PSG Series

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PSG Series

Product Description

Eaton's PSG Series of power supplies is designed to be a high-performance, high-quality line of products covering a majority of 12 Vdc and 24 Vdc control applications. With global certifications, a compact size and an impressive operating temperature range, the PSG Series fits a wide variety of applications at a competitive price.

Our expansive 22 model offering is able to provide solutions for most applications with PSG outputs ranging from 12 Vdc at 1.25 A up to 24 Vdc at 40 A, plus redundancy and buffer modules to ensure uptime.

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 the options of a rugged metal or plastic housing, heavy-duty screw or finger-safe 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: 100–240 Vac for single-phase units, 400–500 Vac for three-phase units
- General-purpose 12 Vdc and 24 Vdc adjustable output
- 150% power surge output
- Wide operating temperature range: –25 °C to +80 °C
- MTBF up to 1,000,000 hours ensures uptime and reliability
- Protection from overvoltage, overcurrent and over-temperature conditions
- Rugged aluminum and plastic housings provide the durability required to stand up to harsh environments
- All-metal DIN rail mounting hardware
- Heavy-duty screw and finger-safe terminals
- LED indicating light for DC OK simplifies troubleshooting
- Conformal coated electronics
- Hazardous Location Class I, Division 2 rated models
- UL/NEC® Class 2 rated model
- Redundancy modules keep loads up and running in the event of a device failure
- Buffer module has the stored power needed to keep loads running through a short duration power failure
- Three-year standard warranty

Standards and Certifications

- cULus listed—UL 508
- CSA listed—CSA 22.2 No. 107.1-01
- Hazardous Location, Class I, Div. 2, Groups A, B, C, D
- IEC
- EN
- NEC Class 2
- UL Class 2
- CE marked
- RoHS compliant

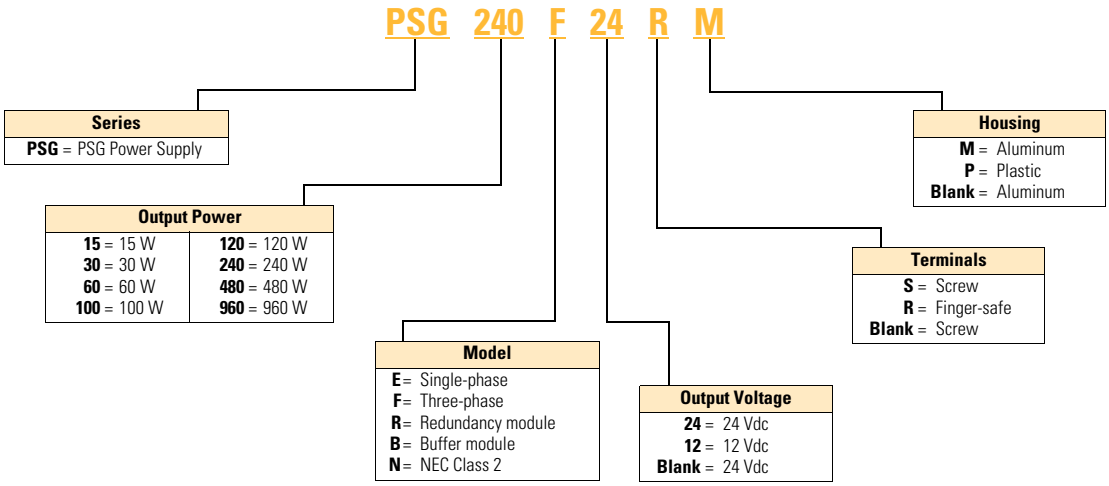
Listed C US COMPLIANT

Note: Some models may not carry all certifications listed.

Catalog Number Selection

Note: Catalog number selection breakdown shown below is for illustrative purposes only and not to be used to create new catalog number configurations.

PSG Series



Note: Not all combinations are available. See Pages **V7-T6-19**–**V7-T6-26** for all available combinations.

Product Selection

PSG Series

Screw Type Terminals—Connections for those that require multiple types of terminations and lug connections.

	Power	Description	Catalog Number
	Screw Type Terminals		
PSG100E12SM 	12 Vdc output single-phase power supplies (100–240 Vac nominal input)	15 W 1.25 A output, plastic housing	**PSG15E12SP**
		30 W 2.5 A output, plastic housings	**PSG30E12SP**
		60 W 5 A output, aluminum housing	**PSG60E12SM**
		100 W 8.33 A output, aluminum housing	**PSG100E12SM**
PSG60E 	24 Vdc output single-phase power supplies (100–240 Vac nominal input)	60 W 2.5 A output, aluminum housing	**PSG60E**
		60 W 2.5 A output, plastic housing	**PSG60E24SP**
		120 W 5 A, aluminum housing	**PSG120E**
		240 W 10 A, aluminum housing	**PSG240E**
		480 W 20 A, aluminum housing	**PSG480E**

Finger-Safe Terminals—Connections for those that require IP20 terminals for all your safety solutions

	Power	Description	Catalog Number
	Finger-Safe Terminals		
PSG60E24RM 	24 Vdc output single-phase power supplies (100–240 Vac nominal input)	60 W 2.5 A output, aluminum housing	**PSG60E24RM**
		120 W 5 A, aluminum housing	**PSG120E24RM**
		240 W 10 A, aluminum housing	**PSG240E24RM**
		480 W 20 A, aluminum housing	**PSG480E24RM**
		60 W 2.5 A output, plastic housing, UL/NEC Class 2	**PSG60N24RP**
PSG480F24RM 	24 Vdc output, three-phase power supplies (400–500 Vac nominal input)	60 W 2.5 A, aluminum housing	**PSG60F24RM**
		120 W 5 A, aluminum housing	**PSG120F24RM**
		240 W 10 A, aluminum housing	**PSG240F24RM**
		480 W 20 A, aluminum housing	**PSG480F24RM**
		960 W 40 A, aluminum housing	**PSG960F24RM**
PSG480B24RM 	Module power supplies (24 Vdc input)	Buffer module, 480 W 20 A output, aluminum housing	**PSG480B24RM**
		Redundancy module, 480 W <20 A output, aluminum housing	**PSG480R24RM**
		Redundancy module, 960 W <40 A output, aluminum housing	**PSG960R24RM**

Technical Data and Specifications

PSG Series

	Single-Phase						
	PSG15E12SP	**PSG30E12SP**	**PSG60E12SM**	**PSG100E12SM**	**PSG60E**	**PSG60E24SP**	**PSG60E24RM**
Input							
Nominal voltage	100–240 Vac	100–240 Vac	100–240 Vac	100–240 Vac	100–240 Vac	100–240 Vac	100–240 Vac
AC input range	85–264 Vac	85–264 Vac	85–264 Vac	85–264 Vac	85–264 Vac	85–264 Vac	85–264 Vac
DC input range	120–375 Vdc	120–375 Vdc	120–375 Vdc	120–375 Vdc	120–375 Vdc	120–375 Vdc	120–375 Vdc
Frequency	47–63 Hz	47–63 Hz	47–63 Hz	47–63 Hz	47–63 Hz	47–63 Hz	47–63 Hz
Nominal current ①	<0.37 A	<0.7 A	<1.35 A	<2.5 A	1.1 A	<1.10 A	<1.4 A
Inrush current limitation ①	<30 A	<30 A	<50 A	<100 A	30 A	<40 A	<20 A
Internal fuse	T3.15 AH / 250 V	T3.15 AH / 250 V	T3.15 AH / 250 V	T3.15 AH / 250 V	T3.15 AH / 250 V	T3.15 AH / 250 V	T3.15 AH / 250 V
External fusing	4 A or 6 A	4 A or 6 A	6 A, 10 A or 16 A	6 A, 10 A or 16 A	6 A, 10 A or 16 A	6 A, 10 A or 16 A	6 A, 10 A or 16 A
Leakage current	<1 mA	<1 mA	<1 mA	<1 mA	<1 mA	<1 mA	<1 mA
Output							
Power	15 W	30 W	60 W	100 W	60 W	60 W	60 W
Nominal output voltage	12 Vdc ±2%	12 Vdc ±2%	12 Vdc ±2%	12 Vdc ±2%	24 Vdc ±2%	24 Vdc ±2%	24 Vdc ±2%
Adjustment range	11–14 Vdc	11–14 Vdc	11–14 Vdc	11–14 Vdc	22–28 Vdc	22–28 Vdc	24–28 Vdc
Nominal current	1.25 A	2.5 A	5 A	8.33 A	2.5 A	2.5 A	2.5 A
Startup with capacitive loads	Max. 5000 µF	Max. 6600 µF	Max. 8000 µF	Max. 10,000 µF	Max. 8000 µF	Max. 8000 µF	Max. 8000 µF
Efficiency	>84% at 115 Vac, >83% at 230 Vac	>85% at 115 Vac and 230 Vac	>85% at 115 Vac and 230 Vac	>85.5% at 115 Vac, >87.5% at 230 Vac	>85% typ	>86% at 115 Vac, >87% at 230 Vac	>90% at 115 Vac and 230 Vac
Current surge	1.875 A	3.75 A	7.5 A	12.495 A	3.75 A	3.75 A	3.75 A
Current surge time	3 s	3 s	3 s	3 s	1 s (at 10 s intervals)	3 s	5 s
Residual ripple/peak switching (20 MHz)	<100 mVpp	<100 mVpp	<100 mVpp	<100 mVpp	<50 mV / <240 mVpp	<50 mV / <240 mVpp	<50 mVpp / <150 mVpp
Turn-on time	<2.5 s	<2.5 s	<2.5 s	<0.6s	<2.5 s	<3 s	<2s
Mains buffering at nominal load (typ.) ①	>22 ms	>22 ms	>22 ms	>22 ms	>20 ms	>20 ms	>20 ms
Parallel operation	With o-ring diode	With o-ring diode	With o-ring diode	With o-ring diode	PSG480R24RM / PSG960R24RM / With o-ring diode	PSG480R24RM / PSG960R24RM / With o-ring diode	PSG480R24RM / PSG960R24RM / With o-ring diode
Galvanic Isolation							
Input/output	4 k Vac	4 k Vac	4 k Vac	4 k Vac	4 k Vac (type test) / 3 k Vac (routine test)	4 k Vac	4 k Vac
Input/ground	1.5 k Vac	1.5 k Vac	1.5 k Vac	1.5 k Vac	1.5 k Vac (type test) / 1.5 k Vac (routine test)	1.5 k Vac	1.5 k Vac
Output/ground	1.5 k Vac	1.5 k Vac	1.5 k Vac	1.5 k Vac	1.5 k Vac (type test) / 500 Vac (routine test)	1.5 k Vac	1.5 k Vac
General/Physical Data							
Housing material	Plastic	Plastic	Aluminum	Aluminum	Aluminum	Plastic	Aluminum
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
MTBF	>1,000,000 hr	>1,000,000 hr	>800,000 hr	>800,000 hr	>800,000 hr	>800,000 hr	>1,000,000 hr
Dimensions (L)	100 mm	100 mm	121 mm	121 mm	121 mm	120.6 mm	121 mm
Dimensions (W)	32 mm	32 mm	32 mm	50 mm	32 mm	32 mm	32 mm
Dimensions (H)	100.6 mm	100.6 mm	120 mm	118.7 mm	120 mm	113 mm	125 mm
Weight (kg)	0.18	0.2	0.33	0.64	0.37	0.33	0.37
Terminals	Screw	Screw	Screw	Screw	Screw	Screw	Finger-safe, removable
Wire size	AWG 22–14	AWG 22–14	AWG 22–14	AWG 18–24	AWG 22–14	AWG 22–14	AWG 22–12
Operating temperature	–20 °C to +75 °C	–20 °C to +75 °C	–20 °C to +75 °C	–20 °C to +75 °C	–20 °C to +75 °C	–20 °C to +75 °C	–20 °C to +80 °C
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

Note

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

PSG Series, continued

	Single-Phase						
	PSG15E12SP	**PSG30E12SP**	**PSG60E12SM**	**PSG100E12SM**	**PSG60E**	**PSG60E24SP**	**PSG60E24RM**
General/Physical Data, continued							
Power derating—vertical mounting	>50 °C derate power by 2.5% / °C, >70 °C derate power by 4% / °C	>50 °C derate power by 2.5% / °C, >70 °C derate power by 4% / °C	>50 °C derate power by 2.5% / °C, >70 °C derate power by 4% / °C	>50 °C derate power by 2.5% / °C	>50 °C derate power by 2.5% / °C	<0 °C to –20 °C derate power by 1% / °C, >50 °C derate power by 2.5% / °C, >70 °C derate power by 4% / °C	>50 °C derate power by 2.5% / °C
Power derating—horizontal mounting	N/A	N/A	N/A	>50 °C derate power by 2.5% / °C, >70 °C derate power by 4% / °C	N/A	N/A	>50 °C derate power by 2.5% / °C
Operating humidity	<95% RH, noncondensing	<95% RH, noncondensing	<95% RH, noncondensing	<95% RH, noncondensing	<95% RH, noncondensing	<95% RH, noncondensing	<95% RH, noncondensing
Vibration	10 to 150 Hz, 0.35 mm acc. 50 m/s^2, single amplitude (5G max.) for 90 min. in each X, Y and Z directions, in accordance with IEC 60068-2-6						
Pollution degree	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
Safety and Protection							
Transient surge voltage	Varistor	Varistor	Varistor	Varistor	Varistor	Varistor	Varistor
Surge voltage protection against internal surge	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
Shock	30 G (300 m/s^2) in all directions according to IEC 60068-2-27	30 G (300 m/s^2) in all directions according to IEC 60068-2-27	30 G (300 m/s^2) in all directions according to IEC 60068-2-27	30 G (300 m/s^2) in all directions according to IEC 60068-2-27	30 G (300 m/s^2) in all directions according to IEC 60068-2-27	30 G (300 m/s^2) in all directions according to IEC 60068-2-27	30 G (300 m/s^2) in all directions according to IEC 60068-2-27

PSG Series, continued

	Single-Phase, continued						
	PSG60N24RP	**PSG120E**	**PSG120E24RM**	**PSG240E**	**PSG240E24RM**	**PSG480E**	**PSG480E24RM**
Input							
Nominal voltage	100–240 Vac	100–240 Vac	100–240 Vac	100–240 Vac	100–240 Vac	100–240 Vac	100–240 Vac
AC input range	85–264 Vac	85–264 Vac	85–264 Vac	85–264 Vac	85–264 Vac	85–264 Vac	85–264 Vac
DC input range	N/A	120–375 Vdc	120–375 Vdc	120–375 Vdc	120–375 Vdc	120–375 Vdc	120–375 Vdc
Frequency	47–63 Hz	47–63 Hz	47–63 Hz	47–63 Hz	47–63 Hz	47–63 Hz	47–63 Hz
Nominal current ①	<1.5 A at 100 Vac	1.4 A	<2.2 A	2.9 A	<2.5 A	5.7 A	<5 A
Inrush current limitation ①	<40 A	<80 A	<35 A	N/A	<35 A	N/A	<35 A
Internal fuse	T3.15 AH / 250 V	T3.15 AH / 250 V	T4 AH / 250 V	T6.3 AH / 250 V	T6.3 AH / 250 V	F10H / 250 A	T8 AH / 250 V
External fusing	6 A, 10 A or 16 A	6 A, 10 A or 16 A	6 A, 10 A or 16 A	10 A or 16 A	10 A or 16 A	10 A or 16 A	10 A or 16 A
Leakage current	<1 mA	<1 mA	<1 mA	<3.5 mA	<1 mA	<1 mA	<3 mA
Output							
Power	60 W	120 W	120 W	240 W	240 W	480 W	480 W
Nominal output voltage	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	24–28 Vdc	22–28 Vdc	24–28 Vdc	22–28 Vdc	22–28 Vdc
Nominal current	2.5 A	5 A	5 A	10 A	10 A	20 A	20 A
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
Efficiency	>86% at 115 Vac, >87% at 230 Vac	>84% typ	>89% at 115 Vac, >90% at 230 Vac	>84% typ	>90% at 115 Vac and 230 Vac	>86% typ	>90% at 115 Vac and 230 Vac
Current surge	N/A	7.5 A	7.5 A	15 A	15 A	30 A	30 A
Current surge time	N/A	1 s (at 10 s intervals)	5 s	1 s (at 10 s intervals)	5 s	1 s (at 10 s intervals)	5 s
Residual ripple/peak switching (20 MHz)	<50 mVpp / <240 mVpp	<50 mV / <240 mVpp	<50 mVpp / <150 mVpp	<50 mV / <240 mVpp	<50 mVpp / <150 mVpp	<50 mV / <240 mVpp	<50 mVpp
Turn-on time	<3 s	<1 s	<1 s	<1 s	<1 s	<1 s	<1 s
Mains buffering at nominal load (typ.) ①	>20 ms	>35ms	>20 ms	>20 ms	>20 ms	>20 ms	>20 ms
Parallel operation	PSG480R24RM / PSG960R24RM / With o-ring diode	PSG480R24RM / PSG960R24RM / With o-ring diode	PSG480R24RM / PSG960R24RM / With o-ring diode	PSG480R24RM / PSG960R24RM / With o-ring diode	PSG480R24RM / PSG960R24RM / With o-ring diode	PSG480R24RM / PSG960R24RM / With o-ring diode	PSG480R24RM / PSG960R24RM / With o-ring diode
Galvanic Isolation							
Input/output	4 k Vac	4 k Vac (type test) / 3 k Vac (routine test)	4 k Vac	4 k Vac (type test) / 3 k Vac (routine test)	4 k Vac	4 k Vac (type test) / 3 k Vac (routine test)	4 k Vac
Input/ground	1.5 k Vac	1.5 k Vac (type test) / 1.5 k Vac (routine test)	1.5 k Vac	1.5 k Vac (type test) / 1.5 k Vac (routine test)	1.5 k Vac	1.5 k Vac (type test) / 1.5 k Vac (routine test)	1.5 k Vac
Output/ground	1.5 k Vac	1.5 k Vac (type test) / 500 Vac (routine test)	1.5 k Vac	1.5 k Vac (type test) / 500 Vac (routine test)	1.5 k Vac	1.5 k Vac (type test) / 500 Vac (routine test)	1.5 k Vac
General/Physical Data							
Housing material	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum
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
MTBF	>800,000 hr	>800,000 hr	>800,000 hr	>300,000 hr	>500,000 hr	>300,000 hr	>500,000 hr
Dimensions (L)	120.6 mm	121 mm	121 mm	121 mm	121 mm	121 mm	121 mm
Dimensions (W)	32 mm	32 mm	50 mm	85 mm	85 mm	160 mm	144 mm
Dimensions (H)	119.3 mm	120 mm	123.1 mm	118.5 mm	124.1 mm	115 mm	118.6 mm
Weight (kg)	0.33	0.54	0.72	1.04	1.1	1.8	1.37
Terminals	Finger-safe, fixed	Screw	Finger-safe, removable	Screw	Finger-safe, removable	Screw	Finger-safe, fixed
Wire size	AWG 22–10	AWG 22–14	AWG 20–12	AWG 22–14	AWG 16–12	AWG 16–14 (input) AWG 12–10 (output)	AWG 18–10
Operating temperature	–20 °C to +80 °C	–20 °C to +75 °C	–20 °C to +80 °C	–20 °C to +75 °C	–20 °C to +80 °C	–20 °C to +75 °C	–25 °C to +75 °C
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

Note

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

PSG Series, continued

	Single-Phase, continued						
	PSG60N24RP	PSG120E	PSG120E24RM	PSG240E	PSG240E24RM	PSG480E	PSG480E24RM
General/Physical Data, continued							
Power derating—vertical mounting	>50 °C derate power by 2.5% / °C, >70 °C derate power by 4% / °C	>50 °C derate power by 2.5% / °C	>50 °C derate power by 2.5% / °C	>50 °C derate power by 2.5% / °C, >70 °C derate power by 4% / °C	>50 °C derate power by 2.5% / °C	>50 °C derate power by 2.5% / °C	>50 °C derate power by 2.5% / °C, >70 °C to 75 °C derate power by 5% / °C
Power derating—horizontal mounting	>50 °C derate power by 2.5% / °C, >70 °C derate power by 4% / °C	N/A	>50 °C derate power by 2.5% / °C	N/A	N/A	N/A	N/A
Operating humidity	<95% RH, noncondensing	<95% RH, noncondensing	<95% RH, noncondensing	<95% RH, noncondensing	<95% RH, noncondensing	<95% RH, noncondensing	<95% RH, noncondensing
Vibration	10 to 500 Hz, 0.35 mm acc. 30 m/s^2, single amplitude (3 G max.) for 60 min. in each X, Y and Z directions, in accordance with IEC 60068-2-6	10 to 150 Hz, 0.35 mm acc. 50 m/s^2, single amplitude (5G max.) for 90 min. in each X, Y and Z directions, in accordance with IEC 60068-2-6	10 to 150 Hz, 0.35 mm acc. 50 m/s^2, single amplitude (5G max.) for 90 min. in each X, Y and Z directions, in accordance with IEC 60068-2-6	10 to 150 Hz, 0.35 mm acc. 50 m/s^2, single amplitude (5G max.) for 90 min. in each X, Y and Z directions, in accordance with IEC 60068-2-6	10 to 150 Hz, 0.35 mm acc. 50 m/s^2, single amplitude (5G max.) for 90 min. in each X, Y and Z directions, in accordance with IEC 60068-2-6	10 to 150 Hz, 0.35 mm acc. 50 m/s^2, single amplitude (5G max.) for 90 min. in each X, Y and Z directions, in accordance with IEC 60068-2-6	10 to 150 Hz, 0.35 mm acc. 50 m/s^2, single amplitude (5G max.) for 90 min. in each X, Y and Z directions, in accordance with IEC 60068-2-6
Pollution degree	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
Safety and Protection							
Transient surge voltage	Varistor	Varistor	Varistor	Varistor	Varistor	Varistor	Varistor
Surge voltage protection against internal surge	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
Shock	30 G (300 m/s^2) in all directions according to IEC 60068-2-27	30 G (300 m/s^2) in all directions according to IEC 60068-2-27	30 G (300 m/s^2) in all directions according to IEC 60068-2-27	30 G (300 m/s^2) in all directions according to IEC 60068-2-27	30 G (300 m/s^2) in all directions according to IEC 60068-2-27	30 G (300 m/s^2) in all directions according to IEC 60068-2-27	30 G (300 m/s^2) in all directions according to IEC 60068-2-27
UL 1310	Class 2	—	—	—	—	—	—

PSG Series, continued

	Three-Phase PSG60F24RM	PSG120F24RM	PSG240F24RM	PSG480F24RM	PSG960F24RM
Input					
Nominal voltage	3 x 400–500 Vac	3 x 400–500 Vac	3 x 400–500 Vac	3 x 400–500 Vac	3 x 400–500 Vac
AC input range ①	3 x 320–600 Vac	3 x 320–600 Vac	3 x 320–600 Vac	3 x 320–600 Vac	3 x 320–600 Vac
DC input range	450–800 Vdc	450–800 Vdc	450–800 Vdc	450–800 Vdc	450–800 Vdc
Frequency	47–63 Hz	47–63 Hz	47–63 Hz	47–63 Hz	47–63 Hz
Nominal current ②	<0.3 A	<0.5 A	<0.75 A	<1 A	<1.7 A
Inrush current limitation ②	<30 A	<30 A	<40 A	<50 A	<40 A
Internal fuse	T 3.15 AH / 500 V, 600 V	T 3.15 AH / 500 V, 600 V	T 3.15 AH / 500 V, 600 V	T 3.15 AH / 500 V	T 4 AH / 500 V
External fusing	3 x circuit breakers 6 A, 10 A or 16 A	3 x circuit breakers 6 A, 10 A or 16 A	3 x circuit breakers 6 A, 10 A or 16 A	3 x circuit breakers 6 A, 10 A or 16 A	3 x circuit breakers 10 A or 16 A
Leakage current	<3.5 mA	<3.5 mA	<3.5 mA	<3.5 mA	<3.5 mA
Output					
Power	60 W	120 W	240 W	480 W	960 W
Nominal output voltage	24 Vdc ±2%	24 Vdc ±2%	24 Vdc ±2%	24 Vdc ±2%	24 Vdc ±2%
Adjustment range	24–28 Vdc	24–28 Vdc	24–28 Vdc	24–28 Vdc	24–28 Vdc
Nominal current	2.5 A	5 A	10 A	20 A	40 A
Startup with capacitive loads	Max. 10,000 µF	Max. 10,000 µF	Max. 10,000 µF	Max. 10,000 µF	Max. 10,000 µF
Efficiency	>86% at 3 x 400 Vac and 3 x 500 Vac	>88% at 3 x 400 Vac and 3 x 500 Vac	>92% at 3 x 400 Vac and 3 x 500 Vac	>91% at 3 x 400 Vac and 3 x 500 Vac	>92% at 3 x 400 Vac and 3 x 500 Vac
Current surge	3.75 A	7.5 A	15 A	30 A	60 A
Current surge time	5 s	5 s	5 s	5 s	5 s
Residual ripple/peak switching (20 MHz)	<50 mVpp	<50 mVpp	<150 mVpp	<150 mVpp	<240 mVpp
Turn-on time	<1 s	<1 s	<1 s	<1 s	<1.5 s
Mains buffering at nominal load (typ.) ②	>20 ms	>20 ms	>20 ms	>20 ms	>20 ms
Parallel operation	PSG480R24RM / PSG960R24RM / With o-ring diode	PSG480R24RM / PSG960R24RM / With o-ring diode	PSG480R24RM / PSG960R24RM / With o-ring diode	PSG480R24RM / PSG960R24RM / With o-ring diode	PSG960R24RM / With o-ring diode
Galvanic Isolation					
Input/output	4 k Vac	4 k Vac	4 k Vac	4 k Vac	4 k Vac
Input/ground	2 k Vac	2 k Vac	2 k Vac	2 k Vac	2 k Vac
Output/ground	1.5 k Vac	1.5 k Vac	1.5 k Vac	1.5 k Vac	1.5 k Vac
General/Physical Data					
Housing material	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum
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
MTBF	>500,000 hr	>500,000 hr	>300,000 hr	>500,000 hr	>300,000 hr
Dimensions (L)	121 mm	121 mm	121 mm	121 mm	121 mm
Dimensions (W)	50 mm	50 mm	70 mm	140 mm	255 mm
Dimensions (H)	117.3 mm	117.3 mm	117.3 mm	117.3 mm	117.3 mm
Weight (kg)	0.66	0.66	0.89	1.35	2.6
Terminals	Finger-safe, fixed	Finger-safe, fixed	Finger-safe, fixed	Finger-safe, fixed	Finger-safe, fixed
Wire size	AWG 18–12	AWG 18–12	AWG 18–12 (input) AWG 16–12 (output)	AWG 18–8 (input) AWG 12–10 (output)	AWG 18–8 (input) AWG 12–10 (output)
Operating temperature	–25 °C to +75 °C	–25 °C to +75 °C	–25 °C to +75 °C	–25 °C to +80 °C	–25 °C to +65 °C
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

Notes

① PSG is only intended to be run continuously within its nominal voltage range. Short fluctuations in voltage can be tolerated providing they do not rise above the AC input range.

② Ratings for single-phase models are at 115 Vac; three-phase models are at 400 Vac.

PSG Series, continued

	Three-Phase, continued PSG60F24RM	PSG120F24RM	PSG240F24RM	PSG480F24RM	PSG960F24RM
General/Physical Data, continued					
Power derating—vertical mounting	>50 °C derate power by 2.5% / °C, >70 °C derate power by 5% / °C	>50 °C derate power by 2.5% / °C, >70 °C derate power by 5% / °C	>50 °C derate power by 2.5% / °C, >70 °C derate power by 5% / °C	>50 °C derate power by 2.5% / °C, >70 °C derate power by 5% / °C	>50 °C derate power by 2.5% / °C
Power derating—horizontal mounting	>45 °C derate power by 2.5% / °C, >55 °C derate power by 1.66% / °C, >70 °C derate power by 5% / °C	>40 °C derate power by 2.5% / °C, >60 °C derate power by 5% / °C	>40 °C derate power by 2.5% / °C, >60 °C derate power by 5% / °C	N/A	N/A
Operating humidity	<95% RH, noncondensing	<95% RH, noncondensing	<95% RH, noncondensing	5 to 95% RH, noncondensing	5 to 95% RH, noncondensing
Vibration	10 to 500 Hz, 0.35 mm acc. 30 m/s^2, single amplitude (3 G max.) for 60 min. in each X, Y and Z directions, in accordance with IEC 60068-2-6				
Pollution degree	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
Safety and Protection					
Transient surge voltage	Varistor	Varistor	Varistor	Varistor	Varistor
Surge voltage protection against internal surge	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
Shock	30 G (300 m/s^2) in all directions according to IEC 60068-2-27	30 G (300 m/s^2) in all directions according to IEC 60068-2-27	30 G (300 m/s^2) in all directions according to IEC 60068-2-27	30 G (300 m/s^2) in all directions according to IEC 60068-2-27	30 G (300 m/s^2) in all directions according to IEC 60068-2-27

PSG Series, continued

	Redundancy Modules PSG480R24RM	PSG960R24RM
Input		
Nominal voltage	24–48 Vdc	24–48 Vdc
DC input range	22–60 Vdc	22–60 Vdc
Nominal current	<20 A	<40 A
Inrush current limitation	<25 A	<50 A
Output		
Nominal output voltage	Vin–0.65 V (typ.)	Vin–0.65 V (typ.)
Nominal current	<20 A	<40 A
Efficiency	>97% typ.	>97% typ.
Galvanic Isolation		
Input/ground	1.5 k Vac	1.5 k Vac
Output/ground	1.5 k Vac	1.5 k Vac
General/Physical Data		
Housing material	Aluminum	Aluminum
Signals ①	Green LED for DC Vin1 OK and DC Vin2 OK	Green LED for DC Vin1 OK and DC Vin2 OK
MTBF	>800,000 hr	>800,000 hr
Dimensions (L)	121 mm	121 mm
Dimensions (W)	50 mm	50 mm
Dimensions (H)	122.1 mm	122.1 mm
Weight (kg)	0.375	0.515
Terminals	Finger safe—fixed	Finger safe—fixed
Wire size	AWG 12–10	AWG 12–10
Operating temperature	–40 °C to +80 °C	–40 °C to +80 °C
Storage temperature	–40 °C to +85 °C	–40 °C to +85 °C
Power de-rating—vertical mounting	> 50 °C de-rate power by 2.5% / °C	> 50 °C de-rate power by 2.5% / °C
Power de-rating—horizontal mounting	N/A	N/A
Operating humidity	< 95% RH, noncondensing	< 95% RH, noncondensing
Vibration	10 to 500 Hz, 0.35 mm acc. 30m/s², single amplitude (3 G max.) for 60 min. in each X, Y and Z directions, in accordance with IEC 60068-2-6	10 to 500 Hz, 0.35 mm acc. 30m/s², single amplitude (3 G max.) for 60 min. in each X, Y and Z directions, in accordance with IEC 60068-2-6
Pollution degree	2	2
Climatic class	3K3 according to EN 60721	3K3 according to EN 60721
Safety and Protection		
Safety class	Class 2 with ground connection	Class III with ground connection
Shock	30 G (300 m/S²) in all directions according to IEC 60068-2-27	30 G (300 m/S²) in all directions according to IEC 60068-2-27

Note

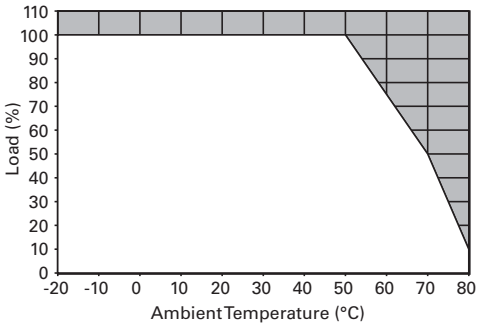
① The LED will turn on when the Vin1 and Vin2 > 18 V ±5% (for 24 V system) or > 36 V ±5% (for 48 V system) and not more than 30 V (for 24 V system) or not more than 60 V (for 48 V system), the relay contacts will be closed. If Vin1 and Vin2 is under or over this range, the LED will be turned off.

PSG Series, continued

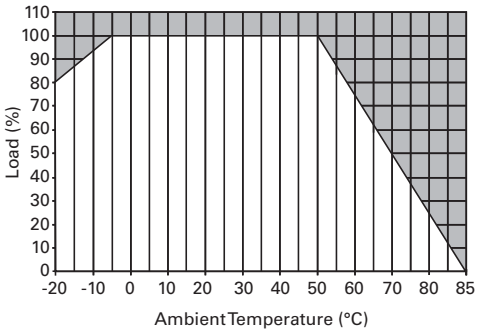
	Buffer Module PSG480B24RM
Input	
Nominal voltage	24 Vdc
DC input range	22.8–28.8 Vdc
Maximum voltage	35 Vdc
Current	Charging mode: <0.6 A
	Discharging mode: 20 A max.
Power (standby mode)	2.5 W average
Maximum signal (inhibit)	35 V / 10 mA
Max inrush current	< 20 A
Charging time	< 30s
Output	
Nominal voltage	24 Vdc typ.
DC adjustment range	Switch = "Fix 22V": Buffering starts if terminal voltage falls below 22 V
	Switch = "Vin-1V" (Factory Setting): Buffering starts if terminal voltage is decreased by >1 V
Maximum voltage	35 Vdc
Current	20 A max.
buffering time	250 ms min. at 24 V/20 A load, 5 s min. at 24 V/1 A load
Maximum signal	35 V / 10 mA
PARD (20MHz)	<200 mVpp
Galvanic isolation	
Input/ground	1.5 k Vac
Output/ground	1.5 k Vac
Signal/ground	1.5 k Vac
General/Physical Data	
Housing material	Aluminum
Signals	Green LED off: unit is discharged or Vin < 22 Vdc
	Green LED on: unit is fully charged
	Green LED blinking slowly: unit is charging
	Green LED blinking quickly: unit is discharging
MTBF	>800,000 hr
Parallel connection	Yes
Series connection	No
Dimensions (L)	121 mm
Dimensions (W)	70 mm
Dimensions (H)	120.1 mm
Weight (kg)	0.76
Terminals	Finger safe–fixed
Wire Size	Input / Output: AWG 12–10
	Signal: AWG 24–10
Operating temperature	–25 °C to +75 °C
Storage temperature	–25 °C to +85 °C
Power de-rating—vertical mounting	>70 °C de-rate power by 5% / °C
Operating humidity	< 95% RH, noncondensing
Vibration	10 to 500 Hz, 0.35 mm acc. 30 m/s², single amplitude (3 G max.) for 60 min. in each X, Y and Z directions, in accordance with IEC 60068-2-6
Pollution degree	2
Safety and Protection	
Shock	30 G (300 m/S²) in all directions according to IEC60068-2-27
Safety class	Class I with ground connection

Power Derating Curves

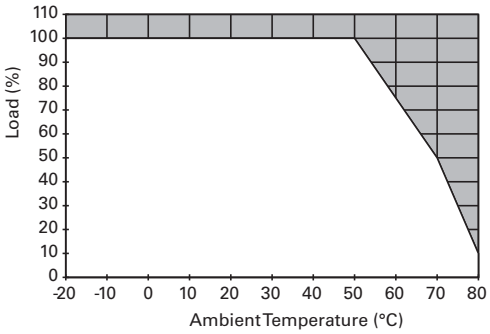
Vertical Mounting Position PSG15E12SP



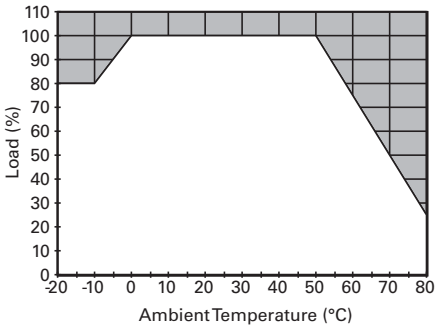
Vertical Mounting Position PSG60E



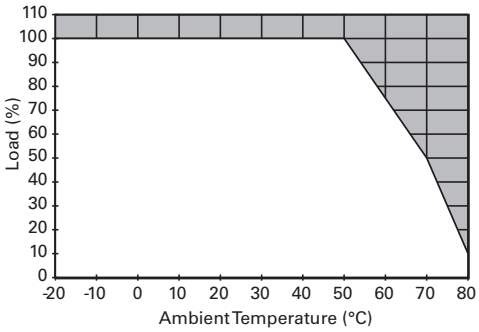
Vertical Mounting Position PSG30E12SP



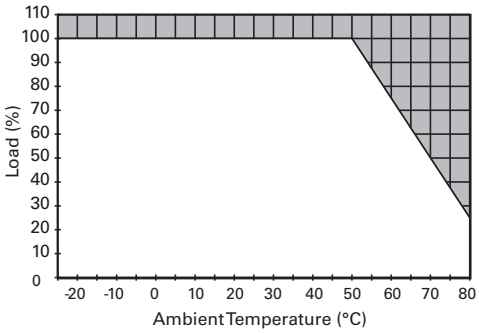
Vertical Mounting Position PSG60E24SP



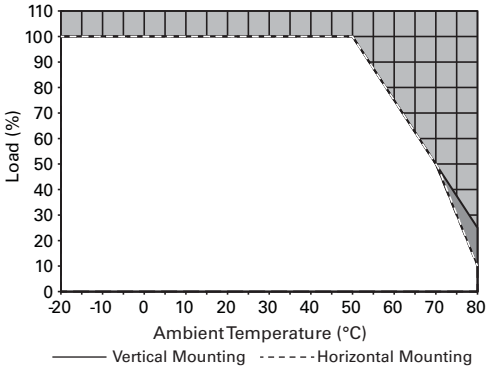
Vertical Mounting Position PSG60E12SM



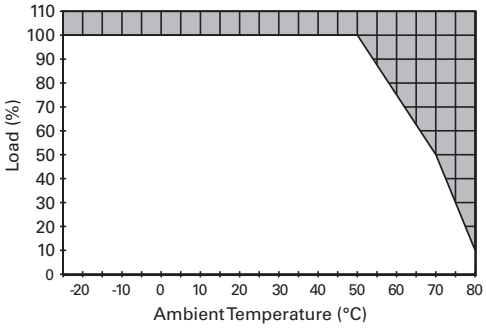
Vertical and Horizontal Mounting Position PSG60E24RM



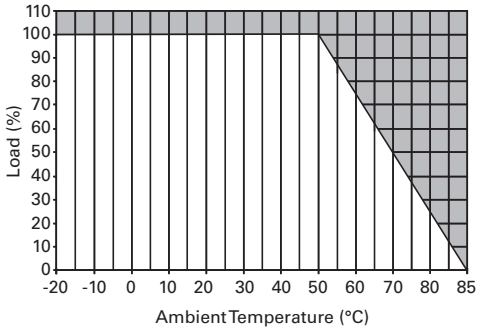
Vertical and Horizontal Mounting Position PSG100E12SM



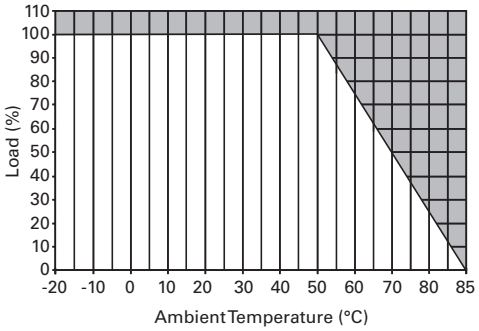
Vertical and Horizontal Mounting Position PSG60N24RP



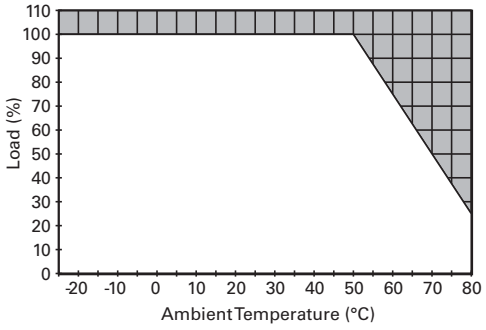
Vertical Mounting Position PSG120E



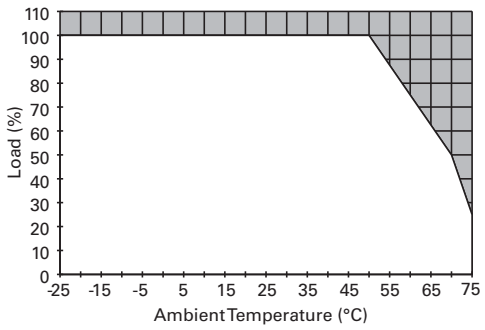
Vertical Mounting Position PSG480E



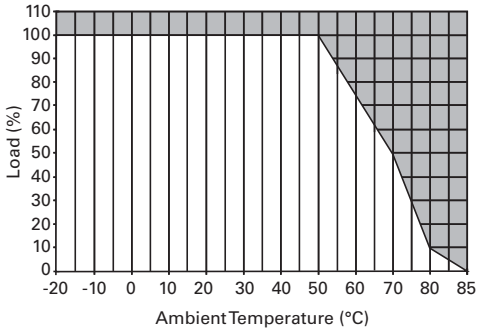
Vertical and Horizontal Mounting Position PSG120E24RM



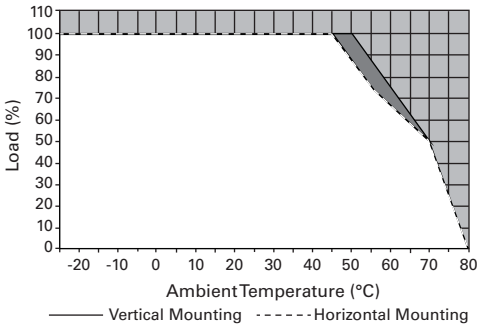
Vertical Mounting Position PSG480E24RM



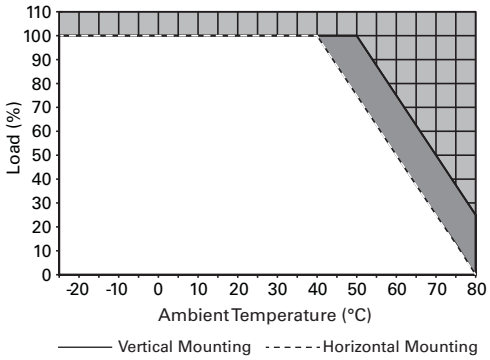
Vertical Mounting Position PSG240E



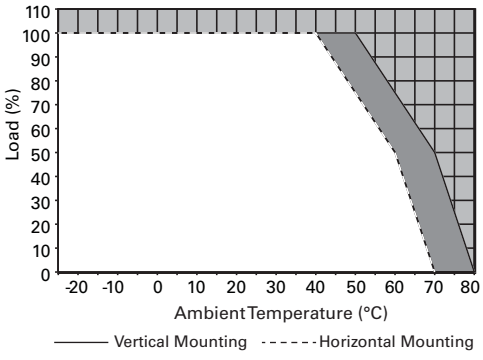
Vertical and Horizontal Mounting Position PSG60F24RM



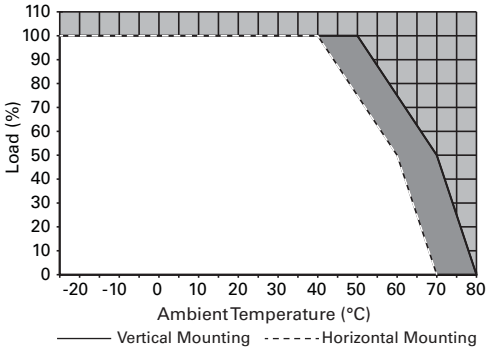
Vertical and Horizontal Mounting Position PSG240E24RM



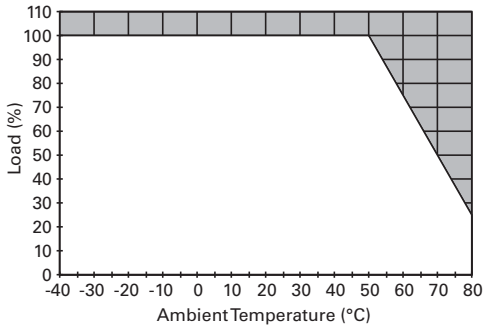
Vertical and Horizontal Mounting Position PSG120F24RM



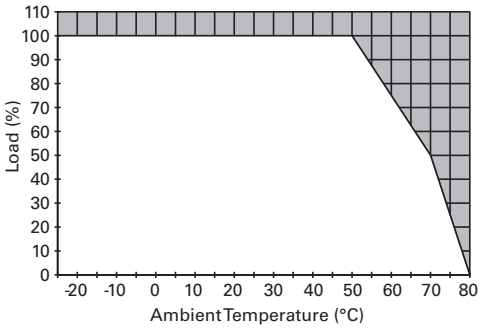
Vertical and Horizontal Mounting Position PSG240F24RM



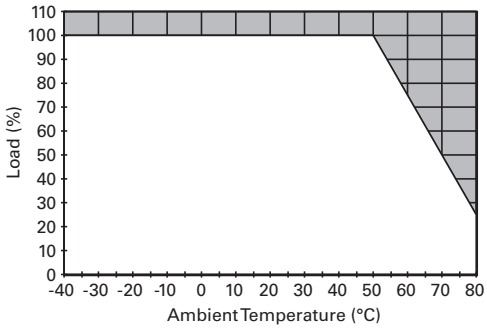
Vertical Mounting Position PSG480R24RM



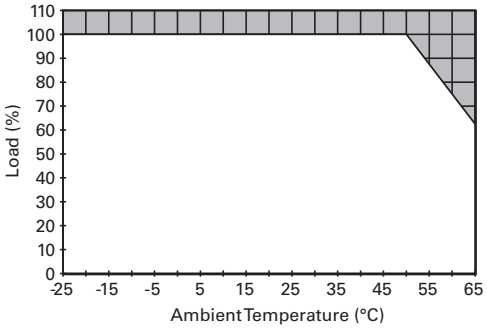
Vertical Mounting Position PSG480F24RM



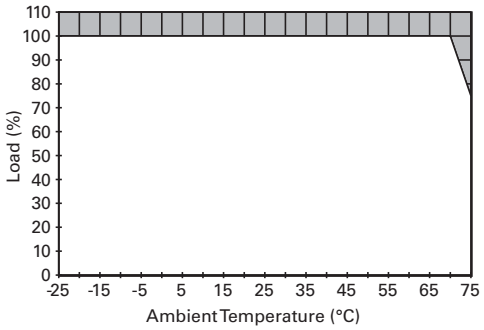
Vertical Mounting Position PSG960R24RM



Vertical Mounting Position PSG960F24RM



Vertical Mounting Position PSG480B24RM

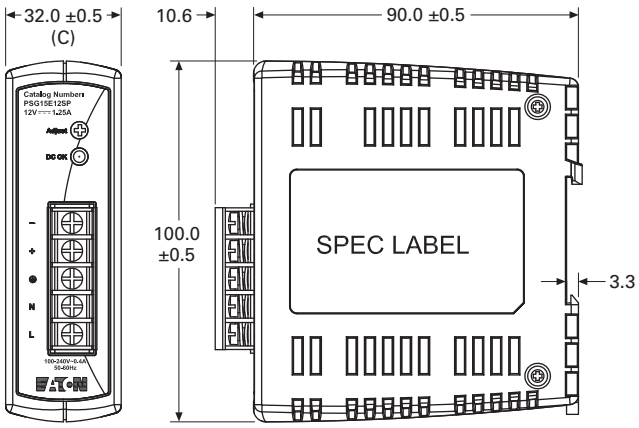


Dimensions

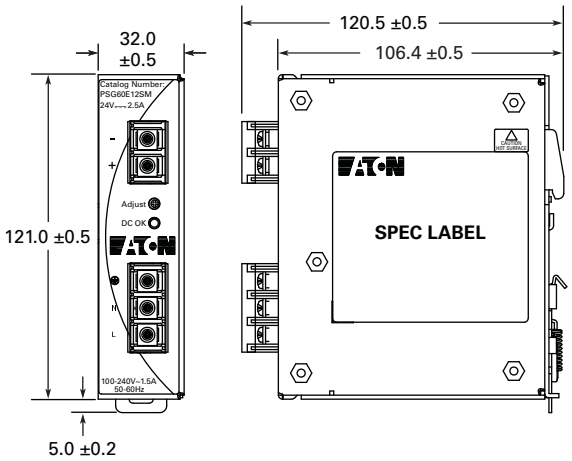
Approximate Dimensions in mm

Note: Dimensions are for reference only.

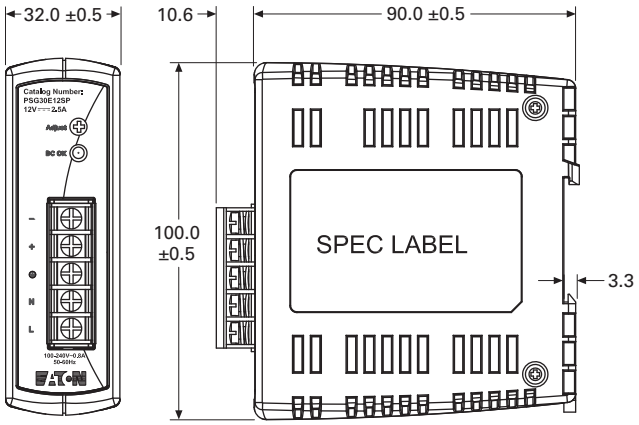
PSG15E12SP



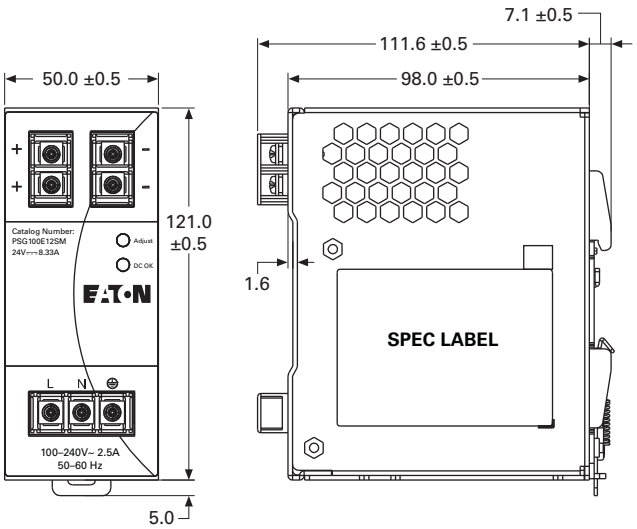
PSG60E12SM



PSG30E12SP



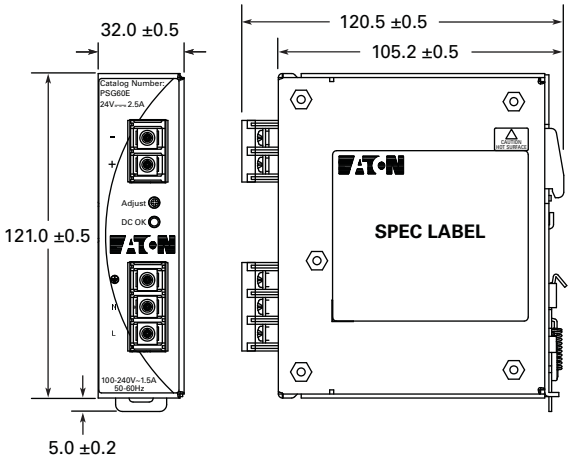
PSG100E12SM



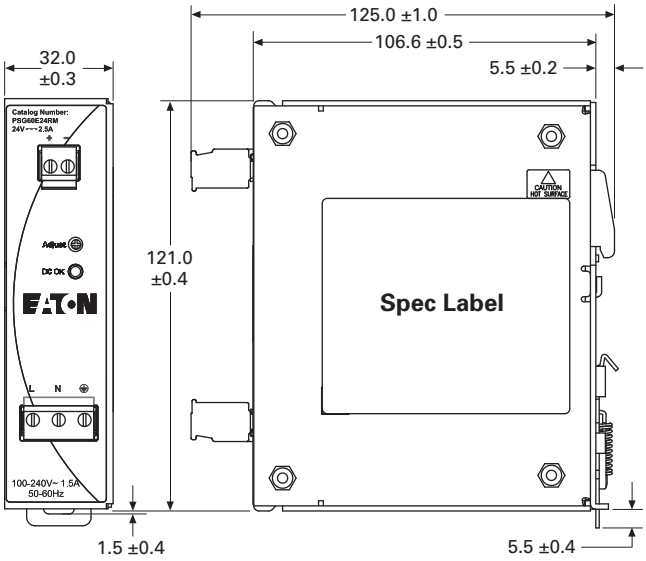
Approximate Dimensions in mm

Note: Dimensions are for reference only.

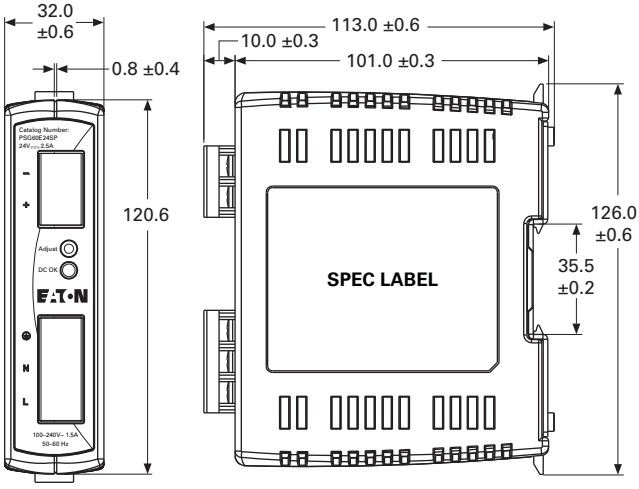
PSG60E



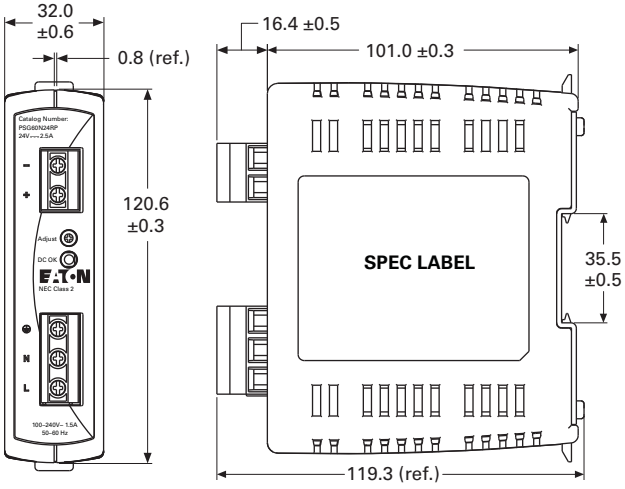
PSG60E24RM



PSG60E24SP



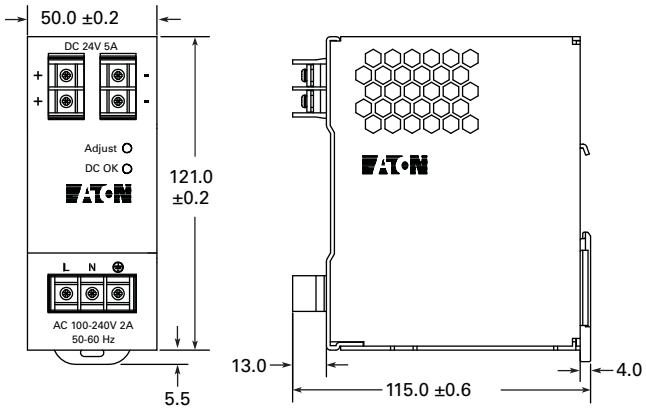
PSG60N24RP



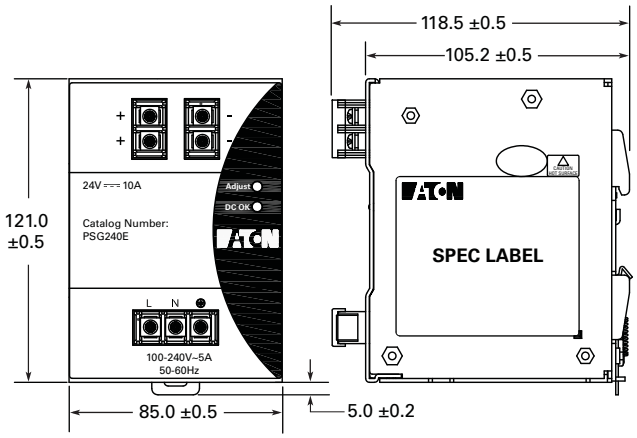
Approximate Dimensions in mm

Note: Dimensions are for reference only.

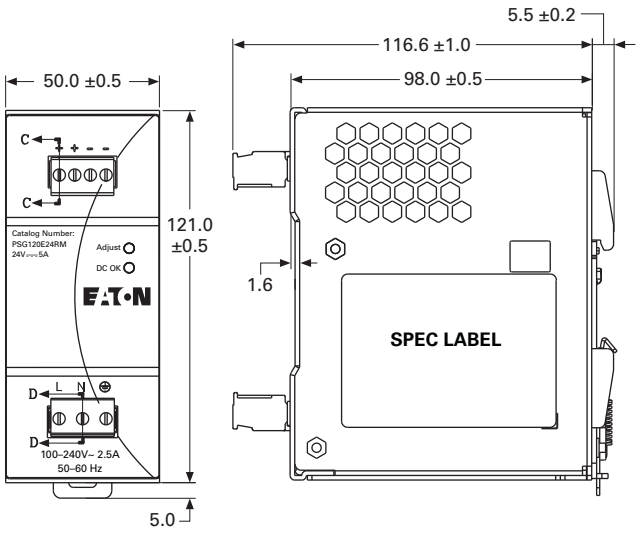
PSG120E



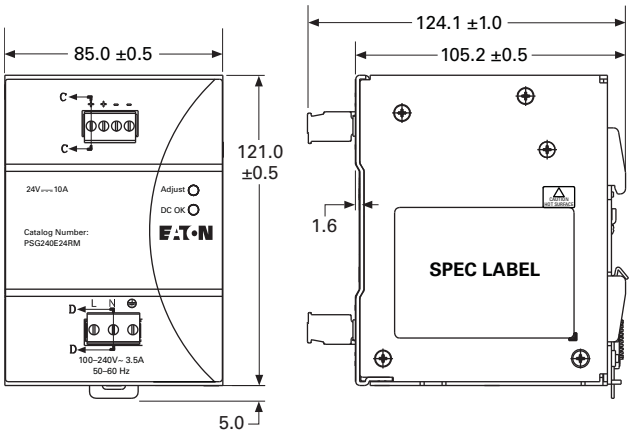
PSG240E



PSG120E24RM



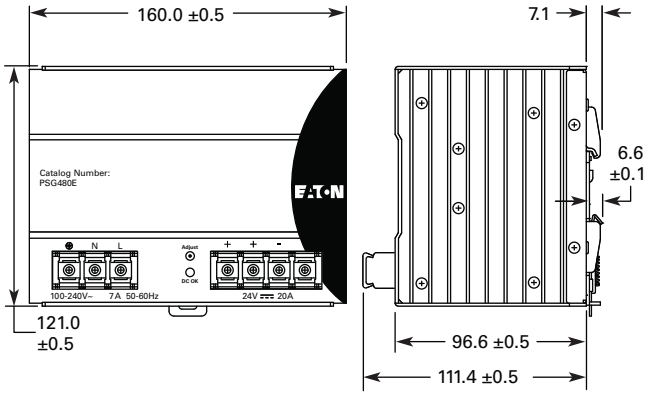
PSG240E24RM



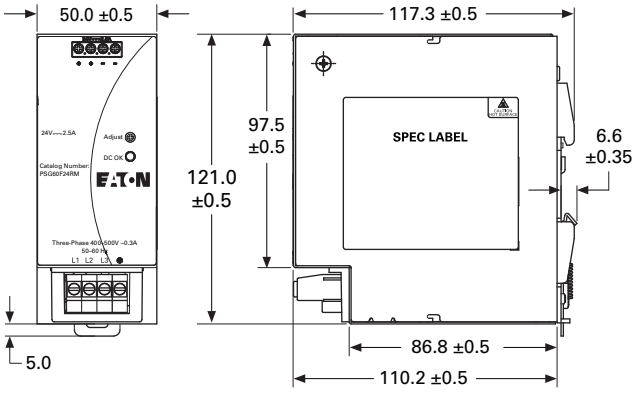
Approximate Dimensions in mm

Note: Dimensions are for reference only.

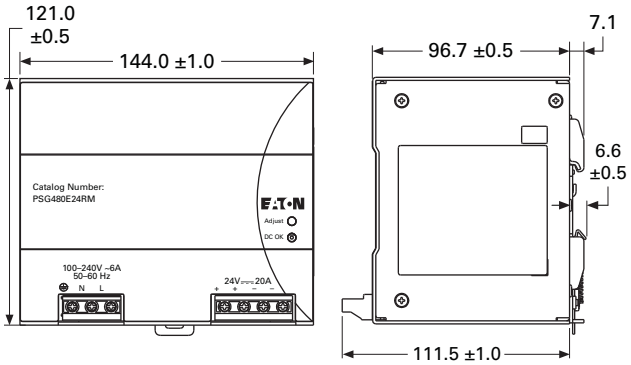
PSG480E



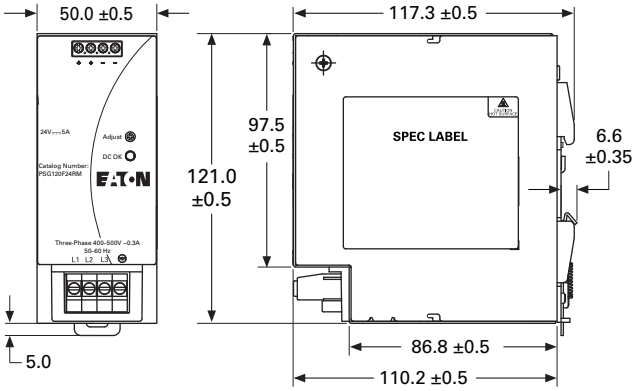
PSG60F24RM



PSG480E24RM



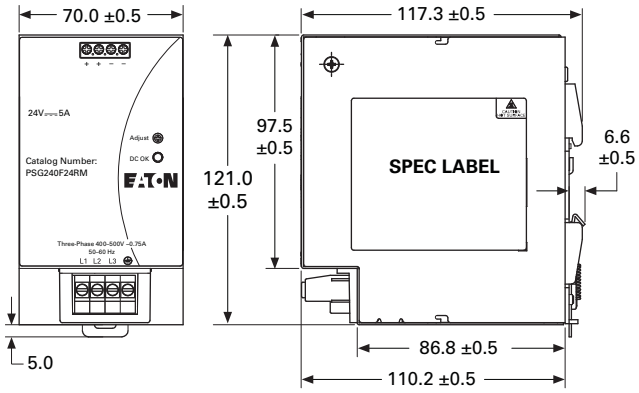
PSG120F24RM



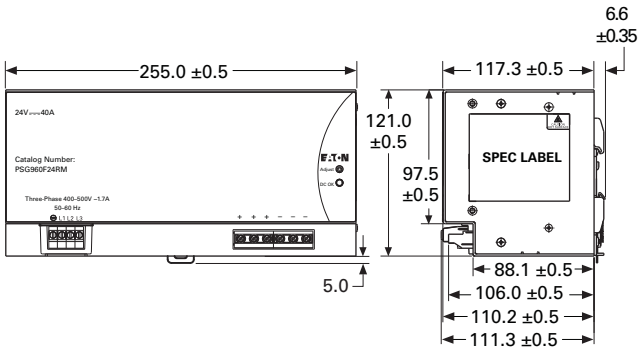
Approximate Dimensions in mm

Note: Dimensions are for reference only.

PSG240F24RM



PSG960F24RM



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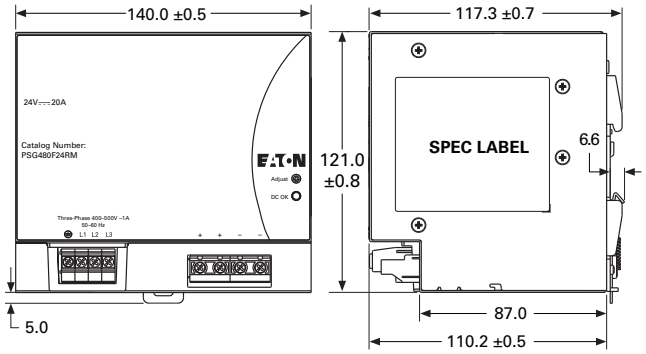

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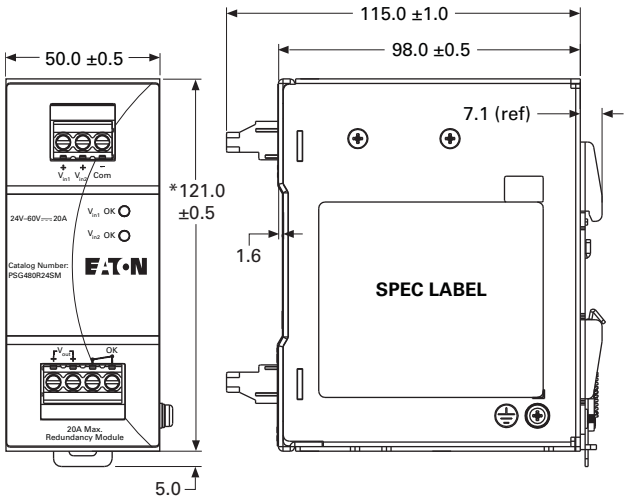
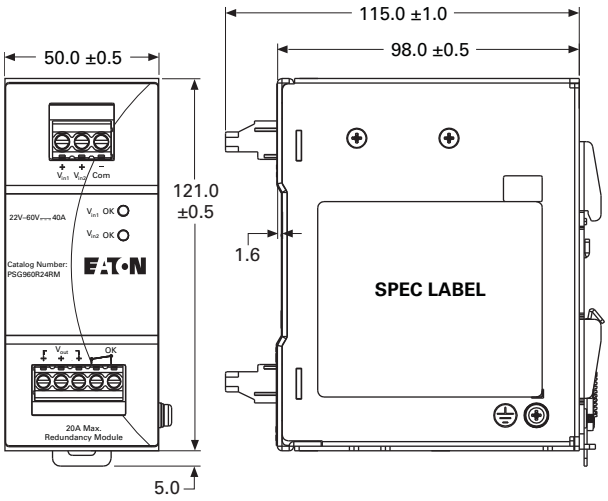


Approximate Dimensions in mm

Note: Dimensions are for reference only.

PSG960R24RM



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