

## Power conditioning products

Electronic voltage regulator  
Power-Sure 700 & 800  
Power-Suppress T7 & 100

Harmonic correction unit  
Sag ride-through power  
conditioner

# The power to work



**EATON**

*Powering Business Worldwide*



## Basics of power quality

### The PQ Pyramid™

The key elements of an effective PQ strategy:

#### Interruption solutions

- Reduce problems associated with outages using UPS, paralleling switchgear, generators and/or energy storage devices

#### Harmonic mitigation

- Many applications require solutions to reduce harmonic current and voltage distortion

#### Voltage regulation

- Stabilizes a facility's voltage and eliminates costly problems due to undervoltage and overvoltage events

#### Surge protection

- Eliminates problems associated with transients traveling on AC, telephone and communication lines

#### Effective grounding

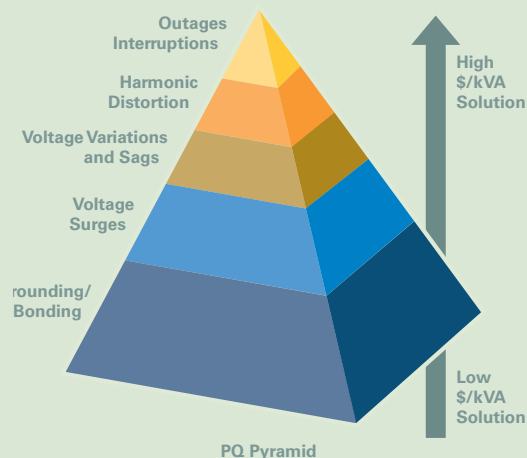
- A well-designed and properly installed grounding system is required for safety and operation of all electrical equipment

## The partner you can trust

Utilities struggle to keep up with the unrelenting demand for clean power...you can't rely solely on them to provide it. The responsibility for PQ rests with the customer—including you.

With Eaton behind you, your company's operations managers and facility engineers can be assured that their power supply will get the job done, no matter what level of reliability your company requires.

You wouldn't use anything other than 100 percent clean gas in your car, or pure oil in your engine. The same rules apply to your electrical equipment. Without an investment in the quality of power running this equipment, you can expect downtime and equipment disruption.

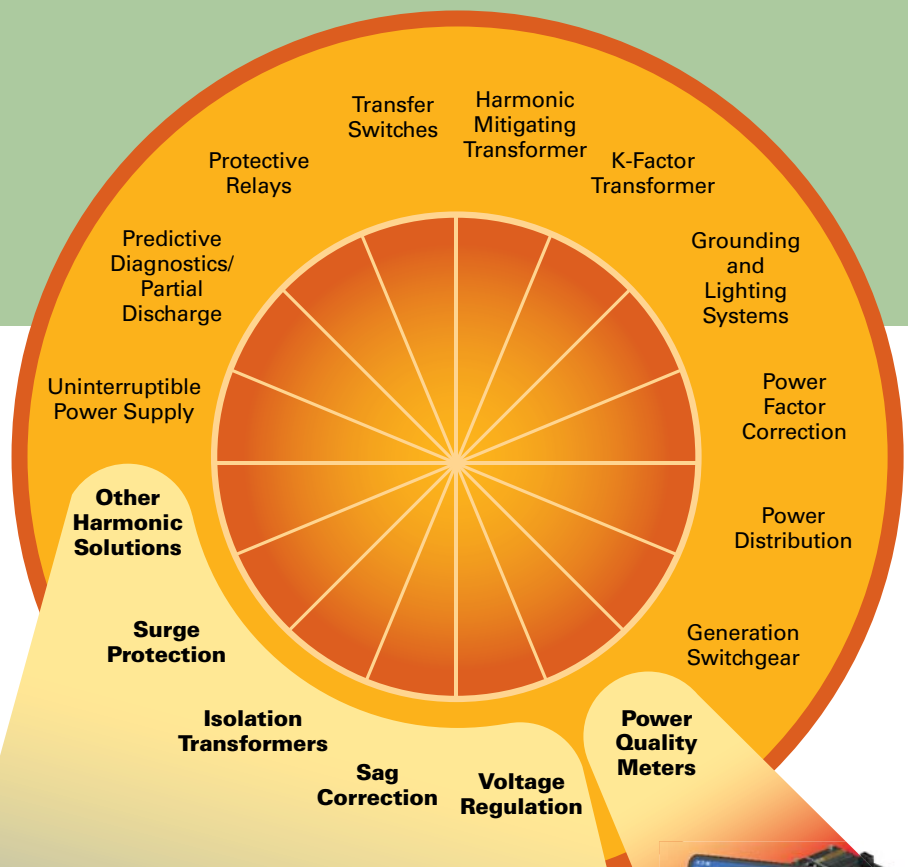


# A total solution

The right power quality solution is site and industry specific. Power quality meters are required to help you capture and analyze your facility's power disturbances. If you can't measure it, you can't manage it.

A power quality engineer can help companies interpret data and identify the most cost-effective solutions. With today's increasingly complex facilities and interconnected networks, the number of problems that can result from poor power quality are significant. Eaton power system engineers are PQ experts who can help you realize the full benefits of your investment.

Armed with this information, you can select the Eaton product that is right for you.



# Solutions to all of your power quality needs

An investment in Eaton power quality (PQ) solutions is one that will pay dividends immediately. It keeps your equipment, and your company, working. That means you avoid costly downtime.

We'll help you protect your investment in an increasingly digital world.



## Overview

Eaton offers a wide range of power conditioning solutions. These solutions range from small single-phase isolation units to megawatt sag correction units. Eaton has the engineering expertise and products to solve any power quality problem.

### Protects equipment from:

- Voltage sags
- Line noise
- Voltage transients/surges
- Under/overvoltage events
- Swells
- Harmonics

### Ratings

- 500 VA to 50 MVA
- 50/60 Hz
- Voltage 120V to 36 kV
- Single-phase and three-phase





## Power conditioning product selection chart

Eaton power conditioning products are designed to protect your critical equipment against common power quality problems.

Power Quality Product / Protection	Transient Activity	Noise Suppression	Voltage Regulation	Voltage Sag Correction	Harmonic Protection	Power Interruption Protection	Isolation	Power Factor Correction
Uninterruptible power supply	■	■	■	■	■	■		
Electronic voltage regulators (EVR)	■	■	■	■			■	
Power-Sure™ 700	■	■	■	■			■	
Power-Sure 800	■	■		■	■		■	
Power-Suppress 100	■	■					■	
Power-Suppress T7		■					■	
Surge protective devices	■	■						
Sag ride-through devices (SRT2)			■	■		■		
Harmonic correction units (HCU)					■			■

## Power conditioning application chart

Power Quality Product / Application	Single-Phase	Three-Phase	Test Equipment	Audio Systems	Data Centers	Power Interruption Protection	Isolation	Factory Automation	Critical Systems
Uninterruptible power supply	■	■			■	■	■	■	■
Electronic voltage regulators (EVR)		■			■		■	■	■
Power-Sure 700		■			■		■	■	■
Power-Sure 800	■		■	■			■		■
Power-Suppress 100	■		■	■			■		■
Power-Suppress T7		■					■	■	
Surge protective devices	■	■	■	■	■			■	■
Sag ride-through devices (SRT2)		■				■		■	■
Harmonic correction units (HCU)		■			■			■	■





## Power conditioning voltage regulators

### EVR and Power-Sure 700—three-phase

- Ratings from 10 to 500 kVA
- Voltage from 208V to 600V
- Seven taps per phase for optimal regulation
- Response time of 1/2 cycle
- Output correction within 1.5 cycles
- $\pm 3\%$  voltage output for a  $+10\%$  to  $-23\%$  voltage input
- Less than 1% THD
- Unit not affected by load power factor
- High efficiency of approximately 97%
- Frequency range of 53–63 Hz
- Bypass switch (optional on 45 kVA and smaller units)
- Triple-shielded isolation transformer
- Overtemperature protection
- Optional surge protection unit
- Optional metering
- Front access only for 50–150 kVA units
- One-year warranty

### Power-Sure 800—single-phase

- Ratings from 500 VA to 25 kVA
- Voltage range from 120V to 480V
- Office models (with receptacles)
- Hardwired models (wall/panel mount and floor mount)
- Line regulation  $\pm 3\%$  V-out for  $+10\%$  to  $-20\%$  V-in at 100% load
- Load regulation  $\pm 3\%$  for 0–75% load to  $\pm 2\%$  for 100% load
- Immunity to distortion at 40% THD V-in, 5% max. THD V-out
- Ride-through capability of 1 cycle
- Voltage recovery of 2 cycles to 95%, 3 cycles to 100%
- K-30 rated K-factor
- Harmonic attenuation of  $-23$  dB for load-reflected harmonics
- Surge protection of 330V let-through voltage
- Common mode noise attenuation of 140 dB
- Transverse mode noise attenuation of 120 dB
- Reliability of 200,000 hours (MTBF)
- Audible noise of 52–56 dB at 1 meter
- Efficiency of 92% at full load
- Operating temperature of  $-20^{\circ}\text{C}$  to  $+40^{\circ}\text{C}$
- Two-year warranty

### Sag ride-through power conditioner (SRT2)

- Up to 30 seconds of voltage sag ride-through
- 99% efficient (typical)
- Does not lower fault capacity
- Continuous voltage regulation
- Voltage harmonic reduction
- Voltage balance correction
- Extensive diagnostics
- Voltage event log
- Separate coupling transformer
- Continuous sag correction survives multiple sag events without recharging capacitors for extra time savings
- Small design and footprint significantly reduces required floor space
- Battery-free design eliminates costly maintenance and disposal requirements
- No minimum load improves operating flexibility for fluctuating loads or processes
- Sub-cycle response patented circuit enables extremely fast 2 ms response (1/8 cycle)



**Electronic Voltage Regulator and Power-Sure 700**



**Power-Sure 800**



**Sag Ride-Through (SRT2)**



## Power conditioning and isolation

### Power-Suppress 100—single-phase

- Traps unwanted harmonics
- Sizes from 500 VA to 7.5 kVA
- Voltages from 120V to 480V
- Common mode noise attenuation of 140 dB at 100 kHz
- Normal mode noise attenuation of 65 dB at 100 kHz
- Overload capacity of 600% for 1 cycle, 300% for 30 seconds
- Frequency of 60 Hz  $\pm$ 5%
- Efficiency of 93–97%
- Adds less than 1% THD under linear loading
- Temperature rise 115°C above a 40°C ambient
- 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
- Two-year warranty

### Power-Suppress T7 isolation transformer

- 20,000,000:1 (146 dB) common-mode noise attenuation
- Typically 1000 to 1 (60 dB) normal-mode noise attenuation
- Transient suppression system with status indicators
- Exclusive shielding
- K-13 rated
- Overtemperature protection
- Clean, noise-free power output
- High efficiency
- Fast, easy installation
- UL® and cUL® listed requirements
- Five-year warranty

### Harmonic correction unit

- Can be sized to guarantee specific levels of harmonic correction, such as meeting IEEE® 519 recommended levels
- Cannot be overloaded
- Can be expanded without affecting performance
- Broad spectrum of cancellation (2nd to 50th harmonic)
- Power factor improvement
- Easier and less expensive installation
- Comprehensive control
- Fast action
- 20 kHz switching carrier frequency, 8 ms full response time
- UL/CSA® approved
- 208–480V  $\pm$ 10%, 600V with autotransformer
- 50/60 Hz  $\pm$ 3 Hz frequency
- Ambient temperature 0°C to +40°C enclosed
- Seismic Zone 4
- NEMA® 1 and NEMA 12 enclosures available:
  - Wallmount (50 and 100A designs)
  - Floor-standing (300A design)
- Output capacity—self-limited to 100% current rated
- Corrective capability—<5% TDD and near unity displacement power factor ❶
- Two-line, 20-character-per-line alphanumeric display

❶ Requires at least 3% series input line reactor ahead of large nonlinear loads.



Harmonic Correction Unit



Power-Suppress 100

Eaton is dedicated to ensuring that reliable, efficient and safe power is available when it's needed most. With unparalleled knowledge of electrical power management across industries, experts at Eaton deliver customized, integrated solutions to solve our customers' most critical challenges.

Our focus is on delivering the right solution for the application. But, decision makers demand more than just innovative products. They turn to Eaton for an unwavering commitment to personal support that makes customer success a top priority. For more information, [www.eaton.com/pc](http://www.eaton.com/pc).

For application support, call our engineers at  
**800-809-2772, option 4, sub-option 2.**  
For details, visit [www.eaton.com/pc](http://www.eaton.com/pc).

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