



AC NON-MODULAR PRODUCTS

50, 100, 150kA Per Mode

SURGE PROTECTIVE DEVICE (SPD)

THOR SYSTEMS Non-modular, UL 1449 5th Edition Surge Protective Device (SPD). These high performance SPDs are suitable for service entrance or distribution panel applications. Our Single-TILE Architecture (using the StakTraks™ design) is the base building block for the product platforms, offering 50, 100, and 150kA/mode surge protection utilizing an optional two-tier or three-tier hybrid design. The Series is available in two configurations for all three surge ratings. The **three-tier hybrid design** with Thermally Protected Metal Oxide Varistors (TpMOVs), TVS Diodes (SADs), and EMI/RFI Filter Capacitors. The **two-tier hybrid design** (TpMOVs and EMI/RFI Filter Capacitors) configuration. The SPDs are prewired with low impedance wire which improves suppression performance (4-8%) by reducing skin-effect losses.

KEY FEATURES & BENEFITS

| GENERAL INFORMATION | |
|---|---|
| Agency Listings | UL1449 5 th Ed., UL 1283 5 th Ed., cUL |
| Application | TSni (Industrial) or TSnc (Commercial) |
| Warranty | TSni: Life of Original Installation TSnc: 5 Years |
| ELECTRICAL SPECIFICATIONS | |
| Configuration | Parallel |
| Voltages (AC) | 240/120; 208/120; 480/277; 600/347; 240 Hi-Leg; 480 |
| Wire Type | TSni: #10 AWG Rope-Lay (413 Strands) TSnc: #10 AWG MTW (133 Strands) |
| Breaker Size | 30A when required by NEC |
| SCCR | 100k AIC |
| Operating Freq | 47Hz to 63Hz |
| Operating Temp | -40° to 70°C |
| Operating Humidity | 0% to 95% Non-condensing |
| Operating Altitude | 0 to 12,000 feet |
| MECHANICAL SPECIFICATIONS | |
| Enclosure/Rating | NEMA 4X Polycarbonate with clear lid |
| Input Connection | Prewired #10 AWG low impedance wire |
| SURGE SPECIFICATIONS | |
| kA Per Mode | 50, 100, or 150kA |
| kA Per Phase | 100, 200, or 300kA |
| Protection Modes | All Modes |
| MCOV | 150V, 320V, or 550V |
| PCB "TILE" Design | Up to 4 oz. Parallel Copper Traces (Top & Bottom) |
| Response Time | <1 nanosecond |
| Technology | TSni: Hybrid 3-Tier (TpMOV, SAD, Filter Capacitor) TSnc: Hybrid 2-Tier (TpMOV, Filter Capacitor) |
| Monitoring (Standard) | Green LED (OK) and Red LED (Fault) & Form C Contact |
| PRODUCT OPTIONS | |
| <ul style="list-style-type: none"> 1.5kW SADs 15kW SADs Audible Alarm Surge Counter | |
| ADDITIONAL FEATURES/BENEFITS | |
| <ul style="list-style-type: none"> Surge conduction paths are 2x the surge current rating of suppression components Fewer, larger TpMOVs provide lower let-through voltage and 100x greater pulse life Each TpMOV is "fail-safe" technology providing full-rated system surge capacity | |

Series TSn Configurations

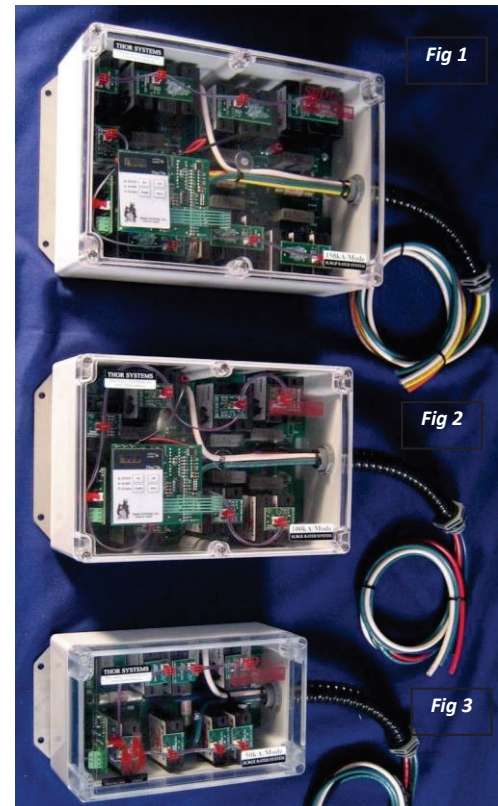


Fig 1: TSn 150 with L2 Monitor & Surge Counter (10-3/8" x 7-1/4" x 3-3/4")

Fig 2: TSn 100 with L2 Monitor & Surge Counter (9-1/2" x 6-1/4" x 3-1/2")

Fig 3: TSn 050 with L1 Monitor (7-3/4" x 4-3/4" x 3-1/2")

PERFORMANCE LET-THROUGH RESULTS

| VOLTAGE | Surge Voltage Ratings (SVR) 500A 8x20µs Impulse | | | | Voltage Protection Ratings (VPR) 3000A 8x20µs Impulse | | | | Category C3 Ratings 10,000A 8x20µs Impulse | | | |
|-------------|--|------|-----|------|--|------|-----|------|---|------|------|------|
| | L:N | L:G | N:G | L:L | L:N | L:G | N:G | L:L | L:N | L:G | N:G | L:L |
| 208/120 Vac | 403 | 405 | 440 | 736 | 700 | 700 | 800 | 1000 | 1200 | 1093 | 1280 | 1547 |
| 480/277 Vac | 869 | 853 | 520 | 1627 | 1200 | 1200 | 900 | 2000 | 1813 | 1707 | 1440 | 2613 |
| 600/347 Vac | 1060 | 1041 | 634 | 1985 | 1500 | 1500 | 900 | 3000 | 2212 | 2083 | 1757 | 3188 |

All tests reflect Models using 6" Leads. Test impulses were dynamic and applied to the 90° phase angle of the sine wave. Test results DO NOT reflect subtraction of the sine wave peak from the let-through voltage measured at zero (0).



Product Spec Sheet

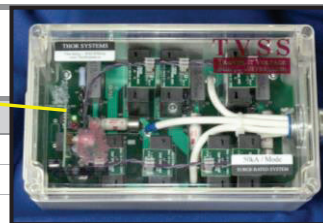
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TYPE 1 MONITORING SERIES Vertical PCB

DISPLAY FEATURES

Green LED indicates all suppression elements are good
Red LED indicates loss of any protection mode

Enlarged View of LEDs



TYPE 2 MONITORING SERIES TSm270a

DISPLAY & OVERLAY FEATURES

Overlay has 4 membrane-style switches providing protection against outside contaminants and clear window for the bright, clear LED Counter

Overlay has 4 LED windows:

- Yellow **ACTIVE SURGE** LED (upper right corner) indicates an active surge event mode
- Green **STATUS** LED indicates power is supplied to the device
- Red **ALARM** LED indicates loss of a protection mode
- Yellow **ENABLE** LED indicates Audible Alarm is enabled

Power **On** button turns the display "ON" and "OFF"

Audible Alarm (horn) sounds in the event of a protection mode loss.

Silence (**Ack**) button on the overlay silences the alarm.

Yellow **Enable** button enables/disables the Audible Alarm (illuminated = enabled)

SURGE COUNTER

Smart alphanumeric display (4-digit, 5x7 dot matrix) indicates total surge events:

- Displays up to 27,000 events
- Stores event level in an EE PROM to ensure the event total is not lost if a power outage occurs
- If there is a protection mode loss, display will alternate between the count total and an "ALRM" display

Surge Counter has 8 levels of sensitivity, allowing adjustment of the Counter trigger level by the end user

Sensitivity **Level #3** is calibrated to increment using a combination (1.2µs x 50µs Voltage and 8µs x 20µs Current) waveform.

This sensitivity level is the standard setting based on a nominal 500A current impulse.

Adjustment of each Sensitivity Level results in an approximate 80A increment from the previous setting (340A to 900A range).

