

# The Rad-X Medical Power Filtration System® (Rad-X Filter)

## Specifications

### 1.0 GENERAL

The Rad-X Filter is a low pass, bi-directional, pi configuration power filtration system with transient voltage surge suppression (TVSS). It is manufactured exclusively for imaging, diagnostic and interventional radiology, neurology, oncology and nuclear medicine systems. The Rad-X Filter attenuates high frequency electrical noise and voltage impulses in three ways:

- 1.1 Prevents electrical noise generated by sources outside of the protected equipment (line generated disturbances) from getting into the protected equipment.
- 1.2 Prevents electrical noise generated by the protected equipment itself (load generated disturbances) from echoing back into the protected equipment.
- 1.3 Prevents electrical noise generated by the protected equipment from affecting other equipment in the area that shares common electrical wiring.

### 2.0 PERFORMANCE

During normal operation of the protected equipment, the Rad-X Filter will:

- 2.1 Reduce high frequency electrical noise to below 0.8 volts peak to peak from 1 kHz to 3 MHz, regardless of the electrical noise levels recorded during pre-filter startup monitoring. Monitoring is performed with a BMI, Model 8800 eight-channel disturbance analyzer.
- 2.2 Eliminate >99% of all voltage impulse activity recorded during pre-filter activation monitoring.

### 3.0 OPERATING SPECIFICATIONS

3.1	Input voltages:	240, 208/120, 480/277, 480
3.2	Input voltage configuration:	Delta or Wye
3.3	Maximum continuous current:	160, 250, or 300 Arms (depending on model)
3.4	Current overload capacity	200% for 3 minutes
3.5	Impedance (at 60 Hz)	1.5%
3.6	Operating frequency:	60 Hz $\pm$ 5%

### 4.0 DIMENSIONS

4.1	Main cabinet	30" High	24" Wide	12" Deep
4.2	Wireway cabinet	8" High	24" Wide	8" Deep
4.3	Horizontal unistrut dimensions:	22 1/2" from mounting bracket center to mounting bracket center.		
4.4	Vertical unistrut dimensions:	31 1/2" from mounting bracket center to mounting bracket center.		

### 5.0 WEIGHT

5.1	Main cabinet	125 lbs (56 kg)
5.2	Wireway cabinet	20 lbs (9 kg)

### 6.0 WIRE SIZE RANGE

6.1	Wire size range	#6 AWG to 250 MCM
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## 7.0 ENVIRONMENTAL

- |     |                                     |   |
|-----|-------------------------------------|---|
| 7.1 | Operating temperature:<br>Humidity: | 10°F (-12°C) to 120°F (48°C)<br>10% to 90% non-condensing |
| 7.2 | Storage temperature:<br>Humidity:   | 0°F (-17°C) to 140°F (60°C)<br>10% to 90% non-condensing  |

## 8.0 LISTING

- 8.1 UL Listed

## 9.0 INDUSTRY STANDARDS

- 9.1 UL 508
- 9.2 IEEE 587
- 9.3 UL 1449
- 9.4 UL 1283

## 10.0 RECOMMENDED MAINTENANCE

- 10.1 Yearly preventive maintenance

## 11.0 WARRANTY

- 11.1 Total system: Five years from date of Filter Activation

## 12.0 REACTOR SPECIFICATIONS

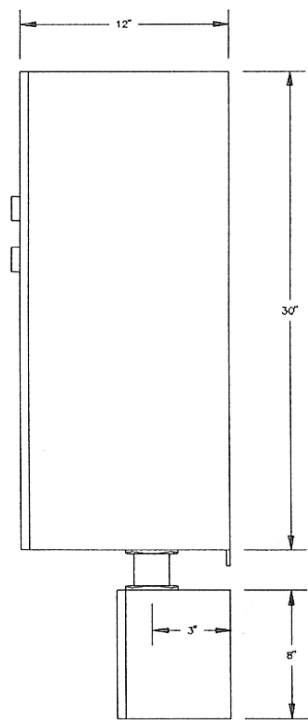
System Voltage:	208/240 VAC, 480 VAC, 575/600 VAC
Insulation System:	Class H (180° C) or Class R (220° C)
Temperature Rise:	115° C or 155° C
Ambient Temperature:	40° C
Altitude (Maximum):	1000 meters (Derating necessary above 1000 meters)
Fundamental Frequency:	60 hz
Short Term Overload Rating:	Tolerate 200% rated I for a minimum of 3 minutes
Agency Approvals:	CE Marked, UL and CUL Recognized
Inductance Characteristics:	Minimum 95%L at 110% Load Minimum 80%L at 150% Load
Inductance:	Distributed Gap Technology™
Enclosures:	Open, UL Type 1 and UL Type 3R enclosures
Harmonics Reduction:	Three Phase Reactors will reduce RMS current through the reduction in harmonic content, thereby improving the total power factor.

## 13.0 CAPACITOR SPECIFICATIONS

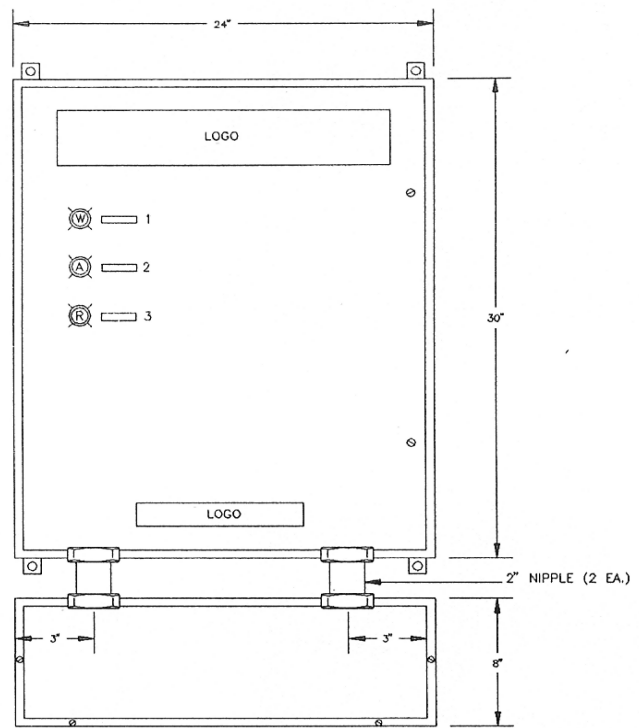
Capacitance Range:	0.25 $\mu$ F to 80 $\mu$ F
AC Voltage Range:	400 Vac to 1200 Vac, 50/60 Hz
Temperature Range:	-40 to +90 °C
Capacitance Tolerance:	$\pm$ 10%
Dissipation Factor (DF):	0.1% max. @ 60 Hz & 25 °C
Insulation Resistance (IR):	>1000 MO x $\mu$ F
Withstand Voltage:	Terminal to terminal 1.75 x WVac Terminal to case 2.0 x WVac + 1kVac
Capacitance Stability:	$\pm$ 3% throughout life
Insulated Bushings:	High cup standard over 1000 Vac (1750 Vac)
Approval Certification:	UL and CUL file number E51176

## 14.0 TVSS SPECIFICATIONS

<b>Input Voltage</b>	480Y/277 V	240 V	480 V	240/120 CT	480/240 CT
	Three Phase Wye 4 wire + Ground	Three Phase $\Delta$ 3 wire + Ground		Three Phase $\Delta$ 4 wire + Ground	
<b>Maximum Continuous Operating Voltage (MCOV)</b>	125% of the nominal level for 120 V; 115% for all other input voltages				
<b>Line Frequency</b>	47-63 Hz				
<b>Connection /Mounting Type</b>	Parallel/Flange				
<b>Enclosure</b>	Metal, NEMA 12 Enclosure				
<b>Dimensions (H x W x D)</b>	4 x 6 x 4 (inches)				
<b>Weight</b>	8 lbs. max				
<b>Modes Of Protection</b>	All Mode: L - N , L - L, L - G, N - G				
<b>Safety Agency Approvals</b>	UL 1449-2, cUL, UL 1283				
<b>UL 1449 (2nd Edition) Suppressor Classification</b>					
L-N	800 V	N/A	N/A	400 V	800 V
L-L	1500 V	1500 V	1500 V	800 V	1500 V
L-G	800 V	1500 V	1500 V	400 V	800 V
N-G	800 V	N/A	N/A	400 V	800 V
<b>AIC Rating</b>	65 kAIC				
<b>Status Indication</b>	3-Green LEDs, 1 per phase, 1-Red LED, Form C Contacts, Audible Alarm				
<b>Response Time</b>	<0.5 nsec				
<b>Operating Temperature</b>	-40°C to +60°C				
<b>Operating Humidity</b>	0% to 95% Non-condensing				
<b>Fusing</b>	Thermal and Fault Current				
<b>Noise Attenuation</b>	40 dB Max				
<b>Peak Surge Current Capability</b>					
Per Phase	100 kA	100 kA	100 kA	100 kA	100 kA
Line to Neutral	50 kA	N/A	N/A	50 kA	50 kA
Line to Line	50 kA	50 kA	50 kA	50 kA	50 kA
Line to Ground	50 kA	50 kA	50 kA	50 kA	50 kA
Neutral to Ground	50 kA	N/A	N/A	50 kA	50 kA



SIDE ELEVATION WITH  
WIRE DUCT



FRONT LAYOUT WITH  
WIRE DUCT  
NEMA 12 ENCLOSURE  
(EGGSHELL WHITE)

<b>MECHANICAL DETAIL</b>		
Client: <b>APPLIED POWER QUALITY</b>		
Dwg. No.: 05-67-2	Date: 4-6-05	Rev: "A" 4-25-05 (AS BUILT)
Sheet 2 of 2	Scale: N.T.S.	
P.O. # VERBAL-ED.	JOB # 504268	

