

## General

**Application:** The RESS device provides the absolute best ring wave transient protection available in a surge suppressor designed for AC residential or light industrial-type sub panels. It is extremely effective in virtually eliminating internally generated transients and is an absolute must on panels feeding high-tech homes, small offices or other locations with microprocessor-based, sensitive equipment and/or computer systems. In addition, the RESS and RES models feature standard clamping protection that provides excellent protection in some of the harshest environments including exposure to lightning, grid switching, pole-mounted applications and other external transient sources.

The RESS and RES blend component-level, thermal fusing and Patent Pending, internal, circuit board mounted, over-current fusing with the field proven advantages of discrete "All Mode" protection. The small size and NEMA 4X composite housing of this product allows maximum application flexibility and ease of installation by a licensed electrician. The product also features suppression status indication through normally-on, LEDs (one per phase indicating suppression status on each phase) and a dry relay contact option (C suffix).

These features make the RESS and RES devices some of the most versatile TVSS devices on the market with superior performance specs and a warranty that is second to none.

**IEEE –C62.41.1 & C62.41.2-2002 environments:** Suitable for Categories: A, B & C (Most Severe Electrical Environments)

**IEC Environments:** Suitable for use in IEC 61643-11 environments

**Circuit Topology:** Parallel connected, hybrid Optimal Sine Wave Tracking<sup>®</sup> (RESS) and Optimal Response Circuitry™ (RESS/RES) design incorporating component-level, thermal fusing; internal, circuit board mounted over-current fusing; and discrete "All Mode" protection (10 modes for 3 phase Wye units). All protection circuits are encapsulated to assure long component life and complete protection from the weather and vibration. Available without Optimal Sine Wave Tracking™ (RES).

**Protection Modes:** Industry-best practice of true all mode dedicated protection components for all operational modes of the electrical system. **Discrete L-N, L-L (Normal Mode) and L-G, N-G (Common Mode)** Example: Directly Connected Protection Elements in All 10 modes for a 3 phase, 4 wire, Wye system, (i.e. 3 L-N modes, 3 L-L modes, 3 L-G modes and 1 N-G mode).

**Input Power:** 50-60 Hz (60 Hz nominal)

**Temperature Rating:** Up to 80°C

**Response Time:** < 1 ns

**Standard Enclosure:** NEMA 4X

**Diagnostics:** Green LED's, one per phase, normally on.

**Circuit Interrupt:** Internal component-level, thermal fusing and patent pending, circuit board mounted, over-current fusing.

**UL Short Circuit Current Rating:** 200 kAIC (UL's Highest Rating)

**Product Qualifications:**

*UL Lightning Protection System Certified Component  
Secondary Surge Arrestor (Q option)*

*UL1449 2<sup>nd</sup> Edition, UL1283, cUL, and CE Compliant*

*ISO 9001 Certified Manufacturing Facility*

*2004 TVSS Customer Value Enhancement Award from Frost & Sullivan*



\* Based on 3 Phase Wye, 4 Wire and Ground

## Key Features

- **Discrete "All Mode" Circuitry: Directly Connected Protection Elements in "All Modes" (10 modes for 3 phase, 4 wire Wye circuits) as recommend by NEMA LS-1 and IEEE Std. 1100-1999**
- **Industry Leading Measured Limiting Voltage (let-through) Performance**
- **Multi-stage Hybrid Optimal Sinewave Tracking<sup>®</sup> Circuit (RESS)**
- **Local & Remote Diagnostics**
- **Independent Verification of Performance and Safety**
- **Component-Level, Thermal Fusing**
- **Patent Pending, Internal, Circuit Board Mounted, Over-Current Fusing**



**25 Year Unlimited Free Replacement Warranty**

# “Surge Suppression Is Our Only Business”

Model	Circuit Type	MCOV	ANSI/IEEE C62.41.1 & C62.41.2 Let-Through Voltage Test Results (tested w/6" lead length external to the enclosure per UL 1449)			
			Test Mode	* Cat A, 30 Ω 100 kHz Ring Wave 2 kV / 67 A @ 270° Phase Angle	Cat B, 2 Ω Impulse Wave 6 kV / 3 kA @ 90° Phase Angle	Cat C, 2 Ω Impulse Wave 20 kV / 10 kA @ 90° Phase Angle
<b>RESS1P1</b> <b>(RES1P1)</b>	120 V, Single Ø (2 wire + ground)	150 V	L-N	29 V	447 V	1,000 V
		150 V	L-G	398 V	444 V	900 V
		150 V	N-G	358 V	620 V	900 V
<b>RESS1S1</b> <b>(RES1S1)</b>	120/240 V 1Ø (Split) (3 wire + ground)	150 V	L-N	29 V	447 V	1,000 V
		300 V	L-L	73 V	907 V	1,200 V
		150 V	L-G	398 V	444 V	900 V
		150 V	N-G	358 V	620 V	900 V
<b>RESS3Y1</b> <b>(RES3Y1)</b>	120/208 V 3Ø Wye (4 wire + ground)	150 V	L-N	29 V	447 V	1,000 V
		300 V	L-L	73 V	907 V	1,200 V
		150 V	L-G	398 V	444 V	900 V
		150 V	N-G	358 V	620 V	900 V
<b>RESS3D1</b> <b>(RES3D1)</b>	120/240 V 3Ø High-Leg Delta (4 wire + ground)	150 V	L-N	29 V	447 V	1000 V
		320 V	Hi-L-N	73 V	907 V	1200 V
		300 V	L-L	73 V	907 V	1200 V
		150 V	L-G	398 V	444 V	900 V
		320 V	Hi-L-G	73 V	907 V	1100 V
		150 V	N-G	358 V	620 V	900 V
<b>RESS3Y2</b> <b>(RES3Y2)</b>	277/480 V 3Ø Wye (4 wire + ground)	320 V	L-N	73 V	585 V	1200 V
		550 V	L-L	69 V	925 V	1400 V
		320 V	L-G	677 V	592 V	1100 V
		320 V	N-G	679 V	1000 V	1400 V
<b>RESS3N2</b> <b>(RES3N2)</b>	240 V 3Ø Delta (NN) (3 wire + ground)	320 V	L-L	116 V	585 V	1200 V
		320 V	L-G		585 V	1200 V
<b>RESS3N4</b> <b>(RES3N4)</b>	480 V 3Ø Delta (NN) (3 wire + ground)	550 V 550 V	L-L L-G	232 V	925 V 925 V	1400 V 1400 V

**Let-Through Voltage Test Parameters:** Positive Polarity, All voltages are peak (±10%). All tests are static except 150 V MCOV modes. Let-Through Voltages on static tests calculated by subtracting sinewave peak from let-through measured from zero. 150 V MCOV mode let-through voltages measured from the insertion point on the sinewave. (Scope Settings: Time Base = 20 microseconds, Sampling Rate = 100 Megasamples/sec. These settings assure Let-through voltages test results are accurate). All tests performed with 6" lead length (external to the enclosure), simulating actual installed performance.

**Surge Current Testing:** Single-pulse surge current testing for all modes at rated currents as recommended by NEMA LS1-1992. Single pulse surge current capacities of 200,000 amps or less are determined by testing all suppression components within each mode as a group. Present industry test equipment limitations require testing of individual suppression components or sub-assemblies within a mode for single-pulse surge capacities over 200,000 amps.

**\* Cat A results only apply to the RESS models.**

**Other configurations are available upon request, for example:**

- 1Px - True single phase (1 phase, neutral and ground)
- 2Nx - Dual phase Delta (2 phases and ground)

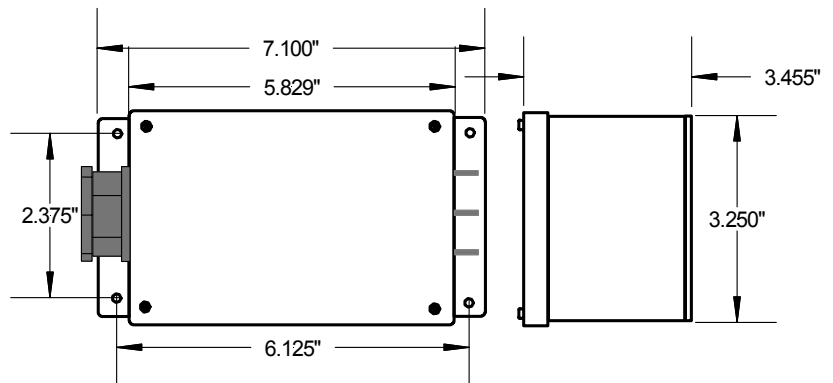
Green LED status indicators, one per phase, normally on.

Pre-installed 3/4" Meyers hub (As shown)

**Circuit Connection:** #10 Wire (pre-attached)

**Options:**

- C** = Form C dry relay contacts
  - E3** = No hub, wires exiting through end of enclosure
  - LP** = Remote daylight bright LEDs
  - N** = Removes neutral to ground Sinewave Tracking Circuit (available for RESS only)
  - P** = Flush mount plate
  - Q** = Secondary Arrester labeling
- Other options are be available upon request.



Because we are constantly seeking to improve our products, specifications are subject to change at any time.

**Mechanical**



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