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Technical Information

Progress made by ebm-papst

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

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

The outstanding features of ACmaxx fans:

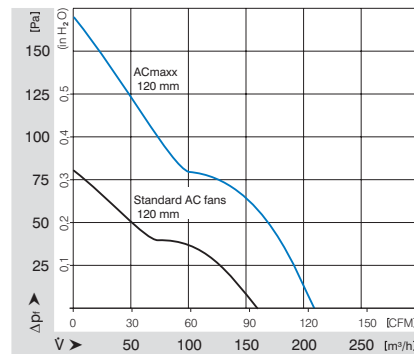
1. Designed for all AC voltages

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

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

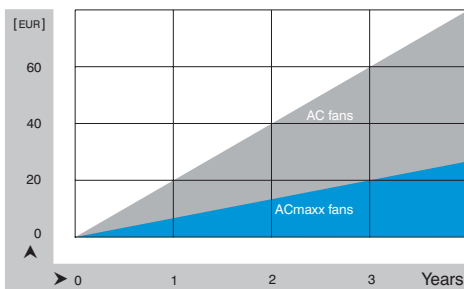
2. More power, more flexibility

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



3. Highest energy efficiency

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

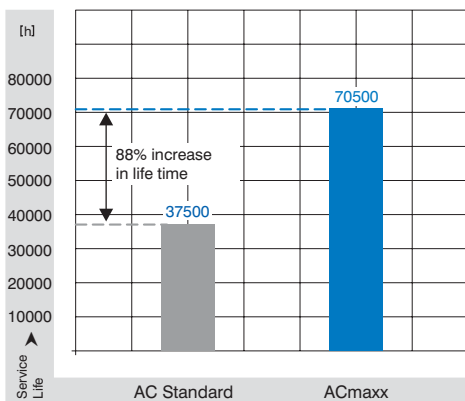


Energy cost comparison: Standard AC fan versus ACmaxx, at the higher air performance.

4. Long service life

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

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



5. Flexible and failsafe

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

You can find further information about these fan options in the "Specialized fans" chapter, starting on page 87. Or you can simply contact our application engineers to discuss your ideal ACmaxx fan.

6. Security

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

7. Environment

- Optional: improved humidity protection or Protection Class IP 54.

Fans for AC Operation

Overview Air Flow

Dimension mm	Series	Air Flow m³/h	Air Flow (m³/h)																			Page
			10	20	30	40	50	60	70	80	90	100	200	300	400	500	600	700	800	900	1000	
NEU □ 80 x 32	AC 8300	80																				108
NEU □ 92 x 38	AC 3200 J	144																				109
NEU □ 119 x 25	AC 4400 FN	205																				110
□ 119 x 32	AC 4300	204																				111
NEU 172 Ø x 51	AC 6100 N	350																				112
172 Ø x 51	AC 6200 N	350																				113

Overview of technically feasible designs

ACmaxx Axial Fans Series	Dimension mm	VDE, UL, CSA	SMTEC-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	Humidity protection IP >= IP54	Salt fog protection	Page
NEU AC 8300	80 x 80 x 32	*	■	•	• • •	• • • •	• • •		108
NEU AC 3200 J	92 x 92 x 38	*	■	•	• • •	• • • •	• • •		109
NEU AC 4400 FN	119 x 119 x 25	*	■	•	• • •	• • • •	• - -		110
AC 4300	119 x 119 x 32	*	■	•	• • •	• • • •	• • •		111
NEU AC 6100 N	172 Ø x 51	*	■	•	• • •	• • • •	• • •		112
AC 6200 N	172 Ø x 51	*	■	•	• • •	• • • •	• • •		113

- unavailably
- availably
- Sleeve Bearings
- 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.

Information 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 90.



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 97.



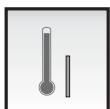
Alarm with limit speed

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 94.



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 100.



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 100.



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 details, please refer to page 101.



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 details, please refer to page 101.



Protection against moisture

Protection for the fan's electronics against moisture and condensation. For details, please refer to page 102.



IP 54

Protection of motor and PCB board against splashed water and humidity. For details, please refer to page 102.



Protection against salt spray fog

Protection of fan against the damaging effects of salt spray fog. For details, please refer to page 102.

max. 80 m³/h

ACmaxx Axial Fans

Series AC 8300 80 x 80 x 32 mm



New Model

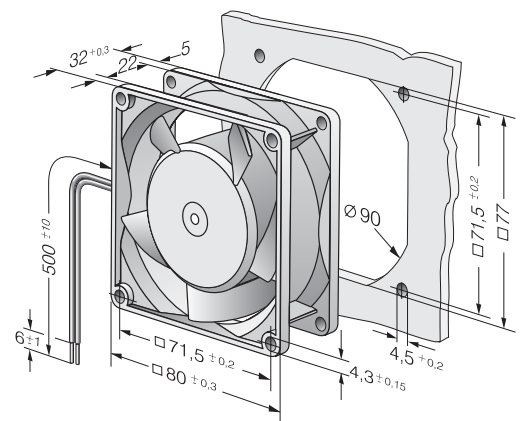
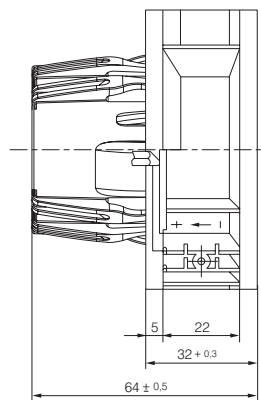
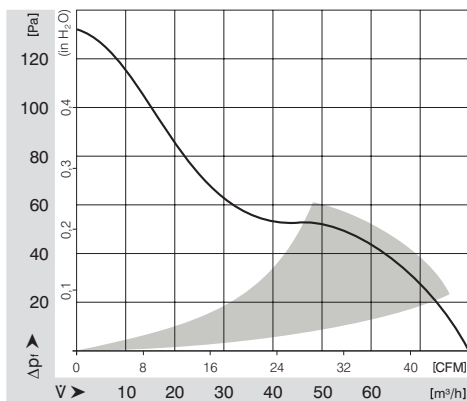
Highlights:

- 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 blocking.
- Electrical connection via single leads AWG 22, TR 64. Stripped and tinned ends.
- Blowing over struts. Rotational direction CCW looking at rotor.
- Mass: 325 g.

Nominal Date	Air Flow		Nominal Voltage	Frequency	Voltage Range	Noise		Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀ at 40 °C		Curve
	m ³ /h	CFM				dB(A)	Bel					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	



max. 144 m³/h

ACmaxx Axial Fans

Series AC 3200 J 92 x 92 x 38 mm



New Model

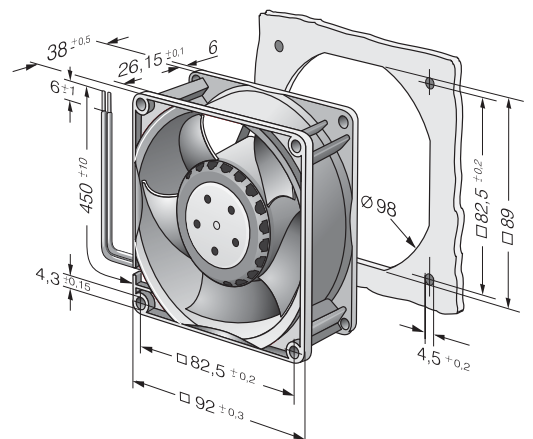
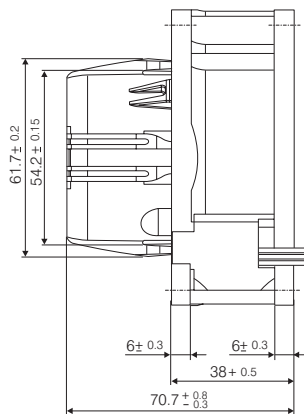
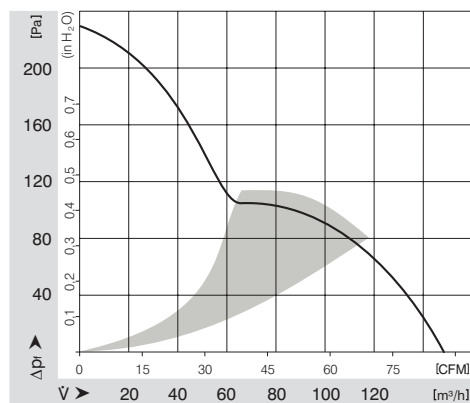
Highlights

- 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.
- Highly compression-insensitive characteristic curve for high air flow with 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 blocking.
- Electrical connection via single leads AWG 22, TR 64. Stripped and tinned ends.
- Blowing over struts. Rotational direction CCW looking at rotor.
- Mass: 325 g.

Nominal Date	Air Flow	Air Flow	Nominal Voltage	Frequency	Voltage Range	Noise	Sintec-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀ at 40 °C	at T _{max}	Curve
Type	m ³ /h	CFM	V	Hz	V AC	dB(A)	□/■	Watt	min ⁻¹	°C	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



max. 205 m³/h

ACmaxx Axial Fans

Series AC 4400 FN 119 x 119 x 25 mm



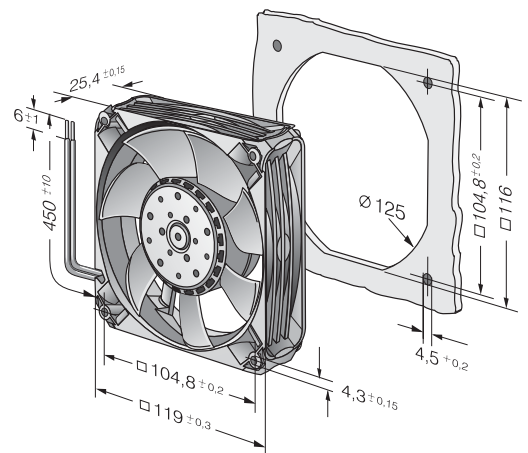
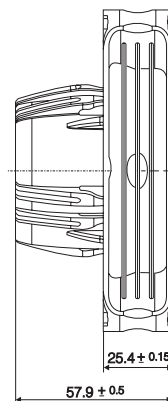
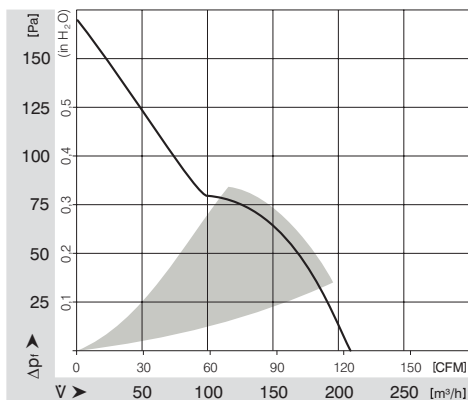
Highlights:

- Universally suitable for all AC voltages between 85 and 265 V.
- Fan speed 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.
- Highly compression-insensitive characteristic curve for high air flow with 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 blocking.
- Electrical connection via single leads AWG 22, TR 64. Stripped and tinned ends.
- Blowing over struts. Rotational direction CCW looking at rotor.
- Mass: 370 g.

Nominal Date	Air Flow	Air Flow	Nominal Voltage	Frequency	Voltage Range	Noise		Sintec-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀ at 40 °C	at T _{max}	Curve
Type	m ³ /h	CFM	V	Hz	V AC	dB(A)	Bel	□/■	Watt	min ⁻¹	°C	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



max. 204 m³/h

ACmaxx Axial Fans

Series AC 4300 119 x 119 x 32 mm



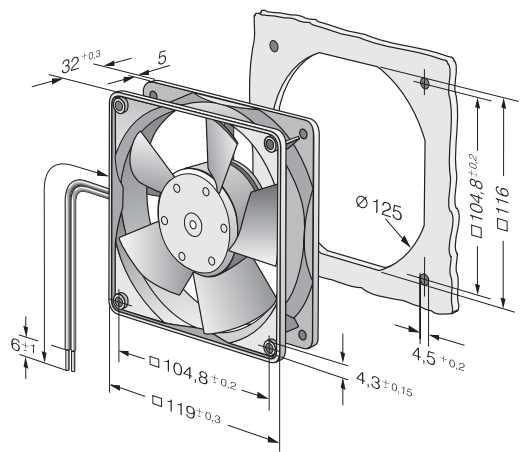
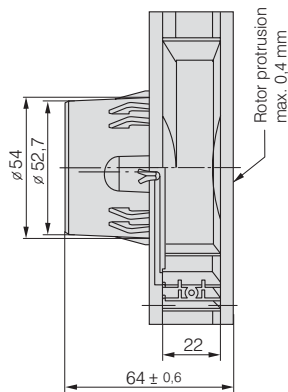
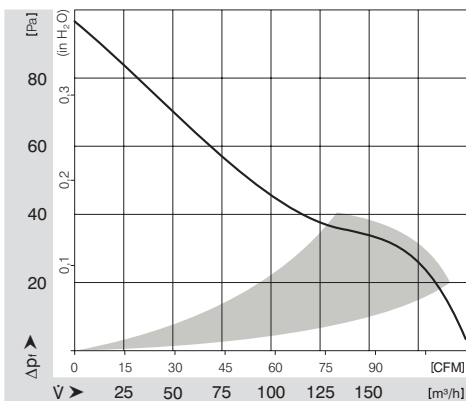
Highlights:

- Universally suitable for all AC voltages between 85 and 265 V.
- Fan speed 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 blocking.
- Electrical connection via single leads AWG 22, TR 64. Stripped and tinned ends.
- Blowing over struts. Rotational direction CCW looking at rotor.
- Mass: 325 g.

Nominal Date	Air Flow	Air Flow	Nominal Voltage	Frequency	Voltage Range	Noise	Sinter-Sleeve Bearings	Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀ at 40 °C	at T _{max}	Curve
Type	m ³ /h	CFM	V	Hz	V AC	dB(A)	□/■	Watt	min ⁻¹	°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	



max. 350 m³/h

ACmaxx Axial Fans

Series AC 6100 N 172 ø x 52 mm



Highlights:

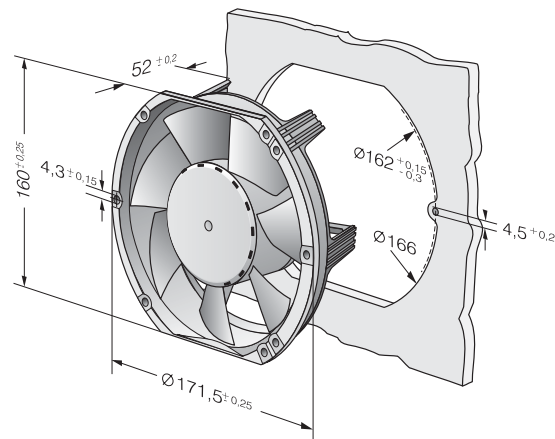
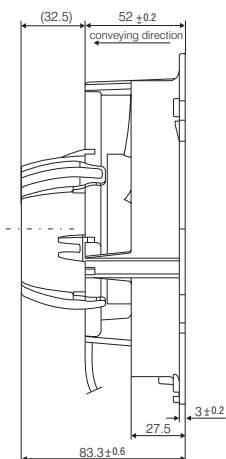
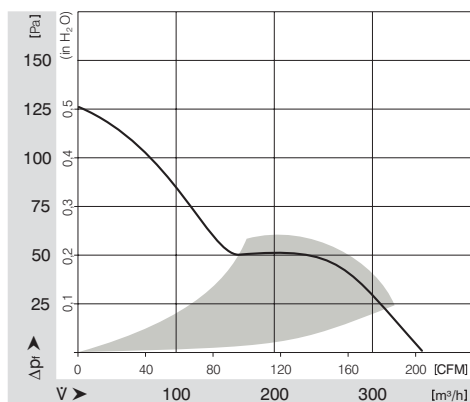
- Universally suitable for all AC voltages between 85 and 265 V.
- Fan speed not dependent on line frequency.
- Significantly reduced power consumption compared to conventional AC fans.
- Open loop speed control, sensor and alarm signal possible on request.

General attributes:

- Material: aluminium housing, fiberglass-reinforced PA impeller. Housing with grounding lug for screw M4 x 8 (Torx).
- Fully integrated electronic commutation.
- Protected against blocking.
- Electrical connection via single leads AWG 22, TR 64. Stripped and tinned ends.
- Blowing over struts. Rotational direction CCW looking at rotor.
- Mass: 760 g.

Nominal Data	Air Flow		Nominal Voltage	Frequency	Voltage Range	Noise		Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀		Curve
	m ³ /h	CFM				V	Hz					V AC	dB(A)	
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	

Extended speed monitoring 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.
- 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: aluminium housing, fiberglass-reinforced PA impeller. Housing with grounding lug for screw M4 x 8 (Torx).
- Fully integrated electronic commutation.
- Protected against blocking.
- Electrical connection via single leads AWG 22, TR 64. Stripped and tinned ends.
- Blowing over struts. Rotational direction CCW looking at rotor.
- Mass: 900 g.

Nominal Data	Air Flow		Nominal Voltage	Frequency	Voltage Range	Noise	Sinter-Sleeve Bearings Ball Bearings	Power Input	Nominal Speed	Temperature Range	Service Life L ₁₀ at 40 °C	at T _{max}	Curve
	m ³ /h	CFM											
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

