



# IP68 Fans from ebm-papst



**ebm****papst**

The engineer's choice

# About ebm-papst North America



## Headquarters - Farmington, CT

- » 250,000 sq. ft.
- » 20 Regional offices
- » Acoustic testing chamber
- » Complete air testing lab on site
- » ISO 9001 and ISO 14001 Certifications
- » Distribution centers in Farmington (CT) and Toronto, Canada

With offices in major cities throughout North America, our highly-skilled and experienced team of professionals are ready to tackle your air moving challenges with solutions that meet your requirements. ebm-papst serves all markets including IT & Telecommunications, Ventilation, Air-Conditioning, Refrigeration, Gas & Heating, Household Appliances, LED, Industrial, Drive Systems, Transportation, Agriculture, Medical, and more. Our customers can always count on prompt, courteous service. Customer satisfaction is our number one priority.



## Expert support when and where you need it

Knowledgeable field sales professionals are close by for face-to-face meetings. Dedicated inside sales associates fulfill all your ordering requirements. To assist you with order management, our customer service department provides automated services such as shipment notifications, reorder notifications, and invoicing.

## Expert design and manufacturing

Beginning with the initial product concept, our application engineers work in tandem with customers to select the best air moving solution to suit specific goals and requirements. Once the prototype has been established, it can then be tested in our state-of-the-art airflow testing chambers, allowing for the optimization of all air moving solutions. Each chamber has been designed to meet AMCA 210 and ISO 5801 requirements. In addition to our airflow testing capabilities, ebm-papst can conduct comparative sound, temperature, and velocity tests. The electrical engineering team can design simple fan controllers for monitoring fan speed, or complex controllers and power supplies, filtering, and specific communication protocols.

## Logistics and inventory management programs

We have over 90,000 sq. ft. of climate-controlled warehousing at our facilities offering real-time inventory transactions and bar-coded inventory. Inventory management programs such as Kanban, demand/pull, safety stock, consignment, and local warehousing can be customized to your needs.



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## The symbol of our commitment

GreenTech is a name put to the philosophy ebm-papst has used for decades: “each new product that we develop has to be better than its predecessor in terms of economy and ecology.” Our company philosophy is not just for designing new and more efficient fans and blowers; it is in practice in the offices and factories, locally and internationally. At the U.S. headquarters, two separate arrays of solar panels have been installed to provide the engineering building with electricity, along with additional renovations that make the facilities even more environmentally friendly.

GreenTech symbolizes our continuous commitment, achievements, and passion to provide customers with high quality products through the use of modern development and production methods, responsible business practices and initiatives that benefit not only the user, but the environment as well.

## What is EC Technology?

EC technology is an important factor in our GreenTech philosophy. ebm-papst EC fans use permanent magnet external rotor DC motors with fully integrated electronic commutation (EC) and AC to DC power conversion. EC motors give the flexibility of connecting to AC mains with the efficiency and simple speed control of a DC motor. With EC fans, the user benefits from the innovative commutation without wear-and-tear on the motor. The EC motor compares to the direct current shunt-wound motor except that the magnetic field is generated by permanent magnets inside the rotor.

With this technology, EC motors and fans can be easily controlled, are maintenance-free, offer outstanding efficiency and have a considerably long service life. The variable speed range possible in EC technology makes using a multitude of individual models a thing of the past.

Our R&D efforts are not only focused on saving energy. In terms of air performance and low noise, our products exceed the toughest specifications. EC technology pays off for every owner or operator, while conserving precious energy resources. When you use intelligent ebm-papst EC technology in your applications, everyone wins - companies, customers, and the environment.





## IP68 Defined

*Ingress Protection (IP) is a standard protection rating on electrical enclosures that are considered waterproof or dust proof. The importance of an IP68 rating on ebm-papst products is to ensure the highest level of protection of the electronics inside the enclosure against foreign objects and water, while also protecting the user against potentially harmful contact.*

### Ingress Protection at a glance

Ingress protection is the level of protection against the intrusion of solid objects, liquids, dust, and accidental contact with electrical enclosures inside a mechanical casing. This rating gives users a more detailed understanding of general terms such as waterproof or water-resistant.

The numerical digits represent conformity with the conditions outlined in the table below. For example, an electrical enclosure rated IP68 is completely

protected against dust and can not be damaged or become unsafe during permanent immersion in water.

### Applications and target markets

Environmentally protected cooling solutions are highly beneficial to applications within the Alternative Energy, Appliance, Commercial Refrigeration, Heating, IT/Telecom, LED/Lighting and Mobile markets.

#### IPXX Defined

|               |                               |
|---------------|-------------------------------|
| IP:           | Ingress Protection            |
| First Digit:  | Protection from solid objects |
| Second Digit: | Protection from liquids       |

### IP (Ingress Protection) Rating - Code Definition

| Rating | Solid Protection (first digit)                   | Rating | Liquid Protection (second digit)                           |
|--------|--------------------------------------------------|--------|------------------------------------------------------------|
| X      | No protection                                    | X      | No protection                                              |
| 1      | Protection against objects > 50mm (hands)        | 1      | Protection against dripping water or condensation          |
| 2      | Protection against objects > 12mm (fingers)      | 2      | Protection against water spray 15° from vertical           |
| 3      | Protection against objects > 2.5mm (tools/wires) | 3      | Protection against water spray 60° from vertical           |
| 4      | Protection against objects > 1mm (small tools)   | 4      | Protection against water spray from all directions.        |
| 5      | Protection against dust, limited ingress         | 5      | Protection against low pressure jets of water              |
| 6      | Complete protection against dust                 | 6      | Protection against high pressure water jets and heavy seas |
|        |                                                  | 7      | Protection against the effects of immersion (6in- 3.3ft)   |
|        |                                                  | 8      | Protection against permanent immersion                     |



# DC axial fans

Series 400JU 40 x 40 x 25 mm



## Highlights:

- Very rigid compression curve for high air flow at high back pressure
- Low operating noise level at high back pressure
- Ingress protection rating of IP68

**Material:** Fiberglass-reinforced composite

Impeller: PA

Electronic housing: PBT

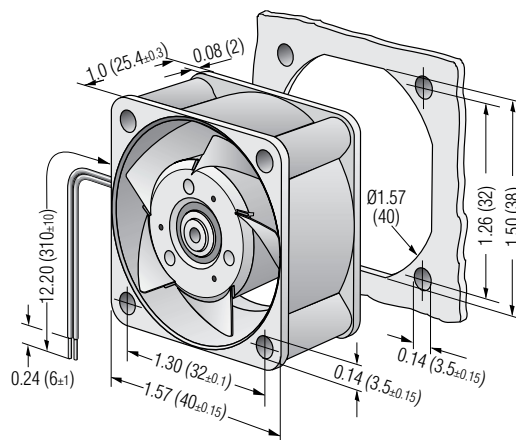
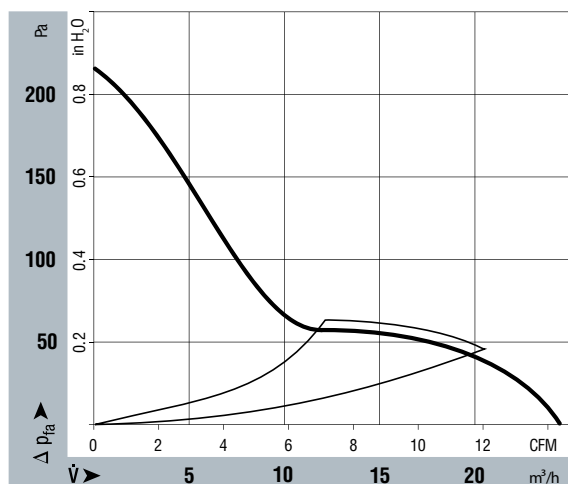
- Fully integrated electronic commutation
- Protected against reverse polarity and locking
- Connection via single strands AWG 26, TR 64, bared and tin-plated
- Air exhaust over struts

**Direction of rotation:** Counter clockwise, seen on rotor

| Nominal Data | Air flow | Nominal voltage | Voltage range | Sound pressure level | Sound power level | Ball bearings | Power input | Speed (1) | Temperature range (1) | Mass | Ingress Protection Rating | UL Approval |
|--------------|----------|-----------------|---------------|----------------------|-------------------|---------------|-------------|-----------|-----------------------|------|---------------------------|-------------|
| Type         | CFM      | VDC             | VDC           | dB(A)                | Bel(A)            |               | Watts       | RPM       | °C                    | g    |                           |             |
| 412JHHU      | 14.1     | 12              | 8...13.5      | 46                   | 6.1               | Yes           | 3.3         | 13,000    | -20...60              | 50   | IP68                      | Yes         |

(1) Nominal data at maximum load.

## Curves





- Very rigid compression curve for high air flow at high back pressure.
- Auto restart locked rotor protection
- Air exhaust over struts
- Connection via 400 mm strands AWG 24 with an insulation diameter of 1.5 mm
- Ingress protection rating of IP68

**Material:** Fiberglass-reinforced composite

Housing: PBT

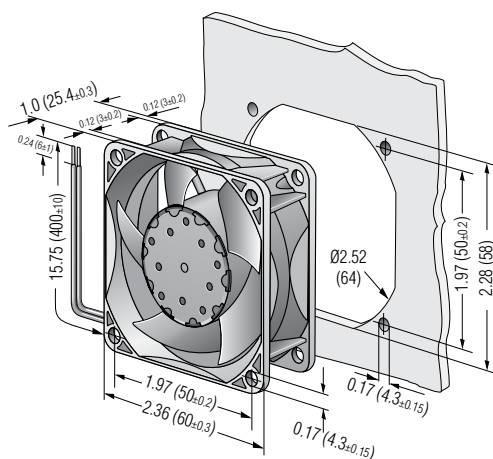
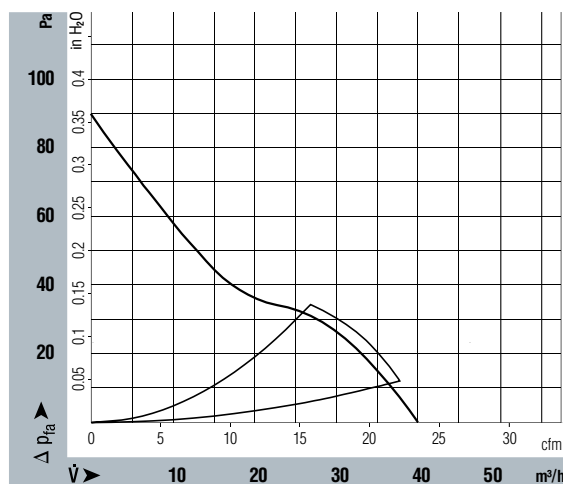
Impeller: PA

**Direction of rotation:** Clockwise, seen on rotor

| Nominal Data |          |                 |               |                      |                   |               |             |           |                       |      |                           |             |
|--------------|----------|-----------------|---------------|----------------------|-------------------|---------------|-------------|-----------|-----------------------|------|---------------------------|-------------|
| Type         | Air flow | Nominal voltage | Voltage range | Sound pressure level | Sound power level | Ball bearings | Power input | Speed (1) | Temperature range (1) | Mass | Ingress Protection Rating | UL Approval |
| 634NU-004    | 23.5     | 24              | 12...30       | 34                   | 5.1               | Yes           | 1.6         | 5900      | -20...70              | 70   | IP68                      | Yes         |

(1) Nominal data at maximum load.

## Curves





# DC axial fans

Series 8400NU 80 x 80 x 25 mm



## Highlights:

– Ingress protection rating of IP68

**Material:** Fiberglass-reinforced composites

Impeller: PA

Electronic housing: PBT

– Fully integrated electronic commutation

– Protected against reverse polarity and locking

– Connection via single strands AWG 24, TR 64, bared and tin-plated

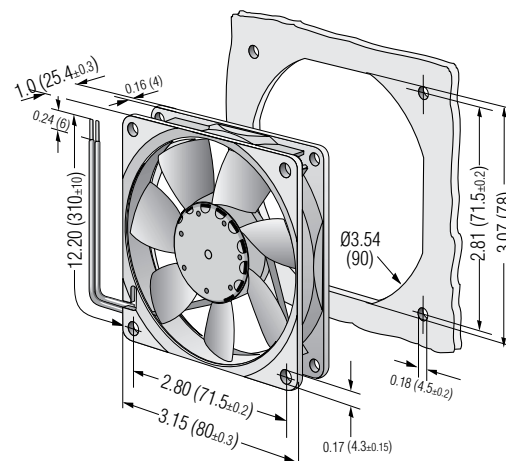
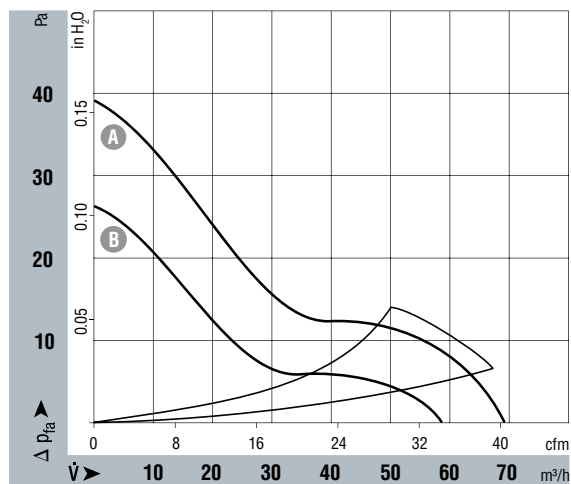
– Air exhaust over struts

**Direction of rotation:** Counter clockwise, seen on rotor

| Nominal Data |  | Air flow | Nominal voltage | Voltage range | Sound pressure level | Sound power level | Ball bearings | Power input | Speed (1) | Temperature range (1) | Mass | Ingress Protection Rating | UL Approval | Curves |
|--------------|--|----------|-----------------|---------------|----------------------|-------------------|---------------|-------------|-----------|-----------------------|------|---------------------------|-------------|--------|
| Type         |  | CFM      | VDC             | VDC           | dB(A)                | Bel(A)            |               | Watts       | RPM       | °C                    | g    |                           |             |        |
| 8412NU       |  | 40.6     | 12              | 8...15        | 32                   | 4.7               | Yes           | 2.0         | 3,100     | -20...70              | 95   | IP68                      | Yes         | A      |
| 8414NMU      |  | 34.1     | 24              | 18...28       | 27                   | 4.4               | Yes           | 1.4         | 2,600     | -20...70              | 95   | IP68                      | Yes         | B      |

(1) Nominal data at maximum load.

## Curves







## DC axial fans

Series 8300U 80 x 80 x 32 mm



### Highlights:

– Ingress protection rating of IP68

**Material:** Fiberglass-reinforced composites

Impeller: PA

Electronic housing: PBT

– Fully integrated electronic commutation

– Protected against reverse polarity and locking

– Connection via single strands AWG 22, TR 64, bared and tin-plated

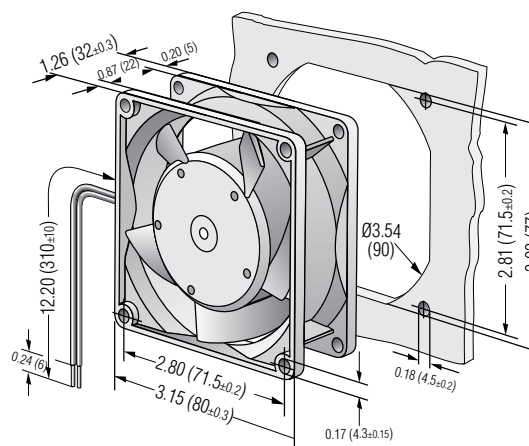
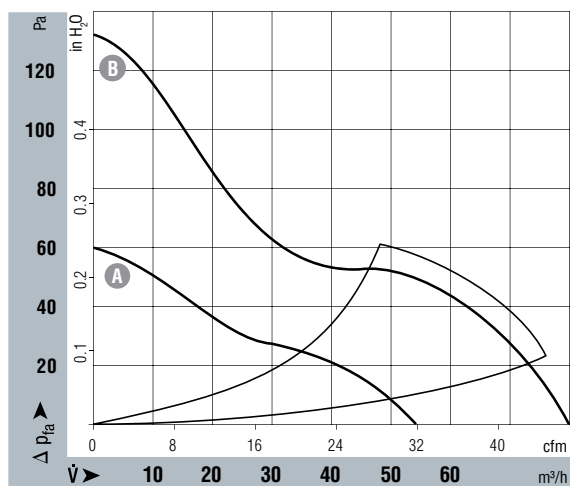
– Air exhaust over struts

**Direction of rotation:** Clockwise, seen on rotor

| Nominal Data | Air flow | Nominal voltage | Voltage range | Sound pressure level | Sound power level | Ball bearings | Power input | Speed (1) | Temperature range (1) | Mass | Ingress Protection Rating | UL Approval | Curves |
|--------------|----------|-----------------|---------------|----------------------|-------------------|---------------|-------------|-----------|-----------------------|------|---------------------------|-------------|--------|
| Type         | CFM      | VDC             | VDC           | dB(A)                | Bel(A)            |               | Watts       | RPM       | °C                    | g    |                           |             |        |
| 8314U        | 31.8     | 24              | 12...31.5     | 36                   | 5.2               | Yes           | 2.7         | 3,300     | -20...75              | 170  | IP68                      | Yes         | A      |
| 8314HU       | 47.1     | 24              | 12...28       | 48                   | 6.2               | Yes           | 6.0         | 5,000     | -20...75              | 170  | IP68                      | Yes         | B      |

(1) Nominal data at maximum load.

### Curves





# DC axial fans

Series 3300U 92 x 92 x 32 mm



## Highlights:

– Ingress protection rating of IP68

**Material:** Fiberglass-reinforced composite

Impeller: PA

Electronic housing: PBT

– Fully integrated electronic commutation

– Protected against reverse polarity and locking

– Connection via single strands AWG 22, TR 64, bared and tin-plated

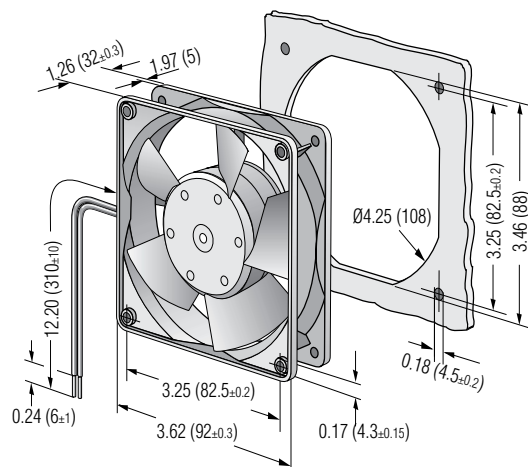
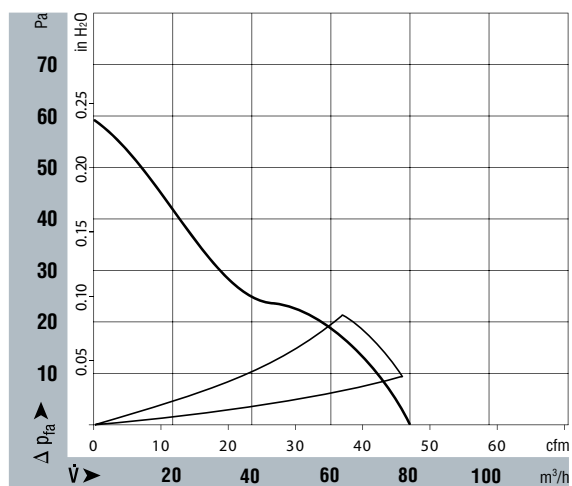
– Air exhaust over struts

**Direction of rotation:** Clockwise, seen on rotor

| Nominal Data | Air flow | Nominal voltage | Voltage range | Sound pressure level | Sound power level | Ball bearings | Power input | Speed (1) | Temperature range (1) | Mass | Ingress Protection Rating | UL Approval |
|--------------|----------|-----------------|---------------|----------------------|-------------------|---------------|-------------|-----------|-----------------------|------|---------------------------|-------------|
| Type         | CFM      | VDC             | VDC           | dB(A)                | Bel(A)            |               | Watts       | RPM       | °C                    | g    |                           |             |
| 3312U        | 47.1     | 12              | 6...15        | 37                   | 5.2               | Yes           | 2.4         | 3,000     | -20...75              | 190  | IP68                      | Yes         |
| 3314U        | 47.1     | 24              | 12...28       | 37                   | 5.2               | Yes           | 2.6         | 3,000     | -20...75              | 190  | IP68                      | Yes         |

(1) Nominal data at maximum load.

## Curves





## DC axial fans

Series 4300U 119 x 119 x 32 mm



### Highlights:

- Ingress protection rating of IP68

**Material:** Fiberglass-reinforced composite

Impeller: PA

Electronic housing: PBT

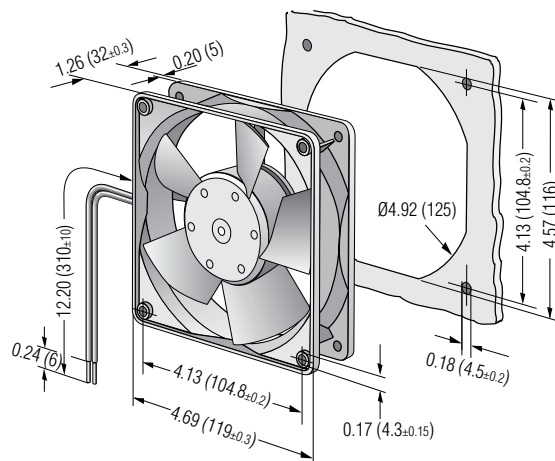
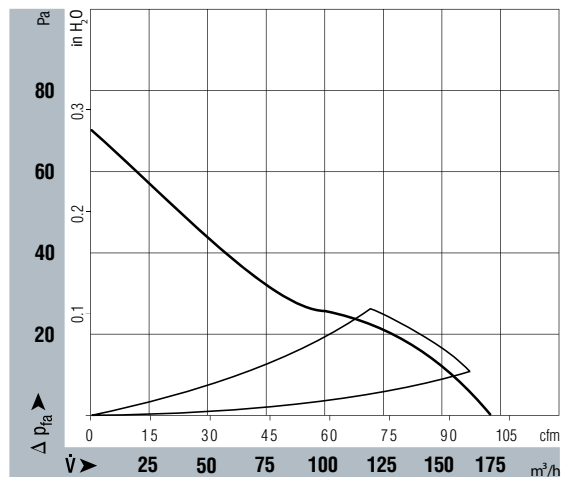
- Fully integrated electronic commutation
- Protected against reverse polarity and locking
- Connection via single strands AWG 22, TR 64, bared and tin-plated
- Air exhaust over struts

**Direction of rotation:** Clockwise, seen on rotor

| Nominal Data | Air flow | Nominal voltage | Voltage range | Sound pressure level | Sound power level | Ball bearings | Power input | Speed (1) | Temperature range (1) | Mass | Ingress Protection Rating | UL Approval |
|--------------|----------|-----------------|---------------|----------------------|-------------------|---------------|-------------|-----------|-----------------------|------|---------------------------|-------------|
| Type         | CFM      | VDC             | VDC           | dB(A)                | Bel(A)            |               | Watts       | RPM       | °C                    | g    |                           |             |
| 4312U        | 100.1    | 12              | 6...15        | 45                   | 5.8               | Yes           | 5.0         | 2,800     | -20...75              | 220  | IP68                      | Yes         |
| 4314U        | 100.1    | 24              | 12...28       | 45                   | 5.8               | Yes           | 5.0         | 2,800     | -20...75              | 220  | IP68                      | Yes         |

(1) Nominal data at maximum load.

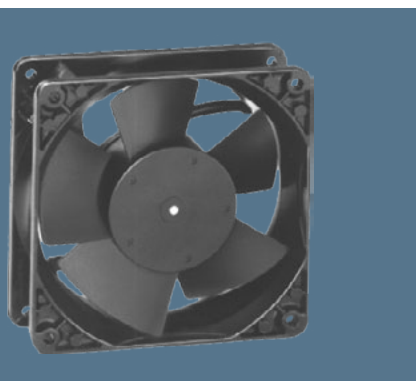
### Curves





# DC axial fans

Series 4100NU 119 x 119 x 38 mm



## Highlights:

– Ingress protection rating of IP68

**Material:** Housing: Aluminum

Impeller: Fiberglass-reinforced PA composite

– Fully integrated electronic commutation, external rotor motor

– Protected against reverse polarity, overloading and locking

– Electrical connection via 2 leads AWG 22 TR 64, 310mm long

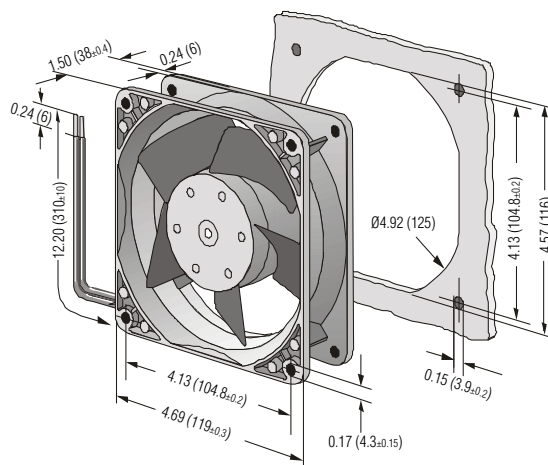
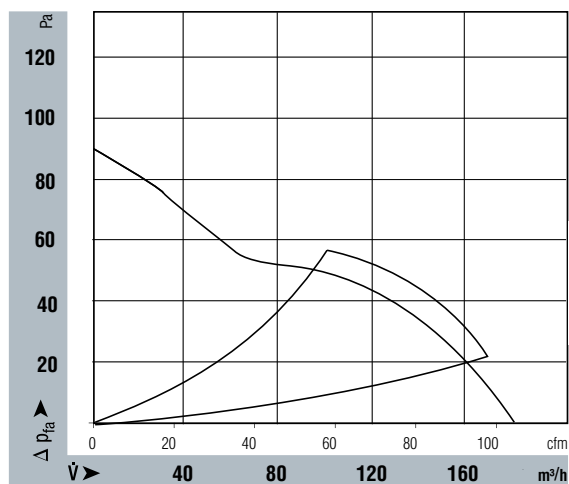
– Air intake over struts

**Direction of rotation:** Clockwise, seen on rotor

| Nominal Data | Air flow | Nominal voltage | Voltage range | Sound pressure level | Sound power level | Ball bearings | Power input | Speed (1) | Temperature range (1) | Mass | Ingress Protection Rating | UL Approval |
|--------------|----------|-----------------|---------------|----------------------|-------------------|---------------|-------------|-----------|-----------------------|------|---------------------------|-------------|
| Type         | CFM      | VDC             | VDC           | dB(A)                | Bel(A)            |               | Watts       | RPM       | °C                    | g    |                           |             |
| 4114NU       | 105.9    | 24              | 12...29       | 48.5                 | 5.7               | Yes           | 4.5         | 3,200     | -30...75              | 390  | IP68                      | Yes         |

(1) Nominal data at maximum load.

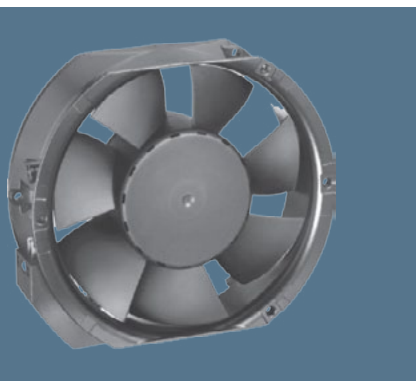
## Curves





# DC axial fans

Series 6400U 172 x 150 x 51 mm



## Highlights:

- Ingress protection rating of IP68

**Material:** Housing: Aluminum

Impeller: Fiberglass-reinforced composite PA

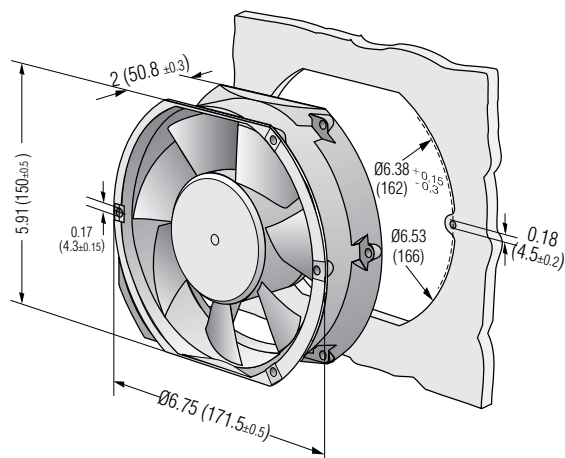
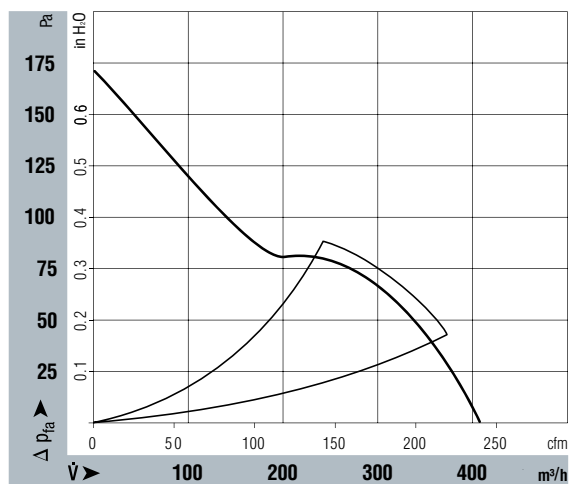
- Fully integrated electronic commutation
- Protected against reverse polarity and locking
- Electrical connection with flat plugs 3 x 0.5 mm.
- Air exhaust over struts

**Direction of rotation:** Counter clockwise, seen on rotor

| Nominal Data | Air flow | Nominal voltage | Voltage range | Sound pressure level | Sound power level | Ball bearings | Power input | Speed (1) | Temperature range (1) | Mass | Ingress Protection Rating | UL Approval |
|--------------|----------|-----------------|---------------|----------------------|-------------------|---------------|-------------|-----------|-----------------------|------|---------------------------|-------------|
| Type         | CFM      | VDC             | VDC           | dB(A)                | Bel(A)            |               | Watts       | RPM       | °C                    | g    |                           |             |
| 6424U        | 241.3    | 24              | 12...28       | 57                   | 6.4               | Yes           | 18          | 3,400     | -20...72              | 760  | IP68                      | Yes         |

(1) Nominal data at maximum load.

## Curves







# AC axial fans

Series 4000ZU 119 x 119 x 38 mm



## Highlights:

- High air flow and minimal noise level
- Aerodynamically shaped, driven by shaded pole motor
- External rotor dynamically balanced in two planes
- Fans can run at 50 or 60 Hz
- Air exhaust over struts
- Overload protection, maintenance-free continuous operation
- Ingress protection rating of IP68

**Material:** Housing: metal

Impeller: metal

Blades: metal

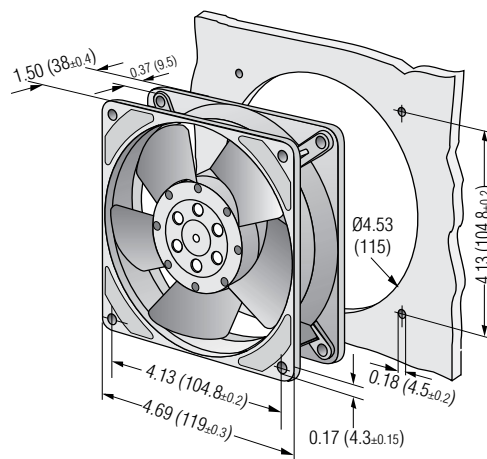
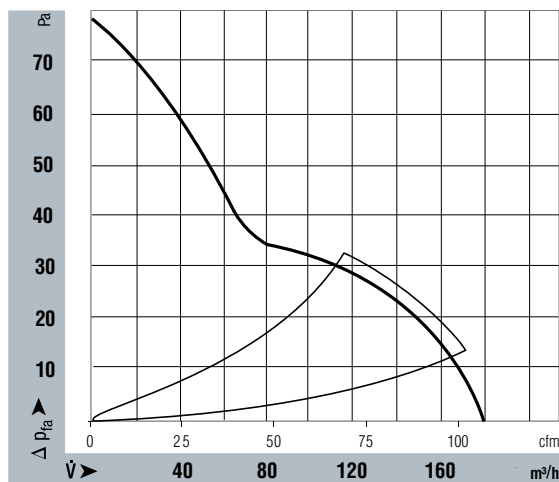
- Electrical connection via 2 leads AWG 22, TR 64, UL Style 1007
- 4656ZWU: 310mm long / 4606ZWU-879: 770 mm long

**Direction of rotation:** Clockwise, seen on rotor

| Nominal Data |  | Air flow | Nominal voltage | Sound pressure level | Sound power level | Ball bearings | Power input | Speed (1) | Temperature range (1) | Mass | Ingress Protection Rating | UL Approval |
|--------------|--|----------|-----------------|----------------------|-------------------|---------------|-------------|-----------|-----------------------|------|---------------------------|-------------|
| Type         |  | CFM      | VDC             | dB(A)                | Bel(A)            |               | Watts       | RPM       | °C                    | g    |                           |             |
| 4656ZWU      |  | 105.8    | 230             | 44                   | 5.6               | Yes           | 17          | 3,100     | -40...85              | 540  | IP68                      | Yes         |
| 4606ZWU-879  |  | 105.9    | 115             | 45                   | 5.6               | Yes           | 18          | 3,100     | -40...85              | 560  | IP68                      | Yes         |

(1) Nominal data at maximum load. Data listed in this table is measured with a power frequency of 60Hz.

## Curves: Airflow at 60 Hz





# ACmaxx axial fans

Series AC 6200NU Ø172 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
- Fully integrated electronic commutation, protected against locking, air exhaust over struts
- Connection with single strands AWG 22, TR 64. Bared and tin-plated
- Ingress protection rating of IP68

## Material:

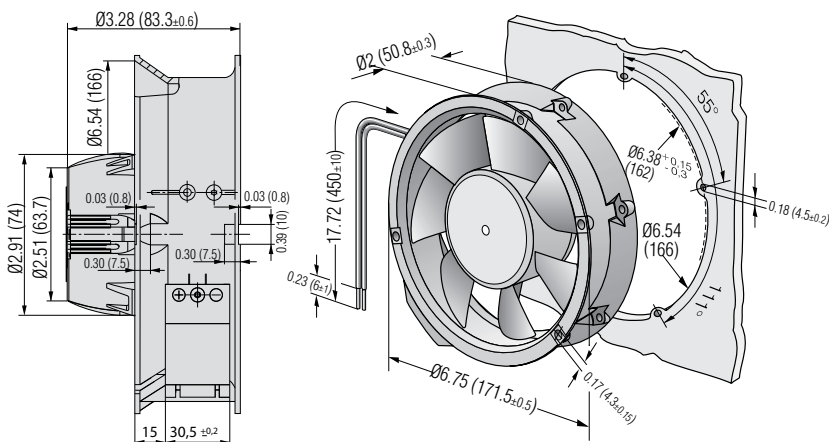
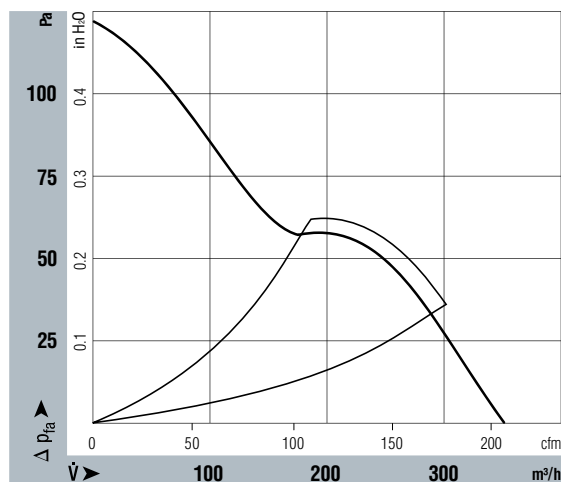
Housing: Aluminum  
Housing with grounding lug for screw M4 x 8 (Torx)  
Impeller: Fiberglass-reinforced composite PA  
Electronic housing: PBT

**Direction of rotation:** Counter clockwise, seen on rotor

| Nominal Data | Air flow | Nominal voltage | Voltage range | Sound pressure level | Sound power level | Ball bearings | Power input | Speed (1) | Temperature range (1) | Mass | Ingress Protection Rating | UL Approval |
|--------------|----------|-----------------|---------------|----------------------|-------------------|---------------|-------------|-----------|-----------------------|------|---------------------------|-------------|
| Type         | CFM      | VDC             | VDC           | dB(A)                | Bel(A)            |               | Watts       | RPM       | °C                    | g    |                           |             |
| AC 6200 NMU  | 206.0    | 115/230         | 85...265      | 50                   | 5.7               | Yes           | 14          | 2,850     | -20...70              | 900  | IP68                      | Yes         |

(1) Nominal data at maximum load.

## Curves



**ebm-papst Inc.  
Farmington**

100 Hyde Road  
Farmington, CT 06034  
Phone + 1 860-674-1515  
Fax +1 860-674-8536  
[sales@us.ebmpapst.com](mailto:sales@us.ebmpapst.com)

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