

Why THOR SYSTEMS' Surge Protection?

Surge Apps - 001



THOR SYSTEMS, INC.
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THOR SYSTEMS, manufacturer of Surge Protective Devices (SPDs), was founded on the dedication of exceeding the expectations of our customers and all of our business partners. Our five senior staff members have 117 years' cumulative experience in the power quality/surge protection industry and are pleased to support technical questions and specific applications, including site visits for power quality problem evaluation. THOR SYSTEMS' commitment is evident in all facets of our business from delivering product value, high performance/full surge rated designs to providing the correct power quality solution for specific applications.

Reference Standards:

UL 1449 4
th Ed.
UL 1283 5th Ed.
C62.41.1: 2002 IEEE
C62.41.2: 2002 IEEE
C62.45: 2002 IEEE
C62.62: 2010 IEEE
C62.72: 2007 IEEE
NEMA
NEC 2014
NFPA 70
FIPS 94
MIL-STD 220A

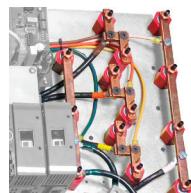
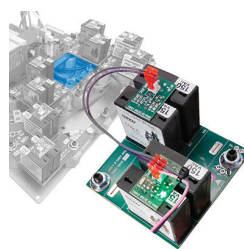
DESIGN PHILOSOPHY

Applying a small number of large block TpMOVs (34 mm square/50kA with "Fail Safe Design"):

- 100 times pulse life vs. 18 to 20mm dia. MOVs used in arrays by a number of competitors;
- Prevents cascading failures which can result in increased voltage let-through levels.

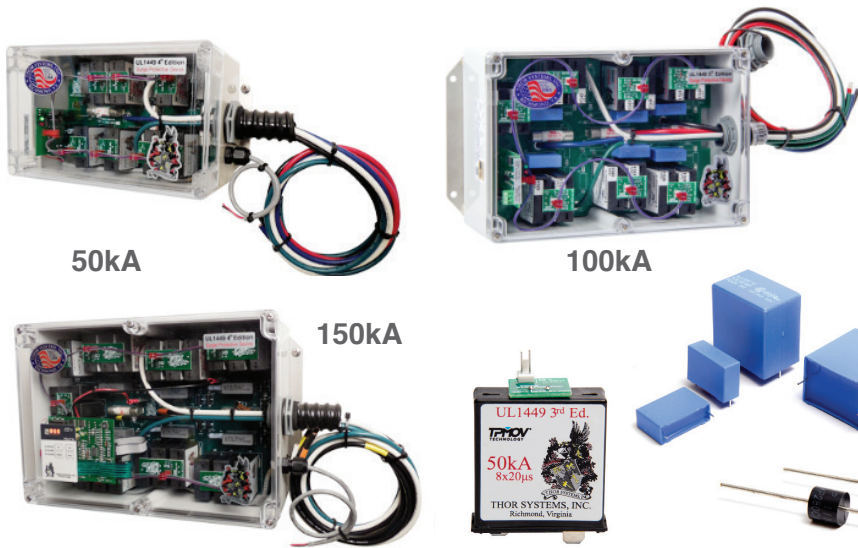
Hybrid design utilizing SADs, TpMOVs, and FILTER CAPACITORS for optimum surge protection:

- Silicon Avalanche Diodes (SADs): Non-linear diverting element/speed of turn-on/low clamping levels;
- Thermally Protected Metal Oxide Varistors (TpMOVs): High energy handling capacity;
- FILTER CAPS: EMI/RFI noise suppression reducing data errors, lockups, and reboots.



Modular TSr Product Series (50, 100,150, 200, 250 & 300kA/Mode)

- Field replaceable, upgradable modules;
- 50 through 300kA per mode (all modes protected);
- Applications: Service Entrance, Main Distribution, and where protected equipment criticality is a vital consideration.



Non-Modular TS_n Product Series (50, 100, & 150kA/Mode)

- Compact, non-field replaceable modules;
- 50 through 150kA per mode (all modes protected);
- Applications: Lower ampacity Distribution, Subdistribution, and Branch Panels.

PROVIDING SOLUTIONS

- Coordinated surge protection provides ability to dissipate transient/surge energy from external (20%) and internal (80%) sources.

- Surge protection matched to the facility's electrical environment using a 3G Site Shield Risk Assessment Spreadsheet (utilizing seven factors of susceptibility for each specific application to assure proper sizing vs. risk)

Reference Documents:

- SA-002 Bottom Feed SPDs
- SA-004 Site Risk Assessment/Sizing SPD
- SA-005 Modular vs. Non-modular
- SA -010 Hybrid SPDs
- AG-09 Features/Benefits
- SA-003 Case Study/Mfg

THOR SYSTEMS, INC. SITE RISK ASSESSMENT SPREADSHEET

Selection: Surge Protection Device (SPD) placement within facility. Complete Criteria Sections 1-7 below for each facility location (seven locations can be assessed on form). Total the value (refer to Table B for recommended SPD

THOR SYSTEMS, INC.		Assessment Criteria Sections											
1815 Sandhill Ave. Richmond, VA 23261-6476 PH: 804-355-1100 • FX: 804-355-6888 www.ThorSystems.us		1. Geographical Location (see Maps below)		2. System Voltage		3. Distribution System Configuration		4. SPD Location (within electrical systems)		5. SPD Location (within electrical systems)		6. SPD Location (within electrical systems)	
SITE RISK ASSESSMENT		A	B	C	D	E	F	G	H	I	J	K	L
Project Name:		1. Electrical System Capacity (at installation point)	2. System Voltage	3. Distribution System Configuration	4. SPD Location (within electrical systems)	5. SPD Location (within electrical systems)	6. SPD Location (within electrical systems)	7. SPD Location (within electrical systems)	8. SPD Location (within electrical systems)	9. SPD Location (within electrical systems)	10. SPD Location (within electrical systems)	11. SPD Location (within electrical systems)	12. SPD Location (within electrical systems)
Facility Location:		3. System Voltage	4. SPD Location (within electrical systems)	5. SPD Location (within electrical systems)	6. SPD Location (within electrical systems)	7. SPD Location (within electrical systems)	8. SPD Location (within electrical systems)	9. SPD Location (within electrical systems)	10. SPD Location (within electrical systems)	11. SPD Location (within electrical systems)	12. SPD Location (within electrical systems)	13. SPD Location (within electrical systems)	
Company:		4. Distribution System Configuration	5. SPD Location (within electrical systems)	6. SPD Location (within electrical systems)	7. SPD Location (within electrical systems)	8. SPD Location (within electrical systems)	9. SPD Location (within electrical systems)	10. SPD Location (within electrical systems)	11. SPD Location (within electrical systems)	12. SPD Location (within electrical systems)	13. SPD Location (within electrical systems)	14. SPD Location (within electrical systems)	
Contact:		5. SPD Location (within electrical systems)	6. SPD Location (within electrical systems)	7. SPD Location (within electrical systems)	8. SPD Location (within electrical systems)	9. SPD Location (within electrical systems)	10. SPD Location (within electrical systems)	11. SPD Location (within electrical systems)	12. SPD Location (within electrical systems)	13. SPD Location (within electrical systems)	14. SPD Location (within electrical systems)	15. SPD Location (within electrical systems)	
Prepared by:		6. SPD Location (within electrical systems)	7. SPD Location (within electrical systems)	8. SPD Location (within electrical systems)	9. SPD Location (within electrical systems)	10. SPD Location (within electrical systems)	11. SPD Location (within electrical systems)	12. SPD Location (within electrical systems)	13. SPD Location (within electrical systems)	14. SPD Location (within electrical systems)	15. SPD Location (within electrical systems)	16. SPD Location (within electrical systems)	
Date:		7. SPD Location (within electrical systems)	8. SPD Location (within electrical systems)	9. SPD Location (within electrical systems)	10. SPD Location (within electrical systems)	11. SPD Location (within electrical systems)	12. SPD Location (within electrical systems)	13. SPD Location (within electrical systems)	14. SPD Location (within electrical systems)	15. SPD Location (within electrical systems)	16. SPD Location (within electrical systems)	17. SPD Location (within electrical systems)	

Table A7 MODEL NUMBER

Model #	1	2	3	4	5	6	7	8	9	10	11	12
Example Model # THORSPD 50kA P1A P101	1	2	3	4	5	6	7	8	9	10	11	12

Table B Numerical Total Rating SPD LAM/Mode

Mode	1	2	3	4	5	6	7	8	9	10	11	12
Mode 1	1	2	3	4	5	6	7	8	9	10	11	12

THOR SYSTEMS' Surge Apps collection is an information resource that provides protection from external to the more frequent internal transient voltage sources.

Should you have any questions, please feel free to contact us 804-355-1100 or visit our web site, www.ThorSystems.us.