Environmental Potentials

Power Quality For The Digital Age




PRODUCT CATALOG

COMPREHENSIVE

2012

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The EP Upgrade for the Electrical Distribution System

The electrical industry has made a significant leap in the last 25 years. Technological advancements have put us on an efficiency path unlike anything seen in the industrialized era. This business revolution is driven by business process automation and is a direct result of these advancements.

Equipment is electrical, electronic, or a hybrid of the two. Equipment is programmable; equipment is sophisticated; equipment is expensive and requires a higher level of maintenance and service.

This difference in equipment means the return on investment is constantly at risk. Operations and maintenance strategies are dynamic planning efforts to drive the critical deliverables of such equipment. Often, the company deploying an automation strategy is going to endure loss of production, increase maintenance costs and have sporadic and abbreviated equipment lifecycles.

Environmental Potentials has built an entire company around the greatest glaring threat that automation promises to deliver. Whether the goal is to optimize production output, squeeze lean operations for efficiency gains, or grow the revenue per employee ratio, one reality remains. The quality of the power delivered to the equipment will significantly affect these goals.

EP provides the first major upgrade to the electrical distribution system in more than 50 years.

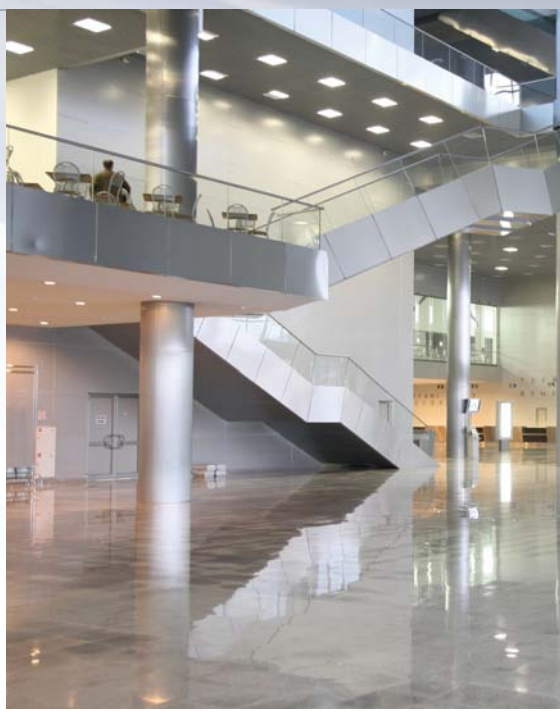
Table of Contents

Comprehensive product listings for Distributors, Spec Development, and Manufacturing Reference.

What is Power Quality?

While there are many complex definitions of power quality, a simple one is: the measure of voltage and current waveforms flowing to your electrical equipment. Good power quality is stable voltage and current with undistorted waveforms. Unfortunately, good power quality is rare. Electrical systems are constantly being assaulted by waveform distortions and changing voltages. There are some external threats to power quality such as lightning and transformer failure. However, almost 85 percent of power quality problems are generated inside of your own facility. Poor power quality translates into equipment deterioration, computer crashes, stoppage in assembly lines, equipment malfunction, flickering lights and wasted energy. Since businesses are powered almost entirely by electrical equipment poor power quality significantly reduces productivity.

Waveform Correction Technology



Environmental Potentials' patented waveform correction technology has revolutionized power quality for the past 12 years. Previously, power quality devices focused on protecting equipment from extreme events. Extreme events were defined as more than 20% above or below the peaks of the sine wave. These extreme events are created by events such as lightning, utility switching, transformer failure, and large faults.

However, the proliferation of electronics, computers and digital equipment is creating pollution on the waveform which rarely, if ever, exceeds the 20% "envelope". The processes of rectifying AC to DC, and inverting DC to AC, are responsible for generating 85% of power pollution.

These signal manipulations leave the waveform full of pollution. This pollution equals losses, unreliable performance, decreased asset lifespans, malfunctions, increased maintenance, and downtime.

Environmental Potentials' patented waveform correction technology focuses on tracking the waveform and filtering all of the pollution generated by continuous power conversion. Environmental Potentials converts this pollution into heat within the unit rather than relying on ground, other system conductors, or even loads to provide the required attenuation. This eliminates harmful and unusable energy from your system.

Installing EP ensures the waveform delivered to your expensive equipment is as sinusoidal as possible.

Installing the EP System

Environmental Potentials' waveform correction technology was designed as a system wide solution for 21st century power quality problems. All computerized, digital and electronic equipment is responsible for degrading power quality. This means power quality is being constantly assaulted from inside the facility.

The EP system was designed to combat this constant assault. For the EP system to achieve its goals the best method is to distribute the system throughout the entire facility. However, financial can hinder efforts to completely install the EP system. Please consider the following factors when selecting the right system with your rep.

The chart on page 5 will help in selecting which product is right for your application. Notice there is some overlap of products. The factors below will help you determine which product is best for your facility. If you have any questions please contact your official EP sales rep.

Factors to Consider

1. Type of facility: Commercial facilities typically include convenience stores, office buildings and retail outlets. Industrial facilities include steel mills, manufacturing facilities, oil refineries or any facility with motors larger than 75 HP. The third category is medical facility. If the installation is for a commercial facility, select the smaller size. Medical facilities have extremely sensitive and expensive equipment while industrial facilities have harsh environments.

2. Electrical Configuration: Does the transformer configuration match the panel configuration (wye transformer, neutral in panel)? If no, then contact an authorized EP rep for assistance.

3. Application: EP's waveform correctors have several different applications. The most common are **increasing equipment performance, protecting equipment, reducing electrical losses or solving power quality problems with the electrical system.**

4. Equipment: Does the facility have multiple variable frequency drives? All nonlinear equipment generates significant non sinusoidal waveforms and extreme levels of high frequency noise between the range of 3kHz-1MHz. Do not apply an EP-2000 on a VFD 50 HP or larger.

Basic Field Guide to Select EP Waveform Correctors

Step 1: Collect application information:

- Rated Panel or rated machine amperage
- System voltage and number of phases
- System configuration Wye or Delta, (neutral or no neutral)

Step 2: Based on the panel or machine amperage, select the required EP Series from chart below

- For EP2000 page 18; EP2500 page 16; EP2800 series page 12; go to page 10 for EP2900 series; features explained on page 9.

Step 3: Select Part #:

- **Example 1**: EP unit is to be applied to a 225A Lighting panel, 3 phase, 120/208Voltage, Wye configuration. The part # is EP20003Y208 The "3Y" indicates three phase wye (neutral) configuration while the "208" indicates a 120/208V system.
- **Example 2**: EP unit is to be applied to a 1200A panel, 3 phase 480 delta, in an industrial facility. The chart shows this can be either the EP-2822 or EP-2922. Since this is an industrial environment select the EP-2822/2922. If EP-2822 the part # is EP28223D480
  The 3D indicates three phase delta (no neutral) configuration while the 480 indicates a 480V system.

RECOMMENDED	RATED PANEL/MACHINE AMPERAGE						
Product	0-15	15-25	60-300	300-800	800-1600	1600-2000	2000-4000+
EP2000 DINRAIL	✓	✓					
EP2000		✓	✓				
EP2500				✓			
EP2822/EP2922					✓		
EP2844/EP2944						✓	✓
EP2888/EP2988							✓

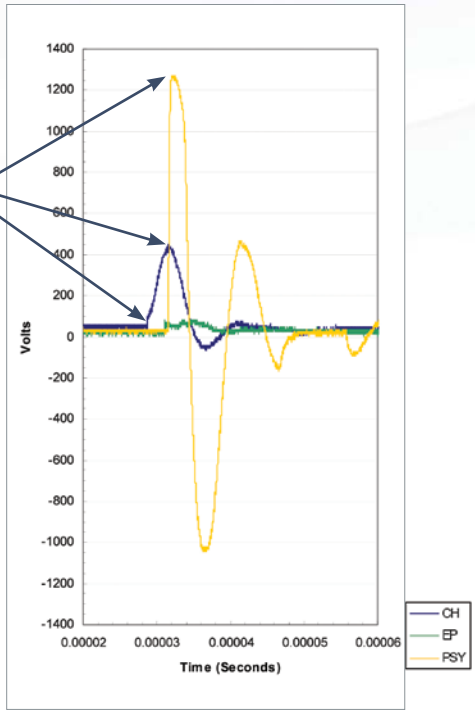
This is a general guide for initial implementation of Environmental Potentials product in the modern facility. Other factors in a facility can contribute to deviating from this general guideline. When selecting a product for a VFD application, do not apply EP-2000's to any VFD 50 HP or larger

Independent Testing

Approximately 85% of power pollution is generated inside facilities in the form of A1 & B3 ring waves. Environmental Potentials' developed a product capable of dealing with this 21st century problem. Independent testing lab, Electrical Systems Analysis performed several performance tests on EP and two legacy competitors. The goal of the test was to see if waveform correction technology could suppress internal surges better than legacy solutions.

2000V 70 Amp Spike

Figure 1: *An A1 ring wave at 180 degrees. The green line represents EP. The blue line and the yellow line represents legacy SPD technology. The higher the line goes the more danger there is to equipment.*



6000V 500 Amp Spike

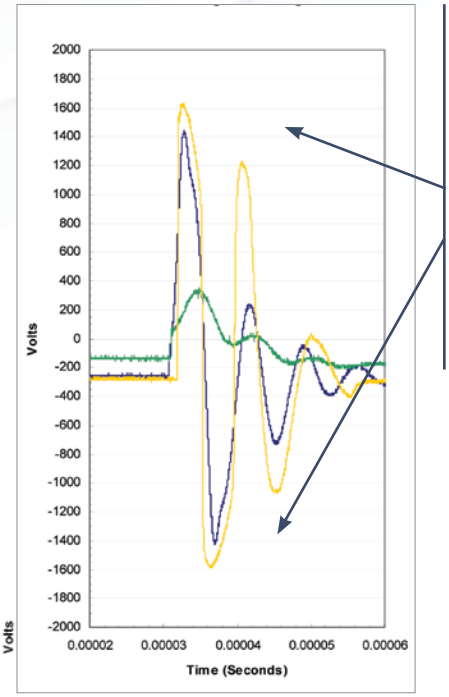


Figure 2: *A B3 ring wave at 180 degrees. Notice the yellow and blue lines go above 1200V on both the positive and negative half cycle. This dangerous energy goes directly to expensive electrical equipment.*

Let through voltage is the amount voltage let through the device and into the electrical system. Both of the EP competitors let through enough voltage to cause equipment malfunctions, waste energy and shorten the asset lifecycle.

Environmental Potentials' patented waveform correction technology is the only technology available that protects facilities from the 15% of external threats such as lightning and the 85% of internal threats such as noise. Every other company focuses on protecting from only the 15% of catastrophic surge events and not the 85% of the surges that disrupt the production process.

*to see the full testing reports please visit **www.ep2000.com** and click on the library link. Or email **info@ep2000.com** and write "Send me the ESA Report" in the subject line.

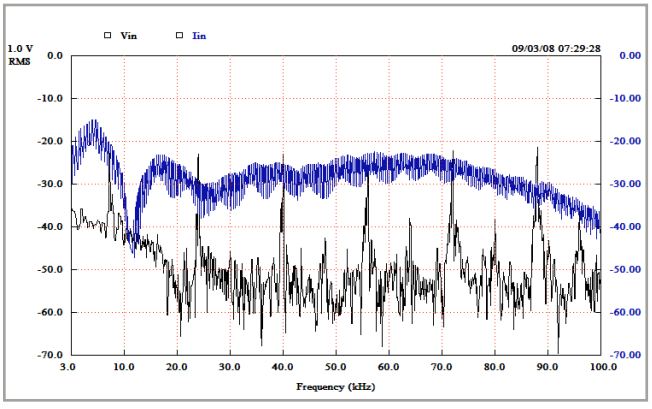
Frequency Noise: 3kHz – 1MHz

High frequency noise between 3kHz-1MHz is extremely harmful to the electrical system. Noise in this range is responsible for several power quality problems including:

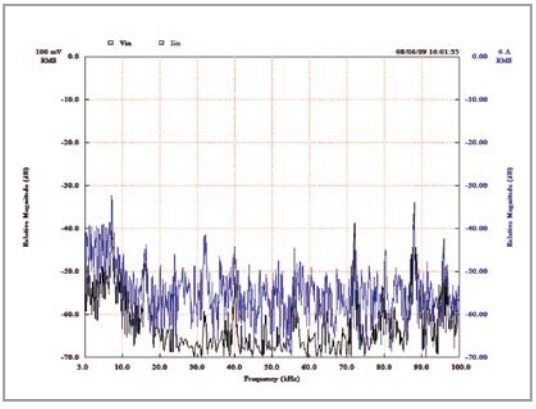
- Printed Circuit Board Burned Out
- Board Component Failures
- Random Memory Wipe
- Corrupted Binary Data Packets
- Overheated Conductors
- Hysteresis Losses In Motors/ Transformers
- UPS Stuck In Bypass
- Ballast Failure And Noise Contribution
- Ground Loops
- PLC/PAC Lockup
- VFD Nuisance Trip
- Skin Effect
- Voltage Flicker
- Power Supply Failure
- Server Room Overheating

The graphs below show high frequency noise between 3kHz-1MHz generated by a VFD. The graph on the left is before installing EP waveform correctors, while the graph on the right is after installing EP waveform correctors.

Current & Voltage High Frequency Noise before EP

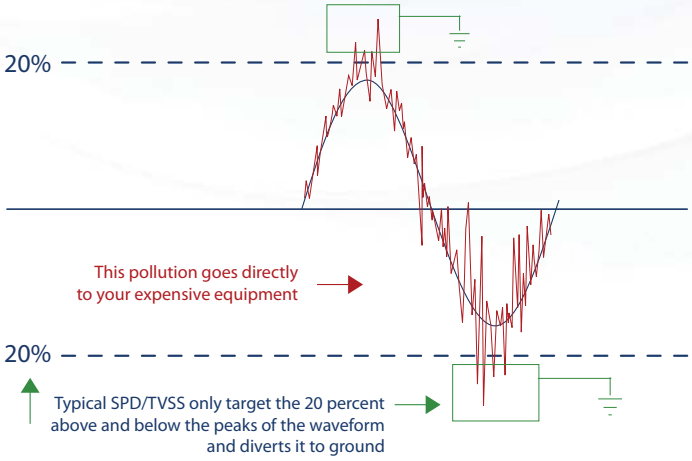


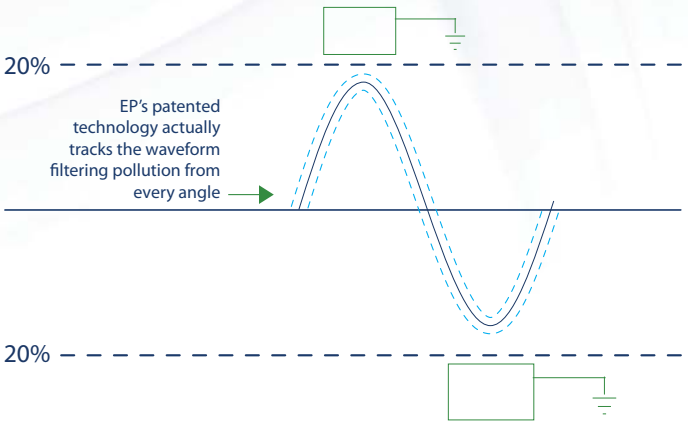
Current & Voltage High Frequency Noise after EP



Features & Benefits of Waveform Correction Technology

Environmental Potentials' patented waveform correction technology focuses on tracking the waveform and filtering all of the pollution generated by continuous power conversion. Environmental Potentials converts this pollution into heat within the unit rather than relying on ground, other system conductors, or even loads to provide the required attenuation. This eliminates harmful and unusable energy from your system.





Features:

Remove the high frequency noise generated by switching transient and/or Correct the sinusoidal nature of the waveform

Absorb – the switching noise and voltage transients

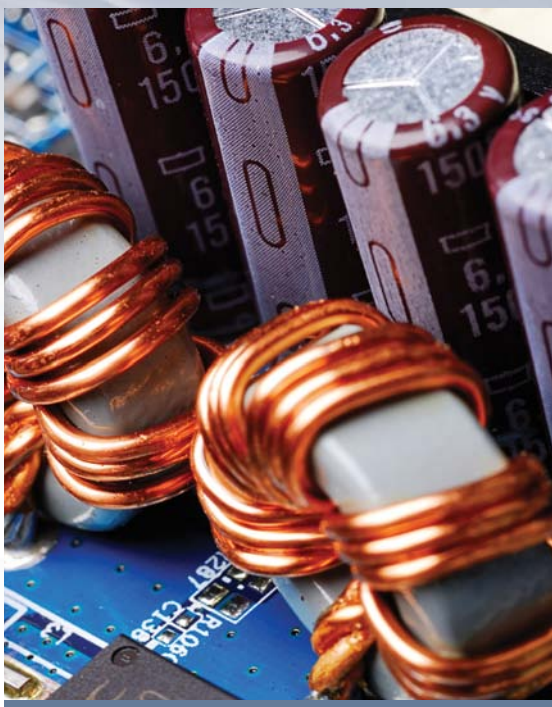
Spread - distribute the energy

Dissipate – dissipate energy in the form of heat within the unit

DOES NOT divert the noise to ground

Since most of the power quality pollution is generated in the facility, it is not recommended to divert electrical noise (high frequency noise) back into the electrical system

Switched-Mode Power Supplies



Technological advancements have revolutionized the workplace. Every employee has a PC. Automated phone systems are a must. Fax machines and copiers are a given. Thanks in part to switched-mode power supplies (SMPS), electronics are smaller, lighter, faster and more efficient than ever before. An SMPS is an electronic power supply unit installed directly into digital equipment. It can convert AC to DC, can change voltage, change frequencies and is highly efficient.

However, SMPS's are also responsible for generating high frequency noise. Noise is the cause of many disturbances within the electrical distribution system, such as computer freezes, network crashes, ballast burnouts, equipment malfunctions and energy losses. All of which equals a significant reduction of return on investment.

Environmental Potentials' patented waveform correction technology filters and eliminate harmful frequency noise from 3kHz-1MHz.

Ground is Not the Answer for Frequency Noise

Because of the natural inductance, capacitance and resistance in all cables, any point more than three feet from the single grounding point has its own electrical characteristic. This problem is exacerbated by an increase in frequency. The sensitive electronic devices prevalent in all facilities produce a tremendous amount of frequency noise in the 3kHz-1MHz range. This noise will ride on the normal power at 60 Hz and is connected to every piece of equipment through all the phases, neutral and your safety grounds.

A building can appear to have a perfectly grounded facility at 60 Hz, yet at 3000 Hz become noisy and harmful to your equipment. This is clearly explained in the IEEE 1100 Emerald Book. It warns engineers that the concept of ground reference is only applicable to 60 Hz. The higher frequencies become trapped inside the facility and are not eliminated at the local ground connections.

THE 2800 SERIES: MODULAR PROTECTION

The EP-2800 series of filter/protectors come in three different sizes with: 2, 4 and 8 optional modules. The 2800 is the only filter/protector in the industry that protects factories against catastrophic surges while also absorbing and dissipating harmful energy generated by electronic devices such as ballasts, computers and industrial control circuits like VFD's.

Modular design provides a cost effective method for meeting current protection needs while also allowing for future growth. This filter/protector is designed for easy installation, typically less than one hour and the modular design means adding new modules can be done in the field in minutes. The 2800 family can be fully customized with dual surge counters, remote relay status alarm, audible alarm, both system and module status LED's and 600VAC, 200kA I.R integrated fuseable disconnects allowing direct bus connection with no upstream disconnect required.

The 2800 has a CA option which is fully customizable and allows the user to select the product that best fits the application.

	EP-2800	EP-2800CA
30Amp 200kAIC Fusing	Yes	Yes
LED Visual Notification	Yes	Yes
Audible Alarm	No	Yes
Dry Contacts/Remote Alarm	No	Yes
Dual Surge Counters	No	Yes

Fusing

The 2800 series come equipped with 600VAC, 200 kA I.R. fuses. The fuses have surge ratings of 20kA-100kA 8X20µSec capacity. The fuses are located inside the enclosure. These fuses are specially designed to withstand 8X20µSec surge pulses without opening. Removing the fuses renders the unit inoperable.

LED Visual Notification

The 2800 series have green LED lighting on the cover of the unit for visual notification of the unit's status. If the LED lights are on the unit is functioning properly. If any of the lights are extinguished, a module needs to be replaced. Inside the casing, red LED lights will indicate which module needs replacing.

Audible Alarm

The 2800CA series are equipped with an audible alarm that will trigger if a unit becomes disabled. There is an ON/OFF switch to disable the alarm. Both the alarm and the switch are located on the outside/front of the unit directly above the surge counters.

Dry Contacts/Remote Relay

Perhaps your electrical room is tucked away in the back of the factory and has little or no foot traffic. The 2800CA series offer dry contacts that can connect to your preferred device to provide notification to wherever you would like.

Surge Counters

Want to know how many surge events you are protected from each month? Well, the 2800CA series come equipped with dual surge counters. The counters are on the front of the unit. Both counters are equipped with a gray reset button on the lower right hand corner of the surge counter. The reset button for the bottom counter has been disabled.

EP-2800CA SERIES WAVEFORM CORRECTOR

THE EP-2800CA FEATURES AND BENEFITS:

- Provides 80kA to 640kA per mode single-pulse surge current
- Integrated Dissipation Technology. Energy is absorbed and dissipated within the unit, not shunted to the ground.
- Active Sine Wave tracking filter
- No additive harmonic distortion
- Patented technology of the 2800B module provides industry superior filter performance
- Reacts to transient in nanoseconds
- Status LED Indicators
- Top and Bottom feed
- 10 –Year Warranty

EP-2800CA GENERAL SPECIFICATIONS

MAX SURGE CURRENT RATING: 640kA per mode
REPETITIVE SURGE CURRENT RATING: 5000 impulses using IEEE C62.41
PRODUCT DESIGN: Patented waveform correction technology and fused MOV in a convenient parallel design
OPERATING FREQUENCY: 45 - 65 Hz
WARRANTY: 10 Years
LISTING: UL 1449 3rd Edition Type 1 & Type 2 SPD
CSA Standards Class 9091 01 & 9091 81; CSA std. c22.2 No. 8-M1986
SAFETY: Fire Rating 94V-0
COMPLIANCE: NEMA LS-1, NEC Surge Suppression Standards, UL 96 A

EP-2800CA ELECTRICAL SPECIFICATIONS

CONNECTION METHOD: Parallel
PROTECTION MODES: L-N, L-L
CONTRACTOR SUPPLIED WIRE: 00 AWG Wire
INTEGRATED FUSEABLE DISCONNECT: 600VAC, 200kA I.R.
STATUS INDICATORS: Local and Remote LED
EMI/RFI FILTER ATTENUATION: MIL Standard 220B

The **EP-2820CA** can hold up to two modules.
Two base modules provide 160kA protection.

The **EP-2840CA** can hold up to four modules.
Four base modules provide 320kA protection.

The **EP-2880CA** can hold up to eight modules.
Eight base modules provide 640kA protection.

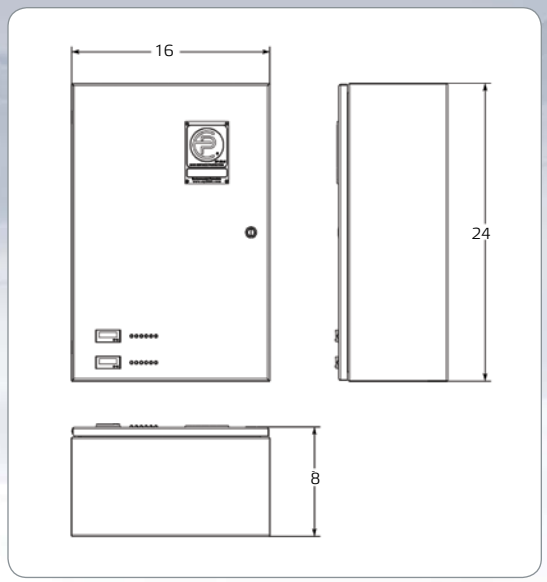
EP-2800CA B MODULE

- 80kA single impulse surge current
- Integrated filter with sine wave tracking
- Integrated dissipation technology

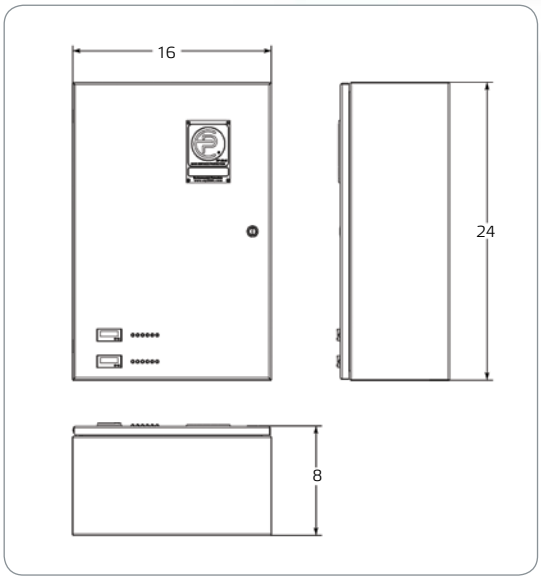
EP-2800CA F MODULE

- Patented technology provides industry-superior filter performance
- Protected by mandatory base module for consistent filtering
- Integrated dissipation technology

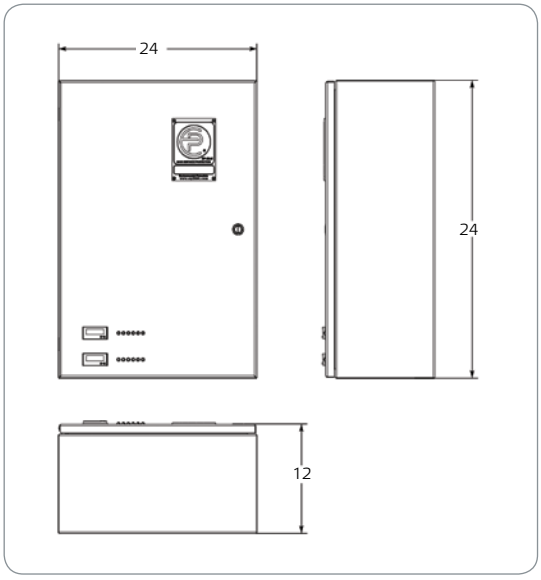
2820CA



2840CA



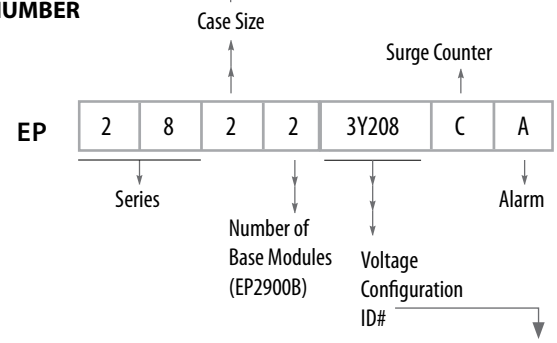
2880CA



EP-2800CA SERIES PRODUCT ORDERING GUIDELINES

CASE SIZE REFERENCE
EP-2820: 24x16x8
EP-2840: 24x16x8
EP-2880: 24x24x12

MODEL NUMBER



VOLTAGE CONFIGURATIONS

SYSTEM VOLTAGE	PROTECT MODE	VPR	SYSTEM CONFIGURATION	VOLTAGE ID#
Single Phase 120/240	L-N L-L	700 1000	3 Wire + G	**1S240**
3 Phase 120/208	L-N L-L	700 1000	4 Wire + G	**3Y208**
3 Phase 277/480	L-N L-L	1200 1800	4 Wire + G	**3Y480**
3 Phase 347/600	L-N L-L	1200 2500	4 Wire + G	**3Y600**
3 Phase 480V	L-L	1800	3 Wire + G	**3D480**
3 Phase 600V	L-L	2500	3 Wire + G	**3D600**

MECHANICAL SPECIFICATIONS	
DIMENSIONS	24 x 16 x 8 inch 61 x 40.6 x 20.3 cm
WEIGHT	60 lbs. / 27.27 Kg
ENCLOSURE	NEMA 4, 12, 13
OPERATING TEMPERATURE	-40F to 140F -40C to +60C
NON-CONDENSING HUMIDITY	5% to 95%

*Other voltages and configurations available upon request

EP-2800 SERIES WAVEFORM CORRECTOR

THE EP-2800 FEATURES AND BENEFITS:

- Provides 80kA to 640kA per mode single-pulse surge current
- Integrated Dissipation Technology. Energy is absorbed and dissipated within the unit, not shunted to the ground
- Active Sine Wave tracking filter
- No additive harmonic distortion
- Patented technology of the 2800B module provides industry-superior filter performance
- Reacts to transient in nanoseconds
- Status LED Indicators
- Top and Bottom feed
- 10 –Year Warranty

EP-2800 GENERAL SPECIFICATIONS

MAX SURGE CURRENT RATING: 640kA per mode
REPETITIVE SURGE CURRENT RATING: 5000 impulses using IEEE C62.41
PRODUCT DESIGN: Patented waveform correction technology and fused MOV in a convenient parallel design
OPERATING FREQUENCY: 45 - 65 Hz
WARRANTY: 10 Years
LISTING: UL 1449 3rd Edition Type 1 & Type 2 SPD
CSA Standards Class 9091 01 & 9091 81; CSA std. c22.2 No. 8-M1986
SAFETY: Fire Rating 94V-0
COMPLIANCE: NEMA LS-1, NEC Surge Suppression Standards, UL 96 A

EP-2800 ELECTRICAL SPECIFICATIONS

CONNECTION METHOD: Parallel
PROTECTION MODES: L-N, L-L
CONTRACTOR SUPPLIED WIRE: 00 AWG Wire
INTEGRATED FUSEABLE DISCONNECT: 600VAC, 200kA I.R.
STATUS INDICATORS: Local and Remote LED
EMI/RFI FILTER ATTENUATION: MIL Standard 220B

The **EP-2820** can hold up to two modules.
Two base modules provide 160kA protection.

The **EP-2840** can hold up to four modules.
Four base modules provide 320kA protection.

The **EP-2880** can hold up to eight modules.
Eight base modules provide 640kA protection.

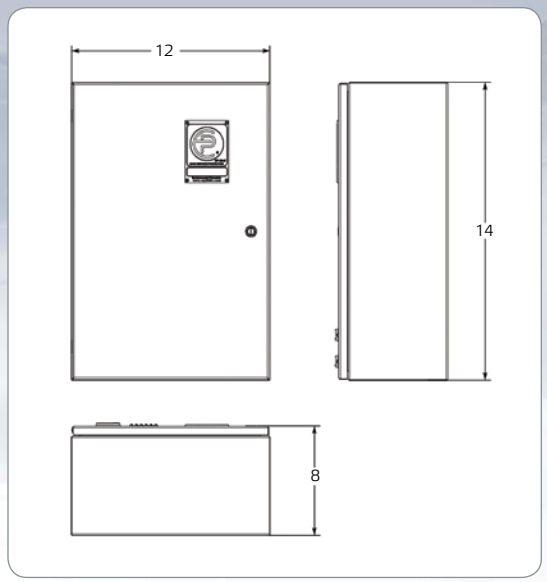
EP-2800B MODULE

- 80kA single impulse surge current
- Integrated filter with sine wave tracking
- Integrated dissipation technology

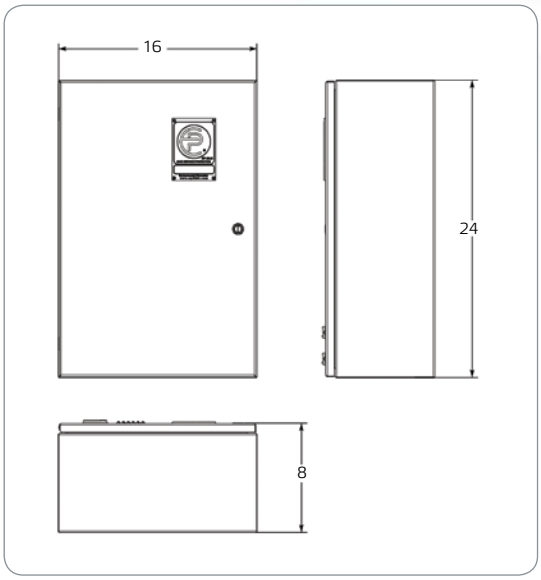
EP-2800F MODULE

- Patented technology provides industry-superior filter performance
- Protected by mandatory base module for consistent filtering
- Integrated dissipation technology

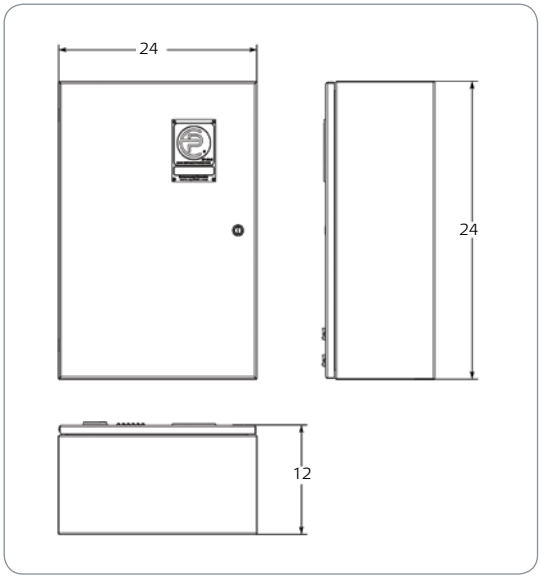
2820



2840



2880

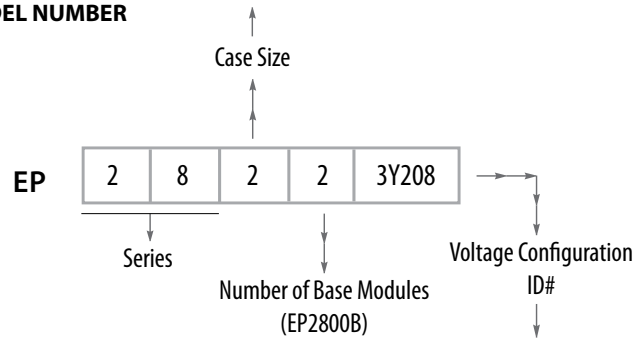


EP-2800 SERIES PRODUCT ORDERING GUIDELINES

CASE SIZE REFERENCE

EP-2820: 14x12x8
EP-2840: 24x16x8
EP-2880: 24x24x12

MODEL NUMBER



VOLTAGE CONFIGURATIONS

SYSTEM VOLTAGE	PROTECT MODE	VPR	SYSTEM CONFIGURATION	VOLTAGE ID#
Single Phase 120/240	L-N L-L	700 1000	3 Wire + G	**1S240**
3 Phase 120/208	L-N L-L	700 1000	4 Wire + G	**3Y208**
3 Phase 277/480	L-N L-L	1200 1800	4 Wire + G	**3Y480**
3 Phase 347/600	L-N L-L	1200 2500	4 Wire + G	**3Y600**
3 Phase 480V	L-L	1800	3 Wire + G	**3D480**
3 Phase 600V	L-L	2500	3 Wire + G	**3D600**

MECHANICAL SPECIFICATIONS	
DIMENSIONS	12 x 14 x 8 inch 30.5 x 35.6 x 20.3 cm
STANDARD WEIGHT **MAXIMUM WEIGHT**	24 lbs. / 10.89 Kg 30 lbs. / 13.61 Kg
ENCLOSURE	NEMA 4, 12, 13
OPERATING TEMPERATURE	-40F to 140F -40C to +60C
NON-CONDENSING HUMIDITY	5% to 95%

*Other voltages and configurations available upon request

COMMERCIAL PROTECTION

Since approximately 85 percent of power quality problems are generated by electrical equipment inside the facility, protection only at the main gate will not improve power quality. To truly ensure equipment is performing to its maximum capability it is necessary to cover every electrical panel and all large equipment.

Designed for industrial and commercial applications the EP-2500 is perfect for downstream panels in heavy industrial environments and strong enough for the main panel in most commercial facilities. The EP-2000 is perfect for point of equipment applications in heavy industrial environments and in downstream panels in commercial facilities.

More than 10 years after the release of the EP-2000, these waveform correctors continue to lead the industry in improving equipment performance. EP patented waveform correctors provide 24/7 active filtration and protection. Conveniently sized and shaped the EP-2000 and EP-2500 fit into most panels and are designed to handle a diverse range of electrical environments.

EP-2500 WAVEFORM CORRECTOR: MEDIUM PROTECTION

THE EP-2500:

ABSORBS, DISSIPATES & REMOVES
with increased capacity

- Transient voltage surges and spikes
- Frequency Noise Between 3kHz-1MHz
- Ring waves

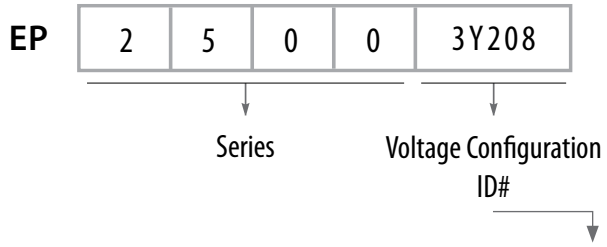
DOES NOT SHUNT ENERGY TO GROUND.
The facility ground is not relied on for performance or survivability.

EP-2500 GENERAL SPECIFICATIONS

OPERATING FREQUENCY
45 - 65 Hz
FREQUENCY ATTENUATION
-20 dB/decade roll-off starting at 2.5 kHz
MAX SURGE CURRENT
80 kA per mode
MCOV
20% above rated voltage
SAFETY APPROVALS
UL 1449 3rd Edition Type 2 SPD
CSA Standards Class 9091 01 & 9091 81; CSA std. c22.2 No. 8-M1986
SAFETY RATINGS
Fire Rating 94V-0
OPERATING ENVIRONMENT
Approximately -25° C to 65° C
RESPONSE TIME
Primary Response Time: Instantaneous
Key Event Time: Approx. 1 Nanosecond
COMPLIANCE
NEMA LS-1, NEC Surge Suppression Standards, Electrical Notice 516
CONNECTION
Wire leads. Size: 10 AWG Length: 3'
MATERIALS
Aluminum Housing, LED Indicator Lamps, 10 AWG 600 V rated Wire.
Circuit encapsulated in epoxy to retain integrity of circuitry in failure mode.
ACCESSORIES
Amber LED indicates active phase
DIMENSIONS & WEIGHT
Diameter: 6.375" Depth: 3.85" Weight: 6 lbs.
Compact for easy installation.

EP-2500 PRODUCT ORDERING GUIDELINES

MODEL NUMBER



VOLTAGE CONFIGURATIONS

SYSTEM VOLTAGE	PROTECT MODE	VPR	SYSTEM	VOLTAGE ID#
Single Phase 120/240	L-N L-L	700 1000	3 Wire + G	**1S240**
Single Leg 120V	L-N	700	2 Wire + G	**1L120**
Single Leg 240V	L-N	1000	2 Wire + G	**1L240**
3 Phase 120/208	L-N L-L	700 1000	4 Wire + G	**3Y208**
3 Phase 277/480	L-N L-L	1200 1800	4 Wire + G	**3Y480**
3 Phase 480V	L-L	1800	3 Wire + G	**3D480**

EP-2000 WAVEFORM CORRECTOR: P.O.E. PROTECTION

The **EP-2000** is the industry's most advanced power quality solution available. The patented circuit of the **EP-2000** uses innovative technology to increase the efficiency of an electrical distribution system, protecting the connected equipment that drives your process, from home automation to industrial robotics - and everything in between.

THE EP-2000:

ABSORBS, DISSIPATES & REMOVES

- Transient voltage surges and spikes
- Frequency Noise Between 3kHz-1MHz
- Ring waves

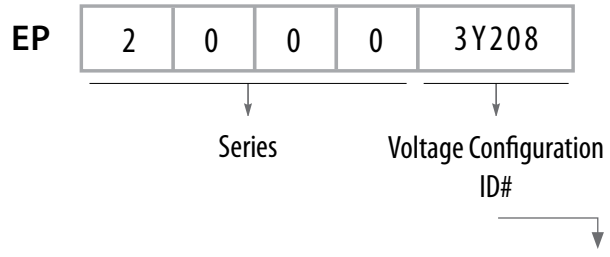
DOES NOT SHUNT ENERGY TO GROUND.
The facility ground is not relied on for performance or survivability.

EP-2000 GENERAL SPECIFICATIONS

OPERATING FREQUENCY
45 - 65 Hz
FREQUENCY ATTENUATION
-20 dB/decade roll-off starting at 2.5 kHz
MAX SURGE CURRENT
12.5 kA per mode
MCOV
20% above rated voltage
SAFETY APPROVALS
UL 1449 3rd Edition Type 2 SPD
CSA Standards Class 9091 01 & 9091 81; CSA std. c22.2 No. 8-M1986
SAFETY RATINGS
Fire Rating 94V-0
OPERATING ENVIRONMENT
Approximately -25° C to 65° C
RESPONSE TIME
Primary Response Time: Instantaneous Key Event Time:
Approx. 1 Nanosecond
COMPLIANCE
NEMA LS-1, NEC Surge Suppression Standards, Electrical Notice 516
CONNECTION
Wire leads. Size: 14 AWG Length: 3'
MATERIALS
Aluminum Housing, LED Indicator Lamps, 14 AWG 600 V rated Wire.
Circuit encapsulated in epoxy to retain integrity of circuitry
in failure mode.
ACCESSORIES
Amber LED indicates active phase
DIMENSIONS & WEIGHT
Diameter: 4.34" Depth: 3.35" Weight: 3 lbs.
Compact for easy installation.

EP-2000 PRODUCT ORDERING GUIDELINES

MODEL NUMBER



VOLTAGE CONFIGURATIONS

SYSTEM VOLTAGE	PROTECT MODE	VPR	SYSTEM CONFIGURATION	VOLTAGE ID#
Single Phase 120/240	L-N L-L	400 800	3 Wire + G	**1S240**
Single Leg 120V	L-N	400	2 Wire + G	**1L120**
Single Leg 240V	L-N	800	2 Wire + G	**1L240**
3 Phase 120/208	L-N L-L	400 800	4 Wire + G	**3Y208**
3 Phase 277/480	L-N L-L	1000 1800	4 Wire + G	**3Y480**
3 Phase 480V	L-L	1800	3 Wire + G	**3D480**

EP-2000 DIN WAVEFORM CORRECTOR: DIN RAIL APPLICATIONS

Finally the industry's most powerful filter is available in a convenient din rail enclosure. The **EP-2000** DIN offers waveform correction technology for all din rail applications. This provides filtration, waveform correction for other din rail technologies such as motor controls, conveyor control applications and PLC's. The DIN unit is available in 120V & 240V AC and 12V & 24V DC.

THE EP-2000 DIN:

ABSORBS, DISSIPATES & REMOVES

- Transient voltage surges and spikes
- Frequency Noise Between 3kHz-1MHz
- Ring waves

DOES NOT SHUNT ENERGY TO GROUND.
The facility ground is not relied on for performance or survivability.

EP-2000 DIN GENERAL SPECIFICATIONS

OPERATING FREQUENCY
45 - 65 Hz
FREQUENCY ATTENUATION
-20 dB/decade roll-off starting at 2.5 kHz
MAX SURGE CURRENT
12.5 kA per mode
MCOV
20% above rated voltage
SAFETY APPROVALS
UL 1449 3rd Edition Type 2
CSA Standards Class 9091 01 & 9091 81; CSA std. c22.2 No. 8-M1986
SAFETY RATINGS
Fire Rating 94V-0
OPERATING ENVIRONMENT
Approximately -25° C to 65° C
RESPONSE TIME
Primary Response Time: Instantaneous
Key Event Time: Approx. 1 Nanosecond
COMPLIANCE
NEMA LS-1, NEC Surge Suppression Standards, Electrical Notice 516
CONNECTION
Screw Terminals; Max Wire Size 12 AWG
MATERIALS
LED Indicator Lamp
Circuit encapsulated in epoxy to retain integrity of circuitry in failure mode.
ACCESSORIES
Green LED indicates active phase
DIMENSIONS & WEIGHT
Length: 86 mm Width: 35 mm

EP-2000 DIN PRODUCT ORDERING GUIDELINES

MODEL NUMBER

EP-2000 D | I | N | 1L120

D | I | N → Series
1L120 → Voltage Configuration ID#

VOLTAGE CONFIGURATIONS

SYSTEM VOLTAGE	PROTECT MODE	VPR	SYSTEM CONFIGURATION	VOLTAGE ID#
Single Leg 120V	L-N	400	2 Wire + G	**1L120**
Single Leg 240V	L-N	800	2 Wire + G	**1L240**

EP-2700 HIGH FREQUENCY FILTER

The **EP-2700** is a constantly-on high frequency noise filter. This filter complements the **EP-2000** by supplying additional filtration to environments where there is a high level of high frequency noise pollution.

THE EP-2700:

- Has a greater than -30 dB reduction from 5 kHz to 2 MHz
- Has a maximum attenuation of greater than -40 dB from 45 kHz to 250 kHz
- Absorbs and dissipates energy within the unit. Energy is not shunted to the ground. Case ground only.
- This unit will not work on the output of a VFD; it will attenuate the control frequency.

EP-2700 GENERAL SPECIFICATIONS

OPERATING FREQUENCY
45 - 65 Hz
FREQUENCY ATTENUATION
-30 dB reduction from 5 kHz to 2 MHz
SAFETY RATINGS
Fire Rating 94V-0
OPERATING ENVIRONMENT
Approximately -25° C to 65° C
APPLICATION ENVIRONMENT
Subpanel Distribution, PLC Protection, Buss Plug, Machine Feed,
VFD Input Power (Must be used in combination with either EP-2000 or EP-2500)
COMPLIANCE
NEMA LS-1, Electrical Notice 516

CONNECTION
Wire leads Size: 14 AWG Length: 3'
DIMENSIONS & WEIGHT
Three-Phase: Length: 6.25" Width: 6.25" Height: 4" Weight: 8 lbs.
Mounting Plate: 8.25 x 6.25 x .25"
Single-Phase: Length: 4.75" Width: 4.75" Height: 3.75" Weight: 5 lbs.
Mounting Plate: 6.75 x 4.75 x .25"
MATERIALS
Aluminum Housing, 14 ga 600 V rated Wire.
Circuit encapsulated in epoxy to retain integrity of circuitry in failure mode.
ACCESSORIES
Red LED Indicator Lights = Failure Mode

The EP-2700 is an extremely sensitive filter and should only be applied at the recommendation of Environmental Potentials. Never install a 2700 in a facility that has grounded the neutral leg of a wye transformer downstream of the main service. This is a common practice in many facilities.

EP-2750 & 2775 GROUND FILTERS

The **EP-2750** and **EP-2775** remove high frequency resonance in the grounding system.

THE EP-2750 AND EP-2775:

- Remove high frequency resonance in the grounding system
- Allow for greater leverage of ground system to dissipate events
- Add filtering to prevent ground loops
- Reduce feedback to sensitive electronics and instrumentation from ground
- Reduce the chance of equipment damage caused byflashover and near-strike lightning.

EP-2750 & EP-2775 GENERAL SPECIFICATIONS

OPERATING FREQUENCY
45 - 65 Hz
FREQUENCY ATTENUATION
Noise attenuation starting at 15 kHz and attenuation of -30 dB at 1.5 MHz
SAFETY RATINGS
Fire Rating 94V-0
OPERATING ENVIRONMENT
Approximately -25° C to 65° C
APPLICATION ENVIRONMENT
Subpanel Distribution, PLC Protection, Buss Plug, Machine Feed
CONNECTION
Wire Leads Length: 2'
EP-2750 Size: 10 AWG Wire EP-2775 Size: 3 AWG Wire

2750 DIMENSIONS & WEIGHT
Length: 4" With mounting tabs: 4.75" Width: 2" Height: 1.5" Weight: 10 oz.
Compact size for easy installation.
2775 DIMENSIONS & WEIGHT
Length: 4.75" With mounting tabs: 6" Width: 4.75" Height: 3.75"
Weight: 5.5 lbs. Compact size for easy installation.
MATERIALS
Plastic Housing, 10 AWG Wire for 2750, 3 or 6 AWG wire for 2775.
Circuit encapsulated in epoxy to retain integrity of circuitry in failure mode.
COMPLIANCE
NEMA LS-1, Electrical Notice 516

GROUND FILTER PRODUCT LIST

PRODUCT	WIRE OPTIONS	PRODUCT NUMBER
EP-2775	3 AWG	EP2775-3
EP-2775	6 AWG	EP2775-6
EP-2750	10 AWG	EP2750-10
EP-2750	12 AWG	EP2750-12

POWER SUPPLIES

Businesses rely on power for critical operations. Technological advancements made electronic equipment smarter, faster and more sophisticated than ever before. However, power disturbances and poor power quality can significantly reduce the return on investment for these expensive and critical assets.

Clean power will extend the lifecycle and increase the performance and efficiency of expensive electrical and electronic equipment. Environmental Potentials designed its line of power supply products to provide businesses, medical facilities and residences with EP's industry changing waveform correction technology in a convenient, portable plug-in case.

Environmental Potentials' power supplies integrate EP's patented waveform correction technology, additional noise filtration and protection from extreme events

EP-2400 RACK MOUNTED POWER SUPPLY

The **EP-2400** is a unique industrial rack mounted power supply featuring the superior benefits of EP technology. It is conveniently sized to integrate with industry-standard equipment, and designed for ease of installation, portability and commercial-grade use.

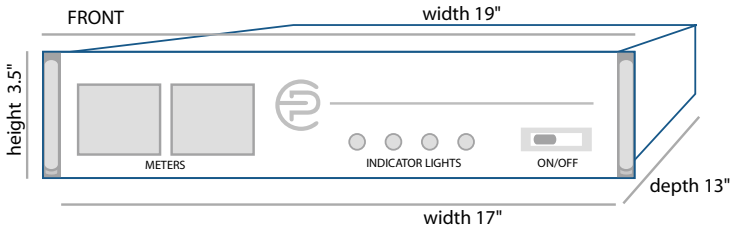
THE EP-2400 PROVIDES:

- EP-2500 Lightning Protection
- EP-2700 High Frequency Filtering
- EP-2750 Ground Filtering
- EP-2275 Ethernet Protection
- 20 Amp Breaker Protection
- Outlet panel for Power Access

EP-2400 GENERAL SPECIFICATIONS

MAX SURGE CURRENT
80 kA
SAFETY RATINGS
Fire Rating 94V-0
SAFETY APPROVALS
UL 1449 3rd Edition (EP-2500)
CSA Std. Class 9091 01 & 9091 81; CSA Std. c22.2 No. 8-M1986 (EP-2500)
OPERATING ENVIRONMENT
Approximately -10° C to 65° C
APPLICATION ENVIRONMENT
Commercial
CONNECTION
NEMA 5-15, 5.5' cord length
MATERIALS
Aluminum Housing, LED Indicator Lamps. Circuit encapsulated in epoxy to retain integrity of circuitry in failure mode.
ACCESSORIES
Analog voltage and amperage meters, LEDs indicate active phase, Commercial grade vertical handles, Electrical panel, Ethernet ports, Rubber base pads
COMPLIANCE
NEMA LS-1, NEC Surge Suppression Stds., Electrical Notice 516

DIMENSIONS & WEIGHT
Height: 3.5" Width: 17" (19" at front with handles)
Depth: 13" Weight: 9 lbs
Industry standard size for integration with other equipment



EP-2450 HOME THEATER POWER SUPPLY

The **EP-2450** is a unique residential power supply, combining several EP product features to provide an all-in-one protection unit. It is conveniently sized for use with standard home entertainment equipment, but can be used in various situations where a protected power supply is beneficial.

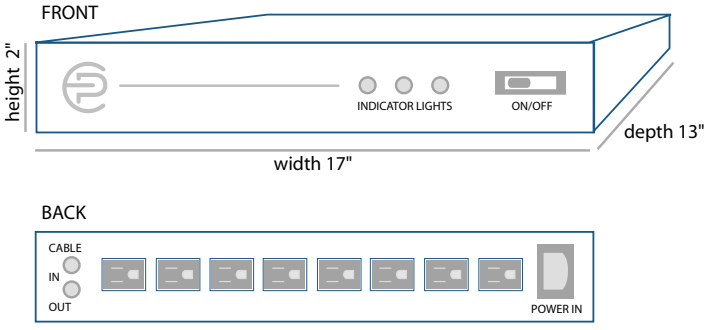
THE EP-2450 PROVIDES:

- EP-2000 Surge Protection
- EP-2250 Cable Suppression & Filtering
- EP-2700 High Frequency Filtering
- EP-2750 Ground Filtering
- 15 Amp Breaker Protection
- Eight-Receptacle Electrical Panel for Power Access Industry standard-sized case

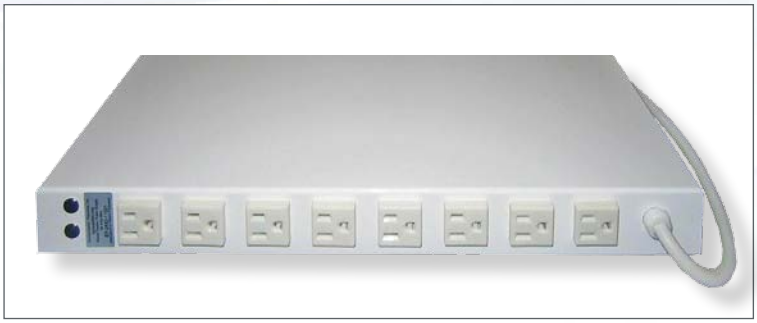
EP-2450 GENERAL SPECIFICATIONS

MAX SURGE CURRENT
12.5 kA
SAFETY RATINGS
Fire Rating 94V-0
SAFETY APPROVALS
UL 1449 3rd Edition (EP-2000)
CSA Std. Class 9091 01 & 9091 81; CSA Std. c22.2 No. 8-M1986 (EP-2000)
OPERATING ENVIRONMENT
Approximately -10° C to 65° C
APPLICATION ENVIRONMENT
Home Theater, Computers and Servers, Audio Equipment
CONNECTIONS
NEMA 5-15, 5.5' cord length
In/Out F-type Cable Connections
MATERIALS
Aluminum Housing, LED Indicator Lamps. Circuit encapsulated in epoxy to retain integrity of circuitry in failure mode.
ACCESSORIES
LEDs indicate active phase, Eight-outlet electrical panel, Rubber base pads
COMPLIANCE
NEMA LS-1, NEC Surge Suppression Stds., Electrical Notice 516

DIMENSIONS & WEIGHT
Height: 2" Width: 17"
Depth: 13" Weight: 6 lbs
Industry standard size for integration with other equipment



EP-2460 MEDICAL POWER SUPPLY



The **EP-2460** is a unique medical power supply, combining several EP product features to provide an all-in-one protection unit. It is conveniently sized for use with standard medical equipment, but can be used in various situations where a protected power supply is beneficial.

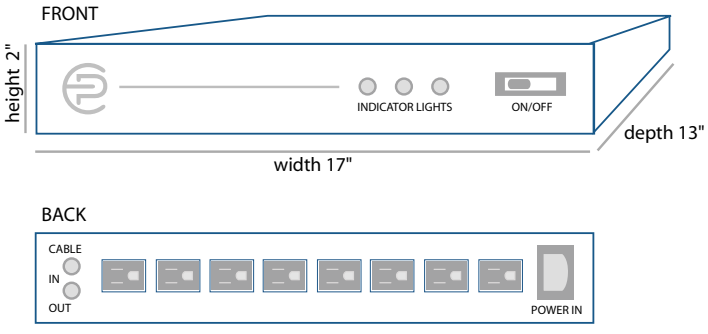
THE EP-2460 PROVIDES:

- EP-2000 Surge Protection
- EP-2700 High Frequency Filtering
- EP-2750 Ground Filtering
- 15 Amp Breaker Protection
- Eight Medical Grade Receptacles Electrical Panel for Power Access Industry standard-sized case
- Medical Grade Input Cord

EP-2460 GENERAL SPECIFICATIONS

MAX SURGE CURRENT
12.5 kA
SAFETY RATINGS
Fire Rating 94V-0
SAFETY APPROVALS
UL 1449 3rd Edition (EP-2000)
CSA Std. Class 9091 01 & 9091 81; CSA Std. c22.2 No. 8-M1986 (EP-2000)
OPERATING ENVIRONMENT
Approximately -10° C to 65° C
APPLICATION ENVIRONMENT
Medical Equipment, Computers and Servers
CONNECTIONS
NEMA 5-15
MATERIALS
Aluminum Housing, LED Indicator Lamps. Circuit encapsulated in epoxy to retain integrity of circuitry in failure mode.
ACCESSORIES
LEDs indicate active phase, Eight-outlet electrical panel, Rubber base pads
COMPLIANCE
NEMA LS-1, NEC Surge Suppression Stds., Electrical Notice 516

DIMENSIONS & WEIGHT
Height: 2" Width: 17"
Depth: 13" Weight: 6 lbs
Industry standard size for integration with other equipment



RESIDENTIAL/LIGHT COMMERCIAL

The digital age has not just revolutionized business; it has also brought dramatic increases in home offices and expensive home equipment. A typical home can have tens of thousands of dollars worth of electrical appliances, computers, printers, fax machines and televisions. All of this equipment generates transient energy and frequency noise and ironically all of this equipment is more sensitive to poor power quality.

Now you can protect your expensive televisions, computers and appliances using industrial strength waveform correctors, without the industrial price tag.

EP-2050 RESIDENTIAL PROTECTION

The **EP-2050** is an industrial electrical surge and noise filtration system adapted for the residential marketplace. The **EP-2050** eliminates detrimental power disturbances that permeate the residental electrical distribution system. The compact unit provides automatic protection for industrial, residential and marine electrical distribution systems.

THE EP-2050:

ABSORBS, DISSIPATES & REMOVES

- Transient voltage surges and spikes
- Frequency Noise Between 3kHz-1MHz
- Ring waves

DOES NOT SHUNT ENERGY TO GROUND.
The facility ground is not relied on for performance or survivability.

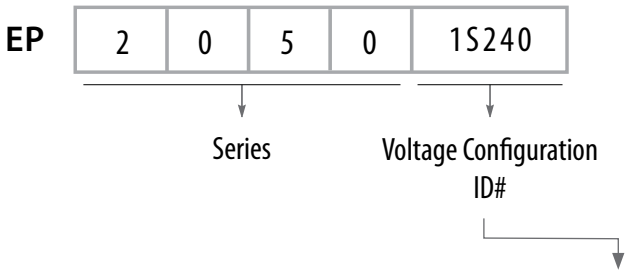
EP-2050 GENERAL SPECIFICATIONS

OPERATING FREQUENCY
45 - 65 Hz
FREQUENCY ATTENUATION
-20 dB/decade roll-off starting at 2.5 kHz
MAX SURGE CURRENT
12.5 kA per mode
MCOV
20% above rated voltage
SAFETY APPROVALS
UL 1449 3rd Edition Type 2 & Type 3 SPD
CSA Standards Class 9091 01 & 9091 81; CSA std. c22.2 No. 8-M1986
SAFETY RATINGS
Fire Rating 94V-0
OPERATING ENVIRONMENT
Approximately -25° C to 65° C
RESPONSE TIME
Primary Response Time: Instantaneous
Key Event Time: Approx. 1 Nanosecond
COMPLIANCE
NEMA LS-1, NEC Surge Suppression Standards, Electrical Notice 516
CONNECTION
Wire leads. Size: 14 AWG Length: 3'
MATERIALS
Aluminum Housing, LED Indicator Lamps, 14 AWG 600 V rated Wire. Circuit encapsulated in epoxy to retain integrity of circuitry in failure mode.
ACCESSORIES
Amber LED indicates active phase

DIMENSIONS & WEIGHT
100-127 V Units: Diameter: 3" Depth: 2.5" Weight: 1.5 lbs. Compact for easy installation.
200-250 V Units: Diameter: 4.34" Depth: 3.35" Weight: 3 lbs. Compact for easy installation.

EP-2050 PRODUCT ORDERING GUIDELINES

MODEL NUMBER



VOLTAGE CONFIGURATIONS

SYSTEM VOLTAGE	PROTECT MODE	VPR	SYSTEM CONFIGURATION	VOLTAGE ID#
Single Phase 100/200	L-N	400	3 Wire + G	**1S200**
Single Phase 120/240	L-N	400	3 Wire + G	**1S240**

EP DIGIPLUG PORTABLE PLUG-IN PROTECTION

The **EP DigiPlug** uses the same circuit as the industry's most advanced power performance solution available: the EP-2000. The **EP DigiPlug** provides the innovative, patented circuit of the EP-2000 in a portable device to increase the efficiency of smaller electrical equipment. The **EP DigiPlug** protects the technology that drives your process, from lap tops to refrigerators - and everything in between.

THE EP DIGIPLUG:

ABSORBS, DISSIPATES & REMOVES

- Transient voltage surges and spikes
- High frequency noise
- Ring waves

DOES NOT SHUNT ENERGY TO GROUND.
The facility ground is not relied on for performance or survivability.

EP DIGIPLUG GENERAL SPECIFICATIONS

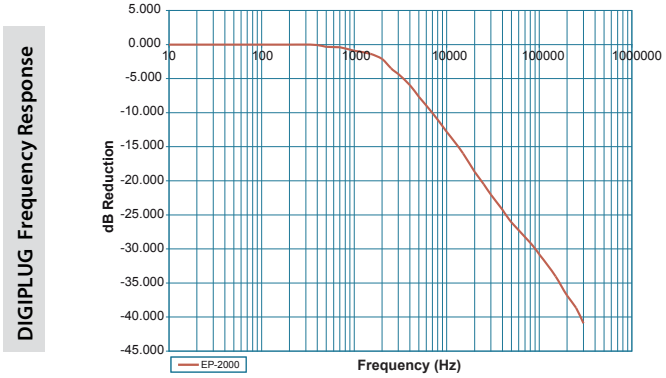
OPERATING FREQUENCY
45 - 65 Hz
FREQUENCY ATTENUATION
-20 dB/decade roll-off starting at 2.5 kHz
MAX SURGE CURRENT
12.5 kA per mode
MCOV
20% above rated voltage
SAFETY APPROVALS
Circuit is built to meet Safety Standards: UL 1449 3rd Edition ;
CSA Standards Class 9091 01 & 9091 81; CSA std. c22.2 No. 8-M1986
SAFETY RATINGS
Fire Rating 94V-0
OPERATING ENVIRONMENT
Approximately -25º C to 65º C
RESPONSE TIME
Primary Response Time: Instantaneous Key Event Time: Approx. 1 Nanosecond
CONNECTION
Plug in
MATERIALS
Black ABS 94V-0, LED Indicator Lamps
Circuit encapsulated in epoxy to retain integrity of circuitry in failure mode.
ACCESSORIES
Red LED indicates active phase

RECEPTABLE RATED
15 Amps
DIMENSIONS & WEIGHT
Dimensions: 4 x 2.25 x 2.75" Weight: 8 oz. Compact for easy installation.

PRODUCT PERFORMANCE

The EP DIGIPLUG absorbs, dissipates and removes transient voltage surges and spikes, high frequency noise and ring waves.

- Noise Attenuation starting at 2.5 kHz
- Max Attenuation of greater than -35 dB from 150 - 500 kHz



Note:
Comparison charts are unavailable as Legacy TVSS or SPD's do not provide this functionality.

EP DIGIPLUG STATIONARY PLUG-IN PROTECTION

The **EP DigiPlug Stationary** uses the same circuit as the industry's most advanced power performance solution available: the **EP-2000**. The **EP DigiPlug Stationary** provides the innovative, patented circuit of the **EP-2000** in a convenient flush mounted socket to increase the lifespan and performance of high end home electronics. The **EP DigiPlug Stationary** will efficiently filter all power pollution threatening your equipment.

THE EP DIGIPLUG:

ABSORBS, DISSIPATES & REMOVES
- Transient voltage surges and spikes
- High frequency noise
- Ring waves

DOES NOT SHUNT ENERGY TO GROUND.
The facility ground is not relied on for performance or survivability.

EP DIGIPLUG GENERAL SPECIFICATIONS

OPERATING FREQUENCY
45 - 65 Hz
FREQUENCY ATTENUATION
-20 dB/decade roll-off starting at 2.5 kHz
MAX SURGE CURRENT
12.5 kA per mode
MCOV
20% above rated voltage
SAFETY APPROVALS
Circuit is built to meet Safety Standards: UL 1449 3rd Edition;
CSA Standards Class 9091 01 & 9091 81; CSA std. c22.2 No. 8-M1986
SAFETY RATINGS
Fire Rating 94V-0
OPERATING ENVIRONMENT
Approximately -25º C to 65º C
RESPONSE TIME
Primary Response Time: Instantaneous Key Event Time: Approx. 1 Nanosecond
CONNECTION
Plug in
MATERIALS
Black ABS 94V-0, LED Indicator Lamps
Circuit encapsulated in epoxy to retain integrity of circuitry in failure mode.
ACCESSORIES
Red LED indicates active phase

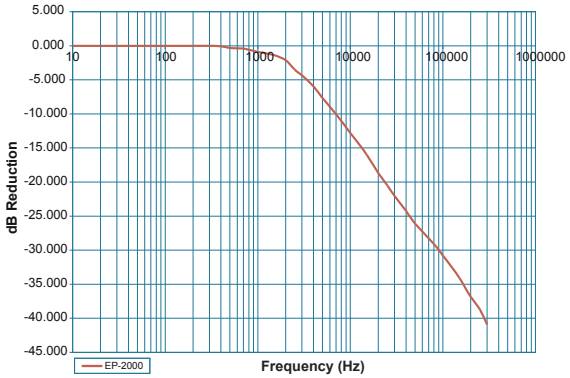
RECEPTABLE RATED
15 Amps
DIMENSIONS & WEIGHT
Dimensions: 4" X 1.4" X 1.25" Weight: 8 oz. Compact for easy installation.

PRODUCT PERFORMANCE

The EP DIGIPLUG absorbs, dissipates and removes transient voltage surges and spikes, high frequency noise and ring waves.

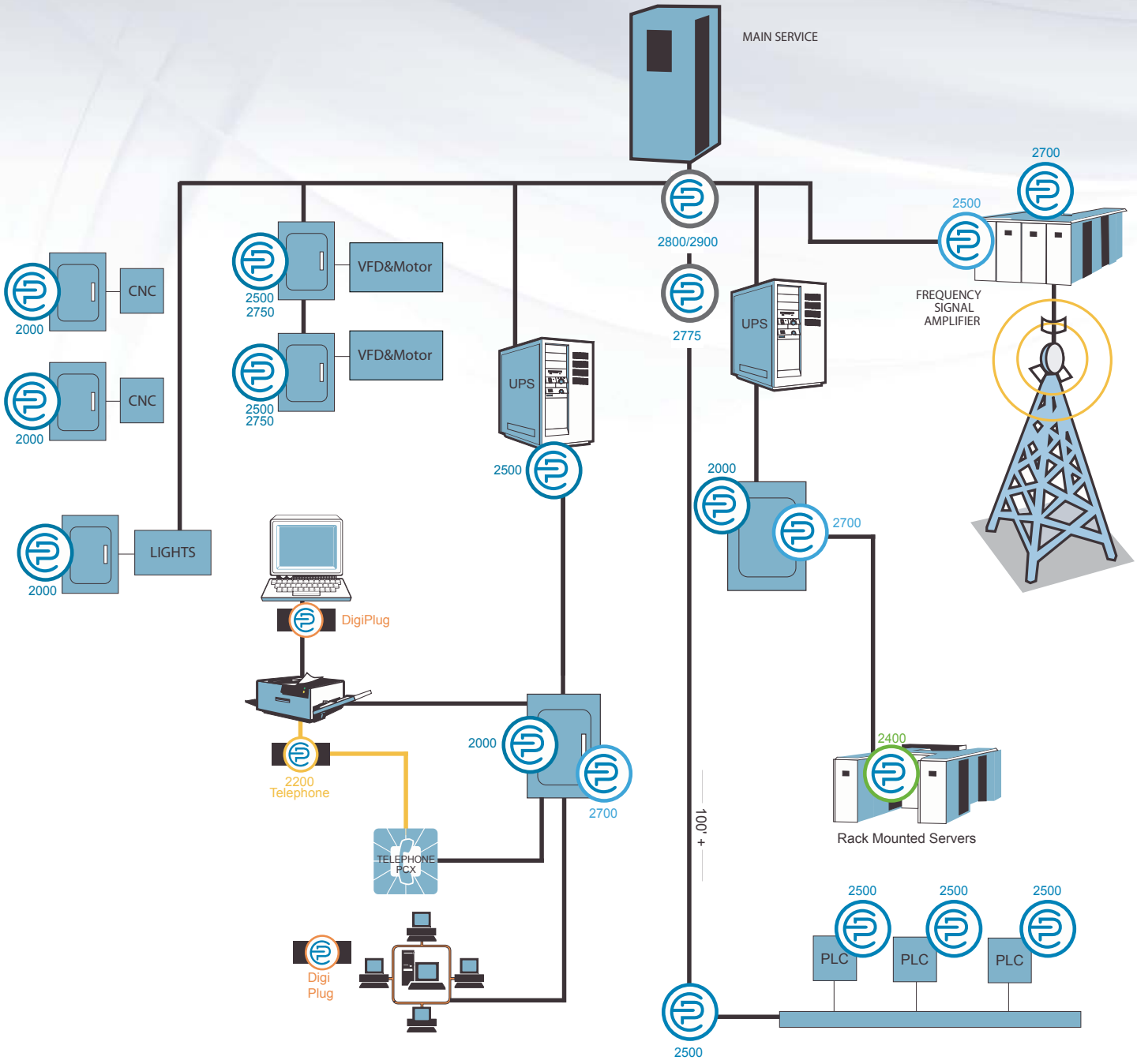
- Noise Attenuation starting at 2.5 kHz
- Max Attenuation of greater than -35 dB from 150 - 500 kHz

DIGIPLUG Frequency Response



Note:
Comparison charts are unavailable as Legacy TVSS or SPD's do not provide this functionality.

SAMPLE INSTALLATION: COMPLETE COVERAGE



Environmental Potentials

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