

PSG Series DC Power Supplies

PSG Series  
DC Power Supplies



PSG Series

General Description

Eaton's PSG Series of power supplies is designed to be a high-performance, high-quality line of products covering a majority of 24 Vdc control applications. With global certifications, compact size and an impressive operating temperature range, the PSG Series fits a wide variety of applications at a competitive price.

Eight models are offered, from 2.5A up to 20A with both single- and three-phase input voltage models available.

Application Description

The PSG Series is a line of general-purpose power supplies for use in a wide variety of industrial control applications. Applications include communication networks, sensors, PLCs and many other electrical systems.

Each model is equipped with a rugged metal housing, heavy-duty screw terminals and a variety of protection features, making the PSG one of the most versatile industrial power supply lines on the market.

Features, Benefits and Functions

- Universal input voltages: 85–264 Vac for single-phase units, 320–575 Vac for three-phase units
- Rugged aluminum housing stands up to harsh environments
- Current surge (power boost) of 1.5 times nominal current for 1 second allows branch protection and powering of high pickup loads
- Wide operating temperature range: –20°C to +75°C (derating above 50°C)
- Adjustable DC voltage output
- LED indicating light for DC OK simplifies troubleshooting
- Compact size, with common depth and height across all models, allows for common panel depths and family consistency
- MTBF up to 800,000 hours ensures uptime and reliability
- Heavy-duty screw terminals with finger-safe protective cover allow use of ring-lug terminals
- All-metal DIN rail mounting hardware
- Class 1, Division 2 hazardous location rated

Standards and Certifications

- UL/cUL listed—UL 508 (industrial control equipment)
- cURus—UL 60950-1
- IEC
- EN
- German safety
- CSA certified (contact Eaton for certification dates and status)
- CE marked
- RoHS compliant

Product Selection

Table 30.5-35. Power Supply—Single-Phase

| Description                          | Catalog Number |
|--------------------------------------|----------------|
| 85–264 Vac input, 24 Vdc/2.5A output | PSG60E         |
| 85–264 Vac input, 24 Vdc/5A output   | PSG120E        |
| 85–264 Vac input, 24 Vdc/10A output  | PSG240E        |
| 85–264 Vac input, 24 Vdc/20A output  | PSG480E        |

Table 30.5-36. Power Supply—Three-Phase

| Description                           | Catalog Number |
|---------------------------------------|----------------|
| 320–575 Vac input, 24 Vdc/2.5A output | PSG60F         |
| 320–575 Vac input, 24 Vdc/5A output   | PSG120F        |
| 320–575 Vac input, 24 Vdc/10A output  | PSG240F        |
| 320–575 Vac input, 24 Vdc/20A output  | PSG480F        |

**PSG Series DC Power Supplies**

**Technical Data and Specifications**

**Table 30.5-37. PSG Series DC Power Supplies**

| Capacity                                 | PSG60E<br>60W                  | PSG120E<br>120W                | PSG240E<br>240W                | PSG480E<br>480W                | PSG60F<br>60W                       | PSG120F<br>120W                     | PSG240F<br>240W                     | PSG480F<br>480W                     |
|--|--------------------------------|--------------------------------|--------------------------------|--------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| <b>Input</b>                             |                                |                                |                                |                                |                                     |                                     |                                     |                                     |
| Nominal voltage                          | 100–240 Vac                    | 100–240 Vac                    | 100–240 Vac                    | 100–240 Vac                    | 3 x 400–500 Vac                     | 3 x 400–500 Vac                     | 3 x 400–500 Vac                     | 3 x 400–500 Vac                     |
| Voltage range                            | ②                              | ②                              | ②                              | ②                              | ③                                   | ③                                   | ③                                   | ③                                   |
| Frequency                                | 47–63 Hz<br>(0 Hz at DC input) | 47–63 Hz<br>(0 Hz at DC input) | 47–63 Hz<br>(0 Hz at DC input) | 47–63 Hz<br>(0 Hz at DC input) | 47–63 Hz<br>(0 Hz at DC input)      | 47–63 Hz<br>(0 Hz at DC input)      | 47–63 Hz<br>(0 Hz at DC input)      | 47–63 Hz<br>(0 Hz at DC input)      |
| Nominal current ①                        | 1.1A                           | 1.4A                           | 2.9A                           | 5.7A                           | 0.3A                                | 0.5A                                | 0.8A                                | 1.6A                                |
| Inrush current limitation ①              | 30A                            | <80A                           | N/A                            | N/A                            | <30A                                | <30A                                | <40A                                | <50A                                |
| Mains buffering at nominal load (typ.) ① | >20 ms                         | >35 ms                         | >20 ms                         | >20 ms                         | >30 ms                              | >35 ms                              | >35 ms                              | >20 ms                              |
| Turn-on time                             | <2.5 sec                       | <1 sec                         | <1 sec                         | <1 sec                         | <2 sec                              | <1 sec                              | <1 sec                              | <1 sec                              |
| Internal fuse                            | T3.15 AH/250V                  | T3.15 AH/250V                  | T6.3AH/250V                    | F10H/250V                      | 3.15AH/500V                         | 3.15AH/500V                         | 3.15AH/500V                         | 3.15AH/500V                         |
| External fusing                          | 6A, 10A or 16A                 | 6A, 10A or 16A                 | 10A or 16A                     | 10A or 16A                     | 3 x circuit breakers 6A, 10A or 16A | 3 x circuit breakers 6A, 10A or 16A | 3 x circuit breakers 6A, 10A or 16A | 3 x circuit breakers 6A, 10A or 16A |
| Leakage current                          | <1 mA                          | <1 mA                          | <3.5 mA                        | <1 mA                          | <3.5 mA                             | <3.5 mA                             | <3.5 mA                             | <3.5 mA                             |

**Output**

|  |                               |                               |                               |                               |   |   |   |   |
|--|-------------------------------|-------------------------------|-------------------------------|-------------------------------|---|---|---|---|
| Nominal output voltage                             | 24 Vdc ± 2%                   | 24 Vdc ± 2%                   | 24 Vdc ± 2%                   | 24 Vdc ± 2%                   | 24 Vdc ± 2%                                 | 24 Vdc ± 2%                                 | 24 Vdc ± 2%                                 | 24 Vdc ± 2%                                 |
| Adjustment range                                   | 22–28 Vdc                     | 22–28 Vdc                     | 22–28 Vdc                     | 22–28 Vdc                     | 22–28 Vdc                                   | 22–28 Vdc                                   | 22–28 Vdc                                   | 22–28 Vdc                                   |
| Nominal current                                    | 2.5A                          | 5A                            | 10A                           | 20A                           | 2.5A  | 5A  | 10A   | 20A   |
| Startup with capacitive loads                      | Max. 8000 µF                  | Max. 10,000 µF                | Max. 10,000 µF                | Max. 10,000 µF                | Max. 10,000 µF                              | Max. 10,000 µF                              | Max. 10,000 µF                              | Max. 10,000 µF                              |
| Max. power dissipation idling nominal load approx. | 10W                           | 22.5W                         | 42.5W                         | 72W                           | 9W  | 18W   | 36W   | 72W   |
| Efficiency (at 400 Vac and nominal values)         | >85% typ                      | >84% typ                      | >84% typ                      | >86% typ                      | >86% at 3 x 400 Vac;<br>>85% at 3 x 500 Vac | >86% at 3 x 400 Vac;<br>>85% at 3 x 500 Vac | >86% at 3 x 400 Vac;<br>>85% at 3 x 500 Vac | >86% at 3 x 400 Vac;<br>>85% at 3 x 500 Vac |
| Current surge (at 24 Vdc)                          | 3.75A                         | 7.5A                          | 15A                           | 30A                           | 3.75A                                       | 7.5A  | 15A   | 30A   |
| Current surge time/cycle                           | 1 sec. (at 10-sec. intervals) | 1 sec. (at 10-sec. intervals) | 1 sec. (at 10-sec. intervals) | 1 sec. (at 10-sec. intervals) | 1 sec. (at 10-sec. intervals)               | 1 sec. (at 10-sec. intervals)               | 1 sec. (at 10-sec. intervals)               | 1 sec. (at 10-sec. intervals)               |
| Residual ripple/peak switching (20 MHz)            | <50 mV/<br><240 mVpp          | <50 mV/<br><240 mVpp          | <50 mV/<br><240 mVpp          | <50 mV/<br><240 mVpp          | <50 mV/<br><240 mVpp                        | <50 mV/<br><240 mVpp                        | <50 mV/<br><240 mVpp                        | <50 mV/<br><240 mVpp                        |
| Parallel operation                                 | With O-ring Diode             | With O-ring Diode             | With O-ring Diode             | With O-ring Diode             | With O-ring Diode                           | With O-ring Diode                           | With O-ring Diode                           | With O-ring Diode                           |

**Galvanic Isolation**

|               |  |  |  |  |  |  |  |  |
|---------------|--|--|--|--|--|--|--|--|
| Input/output  | 4 kVAC (type test)/3 kVAC (routine test)     | 4 kVAC (type test)/3 kVAC (routine test)     | 4 kVAC (type test)/3 kVAC (routine test)     | 4 kVAC (type test)/3 kVAC (routine test)     | 4 kVAC (type test)/3 kVAC (routine test)     | 4 kVAC (type test)/3 kVAC (routine test)     | 4 kVAC (type test)/3 kVAC (routine test)     | 4 kVAC (type test)/3 kVAC (routine test)     |
| Input/ground  | 1.5 kVAC (type test)/1.5 kVAC (routine test) | 1.5 kVAC (type test)/1.5 kVAC (routine test) | 1.5 kVAC (type test)/1.5 kVAC (routine test) | 1.5 kVAC (type test)/1.5 kVAC (routine test) | 1.5 kVAC (type test)/1.5 kVAC (routine test) | 1.5 kVAC (type test)/1.5 kVAC (routine test) | 1.5 kVAC (type test)/1.5 kVAC (routine test) | 1.5 kVAC (type test)/1.5 kVAC (routine test) |
| Output/ground | 1.5 kVAC (type test)/500 Vac (routine test)  | 1.5 kVAC (type test)/500 Vac (routine test)  | 1.5 kVAC (type test)/500 Vac (routine test)  | 1.5 kVAC (type test)/500 Vac (routine test)  | 1.5 kVAC (type test)/500 Vac (routine test)  | 1.5 kVAC (type test)/500 Vac (routine test)  | 1.5 kVAC (type test)/500 Vac (routine test)  | 1.5 kVAC (type test)/500 Vac (routine test)  |

① Ratings for single-phase models are at 115 Vac; three-phase models are at 400 Vac.

② 85–264 Vac (DC input range 120–375 Vdc).

③ 320–575 Vac (DC input range 450–800 Vdc).

## PSG Series DC Power Supplies

**Table 30.5-37. PSG Series DC Power Supplies (Continued)**

| Capacity                     | PSG60E<br>60W                   | PSG120E<br>120W                 | PSG240E<br>240W                 | PSG480E<br>480W                 | PSG60F<br>60W                   | PSG120F<br>120W                 | PSG240F<br>240W                 | PSG480F<br>480W                 |
|------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| <b>General/Physical Data</b> |                                 |                                 |                                 |                                 |                                 |                                 |                                 |                                 |
| Housing material             | Aluminum (Al5052)               | Aluminum (Al5052)               | Aluminum (Al5052)               | Aluminum (Al5052)               | Aluminum (Al5052)               | Aluminum (Al5052)               | Aluminum (Al5052)               | Aluminum (Al5052)               |
| Signals                      | Green LED for DC OK             | Green LED for DC OK             | Green LED for DC OK             | Green LED for DC OK             | Green LED for DC OK             | Green LED for DC OK             | Green LED for DC OK             | Green LED for DC OK             |
| MTBF                         | >800,000 hrs                    | >800,000 hrs                    | >300,000 hrs                    | >300,000 hrs                    | >500,000 hrs                    | >500,000 hrs                    | >300,000 hrs                    | >300,000 hrs                    |
| Dimensions (L)               | 121 mm                          | 121 mm                          | 121 mm                          | 121 mm                          | 121 mm                          | 121 mm                          | 121 mm                          | 121 mm                          |
| Dimensions (W)               | 32 mm                           | 50 mm                           | 85 mm                           | 160 mm                          | 70 mm                           | 70 mm                           | 85 mm                           | 160 mm                          |
| Dimensions (H)               | 120 mm                          | 115 mm                          | 118.5 mm                        | 115 mm                          | 118.5 mm                        | 118.5 mm                        | 120.5 mm                        | 115 mm                          |
| Weight (kg)                  | 0.37                            | 0.54                            | 1.04                            | 1.8                             | 0.56                            | 0.72                            | 0.77                            | 1.71                            |
| Operating temperature        | -20°C to +75°C (>50°C derating) | -20°C to +75°C (>50°C derating) | -20°C to +75°C (>50°C derating) | -20°C to +75°C (>50°C derating) | -20°C to +75°C (>50°C derating) | -20°C to +75°C (>50°C derating) | -20°C to +75°C (>50°C derating) | -20°C to +75°C (>50°C derating) |
| Storage temperature          | -25°C to +85°C                  | -25°C to +85°C                  | -25°C to +85°C                  | -25°C to +85°C                  | -25°C to +85°C                  | -25°C to +85°C                  | -25°C to +85°C                  | -25°C to +85°C                  |
| Operating humidity           | <95% RH, non-condensing         | <95% RH, non-condensing         | <95% RH, non-condensing         | <95% RH, non-condensing         | <95% RH, non-condensing         | <95% RH, non-condensing         | <95% RH, non-condensing         | <95% RH, non-condensing         |
| Vibration (operating)        | ①                               | ①                               | ①                               | ①                               | ①                               | ①                               | ①                               | ①                               |
| Pollution degree             | 2                               | 2                               | 2                               | 2                               | 2                               | 2                               | 2                               | 2                               |
| Climatic class               | 3K3 according to EN 60721       | 3K3 according to EN 60721       | 3K3 according to EN 60721       | 3K3 according to EN 60721       | 3K3 according to EN 60721       | 3K3 according to EN 60721       | 3K3 according to EN 60721       | 3K3 according to EN 60721       |

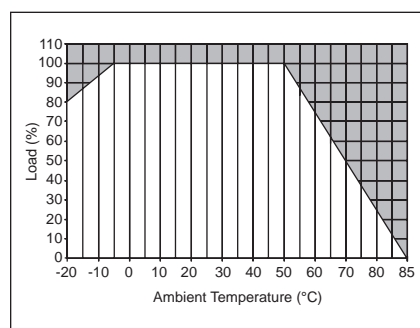
### Safety and Protection

|   |                                |                                |                                |                                |                                |                                |                                |                                |
|---|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Transient surge voltage                         | Varistor                       | Varistor                       | Varistor                       | Varistor                       | Varistor                       | Varistor                       | Varistor                       | Varistor                       |
| Surge voltage protection against internal surge | Yes                            | Yes                            | Yes                            | Yes                            | Yes                            | Yes                            | Yes                            | Yes                            |
| Safety class                                    | Class I with ground connection | Class I with ground connection | Class I with ground connection | Class I with ground connection | Class I with ground connection | Class I with ground connection | Class I with ground connection | Class I with ground connection |
| Shock   | ②                              | ②                              | ②                              | ②                              | ②                              | ②                              | ②                              | ②                              |

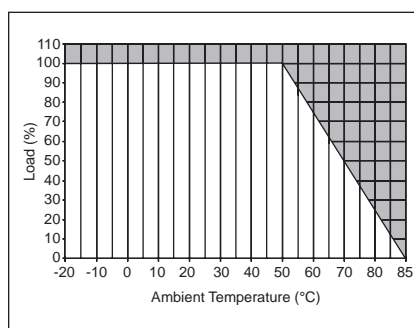
① 10 to 150 Hz, 0.35 mm acc. 50 m/s/s, single amplitude (5G max.) for 90 min. in each X, Y, Z direction, in acc. with IEC 68-2-6.

② 30G (300 m/s/s) in all directions according to IEC 68-2-27.

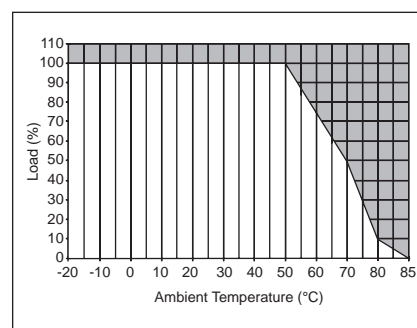
### Power Derating Curves



**Figure 30.5-21. Vertical Mounting Position  
PSG60E**



**Figure 30.5-22. Vertical Mounting Position  
PSG60F, PSG120E, PSG120F, PSG480E,  
PSG480F**



**Figure 30.5-23. Vertical Mounting Position  
PSG240E, PSG240F**

**PSG Series DC Power Supplies**

**Dimensions—Approximate Dimensions in mm**

Note: Dimensions are for reference only.

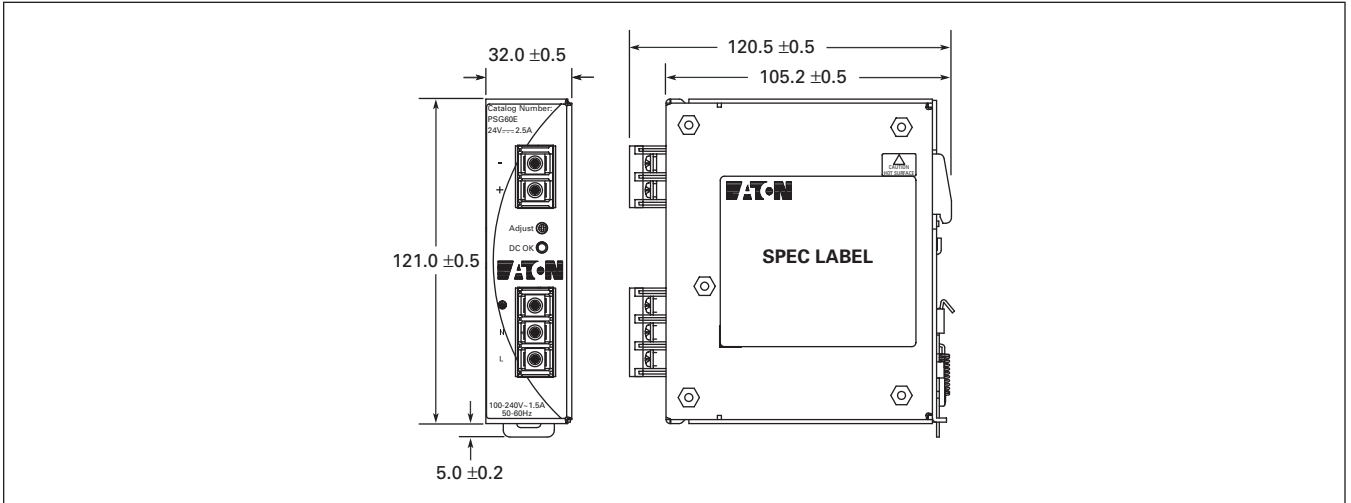


Figure 30.5-24. PSG60E

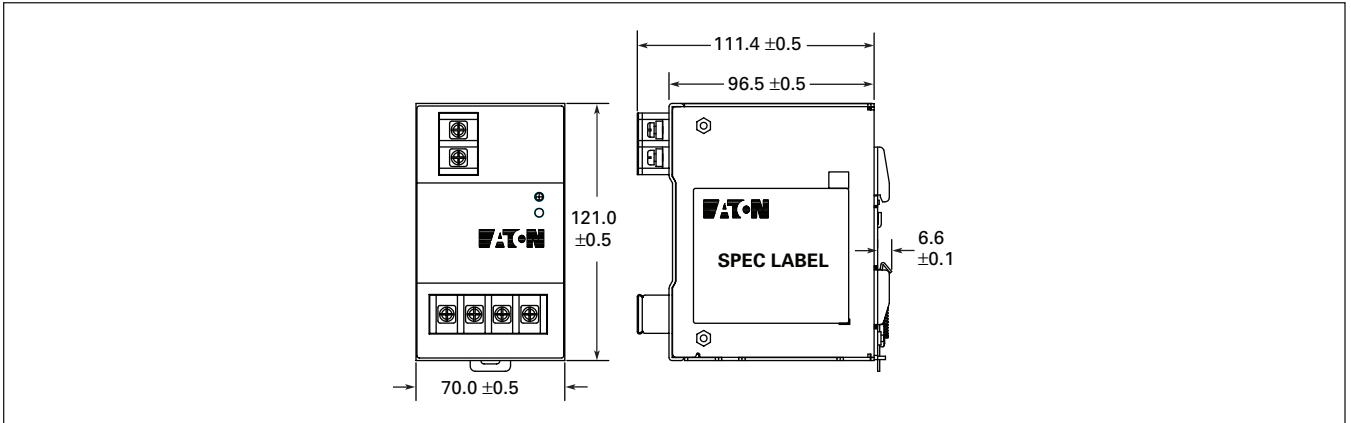


Figure 30.5-25. PSG60F

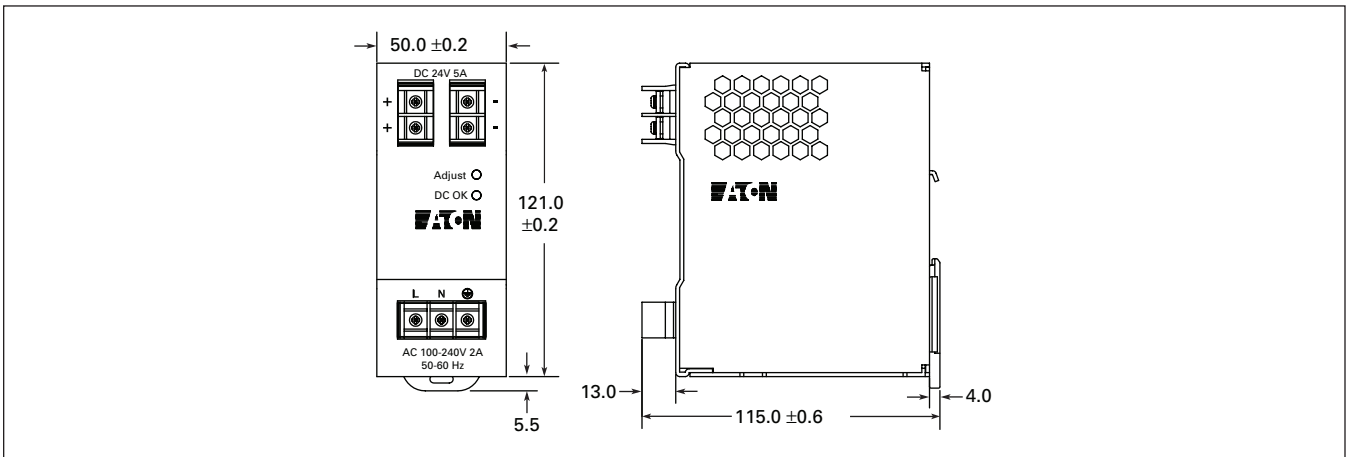
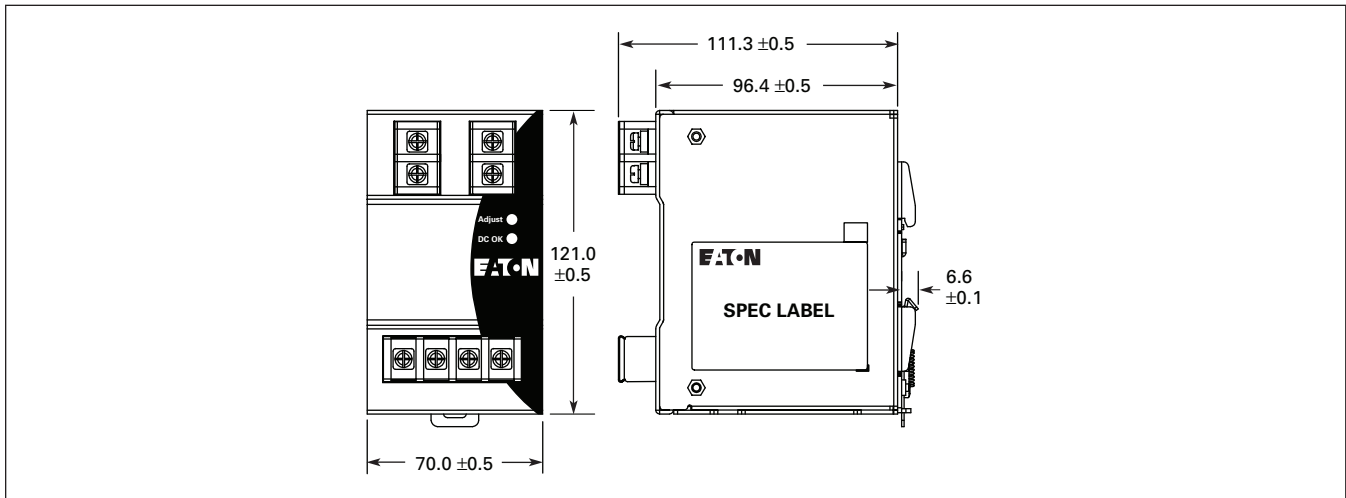


Figure 30.5-26. PSG120E

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**Dimensions—Approximate Dimensions in mm (Continued)**

Note: Dimensions are for reference only.



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Figure 30.5-27. PSG120F

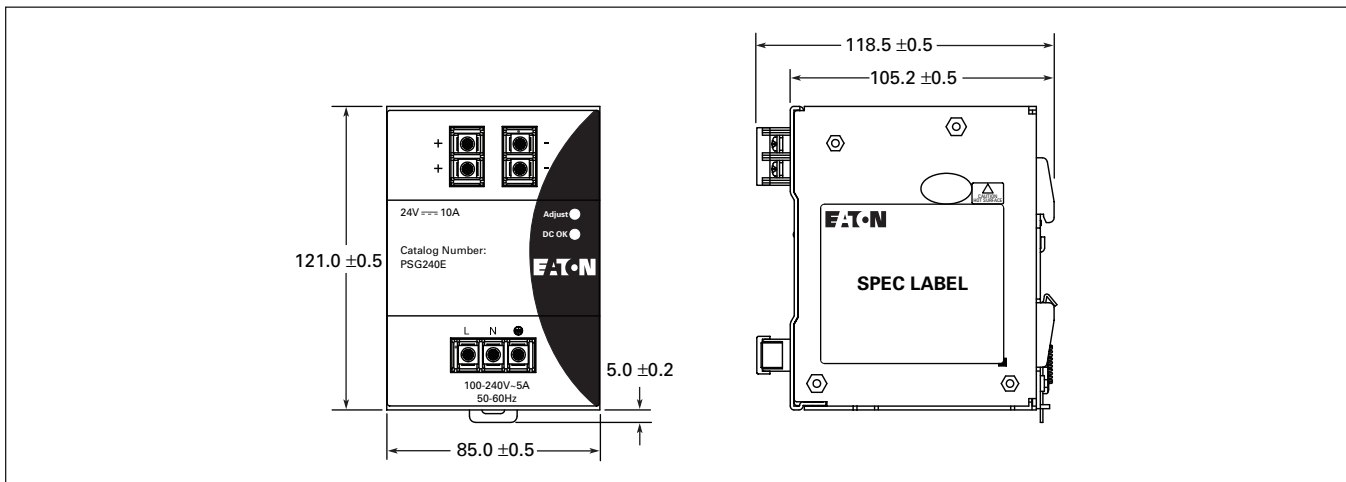


Figure 30.5-28. PSG240E

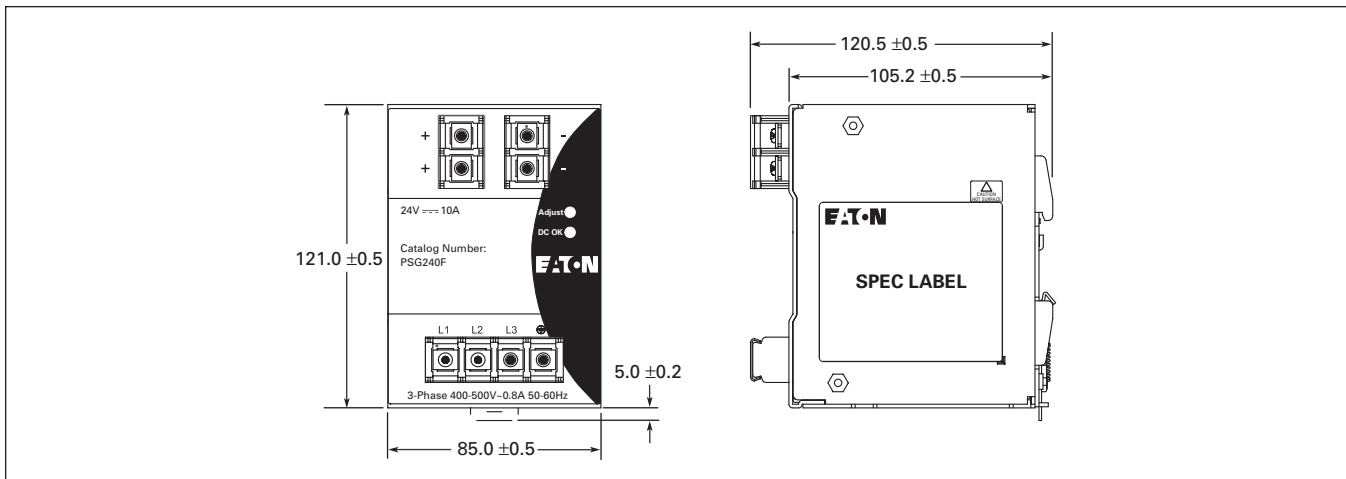
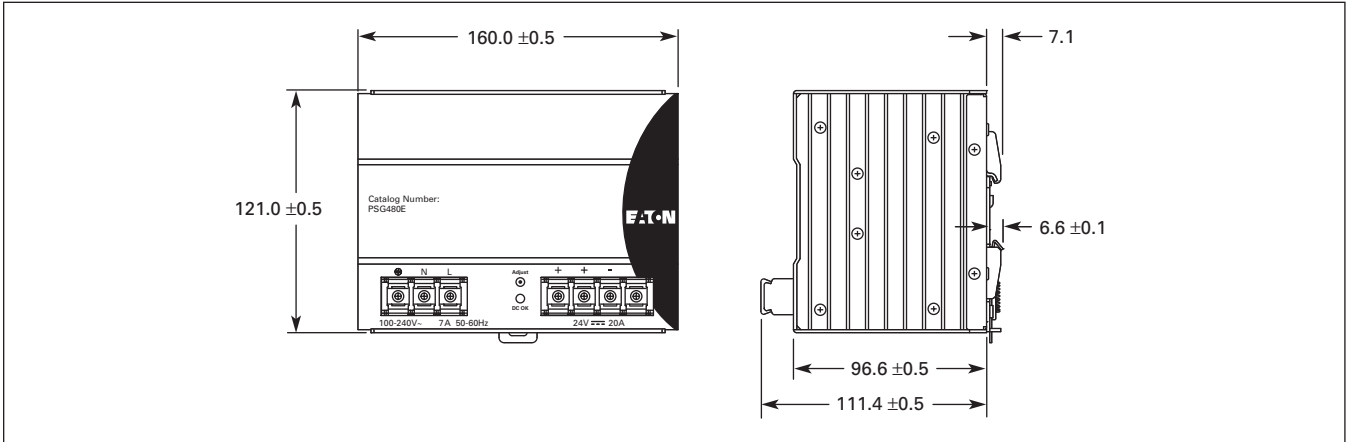


Figure 30.5-29. PSG240F

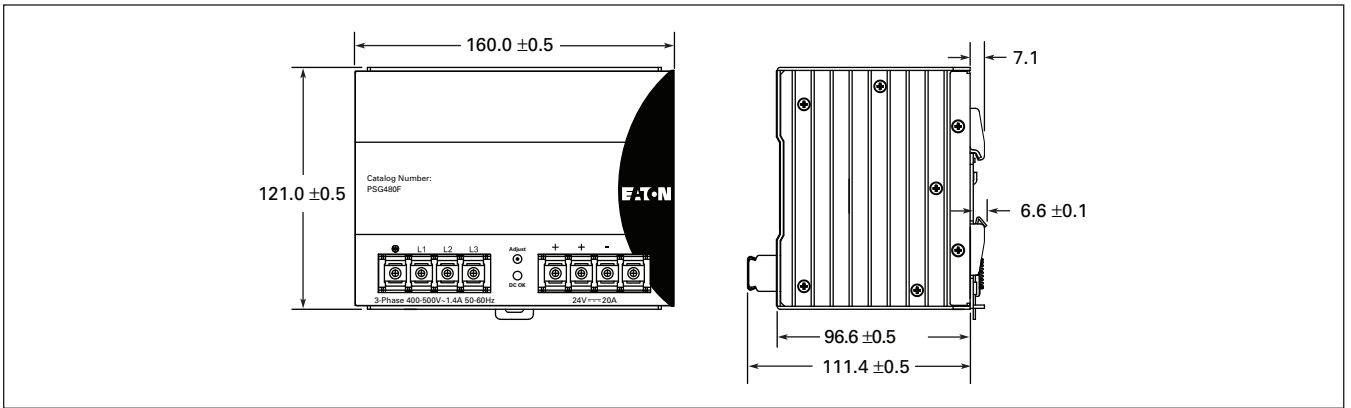
**PSG Series DC Power Supplies**

**Dimensions—Approximate Dimensions in mm (Continued)**

**Note:** Dimensions are for reference only.



**Figure 30.5-30. PSG480E**



**Figure 30.5-31. PSG480F**