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TSri Product Spec Sheet

SERIES TSri

50, 100, 150, 200, 250, 300kA Per Mode

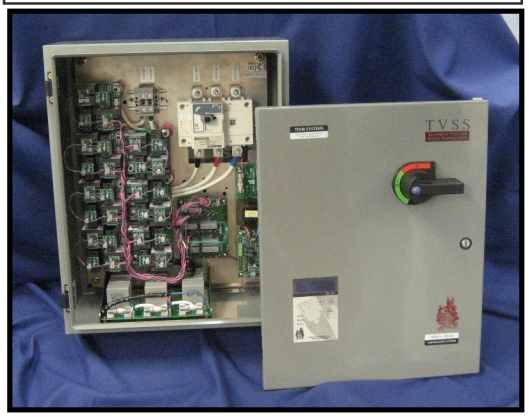
SURGE PROTECTIVE DEVICE (SPD)

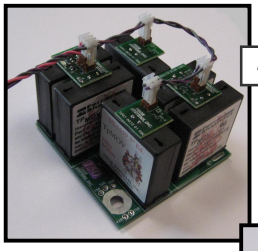
The ***TSri*** is THOR SYSTEMS' Industrial Series of modular, UL 1449 3rd Edition, Type 1 and Type 2 Surge Protective Devices. The ***TSri*** is designed using the "Hybrid 3-Tier" technology consisting of UL 1449 Recognized Thermally Protected Metal Oxide Varistors (TpMOVs), Silicon Avalanche Diodes (SADs), and Sinewave Tracking UL 1283 Filter Capacitors. With Surge Current Ratings available from 50kA to 300kA for each mode of protection, the modular "**Surge TILE Architecture**" of the Series ***TSri*** makes this product ideal for large applications, i.e. 4000A Service Entrance Switchgear, as well as Distribution and Branch Panelboard applications. The ***TSri*** is housed in a Hoffman NEMA 4 steel enclosure (20H"x 16W" x 8D") with a hinged cover.

KEY FEATURES & BENEFITS

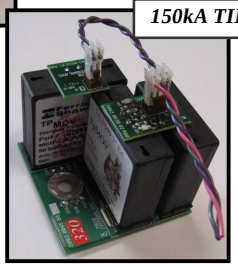
GENERAL INFORMATION	
Agency Listings	***UL1449 3rd Ed., UL 1283 5th Ed.; CUL***
Application	***Industrial***
Warranty	***5 Years***
ELECTRICAL SPECIFICATIONS	
Configuration	***Parallel***
Voltages	***208/120; 480/277; 480, 240 Hi-Leg***
Wire Size	***#6 AWG***
Breaker Size	***60A when required by NEC***
AIC or SCCR	***100kAIC***
Operating Freq	***50 to 60 Hz***
Operating Temp	***0 to 60°C***
Operating Humidity	***0% to 95%, Non-condensing***
Operating Altitude	***0 to 12,000 ft***
MECHANICAL SPECIFICATIONS	
Enclosure	***Hoffman Fabricated Steel with hinged lid***
Size	***20H"x16W"x8D" (all kA sizes)***
Rating	***NEMA 4***
Input Connection	**Std:** ***Terminal Block*** **Option:** ***200kA (8x20µs) Surge Rated Disconnect Switch or Fused Disconnect Switch***
SURGE SPECIFICATIONS	
kA Per Mode	***50, 100, 150, 200, 250, or 300***
Protection Modes	***All Modes***
MCOV	***150V, 320V, or 550V***
"Type" Designation	***Type 1*** *(replaces Secondary Surge Arrestor designation)* ***or Type 2***
Serviceability	***Modular "Surge TILE"***
PCB "TILE" Design	***.093" Thick, 4-oz. Parallel Copper Traces, Top and Bottom***
Response Time	***<1 Nanosecond***
Technology	***Hybrid 3-Tier; UL 1449 TpMOVs, SADs, and Sinewave Tracking UL 1283 Filter Caps per each mode of protection***
Monitoring	***Std: Each replaceable TILE has Green LED (OK) and Red LED (Fault)***
PRODUCT OPTIONS	
- ***Phase Loss Relay***	- ***Surge Counter***
- ***Full Power Quality Monitoring***	- ***High Energy 15kW SADS***
- ***Corona High Voltage Wire***	

Series TSri 300 Configuration
Modular Surge TILE Architecture (7) 300kA Tiles
w/Surge Disconnect Switch (20"x 16"x 8")

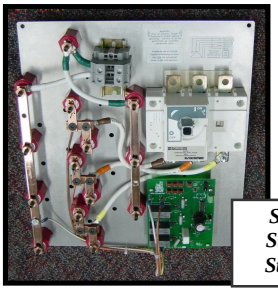




300kA TILE



150kA TILE



Series TSri 300 Configuration
StakTraks™ - All Copper Buss Structure ***(Surge TILES removed)***

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	352	387	376	661	800	700	600	1200	1120	1253	1040	1360
480/277 Vac	637	787	752	877	1200	1200	1000	1800	1493	1680	2133	1520

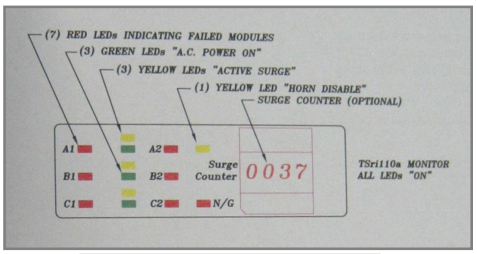
All tests reflect Models using 6" Leads. Test impulses were dynamic and applied to the 90° phase angle of the sine wave. Test results DO NOT reflect subtraction of the sine wave peak from the let-through voltage measured at zero (0).

TSri Product Spec Sheet

Source of Supply;
A Marketing & Service Co.
Alvaro "AL" Rodriguez
San Antonio, Texas 78268-1195
tel. (210) 684-1635 * fax (210)684-2464
e-mail: protector@stic.net

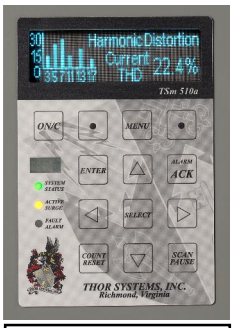
TSri MONITORING FEATURES	Type 5	Type 3	Type 2	Type 1
a. Graphic overlay with membrane switches providing tactile feedback.	ü	ü	ü	ü
b. True RMS voltage monitoring	ü	ü		
c. True RMS current monitoring	ü			
d. Summary Alarm, 2 Form "C" contacts to change state on any alarm condition	ü	ü	ü	ü
e. Digital I/O, 2 inputs and 2 Form "C" programmable outputs	ü	ü		
f. Surge Counter (Types 5 & 3: three surge counters L-N, L-G, Total)	ü	ü	ü	
g. Audible alarm with ***Acknowledge/Silence*** pushbutton	ü	ü	ü	ü
h. Ground integrity alarm (continually supervises overall impedance of the ground connection)	ü	ü		
i. Display of total suppression capacity	ü	ü		
j. Solid State LED indication of system status, active surge, and alarm fault	ü	ü	ü	ü
k. Algorithms constantly evaluate true RMS and waveform parameters to establish base setups, creating a power quality dataset template. Feature allows quick reference data to be used to identify critical events for transient and waveform capture data logging and acquisition.	ü			
l. HTML template pages to graph power quality results and display historical data collection	ü	ü		
m. Ability to monitor power quality in one or multiple facility environments from any remote location	ü			
n. Ability to obtain historical data for root-cause analysis	ü	ü		
o. Communications provided by a highly integrated module with Ethernet port, serial communication, TCP/IP and RS 485	ü	ü		
p. All critical monitoring data is stored in CMOS memory, backed up with a lithium battery capable of retaining data for at least 2 years without AC power attached	ü	ü		

Type 1 (TSm 110a)



Type 2 (TSm 110a-sc)

Type 3 (TSm 310a)



Type5 (TSm 510a)

TSri MODEL NUMBER NOMENCLATURE

TSr i 150 T x 3Y4 M 1 01

MANUFACTURER SERIES
TSr TSr Series, Replaceable (Modular Surge TILE)

MANUFACTURER GRADE
i Industrial Grade
(TpMOVs, SADs; EMI/RFI Filtering)

MANUFACTURER SURGE CURRENT RATING

050	050kA/Mode	200	200kA/Mode
100	100kA/Mode	250	250kA/Mode
150	150kA/Mode	300	300kA/Mode

CONNECTION METHOD
T Terminal Block (#4 max) D Distribution Block (2/0 max)
S Surge Disconnect Switch F Fused Disconnect Switch

HYBRID CONFIGURATION
s TpMOV, 1.5kW SADs, EMI/RFI Filtering
x TpMOV, 15kW SADs, EMI/RFI Filtering

VOLTAGE CONFIGURATION

1S1	120Vac	Single Ø, L-N-G	(150 MCOV)
2S1	240/120Vac	Split Ø, L-L-N-G	(150 MCOV)
2S2	240Vac	Single Ø, L-L-G	(320 MCOV)
2S4	480Vac	Single Ø, L-L-G	(550 MCOV)
3Y2	208/120Vac	3Ø, L-L-L-N-G	(150 MCOV)
3Y4	480/277Vac	3Ø; L-L-L-N-G	(320 MCOV)
3D2	240Vac	3Ø, L-L-L-G	(320 MCOV)
3D4	480Vac	3Ø, L-L-L-G	(550 MCOV)
3Ha	240/208/120Vac	3Ø High-Leg (AØ) Delta	(150, 320 MCOV)
3Hb	240/208/120Vac	3Ø High-Leg (BØ) Delta	(150, 320 MCOV)
3Hc	240/208/120Vac	3Ø High-Leg (CØ) Delta	(150, 320 MCOV)

ADDITIONAL SYSTEM OPTIONS
01 Form C Contact (Standard)
02 Extended Filter Network
03 Phase Loss Relay
04 Over/under Voltage Relay

MONITOR TYPE
1 **Type 1** (TSm110a): Green LED*, Red LED*, Audible Alarm
2 **Type 2** (TSm110-sc): Green LED*, Red LED*, Audible Alarm, Surge Counter
3 **Type 3** (TSm310a): To be determined
5 **Type 5** (TSm510a): To be determined
*LED indication on Front Door and individual TILES

ENCLOSURE TYPE
M Metal NEMA 4
S Stainless Steel NEMA 4X