TIP SHEET
IS THERE A "ONE SIZE FITS ALL" SPD?

BY DAVID KOMM, TECHNICAL SERVICES SUPERVISOR

Frequently, our customers will ask for a "one size fits all" Surge Protective Device (SPD), eliminating the need to stock several different part numbers to meet their customers needs. Some manufactures claim to have a one size fits all Surge Protection Device (SPD), however there is absolutely no benefit of this to the end user. Why? The one size fits all approach could in most cases actually cause damage to the equipment it should be protecting.

For example, you would not want to use a 2000A fuse as a one size fits all fuse. If you only need a 30A fuse to protect the load, clearly a 2000A fuse would be significantly over sized. In the end, the fuse would never open, making it a poor investment for the facility. Now what if a 60A fuse was used instead? In this case, the fuse might open but when it does it will not protect the load as well as a properly sized 30A fuse.

This concept is the same for an SPD. While it is possible to have a "one size fits all," it is not recommended because in most cases it will not provide adequate protection. To help make this point let's look at some part numbers and compare the ratings. To ensure our "one size fits all" SPD can be applied to all common voltage configurations we must use a 480V delta SPD, part number STT24803PDG.

This configuration could be installed on a 208Y/120V system but how much protection will it provide? Answering this question involves reviewing the MCOV and VPR ratings. MCOV is the turn on voltage of the SPD and is where it will start to clamp the excess voltage. From the table below, STT24803PDG has an MCOV of 550V line to ground which is about 450% of our circuit line to ground voltage. Typically the MCOV should be between 125% to 150% of the voltage.

VPR is the voltage protection rating; this tells how much the SPD will limit a 6kV, 3kA surge. STT24803PDG has a VPR of 1800V line to ground and 3000V line to line both of which are most likely to high to protect the connected equipment. A good rule of thumb is to have the VPR as low as possible.

Instead of using our "one size fits all" SPD, let's look at the MCOV and VPR values for a properly sized SPD, part number STT22083PYG. From the table above, the MCOV is 180V which is 150% of our line to ground voltage. This ensures that the SPD will have enough room for noise or normal fluctuations in voltage and not turn on unnecessarily. The VPR ratings are 700V line to ground and 1200V line to line both of which are more then half of our "one size fits all" SPD.

Cat No.	Nominal Voltage	MCOV (V)	Voltage Protection Rating (VPR, V)	
		L-G	L-G	L-L
STT22083PYG	208Y/120	180	700	1200
STT24803PDG	480D	550	1800	3000

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Is There a “One Size Fits All” SPD?

“One size fits all” SPDs will have a higher MCOV and higher VPR resulting in poor protection for lower level loads. Mersen always recommends using properly sized SPDs to ensure the best surge protection is provided. Mersen provides four different recommended stocking packages to ensure the most popular SPD will be in stock to meet your customers needs.

Part Number	Description	Entry Package	Basic Package	Standard Package	Superior Package
Surge-Trap Modular		**Qty**	**Qty**	**Qty**	**Qty**
ST1201PG	120V Single Phase			2	3
ST2083PY	120/208V 3-ph Wye	1	1	1	2
ST240SPG	120/240V Split Phase	1	2	2	3
ST2403PDG	240V 3-ph Delta		1	2	3
ST4803PY	277/480V 3-ph Wye	1	1	1	2
ST4803PYG	277/480V 3-ph Wye			2	3
ST4803PDG	480V 3-ph Delta	1	2	2	3
Surge-Trap Pluggable					
STP1201PGM	Surge-Trap Pluggable 120 VOLT			1	2
STP2083PYGM	Surge-Trap Pluggable 120/208 V			1	2
STP480SPGM	Surge-Trap Pluggable 240/480 V			1	2
STP4803PDGM	Surge-Trap Pluggable 480D VOLT			1	1
STP4803PYGM	Surge-Trap Pluggable 277/480 V			1	1
Surge-Trap Type 1 Products					
STT21201PG	Type 1 SPD, 120V Single Phase			2	2
STT22401PG	Type 1 SPD, 240V Single Phase				2
STT2240SPG	Type 1 SPD, 120/240V Split Phase	1	2	2	2
STT24803PYG	Type 1 SPD, 277/480V 3-ph Wye	1	2	2	2
STT26003PYG	Type 1 SPD, 3477/600V 3-ph Wye			1	1
STXR120V3Y50	208Y/120V 30, 4W Plus Ground				1
STXR277V3Y50	480Y/277V 30, 4W Plus Ground				1
STXR240V3D50	DV 30, 3W Plus Ground		2	2	2
STXP02S1004X	208Y/120V 30, 4W Plus Ground				1
STXP05S1004X	480V 30, 3W Plus Ground				1