

Backup power, UPS, surge and IT power distribution

Power conditioners

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Sag Ride-Through (SRT2)



Sag Ride-Through (SRT2)

General Description

Eaton's sag ride-through is the first of its kind. The SRT2 power conditioner prevents expensive electrical downtime. The SRT2 represents Eaton's state-of-the-art solution to today's power conditioning challenges.

The Problem — Voltage Sags and Brownouts

The ability of a plant to ride-through voltage sags can have a significant impact on operations and competitiveness. In the United States, voltage sags cost billions of dollars in lost production, interruption, damaged materials, retooling and scrap. In addition, sags can cause: increased operating costs, the need for product reworks, safety hazards, equipment damage and/or failure, reduced product quality, increased clean-up, additional labor costs, increased scrap material and costs associated with investigations into the problem.

Today's industrial and large commercial electricity customers are becoming more sensitive to power disturbances and are demanding better electric quality. However, the quality of power grids is not significantly improving. Customers still experience power quality problems that affect plant operations and profitability.

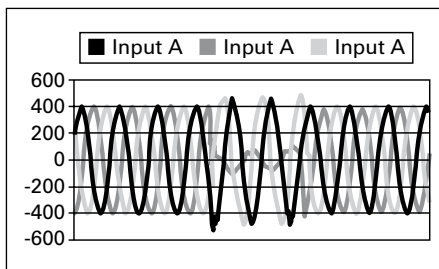


Figure 34.4-1. Deep, Single-Phase Sag

Definition of Voltage Sag

A voltage sag is a sudden, momentary decrease in supply voltage. It can last from a cycle to several seconds. Voltage sags are most often caused by faults on the electrical transmission or distribution system. They can be caused by lightning strikes, animal contact, starting of large motors or an internal fault within a customer's facility.

Depending on the proximity to the fault, which can be hundreds of miles away, the voltage during the sag is typically 40%–90% of nominal utility voltage. The operation of circuit breakers, fuses and reclosers limits most sags to less than 15 cycles.

Voltage sags are experienced 10 to 20 times more frequently than complete outages. However, voltage sags are equally disruptive to sensitive equipment

Regularity of Voltage Sags

EPRI conducted a two-year study of power quality levels on distribution systems in the United States. A variation event was recorded every time the voltage dropped below 90% of the nominal. The results are shown below.

A typical distribution system customer experiences about 50 events per year when the voltage drops below 90%, and only about two events per year when the voltage drops below 30% of nominal. The utility study concluded that sags represented almost all of the events experienced at a typical facility.

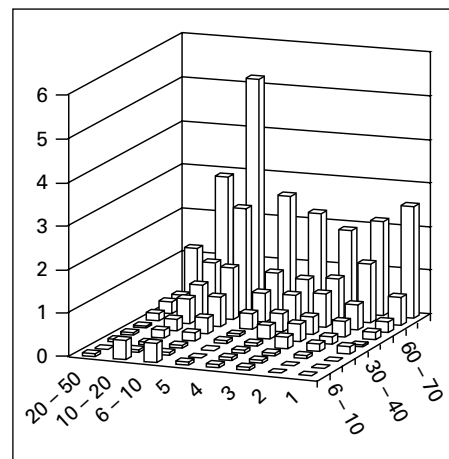


Figure 34.4-3. Events per Year

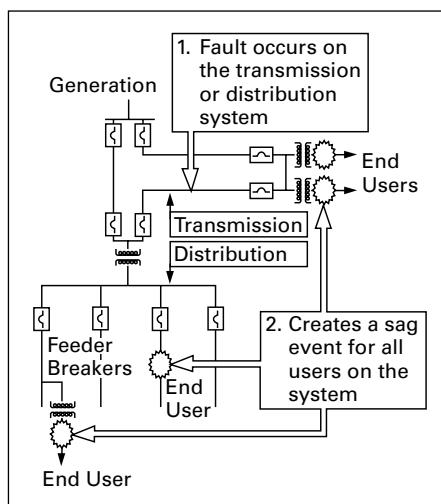


Figure 34.4-2. Voltage Sags

Application Description

Industries and Applications Affected by Sags

Key industries:

- Semi-conductor manufacturers
- Communications
- Steel mills
- Petroleum and chemical processing
- Health care
- Paper mills
- Automotives
- Textile
- Printing
- Plastics
- Other manufacturing

Equipment or processes:

- Manufacturing process controllers
- Variable speed drives
- Robotics
- Motor conductor
- Telephone systems
- HID lighting
- HVAC controls
- Medical equipment
- Computers

Features

Sag Correction Using the SRT2

The SRT2 is a high performance, inverter-based voltage conditioning device developed to provide protection to sensitive loads against commonly occurring voltage sags.

The SRT2 monitors the incoming supply voltage and when it deviates from the nominal voltage level, the SRT2 achieves voltage conditioning by injecting the appropriate correction voltage in series with the power supply. The SRT2 provides an extremely fast reaction time and subcycle response to sag events that would otherwise cause loads to drop out.

The SRT2 is designed for low voltage systems and is also offered in medium voltage applications from up to 50 MVA. Installation is simple and the SRT2 provides customers with a new solution to improve productivity and reduce downtime for sag related problems.

The SRT2 meets the stringent requirements of the Semi-F47 standard; a key requirement for SAG correction in the semiconductor industry.

- Complete correction of single-phase voltage sags down to 63% for 30 seconds
- Partial correction of three-phase sags down to 50% for 30 seconds
- Correction of utility voltage unbalance (from network side of transformer)
- Attenuation of voltage flicker

Continuous Regulation

The Sag Ride-Through is an active voltage conditioner. This means it will constantly respond to voltage sags and swells in the $\pm 10\%$ range with a regulated output in the $\pm 1\%$ range. The SRT2 can be applied to the main service entrance, at branch locations or in front critical loads. The SRT2 provides an outstanding return on investment. It delivers operation productivity that is just not possible with traditional tap switching or ferroresonant technologies. The SRT2 consists of a voltage source inverter, bypass circuit and an injection transformer connected in series between the incoming utility supply and the load, as shown in the **Figure 34.4-4**. For the standard sag correcting model, the injection transformer consists of a boost component. The SRT2 monitors the incoming supply voltage and when it deviates from the nominal voltage level the SRT2 inserts an appropriate compensating voltage using the IGBT inverter and series injection transformer. Energy is sourced from the supply during this time. This regulates the load voltage to its nominal value, thus eliminating voltage disturbances from the utility supply affecting the load.

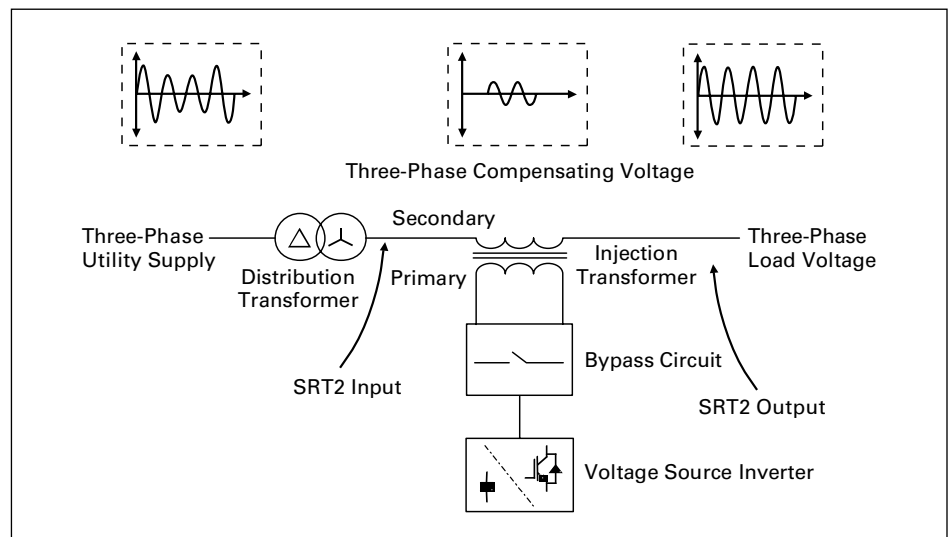


Figure 34.4-4. Block Diagram of the SRT2 Active Voltage Conditioner

Product Selection

Table 34.4-1. SRT2 ①

Load Capacity at Nominal Voltage 480 V (kVA) ②	Terminal Cabinet	Fault Capacity (kVA)	System Efficiency (%)	System Dissipation (Worst Case) (kW)	Airflow (m ³ /min)	Cabinet Dimensions H x W x D in Inches (mm)	Catalog Number ④
150	No	40	97.5	3.8	18	85.00 x 32.00 x 32.00 (2159.0 x 812.8 x 812.8)	SRT20150480AA
150	Yes	40	97.5	3.8	18	85.00 x 32.00 x 32.00 (2159.0 x 812.8 x 812.8)	SRT20150480AA-TC
225	No	40	97.7	5.2	18	85.00 x 32.00 x 32.00 (2159.0 x 812.8 x 812.8)	SRT20225480AA
225	Yes	40	97.7	5.2	18	85.00 x 32.00 x 32.00 (2159.0 x 812.8 x 812.8)	SRT20225480AA-TC
300	No	40	98.0	6.1	18	85.00 x 40.00 x 32.00 (2159.0 x 1016 x 812.8)	SRT20300480AA
300	Yes	40	98.0	6.1	18	85.00 x 40.00 x 32.00 (2159.0 x 1016 x 812.8)	SRT20300480AA-TC
450	No	40	98.2	8.0	36	85.00 x 40.00 x 32.00 (2159.0 x 1016 x 812.8)	SRT20450480AA
450	Yes	40	98.2	8.0	36	85.00 x 40.00 x 32.00 (2159.0 x 1016 x 812.8)	SRT20450480AA-TC
600	No	40	98.4	9.8	36	85.00 x 40.00 x 32.00 (2159.0 x 1016 x 812.8)	SRT20600480AA
600	Yes	40	98.4	9.8	36	85.00 x 40.00 x 32.00 (2159.0 x 1016 x 812.8)	SRT20600480AA-TC
750	No	40	98.4	12.2	54	85.00 x 96.00 x 48.00 (2159.0 x 2438.4 x 1219.2)	SRT20750480AA
750	Yes	40	98.4	12.2	54	85.00 x 96.00 x 48.00 (2159.0 x 2438.4 x 1219.2)	SRT20750480AA-TC
900	No	40	98.5	13.2	54	85.00 x 96.00 x 48.00 (2159.0 x 2438.4 x 1219.2)	SRT20900480AA
1200	No	40	98.5	18.1	72	85.00 x 126.00 x 96.00 (2159.0 x 3200.4 x 2438.4)	SRT21200480AA
1500	No	50	98.7	20.2	90	85.00 x 126.00 x 96.00 (2159.0 x 3200.4 x 2438.4)	SRT21500480AA
1800	No	50	98.8	22.1	108	85.00 x 126.00 x 96.00 (2159.0 x 3200.4 x 2438.4)	SRT21800480AA

① For 50 Hz international applications, consult factory.

② 480 V is standard. If additional voltage is needed, consult factory.

③ Eaton external three-breaker maintenance bypass cabinet is recommended. If a bypass is not used, a terminal cabinet may be required. Contact factory.

④ TC in the model number denotes terminal cabinet, which is not required for units of 900 kVA and larger.

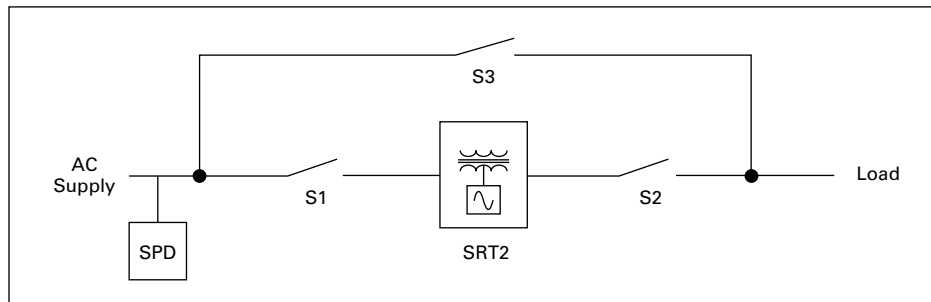


Figure 34.4-5. SRT2 with External Maintenance Bypass Block Diagram

Note: A terminal cabinet may be needed if a bypass cabinet is not used. SRT2 units 900 kVA and larger do not require a terminal cabinet; however, an external three-breaker mechanical bypass with integrated surge protection is recommended.

Power-Sure 700 (T700)



Power-Sure 700 (T700)

General Description

Eaton's Power-Sure 700 (T700) is the ideal solution for keeping your facility and equipment up and running during brownouts, undervoltage conditions and other power problems. The Power-Sure 700 (T700) can significantly reduce the costs of equipment damage and downtime when these situations occur. The state-of-the-art design provides rapid response time, high efficiency, high inrush current capability, and operating advantages exclusive to Eaton.

The Power-Sure 700 (T700) maintains a tightly regulated output voltage by automatically activating the appropriate transformer tap through a silicone controlled rectifier (SCR). Tap changer response time is initiated at one cycle, ensuring rapid and precise regulation. Switching at zero current enables noise reduction during tap transitions.

Brownouts

In the United States, most facilities have sufficient voltage regulation. However, in some U.S. locations and many developing countries, regulation problems occur because of overstressed utility distribution systems.

In some cases, due to the excessive demand on the utility system, voltage may be below 10% of nominal (–10%) during the day. This condition is called a voltage dip or brownout. Customers may notice dim lights and reduced power. During the evening, voltage may rise above 10% of nominal (+10%) because large facilities and loads are shut down. This shutdown reduces the power demand on the grid and results in a voltage increase.

The IEEE® defines voltage regulation as overvoltage or undervoltage. Voltage regulation events last from a few minutes to many hours with voltage varying by $\pm 20\%$. Long-term regulation problems differ from short duration sags and dips, which are much deeper voltage drops.

The Solution

Prior to installing an expensive solution, Eaton encourages customers to monitor incoming voltage to determine if voltage regulation is a problem. The local utility may also be able to provide information on voltage expected at the facility.

Using a meter, it can quickly be determined if a voltage regulation problem or brownout condition exists. The appropriate solution would be a Power-Sure 700 (T700). The Power-Sure 700 (T700) can be installed at the service entrance, branch panel or at critical loads.

Eaton's Power-Sure 700 (T700) is a solid-state tap changing power conditioner designed to protect against brownouts and long duration voltage regulation problems.

Features

- Coordinated with standard thermal-magnetic breakers to allow motor starts
- Optional 50 kA or 100 kA per phase surge protection
- Input frequency range operation from 57–63 Hz
- Integral manual rotary maintenance bypass switch standard on 50 to 500 kVA units and optional on smaller units
- Not affected by load power factor. Can operate effectively in low-load applications due to “unique leakage reactance” technology
- Fail-safe bypass circuit, isolation transformer and overtemperature protection
- Less than 1% THD
- Optional Standard and Premium metering to monitor voltage, current, frequency, power, energy, PF with minimum and maximum, and communication capabilities

Catalog Numbering Selection

Table 34.4-2. Power-Sure 700 (T700)

T - - - k -

Nominal Input Voltage
(Delta Input:
L, L, L, G)

B = 208
C = 240
H = 400
D = 480
E = 600

Nominal Output Voltage
(Wye Output:
L, L, L, N, G)

L = 120/208
M = 230/400
N = 277/480
P = 347/600

kVA Ratings and Dimensions						
kVA	Weight lb	BTUs/ hr	Bypass	Metering	Cabinet Dimensions in Inches (mm) (H x W x D)	
010	440	1025	Optional	No	30.20 x 22.20 x 29.00 (767.1 x 563.9 x 736.6)	
010	520	1205	Optional	Yes	44.20 x 22.20 x 29.00 (1122.7 x 563.9 x 736.6)	
015	520	1540	Optional	No	30.20 x 22.20 x 29.00 (767.1 x 563.9 x 736.6)	
015	600	1540	Optional	Yes	44.20 x 22.20 x 29.00 (1122.7 x 563.9 x 736.6)	
025	870	2560	Optional	Yes	44.20 x 22.20 x 29.00 (1122.7 x 563.9 x 736.6)	
030	890	3090	Optional	Yes	44.20 x 22.20 x 29.00 (1122.7 x 563.9 x 736.6)	
045	950	4600	Optional	Yes	44.30 x 45.90 x 29.00 (1125.2 x 1165.9 x 736.6)	
050	1176	7332	Yes	Yes	66.00 x 29.00 x 35.50 (1676.4 x 736.6 x 901.7)	
075	1575	9514	Yes	Yes	76.00 x 34.40 x 35.50 (1930.4 x 873.8 x 901.7)	
100	2014	11,833	Yes	Yes	76.00 x 34.40 x 35.50 (1930.4 x 873.8 x 901.7)	
125	2137	14,748	Yes	Yes	76.00 x 34.40 x 35.50 (1930.4 x 873.8 x 901.7)	
150	2240	17,698	Yes	Yes	76.00 x 34.40 x 35.50 (1930.4 x 873.8 x 901.7)	
225	3300	23,000	Yes	Yes	77.40 x 56.00 x 41.50 (1966.0 x 1422.4 x 1054.1)	
300	4000	30,750	Yes	Yes	77.40 x 56.00 x 41.50 (1966.0 x 1422.4 x 1054.1)	
500	5500	51,250	Yes	Yes	77.00 x 72.40 x 48.40 (1955.8 x 1839.0 x 1229.4)	

Options ①

Blank = No options
B = Bypass switch ②
M1 = Standard metering (IQ 130)
M2 = Premium metering (IQ 150)
S = Surge

Frequency

5 = 50 Hz
6 = 60 Hz

① Units with no surge protection option, bypass option or metering will have blanks in the last three spaces in the catalog number.

② Bypass is standard on 50 kVA and larger units and an option on 45 kVA and smaller units.

Note: All weights are approximate. Monitor option includes main input circuit breaker. Refer to PAD for pricing and availability.

Listings—UL® Listed, CSA® Certified, except for 600V; no UL, CSA on 600V units. For output distribution, call factory. K factor—rated units available on request.

Power-Sure 800 (T800)



Superior Power Conditioning for Industrial and Commercial Applications

General Description

Eaton's Power-Sure 800™ (T800) cleans up and purifies fluctuating and erratic power that exists in commercial and industrial facilities so that sensitive electronic equipment is not affected.

The Power-Sure 800 (T800) is a self-regulating isolation transformer. It was developed to protect against fluctuating voltages, brownouts, line noise, short-duration power outages, sags, surges, spikes and transients. The Power-Sure 800 also has one of the highest K-factors—K-30—and eliminates harmonic current in the power line, which helps prevent damage to building wiring.

Application Description

The Power-Sure 800 (T800) is ideal for use in industrial applications, such as computer programmable controllers and robotics. Use the Power-Sure 800 (T800) whenever continuous, well-regulated, transient-free power is required.

Features

- Superior isolation
- Tight voltage regulation
- High immunity to distortion
- Lightning and surge protection
- Protection against power interruptions
- Power factor correction
- Bi-directional harmonic filtering
- K-30 rated design
- Two-year warranty

Eaton's Power-Sure 800 (T800) power conditioners provide high-quality power with inherent surge protection, noise and bidirectional harmonic filtering, as well as superior isolation. These units range from office models to floor- or wall-/panel-mounted industrial models and provide an excellent solution for any application with noisy or poor power quality.

Standards and Certifications

- UL 1012, UL 544 and cUL® listed
- Meets ANSI standards for computers with inputs as low as 50% of nominal



Catalog Numbering Selection

Table 34.4-3. Power-Sure 800 (T800)

T800 X - XXXXX X X - X

Configuration

R = Receptacles
P = Hardwired wall-/panel-mount
F = Hardwired floor-mount

VA Rating

01000	03000	08000
01500	03500	10000
01600	03501	15000
02000	05000	20000
02100	07500	25000
02500		

Receptacles

Quantity of: Blank for hardwire

Custom Receptacle Options

Code	No. of Output Panels (Max. 4)	NEMA	Volts	Amperes
A	1	(1) 5-15R	120	15
B	1	(2) 5-15R	120	15
C	1	(1) 5-20R	120	20
D	1	(2) 5-20R	120	20
E	1.5	(1) 5-30R	120	30
F	1	(1) 6-15R	208/240	15
G	1	(2) 6-15R	208/240	15
H	1	(1) 6-20R	208/240	20
I	1	(2) 6-20R	208/240	20
J	1.5	(1) 6-30R	208/240	30
K	1.5	(1) 6-50R	208/240	50
L	1	(1) 14-20R	120/240	20
M	1.5	(1) 14-30R	120/240	30
N	1	(1) L5-15R	120	15
P	1	(2) L5-15R	120	15
R	1	(1) L5-20R	120	20
S	1	(1) L5-30R	120	30
T	1	(1) L6-15R	208/240	15
U	1	(2) L6-15R	208/240	15
V	1	(1) L6-20R	208/240	20
W	1	(1) L6-30R	208/240	30
X	1	(1) L14-20R	120/240	20
Y	1	(1) L14-30R	120/240	30

Option/Frequency

Blank = 60 Hz
5 = 50 Hz

Product Selection

Table 34.4-4. Power-Sure 800 Models

Rating (VA/Watts)	Input Voltage	Output Voltage	Input Interface	Output Interface	Part Number
Office Models (with Receptacles)					
1000/700	120	120	5-15P	(4) 5-20R	T800R-01000
1600/1200	120	120	5-15P	(4) 5-20R	T800R-01600
2100/1500	120	120	5-20P	(4) 5-20R	T800R-02100
2500/1750	120	120	5-30P	(4) 5-20R	T800R-02500
3500/2450	120	120/240	5-50P	(4) 5-20R	T800R-03500
3500/2450	208/240	120/240	6-20P	(4) 5-20R	T800R-03501
5000/3500	208/240	120/240	Hardwired	Custom ①	T800R-05000
7500/5250	208/240	120/240	Hardwired	Custom ①	T800R-07500
10,000/7000	208/240	120/240	Hardwired	Custom ①	T800R-10000
15,000/10,500	208/240	120/240	Hardwired	Custom ①	T800R-15000
Industrial Models (Hardwired Wall-/Panel-Mount)					
500/500	Range 1 ②③	Range ④⑤	Hardwired	Hardwired	T800P-00500
750/750	Range 1 ②③	Range ④⑤	Hardwired	Hardwired	T800P-00750
1000/1000	Range 1 ②③	Range ④⑤	Hardwired	Hardwired	T800P-01000
1500/1500	Range 1 ②③	Range ④⑤	Hardwired	Hardwired	T800P-01500
2000/2000	Range 1 ②③	Range ④⑤	Hardwired	Hardwired	T800P-02000
3000/3000	Range 1 ②③	Range ④⑤	Hardwired	Hardwired	T800P-03000
5000/5000	Range 1 ②③	Range ④⑤	Hardwired	Hardwired	T800P-05000
8000/8000	Range 2 ③④	Range ④⑤	Hardwired	Hardwired	T800P-08000
10,000/10,000	Range 2 ③④	Range ④⑤	Hardwired	Hardwired	T800P-10000
Industrial Models (Hardwired Floor-Mount)					
5000/5000	Range 1 ②③	Range ④⑤	Hardwired	Hardwired	T800F-05000
8000/8000	Range 2 ③④	Range ④⑤	Hardwired	Hardwired	T800F-08000
10,000/10,000	Range 2 ③④	Range ④⑤	Hardwired	Hardwired	T800F-10000
15,000/15,000	Range 2 ③④	Range ④⑤	Hardwired	Hardwired	T800F-15000
20,000/20,000	Range 2 ③④	Range ④⑤	Hardwired	Hardwired	T800F-20000
25,000/25,000	Range 2 ③④	Range ④⑤	Hardwired	Hardwired	T800F-25000

① See Catalog Numbering Selection on **Page 34.4-7**; 5 panels available for distribution; HW output utilizes 1 panel, other 4 panels can be used for receptacle interface or cabling.

② Range 1: 120/208/240/480.

③ Input and output voltage is field configurable; units will ship from the factory configured as follows: Range 1–120 V (input/output); Range 2–240 V (input/output).

④ Range 2: 208/240/480.

⑤ Range 3: 120/208/240.

Power-Suppress 100 (T100)



*Ultra-Isolator Noise Suppressor
and Isolation Provider*

General Description

Eaton's Power-Suppress™ 100 ultra-isolator noise suppressors protect sensitive equipment from electrical noise disturbances. Using exclusive double shielding techniques, the Power-Suppress 100 blocks all forms of electrical noise including radio frequency interface (RFI)/electromagnetic interference (EMI), over a broad range of frequencies. Furthermore, the noise suppression is achieved without impeding normal power flow.

Power-Suppress 100 ultra-isolator noise suppressors can reduce a 6000-volt spike to an insignificant 0.0030 volt. These high-voltage transients contain enough energy to completely destroy the electrical circuit components that are vital to daily operation.

Application Description

Applications for the Power-Suppress 100 include audio and video equipment, computer and process equipment, telecommunications systems, and virtually any sensitive electronic instruments.

Features

- Traps unwanted harmonics
- Removes surge voltages and minimizes reflected THD
- Cleans and conditions the sine wave
- Eliminates load-generated feedback
- Available in both hardwired or line cord/receptacle models
- Fast and easy installation
- Long-life operation
- Small footprint—saves valuable space
- Two-year warranty complete unit, five-year warranty core and coil

Standards and Certifications

- UL 1012, UL 1449, cUL listed, ANSI/IEEE C57.12.91
- Meets FCC Category A, IEEE C62.41 Category A3



Catalog Numbering Selection

Table 34.4-5. Power-Suppress 100

T100

Connection Method

R = Receptacles
H = Hardwired

Size (VA)

0500 = 500
0750 = 750
1000 = 1000
1800 = 1800
2400 = 2400

2500 = 2500
5000 = 5000
5001 = 5000 ①
7500 = 7500
7501 = 7500 ①

Option/Frequency

Blank = 60 Hz
5 = 50 Hz

① Models T100H-5001 and T100H-7501 will ship configured to 240 V input and output voltage.

Product Selection

Table 34.4-6. Power-Suppress 100 Models

Input Voltages ②	Output Voltages ②	Output VA ③	I/O Interfaces (NEMA)	Catalog Number
Line-Cord/Receptacle Models				
120	120	500	5-15P/(1) 5-20R2	T100R-0500
120	120	750	5-15P/(1) 5-20R2	T100R-0750
120	120	1000	5-15P/(1) 5-20R2	T100R-1000
120	120	1800	L5-20P/(2) 5-20R2	T100R-1800
120	120	2400	L5-30P/(2) 5-20R2	T100R-2400
Terminal Style Models				
120/240	120/240	500	Hardwired	T100H-0500
120/240	120/240	750	Hardwired	T100H-0750
120/240	120/240	1000	Hardwired	T100H-1000
120/240	120/240	1800	Hardwired	T100H-1800
120/240	120/240	2500	Hardwired	T100H-2500
120/240	120/240	5000	Hardwired	T100H-5000
240/480	120/240	5000	Hardwired	T100H-5001 ④
120/240	120/240	7500	Hardwired	T100H-7500
240/480	120/240	7500	Hardwired	T100H-7501 ④

② Input and output voltages can be field configured for either 120 Vac or 240 Vac, 240 Vac or 480 Vac, as indicated above.

③ 500 VA to 7500 VA hardwired models will ship configured to 120 V input and output voltage.

④ Models T100H-5001 and T100H-7501 will ship configured to 240 V input and output voltage.

Power-Suppress 600



Power-Suppress 600

General Description

Eaton's Power-Suppress 600 is designed with two full-length electrostatic shields that provide 126 dB common mode noise attenuation. An optional third shield is available that increases the attenuation to 146 dB, 20 dB additional attenuation. The Power-Suppress 600 not only attenuates noise from input to output, but also prohibits system backfeed from noise-generating loads. In addition, an optional pre-wired, high-frequency filter and category C3 surge protection device (SPD) provide your critical loads with optimum protection from noise and impulses, as well as high-energy voltage transients.

Application Description

The Power-Suppress 600's noise attenuation is critical for any application in which digital circuitry is used to scan, measure or monitor critical data, control a critical process, or reproduce high quality audio/video signals.

Optional infrared, transparent polymer IR window provides access for safe routine thermal scanning of transformer connections under load, without exposing personnel to arc flash hazards. Durable IR windows are industrial-grade with a patented reinforced grill, fully impact-resistant, and UL and cUL Listed. This option adds 2 inches to the depth of the 112–225 kVA enclosure.

Catalog Numbering Selection

Table 34.4-7. Power-Suppress 600

T 600 X X - XXX X X X					
Nominal Voltage	Nominal Output Voltage	kVA Rating and Dimensions			Options
Delta Input: L, L, L, G	Wye Output: L, L, L, N, G	kVA	Weight (lb)	Cabinet Size (W x D x H) Dimensions in Inches (mm)	Blank = No options A = Third shield B = Surge protector ② C = IR window ② D = Third shield, surge protector ② E = Third shield, IR window ② F = Surge protector, IR window ② G = Third shield, surge protector, IR window ②
B = 208 C = 240 H = 400 D = 480 E = 600	L = 120/208 M = 230/400 N = 277/480 P = 347/600	15	370	23 x 20 x 28 (584.2 x 508 x 711.2)	Frequency 5 = 50 Hz 6 = 60 Hz
		30	495	23 x 20 x 28 (584.2 x 508 x 711.2)	
		45	700	23 x 20 x 28 (584.2 x 508 x 711.2)	Enclosure N = NEMA 2/1 ① R = NEMA 3R
		75	830	23 x 20 x 28 (584.2 x 508 x 711.2)	
		112	1210	38 x 32 x 57 (965.2 x 812.8 x 1447.8)	
		150	1470	38 x 32 x 57 (965.2 x 812.8 x 1447.8)	
		225	1880	38 x 32 x 57 (965.2 x 812.8 x 1447.8)	
		300	2656	38 x 32 x 57 (965.2 x 812.8 x 1447.8)	
		500	4820	38 x 32 x 57 (965.2 x 812.8 x 1447.8)	

① 225 kVA and below NEMA® 2, 300 kVA and 500 kVA available in NEMA 1 only.

② 300 kVA or 500 kVA models.

Dimensions

Power-Sure 800

Approximate Dimensions in Inches (mm)

Table 34.4-8. Power-Sure 800 Models

Dimensions W x D x H	Weight Lb (kg)	Part Number
Office Models (with Receptacles)		
8.50 x 12.75 x 17.50 (215.9 x 323.9 x 444.5)	46 (21)	T800R-01000
8.50 x 12.75 x 17.50 (215.9 x 323.9 x 444.5)	62 (28)	T800R-01600
8.50 x 12.75 x 17.50 (215.9 x 323.9 x 444.5)	65 (29)	T800R-02100
8.50 x 12.75 x 17.50 (215.9 x 323.9 x 444.5)	68 (31)	T800R-02500
8.50 x 12.75 x 17.50 (215.9 x 323.9 x 444.5)	72 (33)	T800R-03500
8.50 x 12.75 x 17.50 (215.9 x 323.9 x 444.5)	73 (33)	T800R-03501
15.00 x 23.75 x 22.50 (381.0 x 603.3 x 571.5)	176 (80)	T800R-05000
15.00 x 23.75 x 22.50 (381.0 x 603.3 x 571.5)	210 (95)	T800R-07500
15.00 x 23.75 x 22.50 (381.0 x 603.3 x 571.5)	256 (116)	T800R-10000
15.00 x 23.75 x 22.50 (381.0 x 603.3 x 571.5)	314 (142)	T800R-15000
Industrial Models (Hardwired Wall-/Panel-Mount)		
9.00 x 14.00 x 10.00 (228.6 x 355.6 x 254.0)	52 (24)	T800P-00500
9.00 x 14.00 x 10.00 (228.6 x 355.6 x 254.0)	60 (27)	T800P-00750
9.00 x 14.00 x 10.00 (228.6 x 355.6 x 254.0)	82 (37)	T800P-01000
13.00 x 16.50 x 14.75 (330.2 x 419.1 x 374.7)	106 (48)	T800P-01500
13.00 x 16.50 x 14.75 (330.2 x 419.1 x 374.7)	125 (57)	T800P-02000
13.00 x 16.50 x 14.75 (330.2 x 419.1 x 374.7)	157 (71)	T800P-03000
27.00 x 22.50 x 28.50 (685.8 x 571.5 x 723.9)	437 (198)	T800P-05000
27.00 x 22.50 x 28.50 (685.8 x 571.5 x 723.9)	495 (225)	T800P-08000
27.00 x 22.50 x 28.50 (685.8 x 571.5 x 723.9)	537 (244)	T800P-10000
Industrial Models (Hardwired Floor-Mount)		
23.00 x 20.00 x 28.50 (584.2 x 508.0 x 723.9)	407 (185)	T800F-05000
23.00 x 20.00 x 28.50 (584.2 x 508.0 x 723.9)	465 (211)	T800F-08000
23.00 x 20.00 x 28.50 (584.2 x 508.0 x 723.9)	507 (230)	T800F-10000
35.00 x 25.00 x 39.50 (889.0 x 635.0 x 1003.3)	830 (376)	T800F-15000
35.00 x 25.00 x 39.50 (889.0 x 635.0 x 1003.3)	950 (431)	T800F-20000
35.00 x 25.00 x 39.50 (889.0 x 635.0 x 1003.3)	1070 (485)	T800F-25000

Note: Refer to **Page 34.4-4** for SRT2 cabinet dimensions.
Refer to catalog selection guide on **Page 34.4-6** for Power-700 cabinet dimensions.

Power-Suppress 100 (T100)

Approximate Dimensions in Inches (mm)

Table 34.4-9. Power-Suppress 100 Models

Dimensions W x D x H	Weight Lb (kg)	Catalog Number
Line-Cord/Receptacle Models		
6.49 x 6.10 x 12.00 (164.8 x 154.9 x 304.8)	22 (10)	T100R-0500
6.49 x 6.10 x 12.00 (164.8 x 154.9 x 304.8)	28 (13)	T100R-0750
6.49 x 6.10 x 12.00 (164.8 x 154.9 x 304.8)	31 (14)	T100R-1000
10.49 x 11.10 x 17.00 (266.4 x 281.9 x 431.8)	54 (24)	T100R-1800
10.49 x 11.10 x 17.00 (266.4 x 281.9 x 431.8)	58 (26)	T100R-2400
Terminal Style Models		
6.42 x 6.10 x 12.00 (163.1 x 154.9 x 304.8)	22 (10)	T100H-0500
6.42 x 6.10 x 12.00 (163.1 x 154.9 x 304.8)	28 (13)	T100H-0750
6.42 x 6.10 x 12.00 (163.1 x 154.9 x 304.8)	31 (14)	T100H-1000
10.28 x 11.10 x 17.00 (261.1 x 281.9 x 431.8)	54 (24)	T100H-1800
10.28 x 11.10 x 17.00 (261.1 x 281.9 x 431.8)	58 (26)	T100H-2500
10.28 x 11.10 x 17.00 (261.1 x 281.9 x 431.8)	86 (39)	T100H-5000
10.49 x 11.10 x 17.00 (266.4 x 281.9 x 431.8)	92 (42)	T100H-5001
10.28 x 11.10 x 17.00 (261.1 x 281.9 x 431.8)	116 (53)	T100H-7500
10.28 x 11.10 x 17.00 (261.1 x 281.9 x 431.8)	111 (50)	T100H-7501

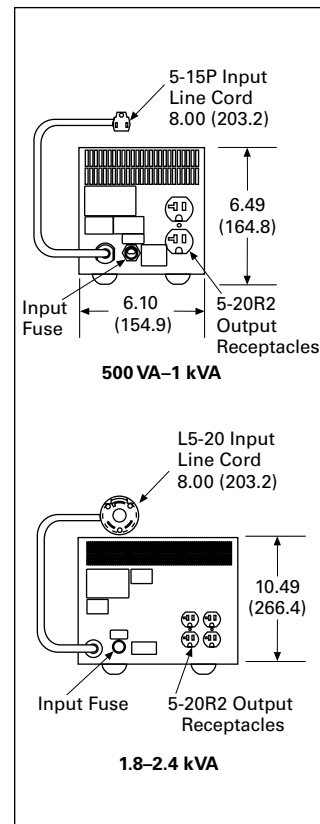


Figure 34.4-6. Line-Cord Style

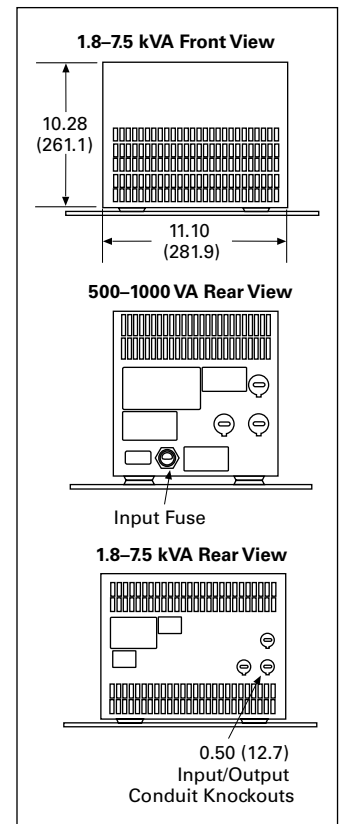


Figure 34.4-7. Terminal Style

Specifications

SRT2

Table 34.4-10. SRT2 Specifications

Description	Specification
Load Capacity	
Capacity	150–1800 kVA (consult factory for custom design; up to 36 kVA available)
Displacement power factor of connected load	0 lagging to 0.9 leading
Crest factor for rated kVA	3 at 100% of rated load
Overload capacity (>90% supply voltage)	150%, 30 seconds, once per 500 s
Input Supply	
Nominal supply voltage (according to model)	480 V Voltages up to 36 kV available as custom applications ①
Power system type	Three-phase, center ground referenced
Supply voltage category	Level III transient voltage capability
Fault capacity	Refer to model tables
Operating Voltage Range for Regulation	
Supply voltage for regulation	90–110% of nominal input voltage unit rating
Output Supply	
Nominal voltage (V)	Set to match nominal supply voltage
Three-phase V regulation range	±10% continuous
Three-phase V regulation accuracy	±1%
Three-phase balanced sag/swell correction ability: 40% model	+40% / –10% at least 30 s at full load
Sag correction accuracy (within specified range)	±2.5%
Sag correction response: Initial Complete	<250 μs <0.25 cycle
Single-phase sag correction ability: 40% model (15% retained voltage / 85% sag)	90% nominal
Equivalent series impedance (operating)	<4% typical
Efficiency of system	0.98 to 0.99 (refer to model tables)
Bypass	
Capacity	100% model rating (kVA)
Maximum overload capacity (in bypass): For 10 minutes For 1 minute For 1 second For 200 milliseconds Transfer time: Inverter to bypass	125% 150% 500% 2000% <0.5 ms
Equivalent series impedance (in bypass)	<2.5% typical
Interface	
Access protocol	Ethernet connectivity; Modbus® TCP, dry contacts
Environmental	
Enclosure rating	NEMA® 1, IP20
Pollution degree rating	2
Minimum operating temperature	0 °C
Maximum operating temperature	40 °C
Temperature derating	Above 40 °C derate at 2% per °C to a maximum of 50 °C
Capacity elevation derating	–2% every 100 m above 1000 m
Cooling: Inverter Transformer	Forced ventilation Fan assisted ventilation
Humidity	<95%, noncondensing
EMC emissions	CISPR 22 level G
Noise	65 dBA
Warranty	1 year

① 480 V is standard. If additional voltage is needed, consult factory.

Power-Sure 700**Table 34.4-11. Power-Sure 700 Specifications (10 to 500 kVA)**

Description	Specification
Technology	Electronic tap changer
Input voltages	208–600 V, three-phase (three-wire)
Input voltage range	+10% to –23% of nominal rated input
Output voltage	±3% of nominal
Response time	1/2 cycle
Frequency	60 Hz, ±3%
Efficiency	97% typical
Line regulation	Output is ±3% of nominal for input variations of +10% to –23% of nominal
Load regulation	Output is maintained within 3% of nominal from no load to full load
Correction time	Output will be corrected to within ±3% of nominal in 1.5 cycles or less
Harmonic distortion	Less than 1.0% added to the output waveform under any dynamic linear loading conditions presented to the line regulator
Noise attenuation Common mode Normal mode	146 dB 3 dB down at 1000 Hz, 40 dB/decade to below 50 dB with resistive load
Turn-on characteristics	When energized, voltage overshoot will be less than 5% of nominal for 1 cycle or less
Overload rating	1000% for 1 cycle and 200% for 10 seconds
Ambient rating	–10 ° to 40 °C
Monitoring	Three green LEDs (phase power on indication), one red LED (alert indication)
Surge protection (optional)	CVX 50 kA SPD device 50 kVA and below, CVX 100 kA SPD device 75 kVA and above
Input breaker	MCCB rated 125% of full rated current
Bypass switch	Normal and bypass selector
Metering (optional)	Standard metering (IQ 130) – voltage and current with minimum and maximum Premium metering (IQ 150) – voltage, current, frequency, power, energy, PF, with minimum and maximum, communications capabilities
Warranty	1-year parts

Power-Sure 800**Table 34.4-12. Power-Sure 800 Specifications**

Description	Specification
Line regulation	±3% V-out for +10% to –20% V-in at 100% load
Load regulation	±3% for 0–75% load ±2% for 100% load
Immunity to distortion	40% THD V-in, 5% max. THD V-out at 50% load or higher
Ride-through capability	1 cycle
Voltage recovery	2 cycles to 95%, 3 cycles to 100%
K-factor	K-30 rated
Power factor correction	Input of 0.95 typical
Harmonic attenuation	–23 dB for load-reflected harmonics
Galvanic isolation	NEC 250.5d, 0.001 PF
Surge protection	330 V let-through voltage when tested to ANSI/IEEE 62.41-Cat B3
Common mode noise attenuation	140 dB
Transverse mode noise attenuation	120 dB
Reliability	200,000 hours (MTBF)
Audible noise	52–56 dB measured at 1 meter, A scale
Efficiency	Approximately 92% at full load
Operating temperature	–20 °C to +40 °C

Power-Suppress 100**Table 34.4-13. Power-Suppress 100 Specifications**

Description	Specification
Input voltage/frequency	120, 240, 480 V Ⓢ/60 Hz
Common-mode noise	140 dB at 100 kHz
Normal-mode noise	65 dB at 100 kHz
Overload capacity	600% for 1 cycle, 300% for 30 seconds
Dielectric strength	2,500 Vac minimum
Frequency	60 Hz ±5%
Impedance	3–6% typical
Efficiency	93–97% typical
Input voltage range	±10% of nominal rated voltage
Harmonic distortion	Adds less than 1% THD, under linear loading
Coil insulation	200 °C
Temperature rise	115 °C max rise above a 40 °C ambient, depending on model
Electromagnetic interference	<0.2 gauss at 36 inches
Audible noise	Less than 50 dBA measured at 3 ft from the noise suppressor
Operating temperature	0 to 40 °C
Storage temperature	–20 to 50 °C
Operating altitude	Up to 12,000 ft (3657.6 m) (without derating)
Operating humidity	95% relative (noncondensing)

Ⓢ 480 V available for 5 and 7.5 kVA models only.

Table 34.4-14. Plug and Receptacle Configuration Models

Rating	Input Plug	Output Receptacle
500–1000 VA	5-15P	5-20R duplex
1.8 kVA	L5-20P	2 × 5-20R duplex
2.4 kVA	L5-30P	2 × 5-20R duplex

Power-Suppress 600

Table 34.4-15. Power-Suppress 600 Specifications

Description	Specification
Power Output	
Three-phase	15, 30, 45, 75, 112.5, 150, 225, 300, 500 kVA
Operating Frequency	
Frequency	60 Hz \pm 5% Note: 50 Hz models available, consult factory.
Electrical Input	
Three-phase 15–150 kVA 225–500 kVA	208, 240, 480, or 600 Vac (delta) 480, 600 Vac (delta)
Voltage taps (15–300 kVA ①)	(2) 2.5% full capacity above nominal (4) 2.5% full capacity below nominal
500 kVA	(1) 3.5% full capacity above nominal (2) 3.5% full capacity below nominal Note: Special voltages available for both single- and three-phase models.
Electrical Output	
Three-phase	208/120 or 480/277 Vac (wye) Note: Special voltages available.
Output impedance	2% to 3.5% typical
Output distortion	Less than 1.0% THD added under linear load
Load regulation	2% typical, no load to full load
Overload	Up to 500% for 10 seconds, 1000% for 1 cycle
Isolated neutral	Establishes a new neutral to ground bond on the transformer's output
Noise Attenuation	
Common mode	126 dB — standard double (2) shield 146 dB — optional triple (3) shield
Transverse mode	3 dB down at 10 kHz, decaying 20 dB per decade; decaying 40 dB with "SPD with high frequency" option
Environmental	
Operating ambient temperature	–25 °C to +40 °C
Relative humidity	0 to 95% noncondensing
Altitude	Up to 5000 feet above sea level without derating
Audible noise	45 to 55 dBA at 1 m, depending on kVA size
Efficiency	
U.S.	Meets and exceeds U.S. Department of Energy (DOE) 2016 high efficiency standards identified under DOE 10 CFR Part 431
Canada	Meets and exceeds CSA Standard C802.2-12
K-Factor Ratings	
Ratings	K13
Neutral size	Twice the ampacity of the secondary phase conductor on three-phase models
Harmonic elimination	The load generated triplen harmonics of the fundamental (3rd, 9th, 15th, 21st, etc.) are eliminated from the input lines, thus reducing the overall THD content.
Transformer construction	All copper winding and conductor construction, dry-type transformer with M3, grain-oriented silicon steel
Electrical connection	Copper bus provided for hardwired input and output. Note: Optional lug kits available.
Basic impulse level	10 kV
Temperature rise	135 °C rise above ambient, under nonlinear loading per UL 1561 standard
Cooling	Convection cooled
Enclosure	Standard, floor mounted: NEMA 2 up to 225 kVA; NEMA 1 at 300 kVA and 500 kVA Note: Optional NEMA 3R outdoor enclosure available up to 225 kVA.
Certifications	
Safety	UL 1561 Listed, labeled for operation with or below a specific K-factor rating; cUL listed to CSA Standard C22.2, No. 47-13
RoHS	Compliant
Quality	ISO 9001:2015

① Exception:
112.5 kVA–150 kVA at
208 Vac or 240 Vac
(1) 5% full capacity above nominal
(2) 5% full capacity below nominal

Harmonic Handling Capability

The Power-Suppress 600 is designed to handle the following percentages of fundamental and harmonic currents, without exceeding temperature rise limits with K14 rating:

- Fundamental 60 Hz: 100%
- 3rd harmonic: 40%
- 5th harmonic: 42%
- 7th harmonic: 25%
- 9th harmonic: 7%
- 11th harmonic: 10%
- 13th harmonic: 8%
- 15th harmonic: 3%
- 17th harmonic: 2%

Note: The above represents only one scenario (per K-factor rating) of an infinite combination of harmonic content that could add up to a specific K-factor. Consult factory with your harmonic load profile for assistance in K-factor selection.

