – the global voltage range, so to speak. This enables the fan to be used around the world, opening up large savings potentials. In addition to reduced logistics effort and stock-keeping, worldwide availability is key. ACmaxx is compatible with every supply voltage—no switching needed. From 85 to 265 volts and mains frequencies of 50 and 60 hertz. Voltage fluctuations in the power system are automatically compensated for.

Higher performance

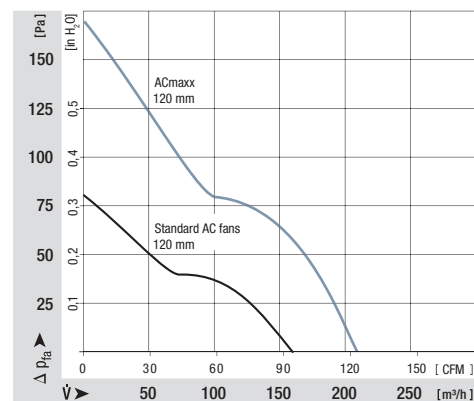
Unlike conventional AC technology, the state-of-the-art drive concept of this fan series is not linked to a fixed power frequency. This allows the motor speed to be increased over a wide range. Thus ACmaxx provides significantly higher air flow and significantly increased pressure.

Higher flexibility

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

You can find further information about these fan options in the "Specialised fans" chapter, starting on page 107.

Or you can simply contact our application engineers to discuss your ideal ACmaxx or GreenTech EC-compact fan.



Information on pictograms

On the pages of the catalogue and on the following overview pages, the pictograms illustrated below provide information about technically possible special versions in the fan line presented.

Please note that these special versions are not possible for all voltages and speeds, and not in all combinations.

The special versions are designed for specific customers and projects and are not usually available off the shelf.



Speed signal

The fan uses a separate wire to output information about its speed, and thus about the speed of the rotor. For technical details, please refer to page 110.



Go / No-go alarm

The fan uses a separate wire to output a static signal when it is stationary, thus providing information about whether or not the rotor is turning. For technical details, please refer to page 117.



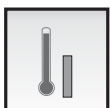
Alarm with limit speed

If the speed drops below a certain level defined in the fan's electronics, the fan will emit a static signal, thus providing information about whether or not the rotor is turning. For technical details, please refer to page 114.



External temperature sensor

An NTC is connected to the fan via a separate wire and the fan changes its speed depending on the temperature at the NTC. For technical details, please refer to page 120.



Internal temperature sensor

In this case, the NTC is integrated into the fan and the fan changes its speed depending on the temperature at the NTC. For technical details, please refer to page 120.



PWM control input

The speed of the fan can be changed via a pulse-width-modulated signal. This signal is applied to a specially provided wire. For technical details, please refer to page 121.



Analogue control input

The speed of the fan can be changed via a control voltage. This control voltage is applied to a specially provided wire. For technical details, please refer to page 121.



Multi-option control input

The fan has a control input that the user can trigger either using a PWM signal, an analogue signal or a resistor. For technical details, please refer to page 122.



Protection against moisture

Protection for the fan's electronics against moisture and condensation. For technical details, please refer to page 123.



IP 54

Protection of motor and PCB board against splashed water and humidity. For technical details, please refer to page 123.



Protection against salt spray fog

Protection of fan against the damaging effects of salt spray fog. For technical details, please refer to page 123.

Fans for AC operation

Overview of air performance

Dimension	Series	Air flow	Air flow (m³/h)																		Page
			10	20	30	40	50	60	70	80	90	100	200	300	400	500	600	700	800	900	
□ 80 x 32	AC 8300 H	80																			131
□ 92 x 38	AC 3200 J	144																			132
□ 119 x 25	AC 4400 FN	205																			133
□ 119 x 32	AC 4300 H	204																			134
NEW □ 119 x 38	ACi 4400	100..180																			135
172 Ø x 51	AC 6100 N	350																			136
172 Ø x 51	AC 6200 N	350																			137
NEW 98,5 Ø x 130	AC 100 NR	80..135																			138

Overview of technically feasible designs

Series	mm	VDE, UL, CSA	Sinter sleeve bearings / ball bearings	Sensor	Go / No-go alarm Alarm with limit speed	External temperature sensor Internal temperature sensor	PWM control input Analogue control input	Multi-option control input	Humidity protection IP >= IP54	Salt spray fog protection	Page
ACmaxx / GreenTech EC-compact fans Axial fans											
AC 8300 H	80 x 80 x 32	*	■	●	●	●	●	●	●	●	131
AC 3200 J	92 x 92 x 38	*	■	●	●	●	●	●	●	●	132
AC 4400 FN	119 x 119 x 25	*	■	●	●	●	●	●	●	●	133
AC 4300	119 x 119 x 32	*	■	●	●	●	●	●	●	●	134
NEW ACi 4400	119 x 119 x 38		■	-	-	-	-	-	●	●	135
AC 6100 N	172 Ø x 51	*	■	●	●	●	●	●	●	●	136
AC 6200 N	172 Ø x 51	*	■	●	●	●	●	●	●	●	137
NEW AC 100	100 Ø x 130		■	-	-	-	-	-	●	●	138

- not yet available
 - Sleeve bearings
 - available
 - Ball bearings
- * Partially granted, partially in registration stage.

Please note that these special versions are not possible for all voltages and speeds, and not in all combinations. The special versions are designed for specific customers and projects. As a rule they are not available off the shelf and are tied to minimum volumes.

Please consult your customer support representative about the feasibility of your special variant.

max. 80 m³/h

ACmaxx axial fans

Series AC 8300 H 80 x 80 x 32 mm



Highlights:

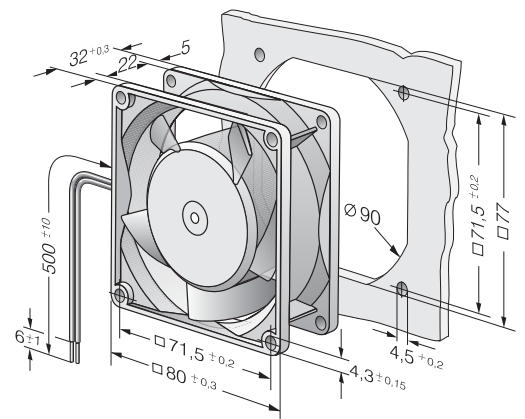
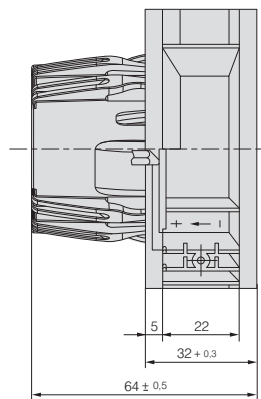
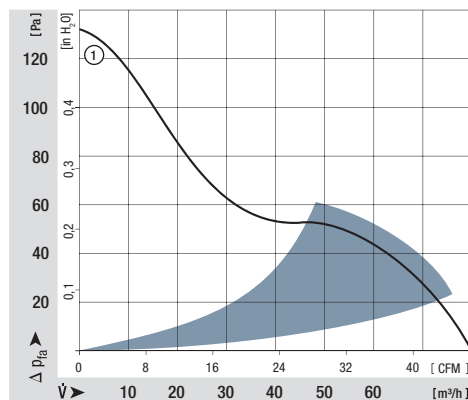
- Universally suitable for all AC voltages between 85 and 265 V.
- Fan speed not dependent on line frequency.
- Significantly reduced power consumption compared to conventional AC fans.
- Open loop speed control, sensor and alarm signal possible on request.

General attributes:

- Material: fibreglass-reinforced plastic. PA impeller, PBTP housing.
- Fully integrated electronic commutation.
- Protected against locking.
- Connection via single strands AWG 22, TR 64. Bared and tin-plated.
- Air exhaust over struts. Direction of rotation clockwise, seen on rotor.
- Mass: 325 g.

Nominal data	Air flow		Nominal voltage	Frequency	Voltage range	Sound pressure level	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀ at 40 °C		Curve
	m ³ /h	CFM										Hours	Hours	
AC 8300 H	80	47,1	115 / 230	50 / 60	85 ... 265	48	6,2	■	7,5	5 000	-20...+75	55 000 / 25 000	1	

Speed variants available on request.



max. 144 m³/h

ACmaxx axial fans

Series AC 3200 J 92 x 92 x 38 mm



Highlights

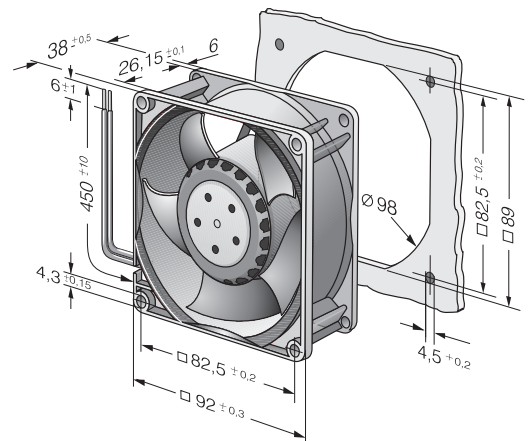
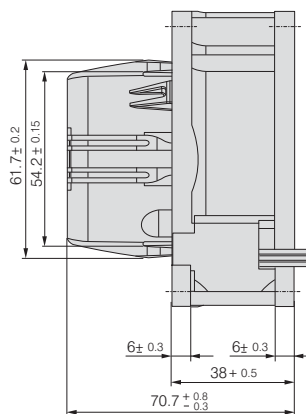
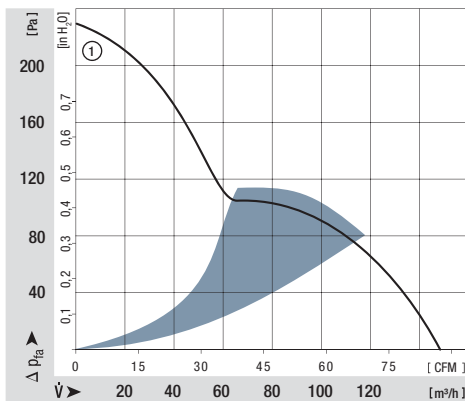
- Universally suitable for all AC voltages between 85 and 265 V.
- Fan speed independent of power frequency.
- Significantly reduced power consumption compared to conventional AC fans.
- Open loop speed control, sensor and alarm signal possible on request.
- Rigid compression curve for high air flow at high back pressure.
- Innovative impeller with winglets for low noise levels.

General attributes:

- Material: fibreglass-reinforced plastic. PA impeller, PBTP housing.
- Fully integrated electronic commutation. Protected against locking.
- Connection via single strands AWG 22, TR 64. Bared and tin-plated.
- Air exhaust over struts. Direction of rotation clockwise, seen on rotor.
- Mass: 325 g.

Nominal data	Air flow		Nominal voltage	Frequency	Voltage range	Sound pressure level	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀		Curve
	m ³ /h	CFM										Hours	Hours	
AC 3200 JH	144	84,8	115 / 230	50 / 60	85 ... 265	55	6,4	■	11	6 800	-20...+70	70 000 / 35 000	1	

Speed variants available on request.



max. 205 m³/h

ACmaxx axial fans

Series AC 4400 FN 119 x 119 x 25 mm



Highlights:

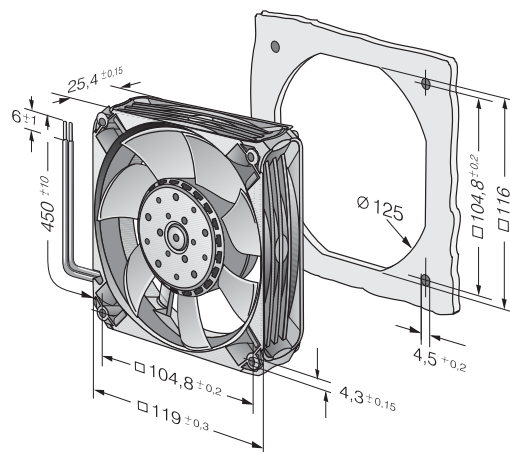
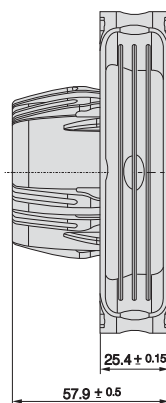
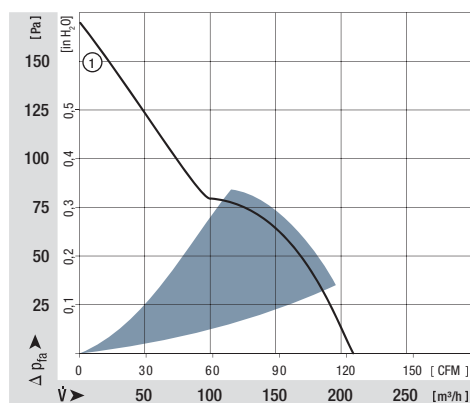
- Universally suitable for all AC voltages between 85 and 265 V.
- Fan speed independent of power frequency.
- Significantly reduced power consumption compared to conventional AC fans.
- Open loop speed control, sensor and alarm signal possible on request.
- Rigid compression curve for high air flow at high back pressure.
- Innovative impeller with winglets for low noise levels.

General attributes:

- Material: fibreglass-reinforced plastic. PA impeller, PBTP housing.
- Fully integrated electronic commutation. Protected against locking.
- Connection via single strands AWG 22, TR 64. Bared and tin-plated.
- Air exhaust over struts. Direction of rotation counter-clockwise, seen on rotor.
- Mass: 370 g..

Nominal data	Air flow		Nominal voltage	Frequency	Voltage range	Sound pressure level	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀		Curve
	m ³ /h	CFM										Hours	Hours	
AC 4400 FNN	205	120,7	115 / 230	50 / 60	85 ... 265	53	6,2	■	12	4 850	-20...+70	60 000 / 30 000	1	

Speed variants available on request.



max. 204 m³/h

ACmaxx axial fans

Series AC 4300 119 x 119 x 32 mm



Highlights:

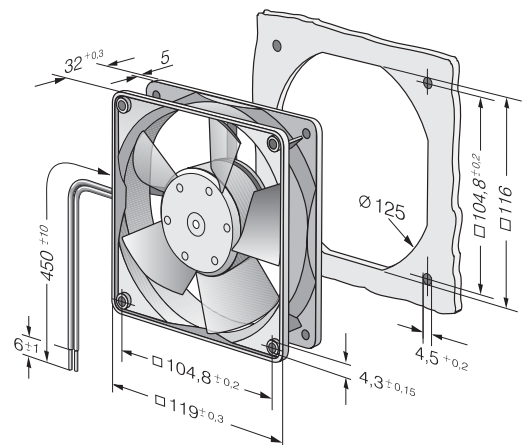
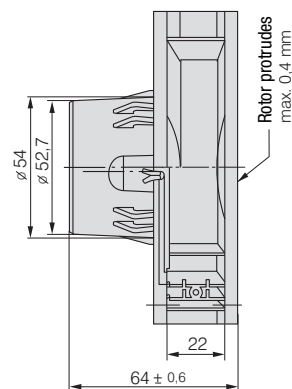
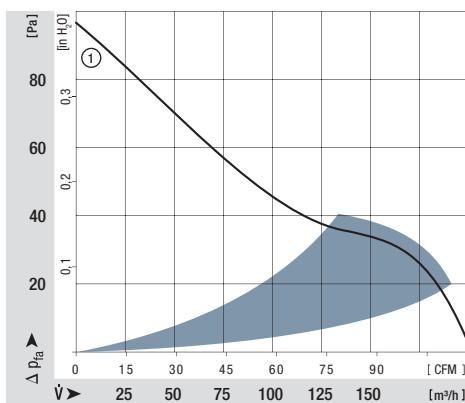
- Universally suitable for all AC voltages between 85 and 265 V.
- Fan speed independent of power frequency.
- Significantly reduced power consumption compared to conventional AC fans.
- Open loop speed control, sensor and alarm signal possible on request.

General attributes:

- Material: fibreglass-reinforced plastic. PA impeller, PBTP housing.
- Fully integrated electronic commutation.
- Protected against locking.
- Connection via single strands AWG 22, TR 64. Bared and tin-plated.
- Air exhaust over struts. Direction of rotation clockwise, seen on rotor.
- Mass: 325 g.

Nominal data	Air flow		Nominal voltage	Frequency	Voltage range	Sound pressure level	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀		Curve
	m ³ /h	CFM										Hours	Hours	
Type	m ³ /h	CFM	V	Hz	VAC	dB(A)	Bel(A)	□/■	Watts	RPM	°C	Hours	Hours	
AC 4300 H	204	120,1	115 / 230	50 / 60	85 ... 265	51	6,4	■	11	3 400	-20...+70	45 000 / 22 500		1

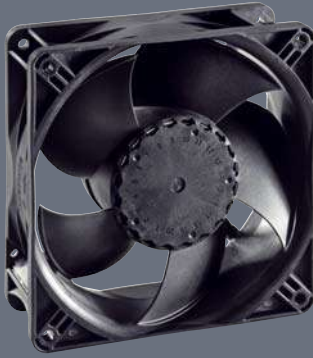
Speed variants available on request.



max. 180 m³/h

GreenTech EC-compact fans axial fans

Series ACi 4400 119 x 119 x 38 mm



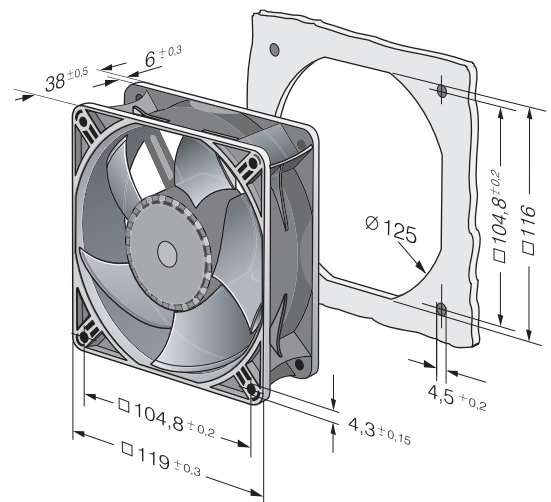
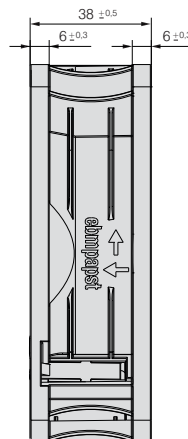
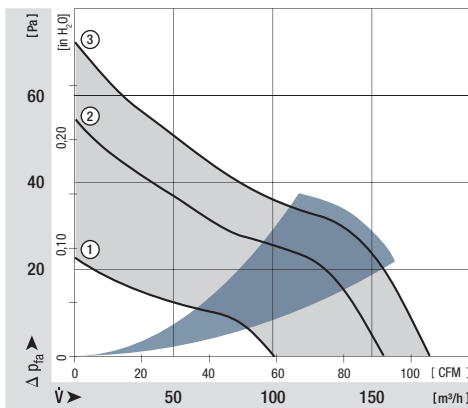
Highlights:

- Energy efficient AC fan with EC technology.
- Conversion and drive electronics fully integrated.
- Significant lower power consumption than **existing** AC fans.
- Significantly lower noise than existing AC fans.
- Significantly higher service life than existing AC fans.
- Fan speed not dependent on line frequency.

General characteristics:

- Material: fibreglass-reinforced plastic. Impeller PA, housing PBT.
- Electronic locked rotor protection.
- Electrical connection via 2 flat plugs 2,8 x 0,5 mm, flying leads optional.
- Air exhaust over struts, direction of rotation clockwise, seen on rotor.
- Mass: 250 g.

Nominal data		Air flow	Air flow	Nominal voltage	Voltage range	Sound pressure level	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀ (40 °C) ebm-papst Standard	Service life L ₁₀ (T _{max}) ebm-papst Standard	Life expectancy L ₁₀ Δ (40 °C)	Curve
Type		m ³ /h	CFM	VAC	VAC	dB(A)	Bel(A)	□/■	Watts	RPM	°C	Hours	Hours	Hours	
NEW ACi 4420 ML		100	58,8	230	195...265	25	4,1	■	1,4	1 850	-20...+75	80 000 / 30 000	160 000	160 000	1
NEW ACi 4420 H		160	94,1	230	195...265	39	5,1	■	3,3	3 000	-20...+75	70 000 / 30 000	140 000	140 000	2
NEW ACi 4420 HH		180	105,9	230	195...265	42	5,3	■	4,4	3 350	-20...+75	62 500 / 30 000	125 000	125 000	3
NEW ACi 4410 HH		180	105,9	115	85...132	42	5,3	■	4,4	3 350	-20...+75	62 500 / 30 000	125 000	125 000	3



max. 350 m³/h

ACmaxx axial fans

Series AC 6100 N 172 ø x 51 mm



Highlights:

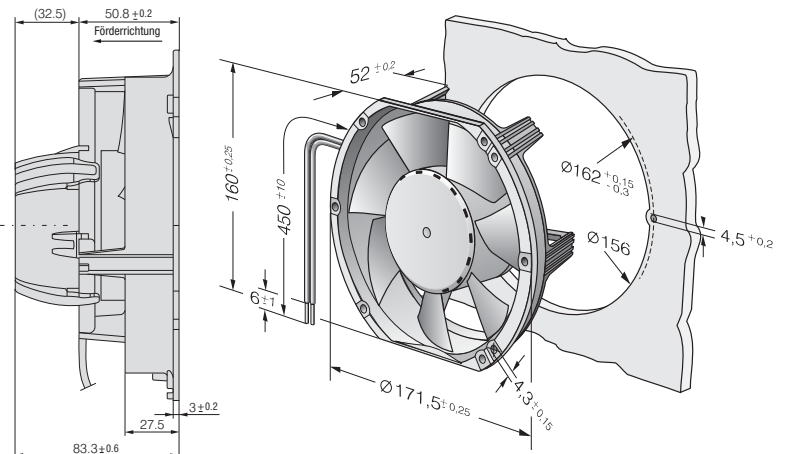
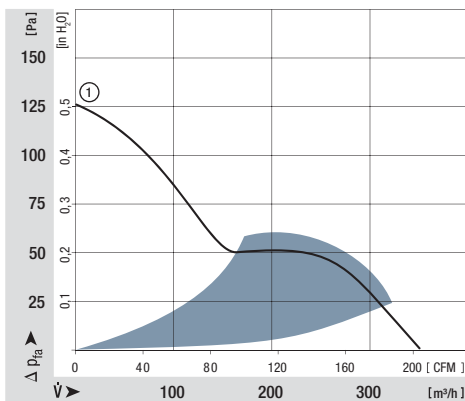
- Universally suitable for all AC voltages between 85 and 265 V.
- Fan speed independent of power frequency.
- Significantly reduced power consumption compared to conventional AC fans.
- Open loop speed control, sensor and alarm signal possible on request.

General attributes:

- Material: fibreglass-reinforced PA housing and impeller.
- Fully integrated electronic commutation.
- Protected against locking.
- Connection via single strands AWG 22, TR 64. Bared and tin-plated.
- Air exhaust over struts. Direction of rotation clockwise, seen on rotor.
- Mass: 760 g.

Nominal data	Air flow		Nominal voltage	Frequency	Voltage range	Sound pressure level	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀ at 40 °C	at T _{max}	Curve
	m ³ /h	CFM												
AC 6100 NM	350	206,0	115 / 230	50 / 60	85 ... 265	52	6,1	■	14	2 850	-20...+70	80 000 / 37 500		1

Speed variants available on request.



max. 350 m³/h

ACmaxx axial fans

Series AC 6200 N 172 ø x 51 mm



Highlights:

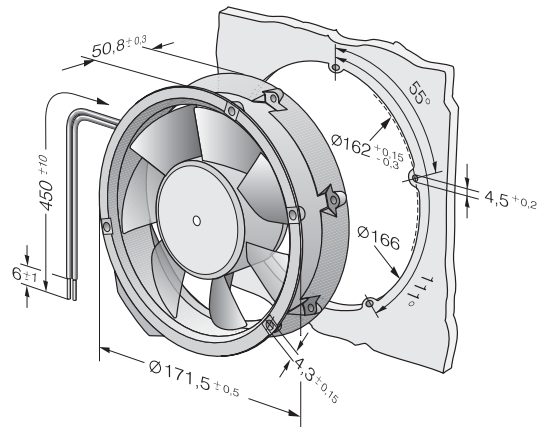
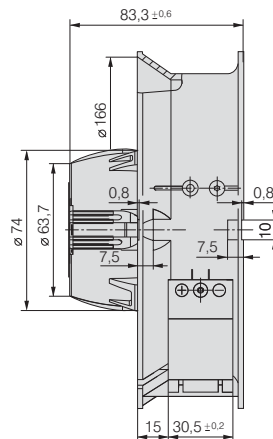
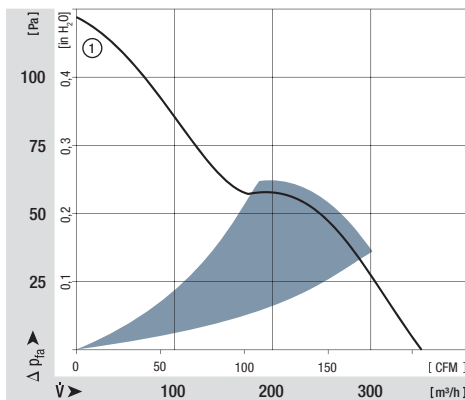
- Universally suitable for all AC voltages between 85 and 265 V, 50-60 Hz.
- Fan speed independent of power frequency.
- Significantly reduced power consumption compared to conventional AC fans.
- Open loop speed control, sensor and alarm signal possible on request.

General attributes:

- Material: aluminium housing, fibreglass-reinforced PA impeller. Housing with grounding lug for screw M4 x 8 (Torx).
- Fully integrated electronic commutation.
- Protected against locking.
- Connection via single strands AWG 22, TR 64. Bared and tin-plated.
- Air exhaust over struts. Direction of rotation counter-clockwise, seen on rotor.
- Mass: 900 g.

Nominal data	Air flow		Nominal voltage	Frequency	Voltage range	Sound pressure level	Sound power level	Sinter sleeve bearings		Power input	Nominal speed	Temperature range	Service life L ₁₀		Curve
	m ³ /h	CFM						□	■				Watts	RPM	
AC 6200 NM	350	206,0	115 / 230	50 / 60	85 ... 265	50	5,7	■	■	14	2 850	-20...+70	80 000 / 40 000	1	

Speed variants available on request.



max. 135 m³/h

ACmaxx in-line duct fan

Series AC 100 NR Ø 98,5 x 130 mm



Highlights:

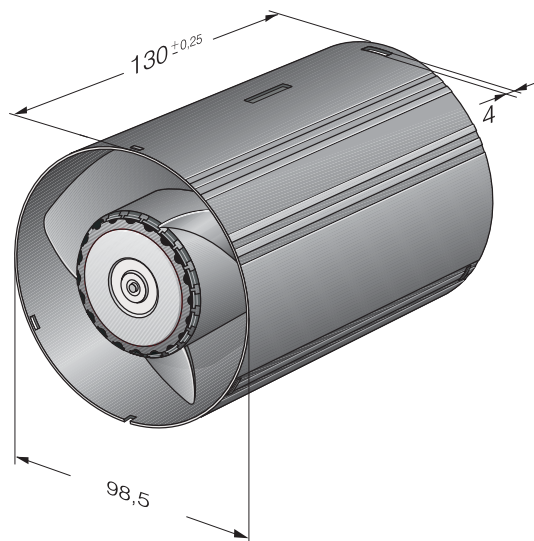
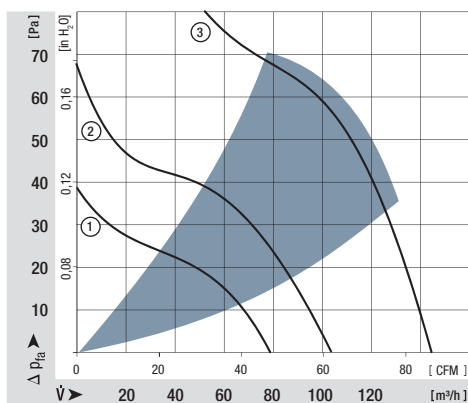
- Highest energy efficiency thanks to EC technology.
- Protection class IP44 (IP45 possible depending on mounting position).
- Speed-boost function via mains voltage switch.
- Vibration-isolated motor.
- Global voltage - one product applicable for all line voltages and frequencies between 85-265 VAC and 50/60 Hz. Fan speed independent from power frequency.

General features:

- Material: fibreglass-reinforced plastic, housing PP, impeller PA.
- Electrical connection via 3-pole terminal block, max. 1.5 mm².
- Protection class 2.
- Approvals: VDE 60335-3-80. UL, CE, CSA on request.
- Mass: 400 g.

Nominal data		Air flow	Air flow	Nominal voltage	Frequency	Voltage range	Sound pressure level	Sound power level	Sintec sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀ at 40 °C	at T _{max}	Curve
Type		m ³ /h	CFM	V	Hz	VAC	dB(A)	Bel(A)	□/■	Watts	RPM	°C	Hours	Hours	
NEW <small>nominal boost</small> AC 100 NR		80	47,1	115/230	50-60	85...265	35	4,7	■	2,5	2 750	-10...+55	70 000 / 40 000		1
		105	61,8				42	5,3		4,5	3 500				2

Optional: Max. speed at 135 m³/h (Curve 3).

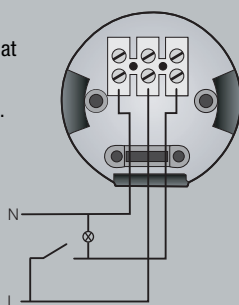


Highest energy efficiency: 0.03 - 0.045 W/m³/h free air (Specific fan power).
Boost speed setting: 2 speed settings possible via boost function.
Vibration isolation: Reduced transmission of vibrations from motor to housing.
Intelligence: Speed settings and control outputs optional.

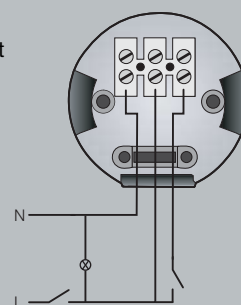
Connection



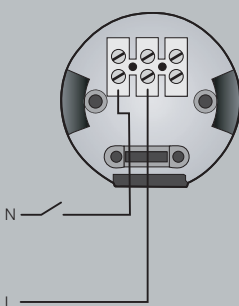
Example 1:
 Continuous operation at nominal speed boost speed via light switch.



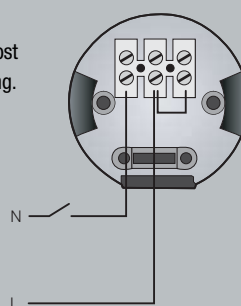
Example 2:
 Nominal speed via light switch, separate boost switch.



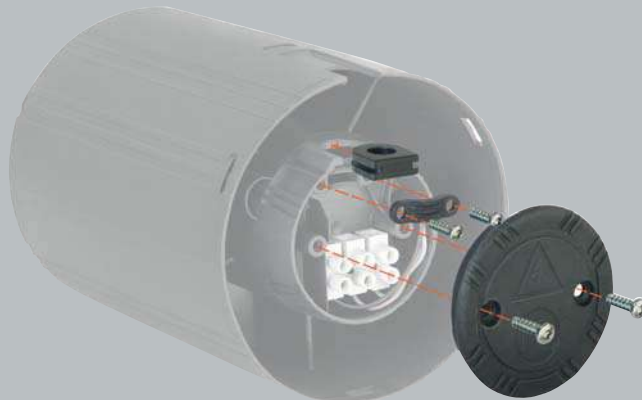
Example 3:
 Simple connection, nominal speed without switching.

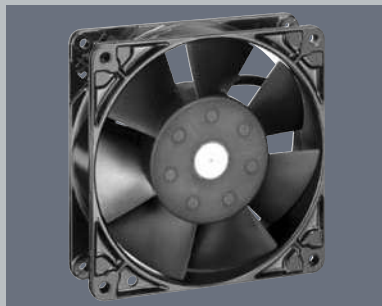
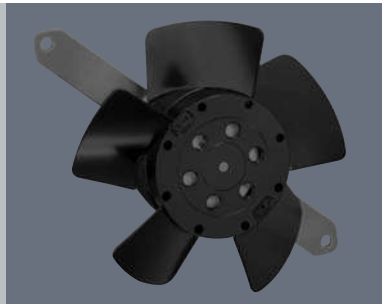


Example 4:
 Simple connection, boost speed without switching.



Scope of delivery





AC axial fans

AC axial fan overview	143
AC axial fans	144



Technical information

Product line

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

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

Variety of sizes

AC fans are available in a variety of sizes with either air exhaust or air intake over struts. Silent running models with sleeve bearings or for extreme ambient conditions; fans with ball bearings are available with plug connection or external leads.

Shaded-pole or capacitor motors

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

Flat built AC fans

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

Bearings

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

Protection class

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

AC voltage

The line of AC fans for Euro voltage according to IEC 60038 (230 V + 6 %, -10 %) is basically also available for 115 V.

Frequencies

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

Capacitor

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

Overloading

Almost all AC fans are protected against overloading (e.g. due to locked 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".

Axial fans for AC operation

Overview of air performance

Dimension	Series	Air flow	Air flow (m³/h)											Page										
			10	20	30	40	50	60	70	80	90	100	200		300	400	500	600	700	800	900	1000	2000	3000
□ 80 x 38	8000 A	29...57																						144
□ 80 x 38	8000 N	30...61																						145
∅ 76 x 37	8000 TA	23...45																						146
∅ 76 x 37	8000 TV	24...47																						147
□ 92 x 25	3900	31...70																						148
□ 92 x 38	3000	49...89																						149
□ 119 x 25	9900	84...135																						150
□ 119 x 38	4000 N	80...180																						151
□ 119 x 38	4000 Z	100...180																						152
∅ 113 x 37	4600 TA	138...147																						153
∅ 108 x 37	4600 TZ	125...140																						154
□ 127 x 38	5900	150...206																						155
□ 135 x 38	5600	235...270																						156
150 x 172 x 38	7000	330...390																						157
∅ 150 x 55	7800	325...380																						158
∅ 150 x 55	7400	390...445																						159
∅ 172 x 51	6000	375...500																						160
∅ 225 x 80	W**200	450...1030																						161
□ 280 x 80	W2E 250	1865																						162

Overview of technically feasible designs

Axial fans		Dimension	VDE, UL, CSA	Sleeve bearings/ Ball bearings	Speed sensor	Humidity protection IP >= IP54	Salt spray fog protection	Page
Series	mm							
8000 A	80 x 80 x 38	yes	□/■	-	• • • •			144
8000 N	80 x 80 x 38	yes	□/■	-	• • • •			145
8000 TA	76 ∅ x 37	yes	□/■	-	• • • •			146
8000 TV	76 ∅ x 37	yes	□/■	-	• • • •			147
3900	92 x 92 x 25	yes	□/■	-	• - - -			148
3000	92 x 92 x 38	yes	□/■	-	• • • •			149
9900	119 x 119 x 25	yes	□/■	-	• - - -			150
4000 N	119 x 119 x 38	yes	□/■	•	• • • •			151
4000 Z	119 x 119 x 38	yes	□/■	•	• • • •			152
4600 TA	113 ∅ x 37	yes	□/■	-	• • • •			153
4600 TZ	108 ∅ x 37	yes	□/■	-	• • • •			154
5900	127 x 127 x 38	yes	□/■	-	• - - -			155
5600	135 x 135 x 38	yes	■	-	• • • •			156
7000	150 x 172 x 38	yes	■	-	- - - -			157
7800	150 ∅ x 55	yes	■	•	- - - -			158
7400	150 ∅ x 55	yes	■	-	- - - -			159
6000	172 x 51	yes	■	-	- - - -			160

• available - not yet available □ Sleeve bearings ■ Ball bearings

Information on pictograms

On the pages of the catalogue and on the following overview pages, the pictograms illustrated below provide information about technically possible special versions in the fan line presented.

Please note that these special versions are not possible for all voltages and speeds, and not in all combinations.

The special versions are designed for specific customers and projects and are not usually available off the shelf.



Speed signal

The fan uses a separate wire to output information about its speed, and thus about the speed of the rotor. For technical details, please refer to page 110.



Protection against moisture

Protection for the fan's electronics against moisture and condensation. For technical details, please refer to page 123.



IP 54

Protection of motor and PCB board against splashed water and humidity. For technical details, please refer to page 123.



Protection against salt spray fog

Protection of fan against the damaging effects of salt spray fog. For technical details, please refer to page 123.

max. 57 m³/h

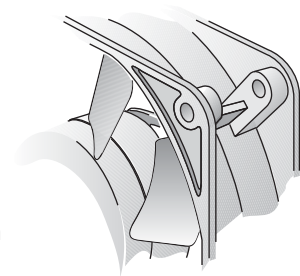
AC axial fans

Series 8000 A 80 x 80 x 38 mm

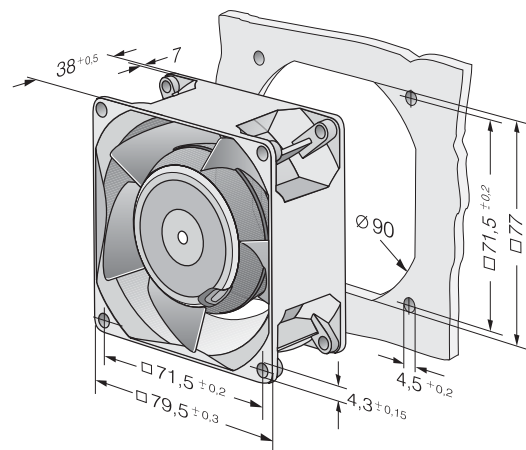
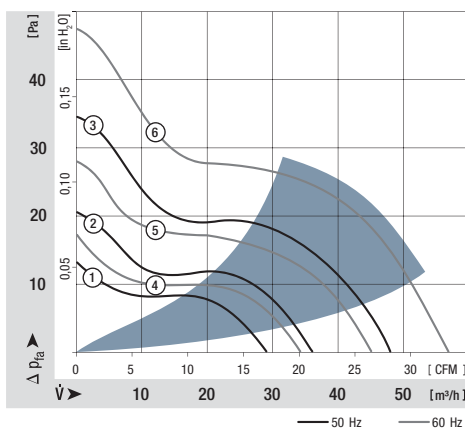


- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Metal fan housing and impeller.
- Air intake over struts. Direction of rotation clockwise, seen on rotor.
- Electrical connection via 2 flat plugs 2.8 x 0.5 mm.
- Fan housing with grounding lug and screw M4 x 8 (TORX).
- Mass: 490 g.
- Optionally available with electrical connection via leads.
- Optionally available with air exhaust over struts and clockwise direction of rotation.
- Please note our new ACmaxx series. With identical mounting dimensions and voltages, this series achieves higher energy efficiency.

Nominal data	Air flow		Nominal voltage	Frequency	Sound pressure level	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀		Curve
	m ³ /h	CFM									V	Hz	
8880 A	29	17,1	230	50	26	4,1	□	9,0	1 750	-10...+80	60 000 / 25 000		1
8850 A	36	21,2	230	50	31	4,6	□	12,5	2 150	-10...+70	52 500 / 25 000		2
8550 A	48	28,3	230	50	36	5,0	□	12,0	2 700	-10...+70	52 500 / 25 000		3
8556 A	48	28,3	230	50	37	5,1	■	12,0	2 800	-40...+90	52 500 / 15 000		3
8830 A	34	20,0	115	60	29	4,3	□	8,0	1 950	-10...+80	62 500 / 25 000		4
8800 A	45	26,5	115	60	34	4,8	□	11,0	2 500	-10...+70	55 000 / 27 500		5
8500 A	57	33,5	115	60	41	5,5	□	11,0	3 200	-10...+75	55 000 / 25 000		6
8506 A	57	33,5	115	60	42	5,7	■	11,0	3 300	-40...+95	55 000 / 15 000		6



Series 8000 A with reinforced flanges



max. 61 m³/h

AC axial fans

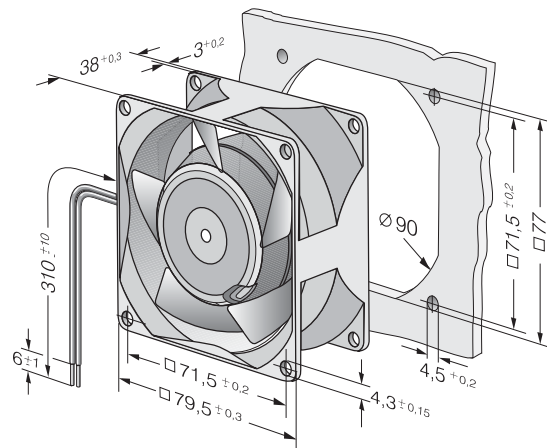
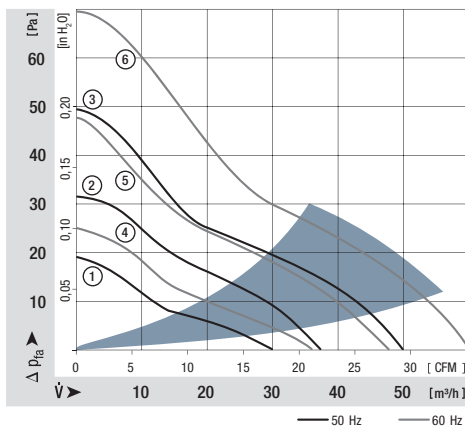
Series 8000 N 80 x 80 x 38 mm



- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Metal fan housing and impeller.
- Air exhaust over struts. Direction of rotation clockwise, seen on rotor.
- Electrical connection via 2 leads. Bared and tin-plated.
- Fan housing with grounding lug for screw M4 x 8 (TORX).
- Mass: 490 g.
- Please note our new ACmaxx series. With identical mounting dimensions and voltages, this series achieves higher energy efficiency.

Nominal data	Air flow	Air flow	Nominal voltage	Frequency	Sound pressure level	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀ at 40 °C	at T _{max}	Curve
Type	m ³ /h	CFM	V	Hz	dB(A)	Bel(A)	□/■	Watts	RPM	°C	Hours	Hours	
8880 N	30	17,7	230	50	18	3,3	□	9,0	1 750	-10...+80	60 000 / 25 000		1
8850 N	37	21,8	230	50	24	3,9	□	12,5	2 150	-10...+70	52 500 / 25 000		2
8550 N	50	29,4	230	50	30	4,4	□	12,0	2 700	-10...+70	52 500 / 25 000		3
8556 N	50	29,4	230	50	31	4,5	■	12,0	2 800	-40...+90	52 500 / 15 000		3
8830 N	36	21,2	115	60	21	3,7	□	8,0	1 950	-10...+80	62 500 / 25 000		4
8800 N	47	27,7	115	60	28	4,3	□	11,0	2 500	-10...+70	55 000 / 27 500		5
8500 N	61	35,9	115	60	34	4,8	□	11,0	3 200	-10...+75	55 000 / 25 000		6
8506 N	61	35,9	115	60	35	5,0	■	11,0	3 300	-40...+95	55 000 / 15 000		6

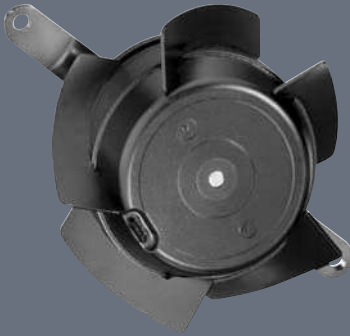
Fan type				Lead wires	
8830 N	8800 N	8550 N	8500 N	310 mm long	AWG 18, TR 64
8880 N				310 mm long	AWG 18, TR 64
8556 N	8506 N			310 mm long	AWG 22
8850 N				440 mm long	AWG 18, TR 64



max. 45 m³/h

AC axial fans

Series 8000 TA 76 Ø x 37 mm

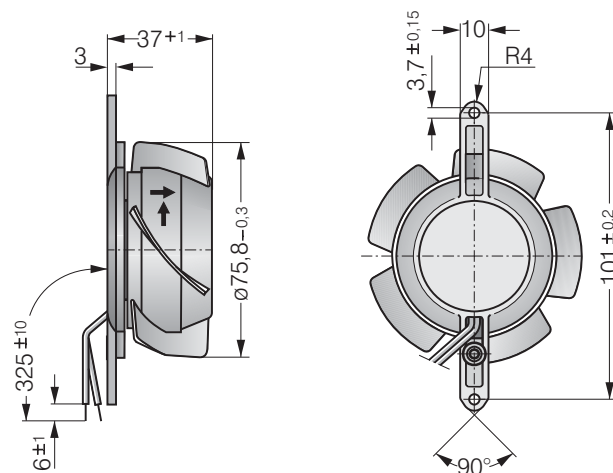


- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Impeller and mounting bracket of metal.
- Air intake over mounting bracket. Direction of rotation clockwise, seen on rotor.
- Electrical connection via 2 leads. Bared and tin-plated.
- Mass: 370 g.
- Please note our new ACmaxx series. With identical mounting dimensions and voltages, this series achieves higher energy efficiency.

Nominal data	Air flow	Air flow	Nominal voltage	Frequency	Sound pressure level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀		Curve
	m ³ /h	CFM								V	Hz	
8880 TA	23	13,5	230	50	15	□	9,0	1 650	-10...+80	60 000 / 25 000		-
8850 TA	30	17,7	230	50	19	□	12,0	2 100	-10...+70	52 500 / 25 000		-
8550 TA	38	22,4	230	50	25	□	12,0	2 650	-10...+70	52 500 / 25 000		-
8556 TA	38	22,4	230	50	26	■	12,0	2 750	-40...+90	52 500 / 15 000		-
8830 TA	26	15,3	115	60	18	□	8,0	1 850	-10...+80	62 500 / 25 000		-
8800 TA	34	20,0	115	60	23	□	11,0	2 450	-10...+70	55 000 / 27 500		-
8500 TA	45	26,5	115	60	30	□	11,0	3 150	-10...+75	55 000 / 25 000		-
8506 TA	45	26,5	115	60	31	■	11,0	3 250	-40...+95	55 000 / 15 000		-

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

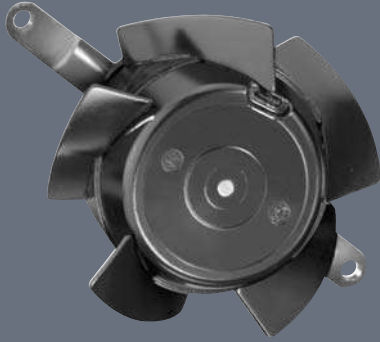
Fan type				Lead wires	
8880 TA	8850 TA	8830 TA	8800 TA	325 mm long	AWG 18, TR 64
8550 TA	8500 TA			325 mm long	AWG 18, TR 64
8556 TA	8506 TA			325 mm long	AWG 18



max. 47 m³/h

AC axial fans

Series 8000 TV 76 Ø x 37 mm

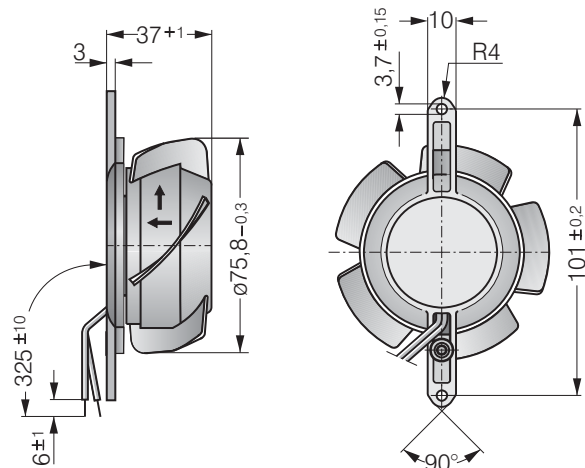


- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Impeller and mounting bracket of metal.
- Air exhaust over mounting bracket. Direction of rotation clockwise, seen on rotor.
- Electrical connection via 2 leads. Bared and tin-plated.
- Mass: 370 g.
- Please note our new ACmaxx series. With identical mounting dimensions and voltages, this series achieves higher energy efficiency.

Nominal data		Air flow	Air flow	Nominal voltage	Frequency	Sound pressure level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀ at 40 °C	at T _{max}	Curve
Type	m ³ /h	CFM	V	Hz	dB(A)	□/■	Watts	RPM	°C	Hours	Hours		
8880 TV	24	14,1	230	50	15	□	9,0	1 650	-10...+80	60 000 / 25 000	-	-	
8850 TV	31	18,2	230	50	20	□	12,0	2 100	-10...+70	52 500 / 25 000	-	-	
8550 TV	40	23,5	230	50	27	□	12,0	2 650	-10...+70	52 500 / 25 000	-	-	
8556 TV	40	23,5	230	50	28	■	12,0	2 750	-40...+90	52 500 / 15 000	-	-	
8830 TV	27	15,9	115	60	18	□	8,0	1 850	-10...+80	62 500 / 25 000	-	-	
8800 TV	36	21,2	115	60	24	□	11,0	2 450	-10...+70	55 000 / 27 500	-	-	
8500 TV	47	27,7	115	60	32	□	11,0	3 150	-10...+75	55 000 / 25 000	-	-	
8506 TV	47	27,7	115	60	33	■	11,0	3 250	-40...+95	55 000 / 15 000	-	-	

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

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



max. 70 m³/h

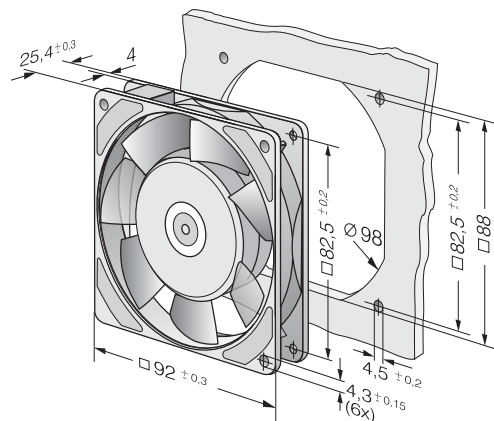
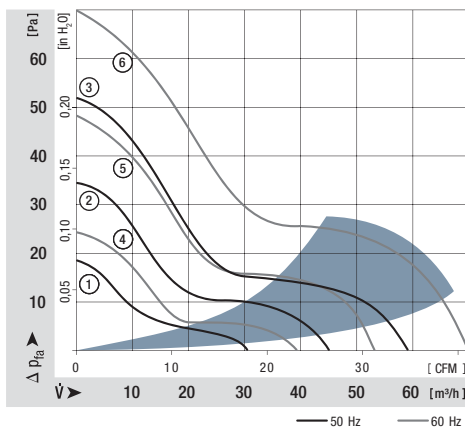
AC axial fans

Series 3900 92 x 92 x 25 mm



- AC fans with internal rotor shaded-pole motor. Impedance protected against overloading.
- Metal fan housing, impeller of mineral-reinforced plastic PA.
- Air exhaust over struts. Direction of rotation counter-clockwise, seen on rotor.
- Electrical connection via 2 flat plugs 2.8 x 0.5 mm.
- Fan housing with grounding lug for screw M4.
- Mass: 280 g.
- Please note our new ACmaxx series. With identical mounting dimensions and voltages, this series achieves higher energy efficiency.

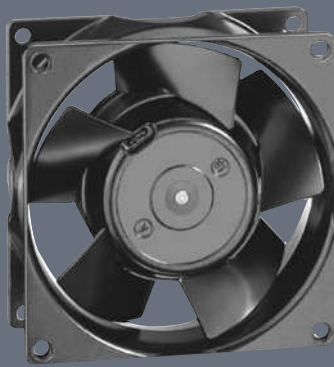
Nominal data	Air flow		Nominal voltage	Frequency	Sound pressure level	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀		Curve
	m ³ /h	CFM									V	Hz	
3950 L	31	18,2	230	50	24	3,8	□	6,0	1 550	-10...+80	70 000 / 27 500		1
3956 L	31	18,2	230	50	24	3,8	■	6,0	1 550	-40...+80	70 000 / 27 500		1
3950 M	45	26,5	230	50	29	4,2	□	6,0	2 150	-10...+80	70 000 / 27 500		2
3956 M	45	26,5	230	50	29	4,2	■	6,0	2 150	-40...+80	70 000 / 27 500		2
3950	59	34,7	230	50	35	4,7	□	11,0	2 650	-20...+80	55 000 / 20 000		3
3956	59	34,7	230	50	35	4,7	■	11,0	2 650	-40...+80	55 000 / 20 000		3
3900 L	39	23,0	115	60	27	4,0	□	5,0	1 850	-10...+80	70 000 / 27 500		4
3906 L	39	23,0	115	60	27	4,0	■	5,0	1 850	-40...+80	70 000 / 27 500		4
3900 M	53	31,2	115	60	34	4,6	□	5,0	2 600	-10...+80	70 000 / 27 500		5
3906 M	53	31,2	115	60	34	4,6	■	5,0	2 600	-40...+80	70 000 / 27 500		5
3900	70	41,2	115	60	40	5,1	□	9,0	3 150	-20...+80	60 000 / 22 500		6
3906	70	41,2	115	60	40	5,1	■	9,0	3 150	-40...+80	60 000 / 22 500		6



max. 89 m³/h

AC axial fans

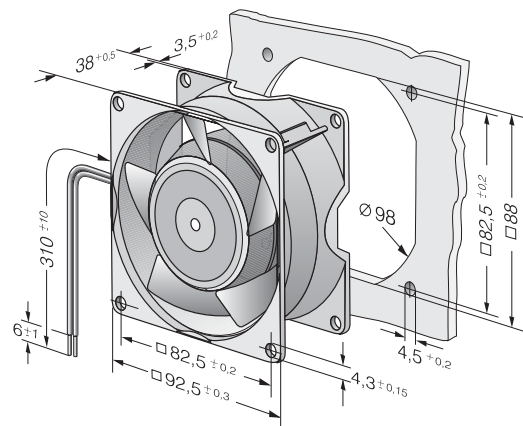
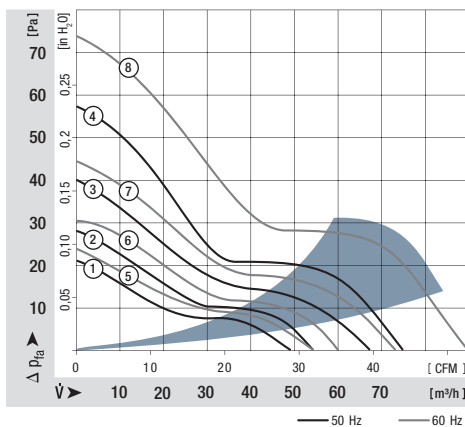
Series 3000 92 x 92 x 38 mm



- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Metal fan housing and impeller.
- Air exhaust over struts. Rotational direction CW looking at rotor.
- Electrical connection via 2 leads. Bared and tin-plated.
- Fan housing with grounding lug and screw M4 x 8 (TORX).
- Mass: 420 g.
- Please note our new ACmaxx series. With identical mounting dimensions and voltages, this series achieves higher energy efficiency.

Nominal data	Air flow		Nominal voltage	Frequency	Sound pressure level	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀ at 40 °C		Curve
	m ³ /h	CFM									V	Hz	
3850	49	28,8	230	50	24	3,7	□	9,0	1 750	-10...+75	60 000 / 27 500		1
3856	54	31,8	230	50	26	3,9	■	9,0	1 950	-40...+90	60 000 / 20 000		2
3550	67	39,4	230	50	32	4,4	□	8,5	2 300	-10...+80	60 000 / 25 000		3
3556	67	39,4	230	50	33	4,5	■	8,5	2 400	-40...+90	60 000 / 20 000		3
3650	75	44,1	230	50	36	4,8	□	12,0	2 650	-10...+55	52 500 / 37 500		4
3656	75	44,1	230	50	37	4,9	■	12,0	2 700	-40...+75	52 500 / 22 500		4
3800	54	31,8	115	60	26	3,9	□	8,0	1 900	-10...+80	62 500 / 25 000		5
3806	60	35,3	115	60	29	4,2	■	8,0	2 150	-40...+95	62 500 / 17 500		6
3500	73	43,0	115	60	35	4,6	□	8,0	2 500	-10...+80	62 500 / 25 000		7
3506	73	43,0	115	60	36	4,7	■	8,0	2 600	-40...+95	62 500 / 17 500		7
3600	89	52,4	115	60	41	5,1	□	11,0	3 100	-10...+65	55 000 / 30 000		8
3606	89	52,4	115	60	42	5,2	■	11,0	3 200	-40...+75	55 000 / 25 000		8

Fan type	Lead wires	
With sleeve bearings	310 mm long	AWG 18, TR 64
With ball bearings	310 mm long	AWG 18



max. 135 m³/h

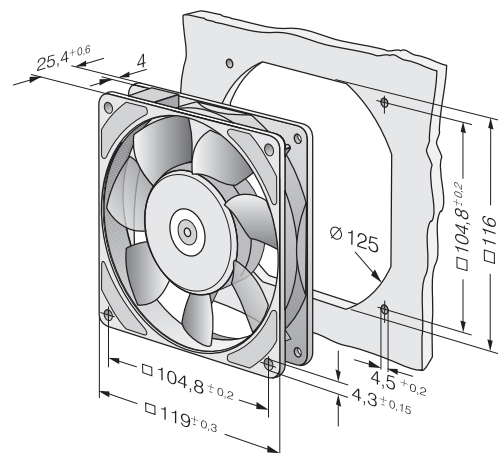
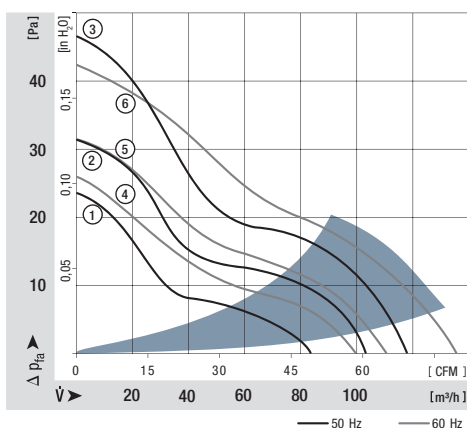
AC axial fans

Series 9900 119 x 119 x 25 mm



- AC fans with external rotor shaded-pole motor. Protected against overloading by thermal cut-out.
- Metal fan housing and impeller.
- Air exhaust over struts. Direction of rotation counter-clockwise, seen on rotor.
- Electrical connection via 2 flat plugs 2.8 x 0.5 mm.
- Fan housing with grounding lug and screw M4 x 8 (TORX).
- Mass: 320 g.
- Please note our new ACmaxx series. With identical mounting dimensions and voltages, this series achieves higher energy efficiency.

Nominal data		Air flow	Air flow	Nominal voltage	Frequency	Sound pressure level	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀ at 40 °C	at T _{max}	Curve
Type		m ³ /h	CFM	V	Hz	dB(A)	Bel(A)	□/■	Watts	RPM	°C	Hours	Hours	
9956 L		84	49,4	230	50	29	4,4	■	9,5	1850	-40...+80	57 500 / 22 500		1
9956 M		104	61,2	230	50	35	4,7	■	10,0	2250	-40...+80	57 500 / 22 500		2
9950		117	68,9	230	50	37	5,0	□	14,0	2450	-20...+70	47 500 / 22 500		3
9956		117	68,9	230	50	37	5,0	■	14,0	2450	-40...+70	47 500 / 22 500		3
9906 L		100	58,9	115	60	34	4,6	■	8,0	2100	-40...+80	62 500 / 25 000		4
9906 M		111	65,3	115	60	37	5,0	■	8,0	2450	-40...+80	62 500 / 25 000		5
9900		135	79,5	115	60	42	5,4	□	12,0	2850	-20...+70	52 500 / 25 000		6
9906		135	79,5	115	60	42	5,4	■	12,0	2850	-40...+70	52 500 / 25 000		6



max. 180 m³/h

AC axial fans

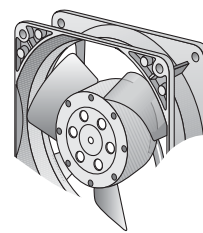
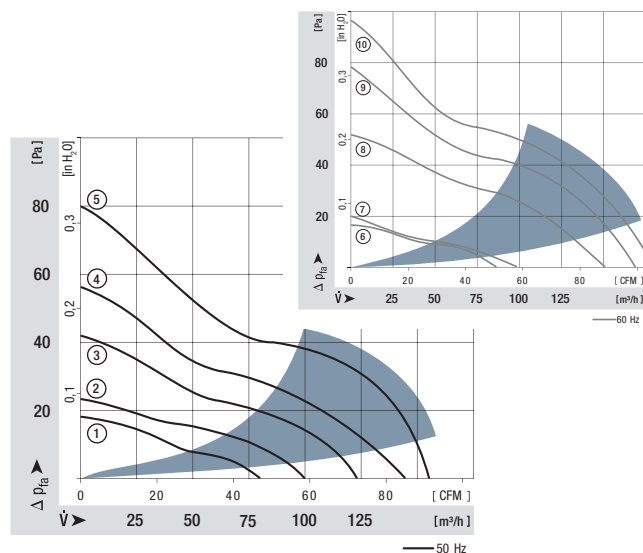
Series 4000 N 119 x 119 x 38 mm



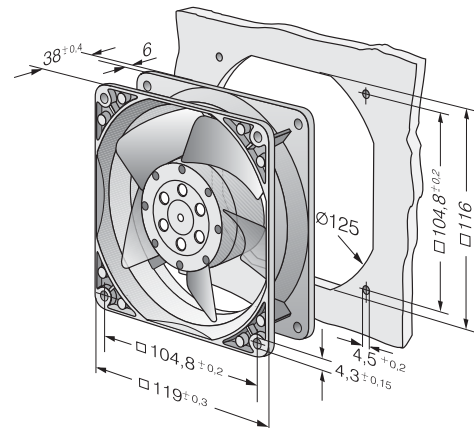
- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Metal fan housing and impeller
- Air intake over struts. Direction of rotation clockwise, seen on rotor.
- Types 4890 N and 4840 N air exhaust over struts.
- Electrical connection via 2 flat plugs 3.0 x 0.5 mm.
- Impeller with 3 or 5 blades, see note for fan type.
- Optionally available: Models with reinforced flanges and single leads.
- Fan housing with grounding lug for screw M 4 and UNC.
- Mass: 550 g.
- Please note our new ACmaxx series. With identical mounting dimensions and voltages, this series achieves higher energy efficiency.

Nominal data	Air flow	Air flow	Nominal voltage	Frequency	Sound pressure level	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀ at 40 °C	at T _{max}	Curve
Type	m ³ /h	CFM	V	Hz	dB(A)	Bel(A)	□ / ■	Watts	RPM	°C	Hours	Hours	
4890 N	80	47,1	230	50	25	4,0	□	11,0	1 550	-10...+70	55 000 / 27 500		1
4850 N*	100	58,9	230	50	32	4,4	□	10,0	1 800	-10...+70	57 500 / 27 500		2
4580 N*	123	72,4	230	50	41	5,2	□	18,0	2 350	-10...+55	40 000 / 27 500		3
4550 N*	145	85,3	230	50	44	5,4	□	16,5	2 550	-10...+55	42 500 / 30 000		4
4650 N	160	94,2	230	50	46	5,4	□	19,0	2 650	-10...+55	37 500 / 27 500		5
4656 N	160	94,2	230	50	47	5,5	■	19,0	2 650	-40...+85	37 500 / 15 000		5
4840 N	85	50,0	115	60	26	4,1	□	10,0	1 650	-10...+75	57 500 / 25 000		6
4800 N*	97	57,1	115	60	32	4,3	□	9,0	1 750	-10...+75	60 000 / 27 500		7
4530 N*	151	88,9	115	60	45	5,4	□	16,0	2 700	-10...+65	42 500 / 25 000		8
4500 N*	169	99,5	115	60	48	5,7	□	15,0	3 000	-10...+65	47 500 / 25 000		9
4600 N	180	105,9	115	60	50	5,7	□	18,0	3 100	-10...+60	40 000 / 25 000		10
4606 N	180	105,9	115	60	51	5,8	■	18,0	3 100	-40...+90	40 000 / 15 000		10

230 V and 115 V versions are rated for both 50 Hz and 60 Hz operation.
For 60 Hz data, please refer to the corresponding 115 V 60 Hz model,
for 50 Hz data please refer to the corresponding 230 V 50 Hz model.



* Fan with 3 blades.



max. 180 m³/h

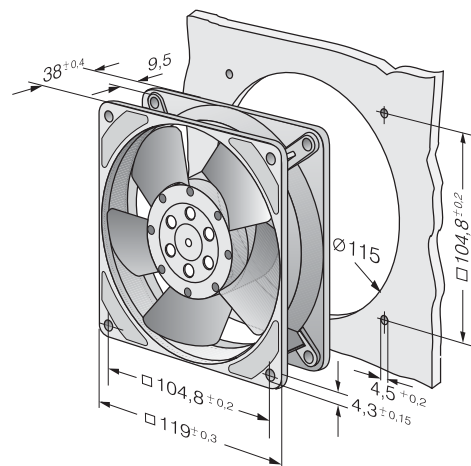
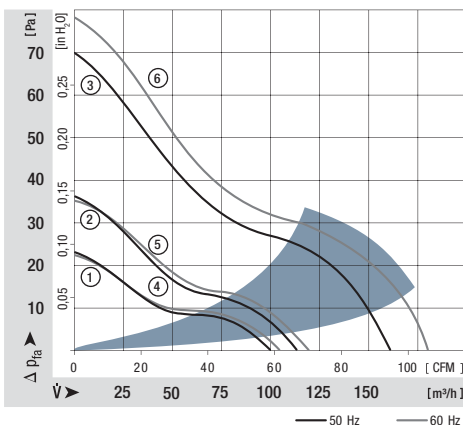
AC axial fans

Series 4000 Z 119 x 119 x 38 mm



- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Metal fan housing and impeller.
- Air exhaust over struts. Direction of rotation clockwise, seen on rotor.
- Electrical connection via 2 flat plugs 2.8 x 0.5 mm.
- Optionally available: Models with reinforced flanges and single leads.
- Fan housing with grounding lug and screw M4 x 8 (TORX).
- Mass: 540 g.
- Please note our new ACmaxx series. With identical mounting dimensions and voltages, this series achieves higher energy efficiency.

Nominal data	Air flow		Nominal voltage	Frequency	Sound pressure level	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀		Curve
	m ³ /h	CFM									V	Hz	
4850 Z	100	58,9	230	50	26	4,0	□	13,0	1 700	-10...+65	50 000 / 27 500		1
4856 Z	100	58,9	230	50	26	4,0	■	13,0	1 700	-40...+75	50 000 / 20 000		1
4580 Z	115	67,7	230	50	30	4,3	□	13,0	1 900	-10...+65	50 000 / 27 500		2
4586 Z	115	67,7	230	50	30	4,3	■	13,0	1 900	-40...+75	50 000 / 20 000		2
4650 Z	160	94,2	230	50	40	5,3	□	19,0	2 650	-10...+50	37 500 / 30 000		3
4656 Z	160	94,2	230	50	40	5,3	■	19,0	2 650	-40...+75	37 500 / 17 500		3
4800 Z	105	61,6	115	60	28	4,1	□	12,0	1 800	-10...+70	52 500 / 25 000		4
4806 Z	105	61,6	115	60	28	4,1	■	12,0	1 800	-40...+75	52 500 / 17 500		4
4530 Z	120	70,6	115	60	32	4,4	□	12,0	2 000	-10...+70	52 500 / 25 000		5
4536 Z	120	70,6	115	60	32	4,4	■	12,0	2 000	-40...+75	52 500 / 17 500		5
4600 Z	180	105,9	115	60	45	5,6	□	18,0	3 100	-10...+60	40 000 / 25 000		6
4606 Z	180	105,9	115	60	45	5,6	■	18,0	3 100	-40...+85	40 000 / 15 000		6



max. 147 m³/h

AC axial fans

Series 4600 TA 113 Ø x 37 mm

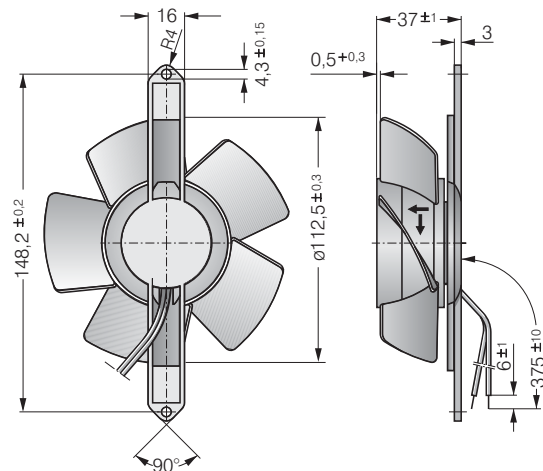


- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Impeller and mounting bracket of metal.
- Air intake over mounting bracket. Direction of rotation clockwise, seen on rotor.
- Electrical connection via 2 leads. Bared and tin-plated.
- Mass: 430 g.
- Please note our new ACmaxx series. With identical mounting dimensions and voltages, this series achieves higher energy efficiency.

Nominal data	Air flow	Air flow	Nominal voltage	Frequency	Sound pressure level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀		Curve
	m ³ /h	CFM								V	Hz	
4650 TA	138	81,2	230	50	41	□	19,0	2 550	-10...+45	37 500 / 32 500		-
4656 TA	138	81,2	230	50	42	■	19,0	2 550	-40...+75	37 500 / 17 500		-
4600 TA	147	86,5	115	60	43	□	18,0	2 900	-10...+50	40 000 / 32 500		-
4606 TA	147	86,5	115	60	44	■	18,0	2 900	-40...+80	40 000 / 17 500		-

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

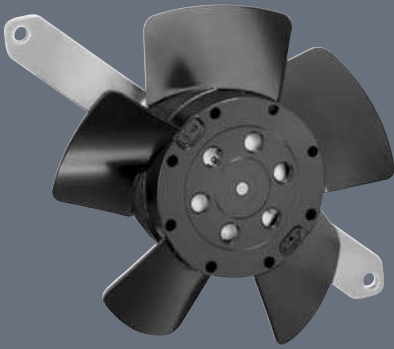
Fan type	Lead wires
4650 TA	4600 TA
	AWG 22, TR 32



max. 140 m³/h

AC axial fans

Series 4600 TZ 108 Ø x 37 mm

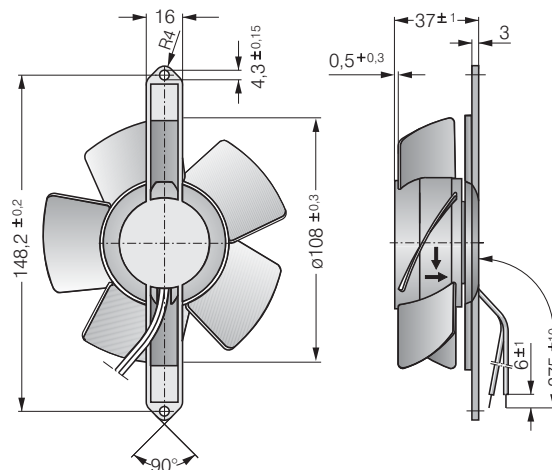


- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Impeller and mounting bracket of metal.
- Air exhaust over mounting bracket. Direction of rotation clockwise, seen on rotor.
- Electrical connection via 2 leads. Bared and tin-plated.
- Mass: 430 g.
- Please note our new ACmaxx series. With identical mounting dimensions and voltages, this series achieves higher energy efficiency.

Nominal data	Air flow		Nominal voltage	Frequency	Sound pressure level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀ at 40 °C		Curve
	m ³ /h	CFM								V	Hz	
4650 TZ	125	73,6	230	50	42	□	19,0	2 600	-10...+50	37 500 / 37 500		-
4656 TZ	125	73,6	230	50	42	■	19,0	2 600	-40...+65	37 500 / 20 000		-
4600 TZ	140	82,4	115	60	45	□	18,0	2 950	-10...+50	40 000 / 32 500		-
4606 TZ	140	82,4	115	60	45	■	18,0	2 950	-40...+75	40 000 / 17 500		-

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

Fan type	Lead wires
4650 TZ	4600 TZ
4656 TZ	4606 TZ
	AWG 22, TR 32
	AWG 18



max. 206 m³/h

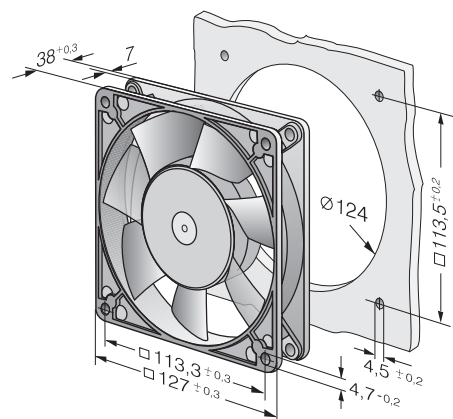
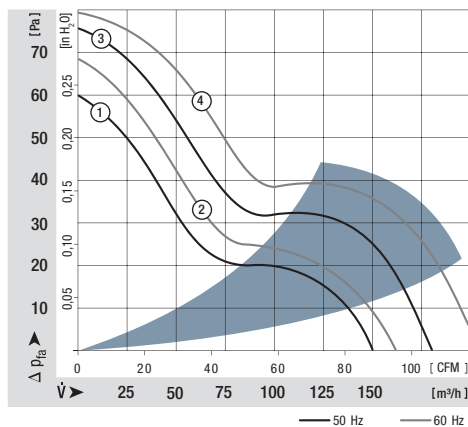
AC axial fans

Series 5900 127 x 127 x 38 mm



- AC fans with internal rotor shaded-pole motor. Impedance protected against overloading.
- Metal fan housing and impeller of fibreglass-reinforced plastic PA.
- Air exhaust over struts. Direction of rotation counter-clockwise, seen on rotor.
- Electrical connection via 2 flat plugs 2.8 x 0.8 mm.
- Fan housing with grounding lug and screw M4 x 6.
- Mass: 570 g.
- Please note our new ACmaxx series. With identical mounting dimensions and voltages, this series achieves higher energy efficiency.

Nominal data		Air flow	Air flow	Nominal voltage	Frequency	Sound pressure level	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀ at 40 °C	at T _{max}	Curve
Type		m ³ /h	CFM	V	Hz	dB(A)	Bel(A)	□ / ■	Watts	RPM	°C	Hours	Hours	
5988		150	88,3	230	50	37	4,9	■	13,0	2 250	-30...+55	35 000 / 20 000		1
5950		180	105,9	230	50	43	5,4	□	18,0	2 700	-20...+50	40 000 / 32 500		3
5958		180	105,9	230	50	44	5,5	■	18,0	2 750	-30...+60	40 000 / 25 000		3
5938		162	95,3	115	60	40	4,9	■	12,0	2 500	-30...+55	35 000 / 20 000		2
5900		206	121,2	115	60	46	5,7	□	17,0	3 050	-20...+55	42 500 / 30 000		4
5908		206	121,2	115	60	47	5,8	■	17,0	3 100	-30...+75	42 500 / 20 000		4



max. 270 m³/h

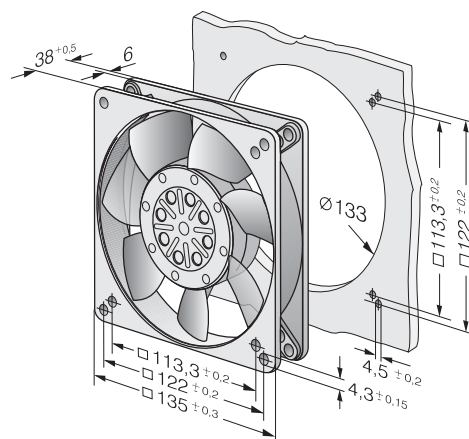
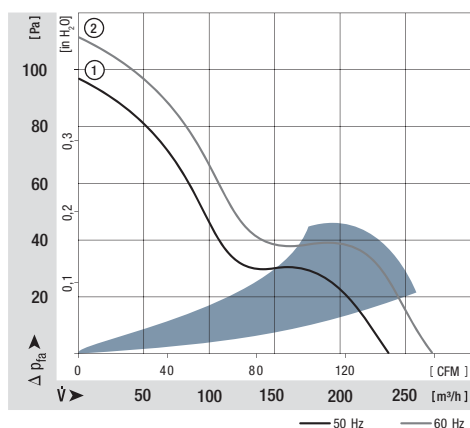
AC axial fans

Series 5600 135 x 135 x 38 mm



- AC fans with external rotor shaded-pole motor. Protected against overloading by thermal cut-out.
- Metal fan housing and impeller.
- Air exhaust over struts. Direction of rotation counter-clockwise, seen on rotor.
- Electrical connection via 2 flat plugs 2.8 x 0.5 mm.
- Fan housing with grounding lug and screw M4 x 8 (TORX).
- Mass: 800 g.
- Please note our new ACmaxx series. With identical mounting dimensions and voltages, this series achieves higher energy efficiency.

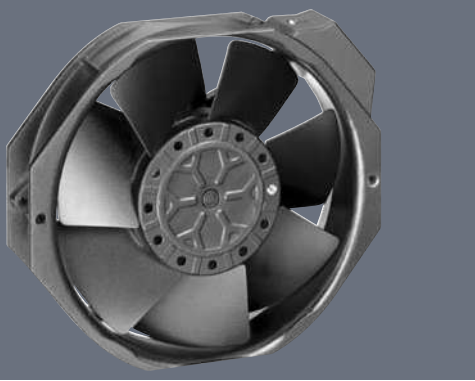
Nominal data	Air flow		Nominal voltage	Frequency	Sound pressure level	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀		Curve
	m ³ /h	CFM									at 40 °C	at T _{max}	
Type	m ³ /h	CFM	V	Hz	dB(A)	Bel(A)	□/■	Watts	RPM	°C	Hours	Hours	
5656 S	235	138,3	230	50	46	5,9	■	30,0	2 700	-35...+70	45 000 / 20 000		1
5606 S	270	158,9	115	60	50	6,2	■	26,0	3 100	-35...+80	47 500 / 20 000		2



max. 380 m³/h

AC axial fans

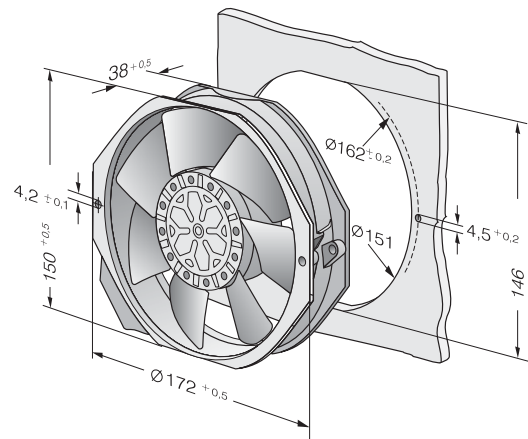
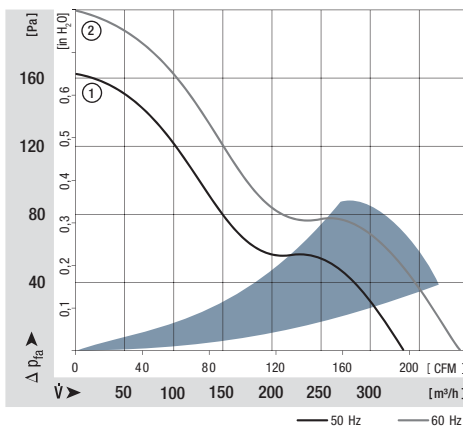
Series 7000 150 x 172 x 38 mm



- AC fans with external rotor capacitor motor. Protected against overloading by integrated thermal cut-out.
- Metal fan housing and impeller.
- Air exhaust over struts. Direction of rotation counter-clockwise, seen on rotor.
- Electrical connection via 2 flat plugs 2.8 x 0.5 mm.
- Fan housing with grounding lug and screw M4 x 6.
- Mass: 900 g.
- Please note our new ACmaxx series. With identical mounting dimensions and voltages, this series achieves higher energy efficiency.

Nominal data		Air flow	Air flow	Nominal voltage	Frequency	Sound pressure level	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀ at 40 °C	at T _{max}	Curve
Type		m ³ /h	CFM	V	Hz	dB(A)	Bel(A)	□/■	Watts	RPM	°C	Hours	Hours	
7056 ES		320	188,3	230	50	51	6,4	■	27,0	2 800	-25...+55	60 000 / 32 000		1
7006 ES		380	223,6	115	60	56	6,8	■	28,0	3 350	-25...+65	55 000 / 18 000		2

Minimum ambient temperature -15 °C.



max. 380 m³/h

AC axial fans

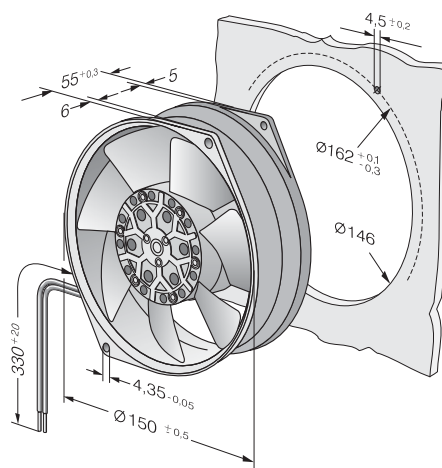
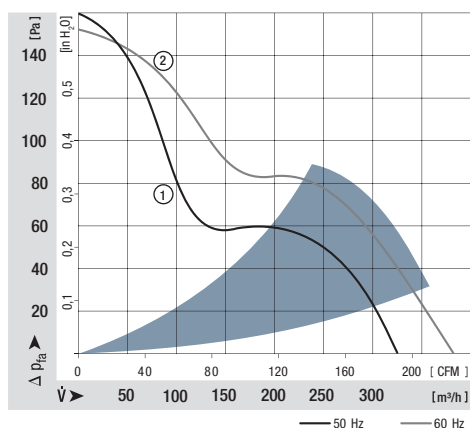
Series 7800 150 Ø x 55 mm



- AC fans with external rotor shaded-pole motor. Protected against overloading by integrated thermal cut-out.
- Metal fan housing and impeller.
- Air exhaust over struts. Direction of rotation counter-clockwise, seen on rotor.
- Electrical connection via 2 leads. Bared and tin-plated.
- Fan housing with grounding lug and screw M4 x 6.
- Mass: 1.1 kg.
- Please note our new ACmaxx series. With identical mounting dimensions and voltages, this series achieves higher energy efficiency.

Nominal data	Air flow		Nominal voltage	Frequency	Sound pressure level	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀		Curve
	m ³ /h	CFM									V	Hz	
7855 ES	325	191,3	230	50	49	6,0	■	45,0	2 800	-25...+50	60 000 / 47 000		1
7856 ES	325	191,3	230	50	49	6,0	■	45,0	2 800	-25...+70	60 000 / 23 000		1
7805 ES	380	223,7	115	60	53	6,4	■	38,0	3 250	-25...+70	60 000 / 47 000		2
7806 ES	380	223,7	115	60	53	6,4	■	38,0	3 250	-25...+90	60 000 / 18 000		2

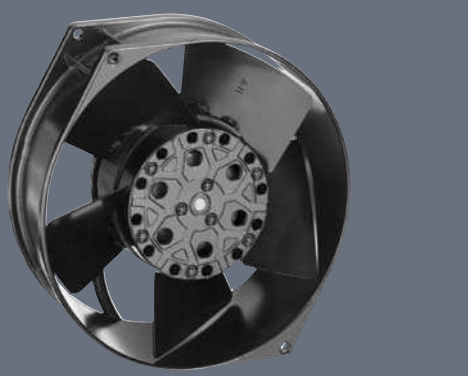
Minimum ambient temperature -15 °C, admissible for a short time at -30 °C; without condensation.



max. 425 m³/h

AC axial fans

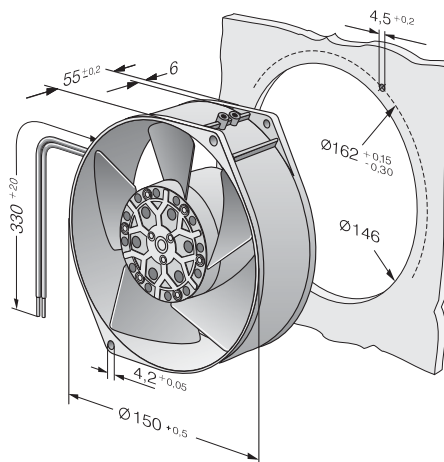
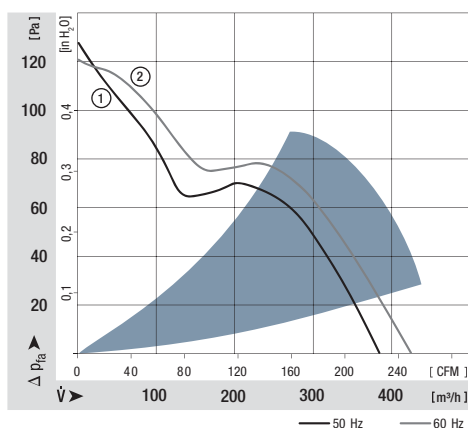
Series 7400 150 Ø x 55 mm



- AC fans with external rotor shaded-pole motor. Protected against overloading by integrated thermal cut-out.
- Metal fan housing and impeller.
- Air exhaust over struts. Direction of rotation counter-clockwise, seen on rotor.
- Electrical connection via 2 leads. Strand ends with brass lead tips.
- Fan housing with grounding lug and screw M4 x 6.
- Mass: 1.1 kg.
- Please note our new ACmaxx series. With identical mounting dimensions and voltages, this series achieves higher energy efficiency.

Nominal data		Air flow	Air flow	Nominal voltage	Frequency	Sound pressure level	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀ at 40 °C	at T _{max}	Curve
Type		m ³ /h	CFM	V	Hz	dB(A)	Bel(A)	□ / ■	Watts	RPM	°C	Hours	Hours	
7450 ES		380	223,6	230	50	60	6,8	■	47,0	2 700	-25...+50	63 000 / 50 000		1
7400 ES		425	250,1	115	60	62	6,9	■	46,0	3 050	-25...+70	50 000 / 24 000		2

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



max. 500 m³/h

AC axial fans

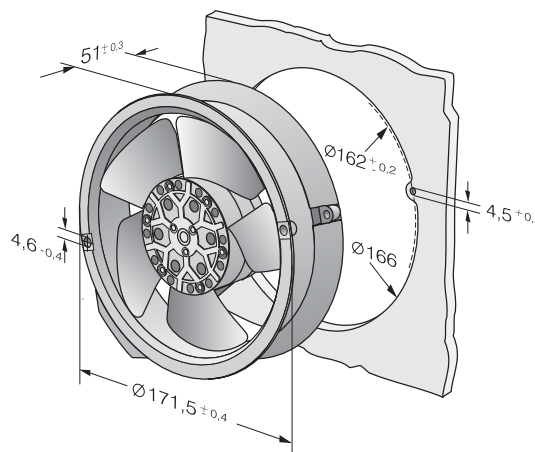
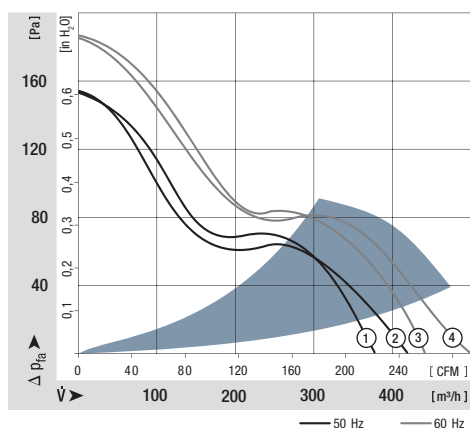
Series 6000 172 Ø x 51 mm



- AC fans with external rotor capacitor motor. Protected against overloading by integrated thermal cut-out.
- Metal fan housing and impeller.
- Air exhaust over struts. Direction of rotation counter-clockwise, seen on rotor.
- Electrical connection via 2 flat plugs 2.8 x 0.5 mm.
- Fan housing with grounding lug and screw M4 x 6.
- Mass: 1.0 kg.
- Please note our new ACmaxx series. With identical mounting dimensions and voltages, this series achieves higher energy efficiency.

Nominal data	Air flow		Nominal voltage	Frequency	Sound pressure level	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀		Curve
	m ³ /h	CFM									V	Hz	
6058 ES	375	220,7	230	50	55	5,9	■	24,0	2 800	-25...+70	62 000 / 31 000		1
6078 ES	420	247,2	230	50	54	6,3	■	26,0	2 800	-25...+60	62 000 / 39 000		2
6008 ES	440	259,0	115	60	60	6,4	■	26,0	3 300	-25...+70	57 000 / 28 000		3
6028 ES	500	284,3	115	60	58	6,7	■	29,0	3 300	-25...+75	57 000 / 22 000		4

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



max. 1030 m³/h

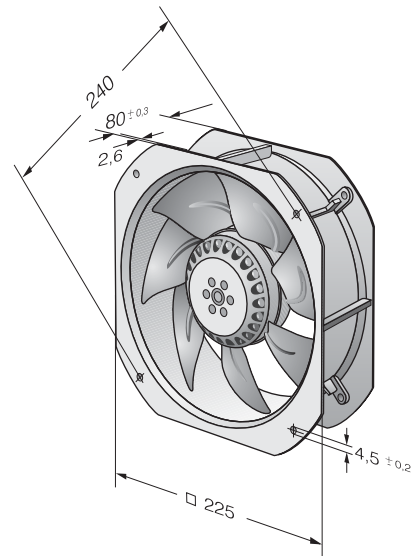
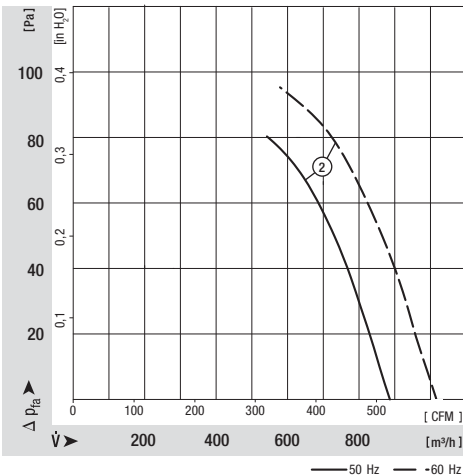
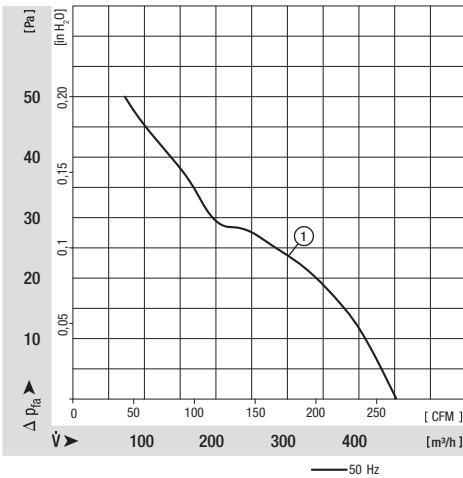
AC axial fans

W** 200 225 x 225 x 80 mm



- External-rotor single-phase motor.* / External rotor shaded-pole motor.**
- Motor protection: TOP wired internally.
- Material: Wall ring die-cast aluminium, seven blades of sheet steel. Blades and rotor coated in black.
- Direction of air flow "V", air exhaust over struts. Direction of rotation: counter-clockwise, seen on rotor.
- Electrical connection: Terminal strip (operating capacitor connected).
- Continuous operation (S1).
- Insulation class: "F"
- Mass: 2 kg.
- Please note our new ACmaxx series. With identical mounting dimensions and voltages, this series achieves higher energy efficiency.

Nominal data		Air flow		Nominal voltage	Frequency	Sound pressure level	Sound power level	Sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀ at 40 °C	at T _{max}	Curve
Type	m ³ /h	CFM	V	Hz	dB(A)	Bel(A)	□/■	Watts	RPM	°C	Hours	Hours	Curve	
W2E200-HK86-01*	1030	606,2	115	60	61	6,7	■	80,0	2800	-25...+65	60 000 / 58 000		2	
W2E200-HK38-01*	880	517,9	230	50	58	6,6	■	64,0	2550	-25...+60	63 000 / 60 000		2	
W4S200-HK04-01**	450	264,9	230	50	40	4,7	■	30,0	1370	-25...+70	85 000 / 80 000		1	



max. 1865 m³/h

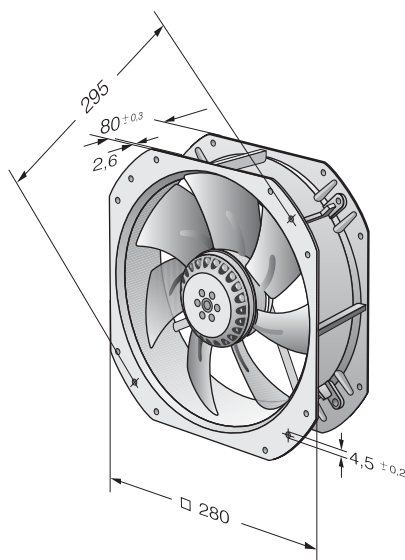
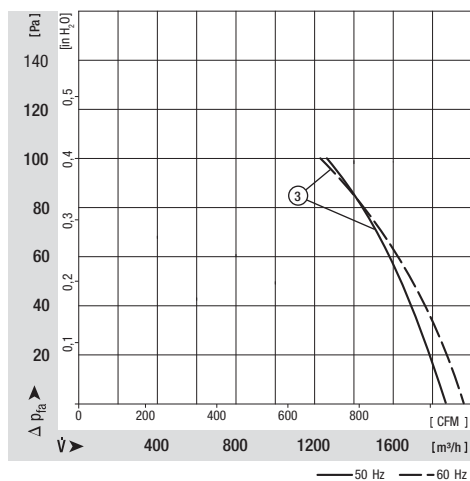
AC axial fans

W2E 250 280 x 280 x 80 mm



- External-rotor single-phase motor.
- Motor protection: TOP wired internally.
- Material: Wall ring die-cast aluminium, seven blades of sheet steel. Blades and rotor coated in black.
- Direction of air flow "V", air exhaust over struts. Direction of rotation: counter-clockwise, seen on rotor.
- Electrical connection: Terminal strips (operating capacitor connected).
- Continuous operation (S1).
- Insulation class: "F"
- Mass: 2 kg.
- Please note our new ACmaxx series. With identical mounting dimensions and voltages, this series achieves higher energy efficiency.

Nominal data		Air flow	Air flow	Nominal voltage	Frequency	Sound pressure level	Sound power level	Sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀ at 40 °C	at T _{max}	Curve
Type		m ³ /h	CFM	V	Hz	dB(A)	Bel(A)	□/■	Watts	RPM	°C	Hours	Hours	
W2E 250-HL06-01		1865	1077,1	230	50	66	7,2	■	127,0	2 550	-25...+60	63 000 / 70 000		3



AC centrifugal fans

AC centrifugal fan overview	165
AC centrifugal fans	166



Technical information

Product line

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

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

Variety of sizes

AC fans are available in a variety of sizes with either air exhaust or air intake over struts. Silent running models with sleeve bearings or for extreme ambient conditions; fans with ball bearings are available with plug connection or external leads.

Shaded-pole or capacitor motors

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

Flat built AC fans

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

Bearings

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

Protection class

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

AC voltage

The line of AC fans for Euro voltage according to IEC 60038 (230 V + 6 %, -10 %) is basically also available for 115 V.

Frequencies

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

Capacitor

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

Overloading

Almost all AC fans are protected against overloading (e.g. due to locked 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".

Centrifugal fans for AC operation

Overview of air performance

Dimension	Series	Air flow	10	20	30	40	50	60	70	80	90	100	200	300	400	500	600	700	800	900	1000	2000	3000	Page
mm		m ³ /h																						
□ 121 x 37	RL 90	40...42																					166	
□ 135 x 38	RG 90	47...54																					167	
□ 180 x 40	RG 125	86...94																					168	
□ 220 x 56	RG 160	202...223																					169	
∅ 138 x 40	RER 125	104...115																					170	
∅ 176 x 54	RER 160	234...274																					171	

Overview of technically feasible designs

Centrifugal fans		Dimension	VDE, UL, CSA	Sleeve bearings/ Ball bearings	Speed sensor	Humidity protection IP >= IP54	Salt spray fog protection	Page
Series	mm			□ / ■	–	•	•	P.
RL 90	121 x 121 x 37	yes	□ / ■	–	•	•	•	166
RG 90	135 x 135 x 38	yes	□ / ■	–	•	•	•	167
RG 125	180 x 180 x 40	yes	■	–	•	•	•	168
RG 160	220 x 220 x 56	yes	■	–	•	•	•	169
RER 125	138 ∅ x 40	yes	■	–	•	•	•	170
RER 160	176 ∅ x 54	yes	■	–	•	•	•	171

• available – not yet available □ Sleeve bearings ■ Ball bearings

Information on pictograms

On the pages of the catalogue and on the following overview pages, the pictograms illustrated below provide information about technically possible special versions in the fan line presented.

Please note that these special versions are not possible for all voltages and speeds, and not in all combinations.

The special versions are designed for specific customers and projects and are not usually available off the shelf.



Speed signal

The fan uses a separate wire to output information about its speed, and thus about the speed of the rotor. For technical details, please refer to page 110.



Protection against moisture

Protection for the fan's electronics against moisture and condensation. For technical details, please refer to page 123.



IP 54

Protection of motor and PCB board against splashed water and humidity. For technical details, please refer to page 123.



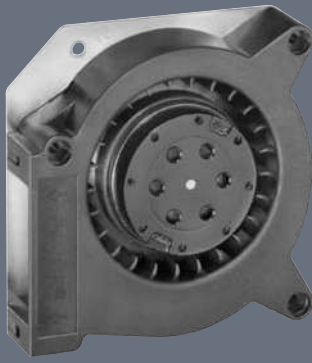
Protection against salt spray fog

Protection of fan against the damaging effects of salt spray fog. For technical details, please refer to page 123.

max. 42 m³/h

AC centrifugal fans

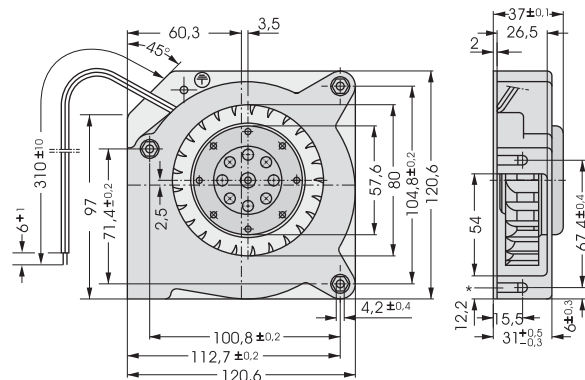
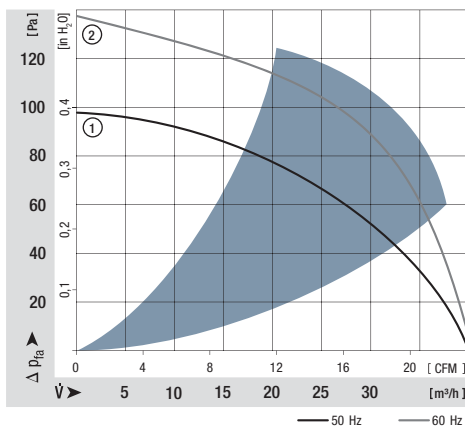
Series RL 90 121 x 121 x 37 mm



- AC centrifugal fan with external rotor shaded-pole motor. Impedance protected against overloading.
- Spiral housing and impeller of fibreglass-reinforced plastic. Housing base of galvanised steel plate. Housing base with flat plug 6.3 x 0.8 mm for protective earth.
- Direction of air flow radial, through housing port. Direction of rotation clockwise, seen on rotor.
- Electrical connection via 2 leads. Bared and tin-plated.
- Mass: 680 g.

Nominal data	Air flow		Nominal voltage	Frequency	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀		Curve
	m ³ /h	CFM								Hours	Hours	
RL 90-18/50	40	23,5	230	50	5,6	□	20,0	2 450	-10...+50	37 500 / 30 000		1
RL 90-18/56	40	23,5	230	50	5,6	■	20,0	2 450	-30...+70	37 500 / 20 000		1
RL 90-18/00	42	24,7	115	60	6,0	□	19,5	2 550	-10...+60	37 500 / 25 000		2
RL 90-18/06	42	24,7	115	60	6,0	■	19,5	2 550	-30...+85	37 500 / 15 000		2

Fan type		Lead wires
RL 90-18/50	RL 90-18/00	AWG 18, TR 32



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

max. 54 m³/h

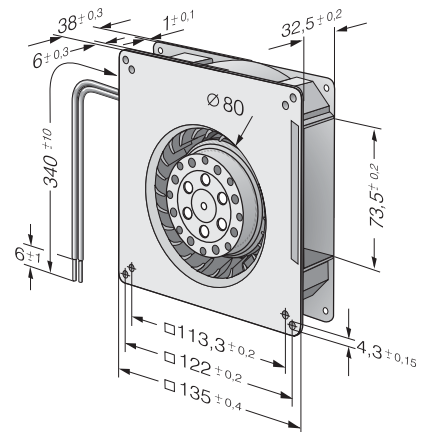
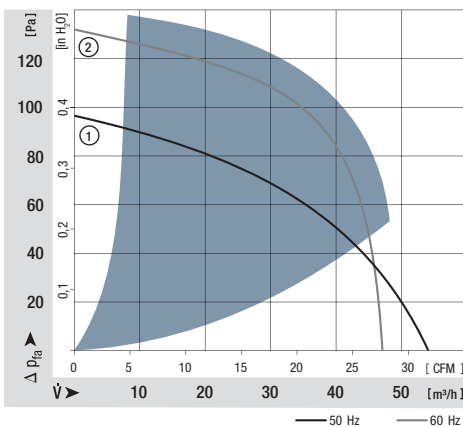
AC centrifugal fans

Series RG 90 135 x 135 x 38 mm



- AC centrifugal fan with external rotor shaded-pole motor. Impedance protected against overloading.
- Spiral housing and impeller of fibreglass-reinforced plastic. Housing base of galvanised steel plate.
- Direction of air flow radial, through housing port. Direction of rotation clockwise, seen on rotor.
- Electrical connection via 2 leads AWG 22. Bared and tin-plated.
- Mass: 560 g.

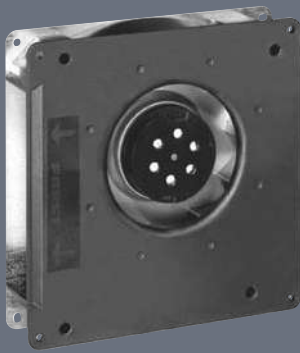
Nominal data	Air flow		Nominal voltage	Frequency	Sound power level	Sinter sleeve bearings Ball bearings		Power input	Nominal speed	Temperature range	Service life L ₁₀ at 40 °C		Curve
	m ³ /h	CFM				V	Hz				□ / ■	Watts	
RG 90-18/50	54	31,8	230	50	5,8	□	22,0	2 200	-30...+60	35 000 / 20 000		1	
RG 90-18/56	54	31,8	230	50	5,8	■	22,0	2 200	-30...+60	35 000 / 20 000		1	
RG 90-18/00	47	27,7	115	60	6,2	□	22,0	1 900	-30...+65	35 000 / 20 000		2	
RG 90-18/06	47	27,7	115	60	6,2	■	22,0	1 900	-30...+65	35 000 / 20 000		2	



max. 94 m³/h

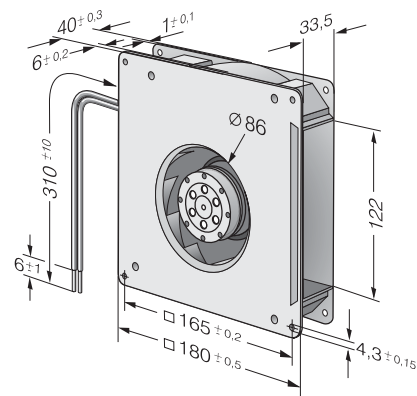
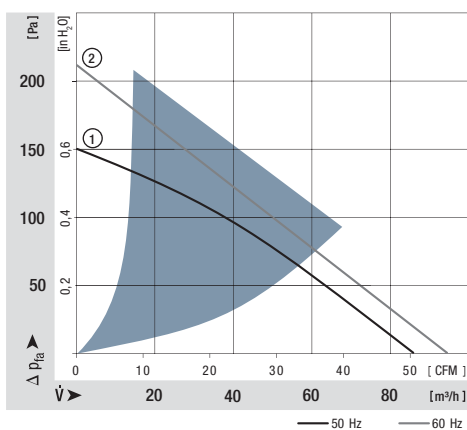
AC centrifugal fans

Series RG 125 180 x 180 x 40 mm



- AC centrifugal fan with external rotor shaded-pole motor. Impedance protected against overloading.
- Spiral housing and impeller of fibreglass-reinforced plastic. Housing base of galvanised steel plate.
- Direction of air flow radial, through housing port. Direction of rotation clockwise, seen on rotor.
- Electrical connection via 2 leads AWG 22. Bared and tin-plated.
- Mass: 850 g.

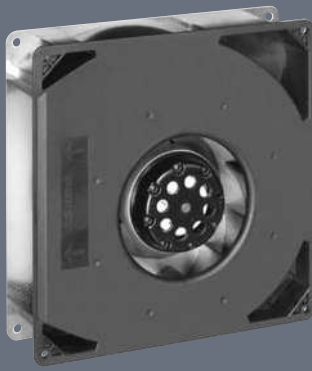
Nominal data	Air flow	Air flow	Nominal voltage	Frequency	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀ at 40 °C	at T _{max}	Curve
	m ³ /h	CFM										
RG 125-19/56	86	50,6	230	50	5,8	■	20,0	2 550	-30...+70	37 500 / 20 000		1
RG 125-19/06	94	55,3	115	60	6,0	■	19,0	2 750	-30...+80	40 000 / 15 000		2



max. 223 m³/h

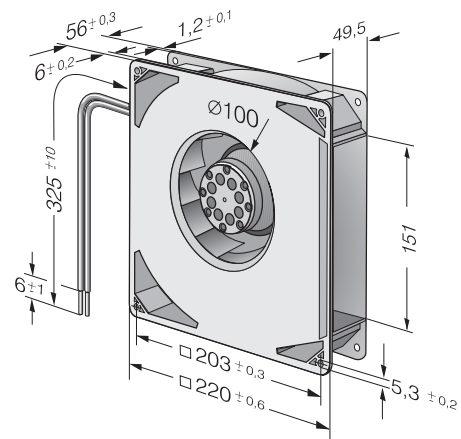
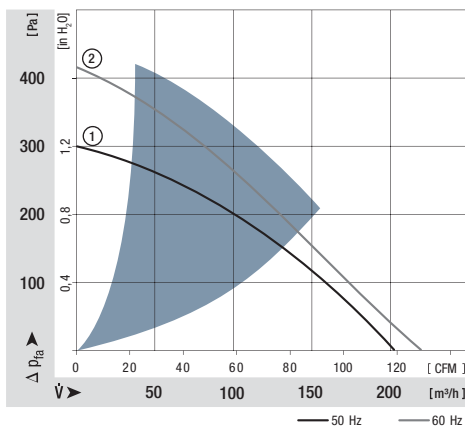
AC centrifugal fans

Series RG 160 220 x 220 x 56 mm



- AC centrifugal fan with external rotor shaded-pole motor. Thermal contactor as protection against thermal overloading.
- Spiral housing and impeller of fibreglass-reinforced plastic. Housing base of galvanised steel plate.
- Direction of air flow radial, through housing port. Direction of rotation counter-clockwise, seen on rotor.
- Electrical connection via leads AWG 18. Bared and tin-plated.
- Mass: 1.7 kg.

Nominal data		Air flow	Air flow	Nominal voltage	Frequency	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀ at 40 °C	at T _{max}	Curve
Type		m ³ /h	CFM	V	Hz	Bel(A)	□/■	Watts	RPM	°C	Hours	Hours	
RG 160-28/56S		202	118,9	230	50	6,6	■	47,0	2 750	-30...+70	30 000 / 15 000		1
RG 160-28/06S		223	131,3	115	60	6,9	■	50,0	3 050	-30...+80	27 500 / 12 500		2



max. 115 m³/h

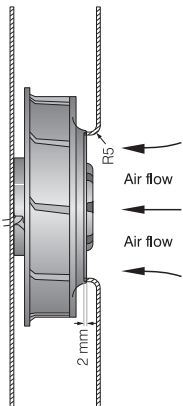
AC centrifugal fans

Series RER 125 138 Ø x 40 mm

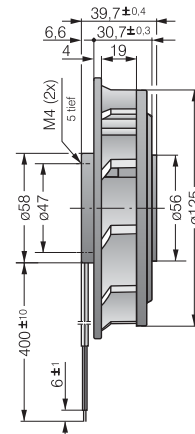
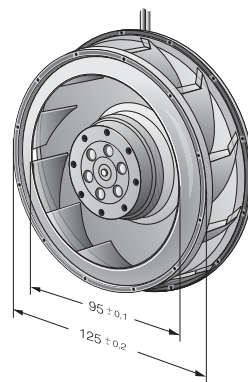
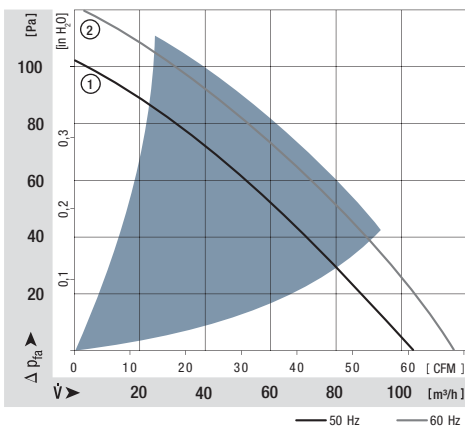


- AC centrifugal fan with external rotor shaded-pole motor. Impedance protected against overloading.
- Impeller of fibreglass-reinforced plastic, with steel plate reinforced.
- Direction of air flow radial. Direction of rotation clockwise, seen on rotor.
- Electrical connection via leads AWG 22. Bared and tin-plated.
- Mass: 500 g.

Nominal data	Air flow		Nominal voltage	Frequency	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀		Curve
	m ³ /h	CFM								at 40 °C	at T _{max}	
Type	m ³ /h	CFM	V	Hz	Bel(A)	□/■	Watts	RPM	°C	Hours	Hours	
RER 125-19/56	104	61,2	230	50	6,2	■	19,0	2 600	-30...+60	37 500 / 22 500		1
RER 125-19/06	115	67,7	115	60	6,5	■	18,0	2 850	-30...+70	40 000 / 20 000		2



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



max. 274 m³/h

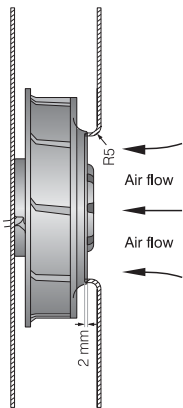
AC centrifugal fans

Series RER 160 176 Ø x 54 mm

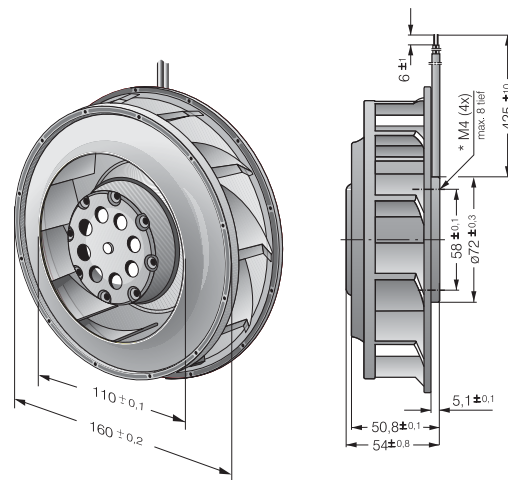
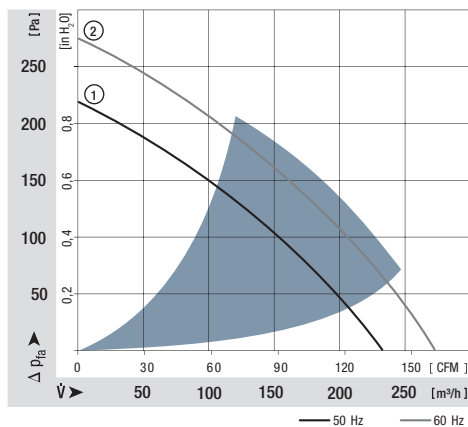


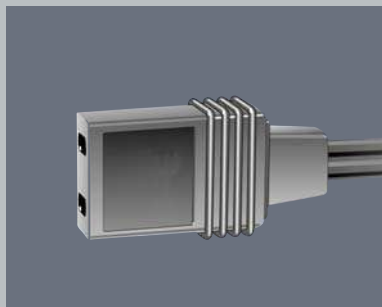
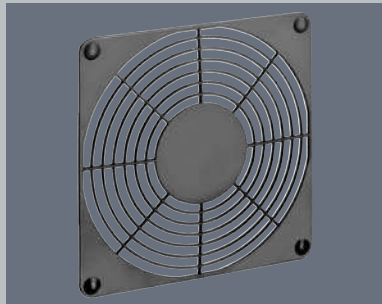
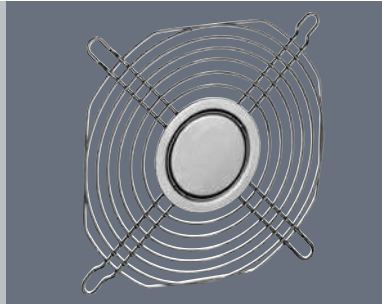
- AC centrifugal fan with external rotor shaded-pole motor. Impedance protected against overloading.
- Impeller of fibreglass-reinforced plastic, with steel plate reinforced.
- Direction of air flow radial. Direction of rotation counter-clockwise, seen on rotor.
- Electrical connection via leads AWG 18. Bared and tin-plated.
- Mass: 1.0 kg.

Nominal data	Air flow		Nominal voltage	Frequency	Sound power level	Sinter sleeve bearings Ball bearings	Power input	Nominal speed	Temperature range	Service life L ₁₀		Curve
	m ³ /h	CFM								V	Hz	
RER 160-28/56S	234	137,7	230	50	6,6	■	45,0	2 800	-30...+60	30 000 / 20 000		1
RER 160-28/06S	274	161,3	115	60	6,8	■	46,0	3 250	-30...+70	30 000 / 15 000		2



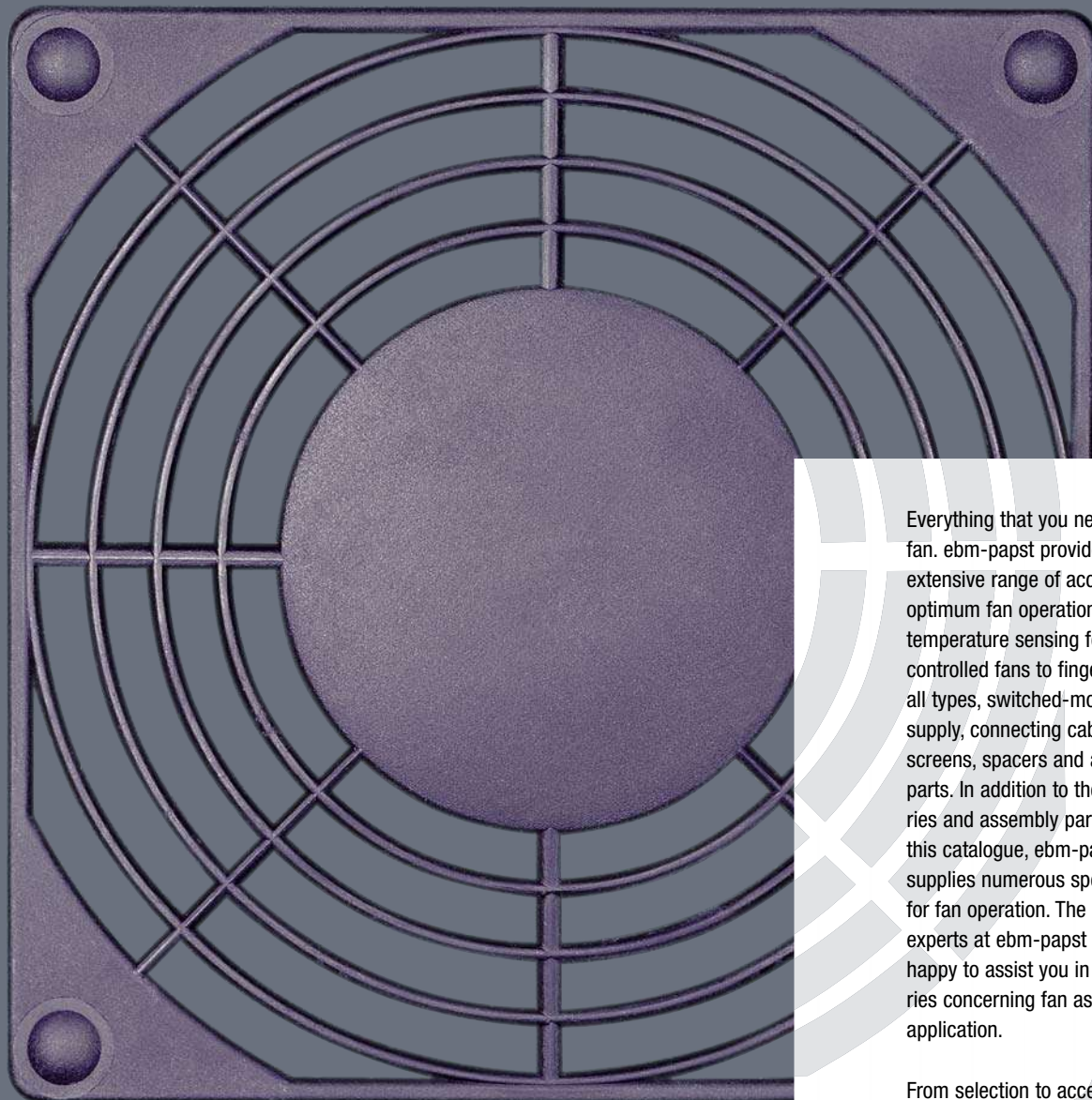
The air flow and noise level of fans without external housing depend on the installation conditions. The stated air flow and noise levels have been measured under the following conditions:
Centrifugal fan mounted on a base plate 260 x 260 mm. Cover plate 260 x 260 mm with an air inlet of Ø 100 mm, concentric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





Accessories

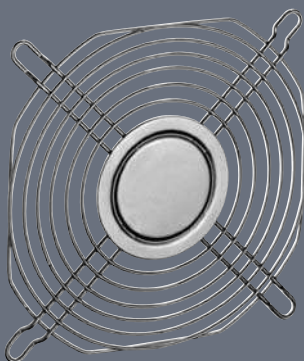
Guard grilles	174
Fan filter guard grilles	180
Inlet nozzles	182
Connection cables / Accessories	183



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

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

Guard grilles



- Guard grille acc. to DIN EN ISO 13857 (previously EN 294), made of galvanised or nickel-plated and passivated steel wire for device fans.
- Additional guard grilles that do not conform to DIN EN ISO 13857 are available on request.
- Our guard grilles are specially designed for use with ebm-papst fans. Their design ensures maximum safety with minimum effect on the operating noise level. Note that when using guard grilles from other manufacturers, compliance with safety-related distances will not always be present.

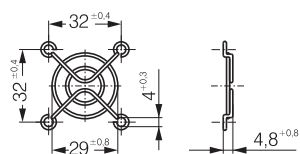
Fan series	Guard grilles
400	LZ29-1
500	LZ31
600	LZ28-1
3000	LZ23-1
8000	LZ32-4 / LZ22-2
9000	LZ30-4 / LZ 30
4000	LZ30-4 / LZ 30
5100	LZ25

Fan series	Guard grilles
5600	LZ25
5200	LZ35
5300	LZ53
5900	LZ35
7000	LZ36
6300	LZ37
6400	LZ38
2200F	LZ22

Fan series	Guard grilles
DV 6200	LZ37 Intake side
DV 6200	LZ39 Outlet side
DV 6400	LZ38 Intake side
DV 6400	LZ39 Outlet side

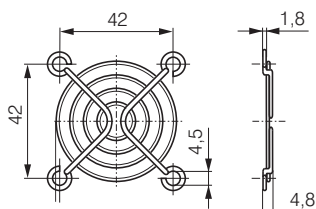
LZ29-1

Fan size 40 x 40



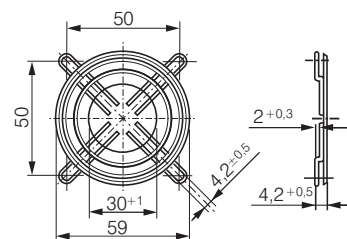
LZ31

Fan size 50 x 50



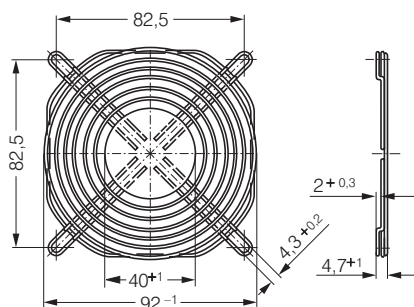
LZ28-1

Fan size 60 x 60



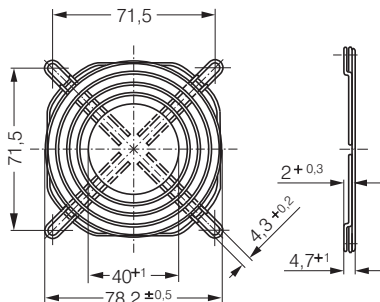
LZ23-1

Fan size 92 x 92



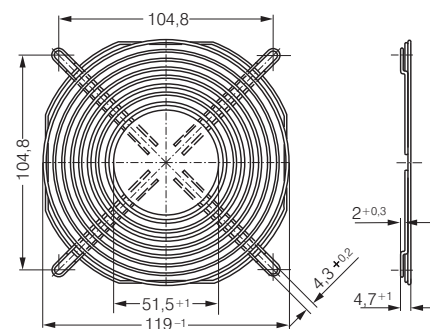
LZ32-4

Fan size 80 x 80

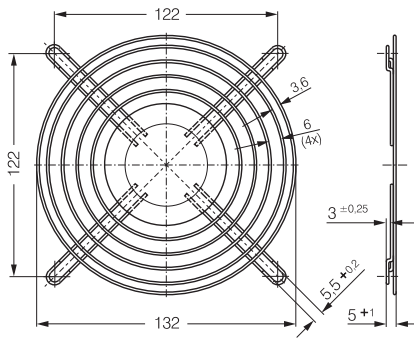


LZ30-4

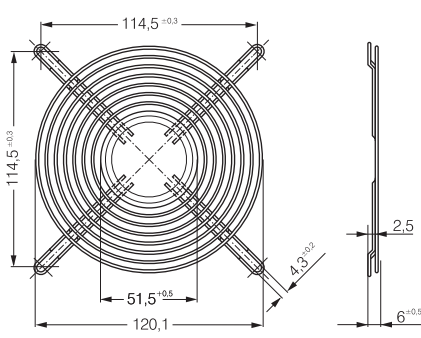
Fan size 119 x 119



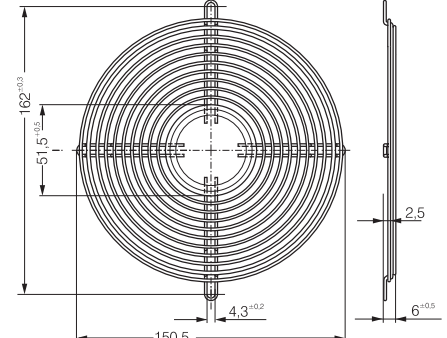
LZ25 Fan size 135 x 135



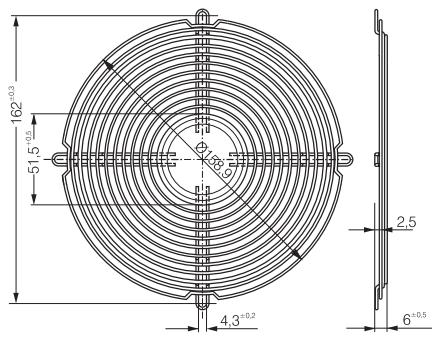
LZ35 Fan size 127 x 127



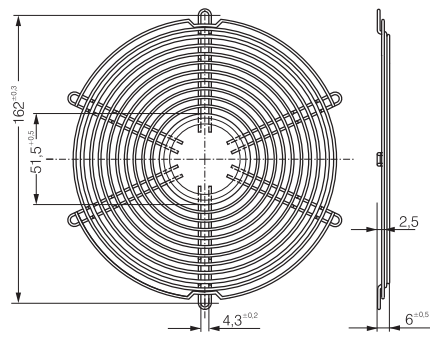
LZ36 Fan size 150 x 172



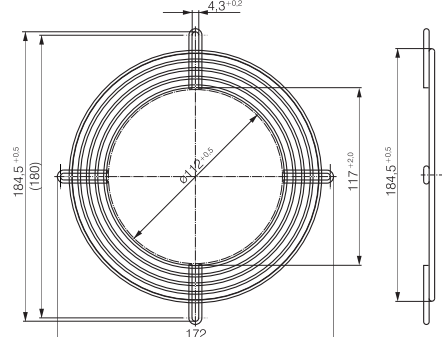
LZ37 Fan size 172 Ø x 51



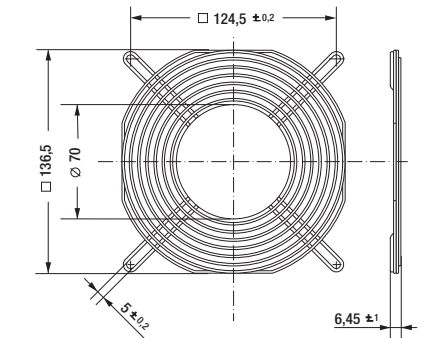
LZ38 Fan size 172 Ø x 51



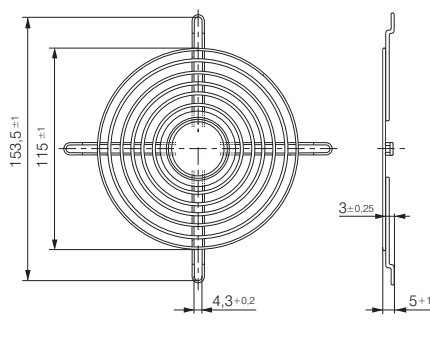
LZ39 Fan size 172 Ø x 51



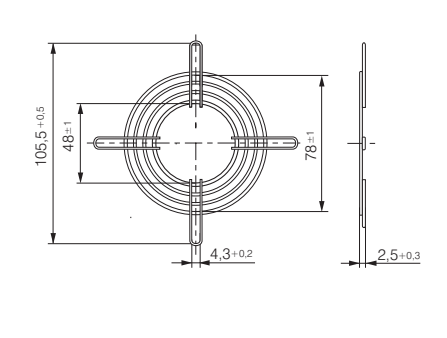
LZ53 Fan size 140 x 140



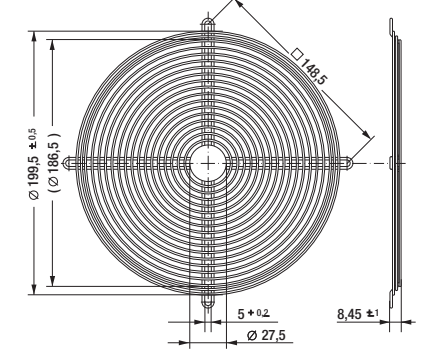
LZ30 Fan size 119 x 119



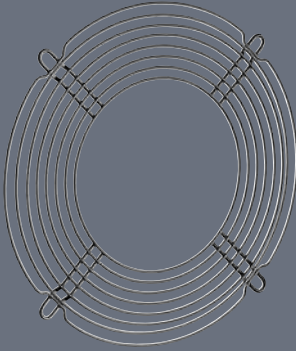
LZ22-2 Fan size 80 x 80



LZ22 Fan size 200 x 51



ACmaxx guard grilles



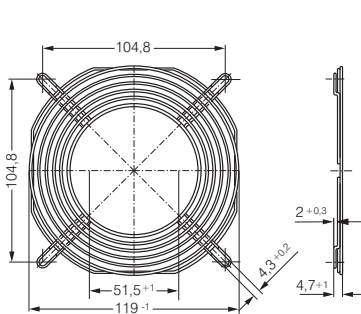
- Guard grille acc. to DIN EN ISO 13857 (previously EN 294), made of galvanised or nickel-plated and passivated steel wire for device fans.
- The guard grilles shown on this page are designed specially for ACmaxx series fans and are installed on the outlet side.

Fan series	Guard grilles	
AC 8300	LZ32-4	Intake side s.P.174
AC 8300 H	LZ32-7	Outlet side
AC 3200 J	LZ23-1	Intake side s.P.174
AC 3200 J	LZ23-6	Outlet side
AC 4400 FN	LZ30-4	Intake side s.P.174
AC 4400 FN	LZ30-9	Outlet side
AC 4300	LZ30-4	Intake side s.P.174
AC 4300	LZ30-9	Outlet side
ACi 4400	LZ30	Intake side s.P.175
ACi 4400	LZ30	Outlet side s.P.175

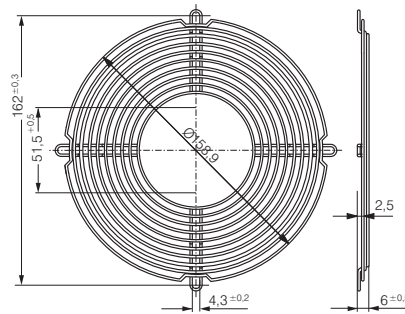
Fan series	Guard grilles	
AC 6200 N	LZ37	Intake side s.P.175
AC 6200 N	LZ37-2	Outlet side
AC 6100 N	LZ37	Intake side s.P.175
AC 6100 N	*	Outlet side

*Outlet-side grilles on request

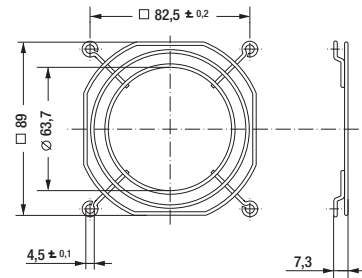
LZ30-9 Fan size 119 X 119



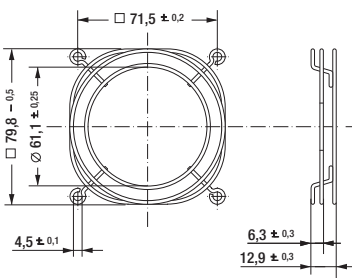
LZ37-2 Fan size 172 Ø X 51



LZ23-6 Fan size 92 x 92

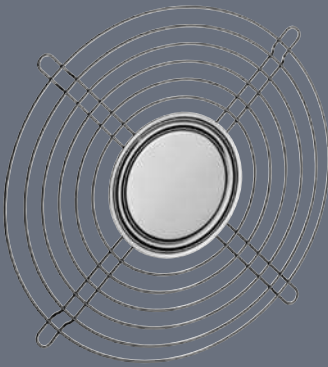


LZ32-7 Fan size 80 x 80



Guard grilles

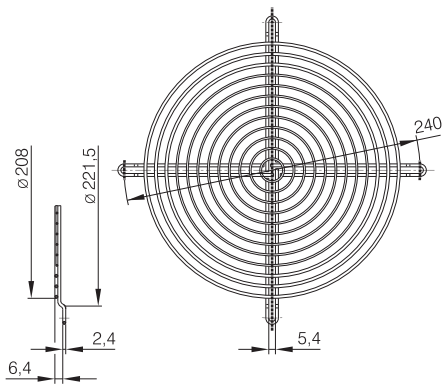
- Steel wire, plastic-coated, silver-metallic gloss.



Fan series	Guard grilles	Fan series	Guard grilles
W1G 200	78128-2-4039	W4S 200	78128-2-4039
W1G 250	09418-2-4039	W2E 250	09418-2-4039
W2E 200	78128-2-4039		

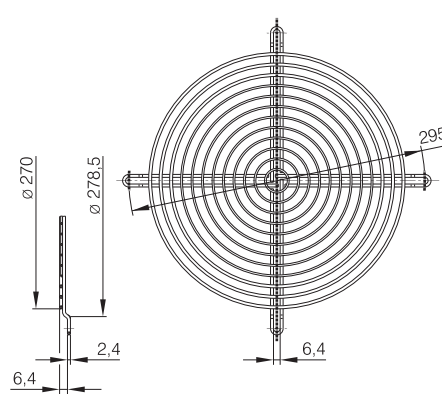
78128-2-4039

Size 200

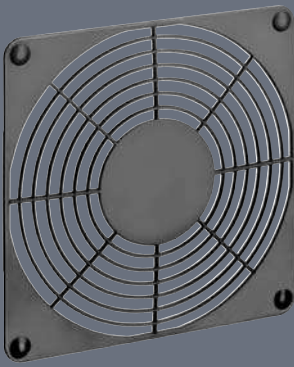


09418-2-4039

Size 250



Guard grilles



- Guard grille acc. to DIN EN ISO 13857 (previously EN 294), made of fibreglass-reinforced plastic.
- Plastic grilles must not be used for the following models:
8200 JH3 / JH4
3200 JH3 / JH4
4100 NH5 - NH8

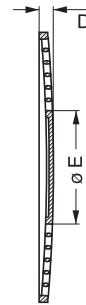
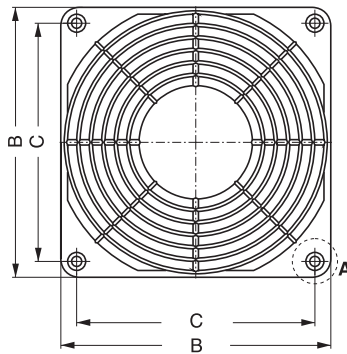
Guard grilles	Mounting	B	C	D	E	Guard grilles	Mounting	B	C	D	E
LZ32-2	A1	80 ^{-0,5}	71,5±0,2	7,0	34	LZ30-5	A2	119-0,5	105±0,2	6,5	50
LZ32-3	A3	80 ^{-0,5}	71,5±0,2	7,0	34	LZ30-6	A4	119-0,5	105±0,2	6,5	50
LZ23-2	A1	92,5-0,5	82,5±0,2	6,5	46	LZ33-1	A2	127-0,5	113,5±0,2	6,5	50
LZ23-3	A3	92,5-0,5	82,5±0,2	6,5	46	LZ33-2	A4	127-0,5	113,5±0,2	6,5	50

LZ32-2 / LZ32-3 Size 80 x 80

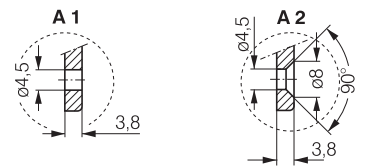
LZ23-2 / LZ23-3 Size 92 x 92

LZ30-5 / LZ30-6 Size 119 x 119

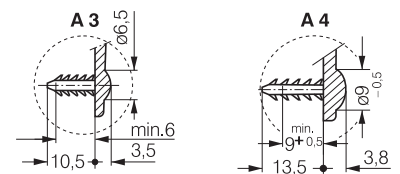
LZ33-1 / LZ33-2 Size 127 x 127



Screw connection

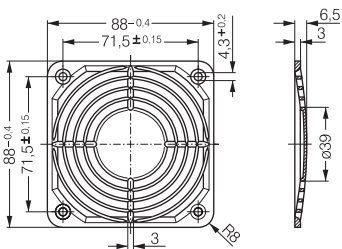


Barbed inserts

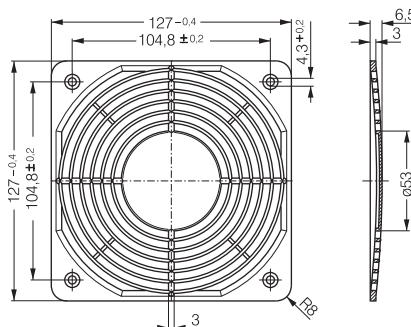


Suitable for bore diameters 4.3 - 4.7 only.

LZ32P Fan size 80 x 80



LZ30P Fan size 119 x 119



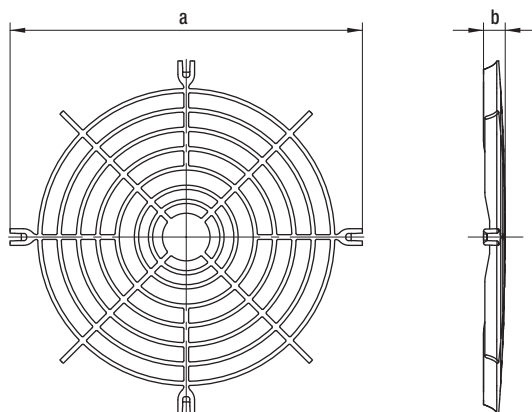
Guard grilles

for compact centrifugal modules

– PA plastic 6, fibreglass-reinforced



Fan series	Guard grilles	a	b
RG 190	LZ46	133	9,0
RG 220	LZ47	166	8,7
RG 225	LZ48	158	8,7



Fan filter guard grilles



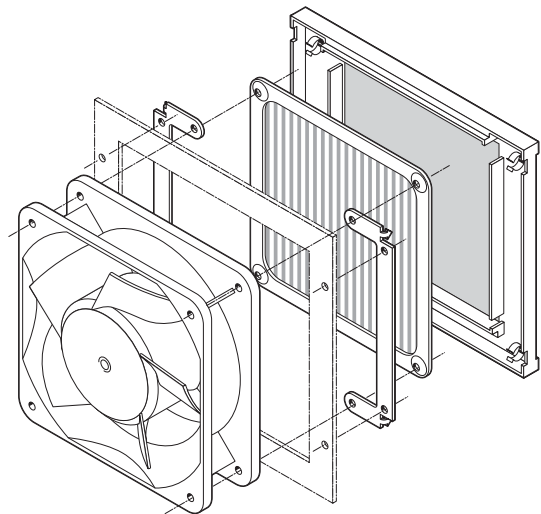
- Filter guard grilles consist of a mounting plate, filter and screen.
- Screen LZ40 N made of black, fibreglass-reinforced plastic with inserted wire netting LZ60.
- Filter LZ60 made of Nirosta stainless steel wire netting.
- Mounting plate LZ40-1 for installation.

Fan series DC

4400 F
4400 FN
4300
4300 N
4400
4200
4100 N

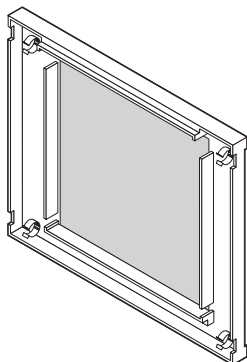
Fan series AC

AC 4300
9900
4000 N
4000 Z



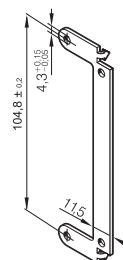
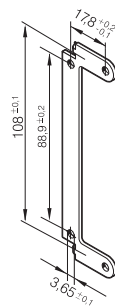
LZ40N

Screen



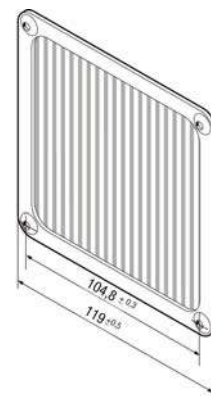
LZ40-1

Bracket



LZ60

Filter



Fan filter guard grilles



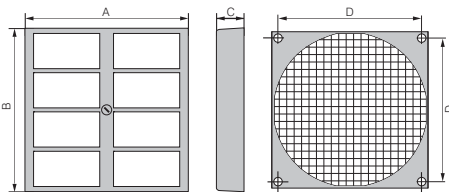
- Filter guard grille suitable for attachment to axial fan series of size 60 mm, 80 mm, 92 mm, 119 mm, \varnothing 172 mm. All filter units fit directly onto the existing installation holes of the fans.
- Filter guard grille consisting of 3 parts: outer grille barrier, inner fastening plate and replaceable filter mat.
- Grille barrier made of moulded polycarbonate (PC), with matted surface.
- Fast and easy exchange of filter mat via a quick release on the grille barrier.
- Fastening plate made of wire netting, with black powder coating.
- Filter mat can be replaced while the fan is running, protection provided by welded wire netting.
- Filter mat made of white, synthetically bonded fibres.

Protection filter	Fan size	A	B	C	D	Replacement filter*
FF60	60 x 60 mm	65	65	13,5	50,0	RF 60
FF80	80 x 80 mm	85	85	14,0	71,5	RF 80
FF92	92 x 92 mm	125	105	17,5	82,5	RF 92
FF119	119 x 119 mm	162	136	18,5	104,5	RF 119
FF172	\varnothing 172 mm	226	190	19,5	162,0	RF 172

* Replacement filters only in packs of 5.

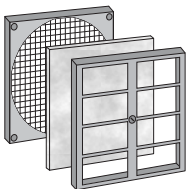
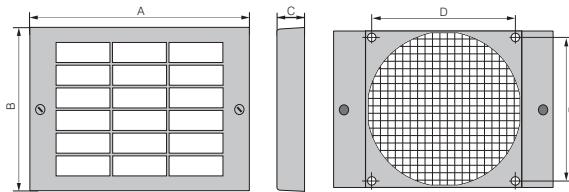
FF60 / FF80

Fan size: 60 x 60 mm
80 x 80 mm



FF92 / FF 119

Fan size: 92 x 92 mm
119 x 119 mm

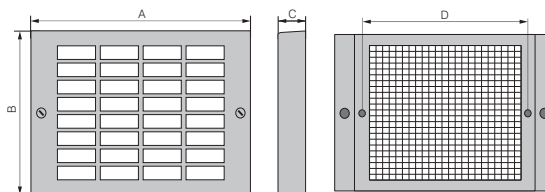


Filter capacity

A fan filter guard filters out up to 75% of dust particles up to a size of 5-10 microns and withstands temperatures of up to 100°C. Flame retardant in accordance with DIN 53438, grade F1. For installed, clean filters, an air flow reduction of 20 – 30% can be assumed.

FF 172

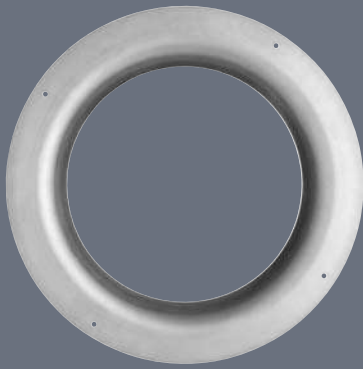
Fan size: \varnothing 172 mm



Inlet nozzles

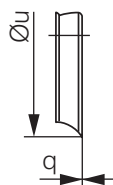
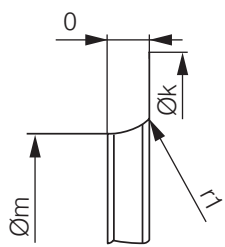
for centrifugal fans

– Material: Sheet steel, galvanised

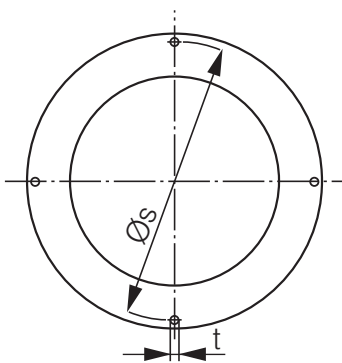


Fan	Vers.	k	m	o	q	r ₁	s	t	u	No.:
RET 97	(S) 1	116,0	80,0	10,0	0,80	10,0	108,0	3x4,5	–	LZ 1000-097
RER 120	(P) 1	146,0	94,4	18,0	0,80	16,0	134,0	4x4,5	126,0	LZ 1000-120
RER 133	(P) 1	129,0	87,0	13,0	1,00	8,0	118,0	4x4,5	103,0	LZ 1000-133
RER 175 / 190	(P) 1	170,0	125,5	14,0	1,25	10,0	158,0	4x4,5	146,0	LZ 1000-175
RER 220	(P) 2	252,0	155,0	21,0	0,80	22,0	–	–	199,0	LZ 1000-220
RER 225	(P) 1	223,0	146,0	28,0	1,50	25,0	210,0	4x4,5	196,0	LZ 1000-225

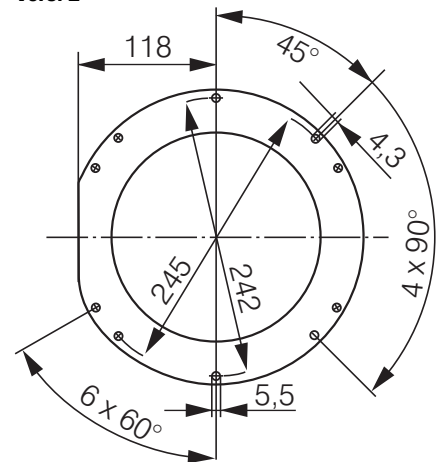
(P) = plastic, (S) = sheet steel



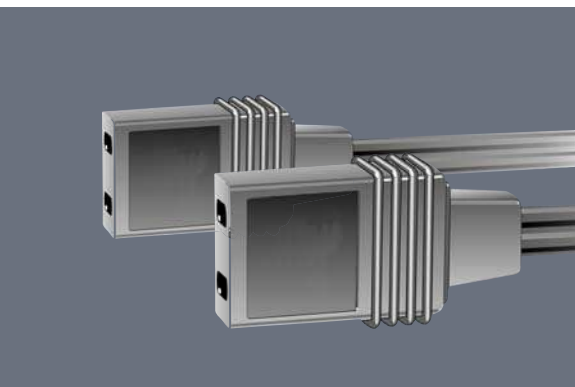
Vers. 1



Vers. 2



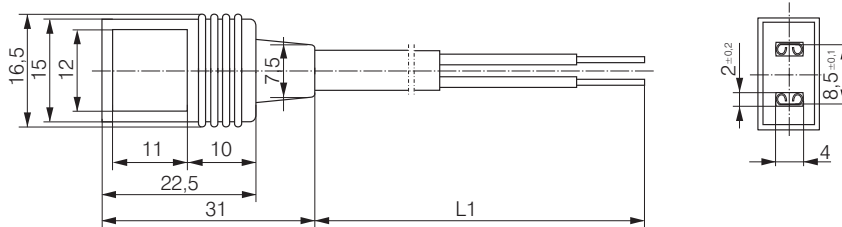
Connector cables



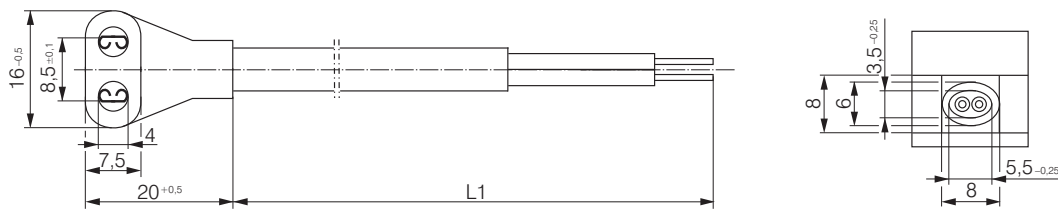
- Connector cable with injection-moulded plug in various lengths.
- Strand ends with core-crimping sleeve, core-end sleeve or tin-plated.
- Straight or angled plug.
- For all types of fan with flat plug 2.8 / 3.0 x 0.5.

Plug model	L1 (mm)	Leads	Plug	Leads end	Lead colour	Receptacle for tabs	Application
LZ120	610	0,5 mm ²	G	C	black/black	2,8 x 0,5	AC
LZ120-4	2 000	0,5 mm ²	G	A	black/black	2,8 x 0,5	AC
LZ120-5	380	0,5 mm ²	W	B	red/black	2,8 x 0,5	DC
LZ120-6	610	0,5 mm ²	W	B	red/black	2,8 x 0,5	DC
LZ120-11	2 000	0,5 mm ²	G	A	red/black	2,8 x 0,5	DC
LZ120-16	800	0,5 mm ²	G	B	black/black	2,8 x 0,5	AC
LZ120-18	4 000	0,5 mm ²	G	A	black/black	2,8 x 0,5	AC
LZ126	1 000	0,5 mm ²	G	C	black/black	2,8 x 0,5	AC
LZ127	1 600	0,5 mm ²	G	B	black/black	2,8 x 0,5	AC
LZ130-1	610	0,82 mm ²	G	C	black/black	2,8 x 0,5	AC
LZ140	610	0,73 mm ²	G	B	black/black	2,8 x 0,8	AC

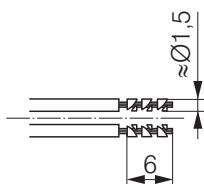
Connector cable Straight plug (G)



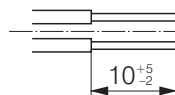
Connector cable Angled plug (W)



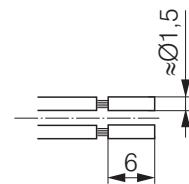
Core crimp sleeve Leads end A



Tin-plated Leads end B

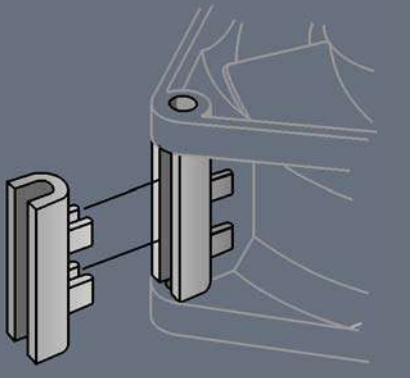


Core end sleeve Leads end C



Accessories

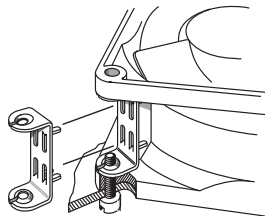
In addition to the accessories and assembly parts listed in this catalogue, ebm-papst also supplies numerous special parts for fans. The sales experts at ebm-papst will be happy to assist you in your enquiries concerning fan assembly and application.



Fan series	Accessories
8300	LZ212 / LZ260
8400 N	LZ261
3300	LZ212 / LZ260
3400 N	LZ261
9000	LZ210
4000	LZ210
4300	LZ212 / LZ260
8300	LZ212

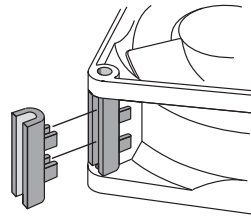
Fan series	Accessories
5100	LZ210
5600	LZ210
5200	LZ210
5900	LZ210
7000	LZ210
VARIOFAN	LZ370

LZ212



Screw clip of stainless steel. For mounting fans with threaded pin 3.5 DIN EN ISO 1478 (7970).

LZ260/LZ261



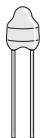
Spacer of fibreglass reinforced plastic. For screw mounting over both fan mounting flanges.

LZ210



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

LZ370

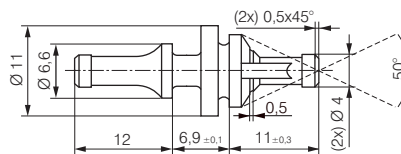


Required performance data:

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

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

LZ550



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

Вентилятор ebmpapst, купить в Минске tel. +375447584780

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