

TRABTECH | TECHNOLOGY

SURGE PROTECTION

for PLC, CNC &
Drive Systems



What causes power surges and why are they dangerous for electrical & electronics system

Why use SURGE PROTECTION?

Power surges are short duration voltage and current spikes that occur continuously in the electrical environment. The sources of these electromagnetic phenomena can be natural or man-made. Normal utility and electrical activity, such as load switching, motor drives, contactors and capacitor bank switching can cause power surges.

With the ever increasing dependence on electronics and communications for every facet of our daily lives, electronic reliability is an important issue. When equipment fails, the repair costs often run much higher than that of the equipment itself. When considering cost of downtime, troubleshooting, lost production and cost of hardware replacements, the true costs can be astronomical.

To prevent power surges from destroying AC power circuits, electrical and electronic systems all the interfaces at risk (such as control and data signals, communication and video signals) must be connected to surge protection devices. Different surge protection components and approaches are used depending on the application.

Equipment SUSCEPTIBILITY

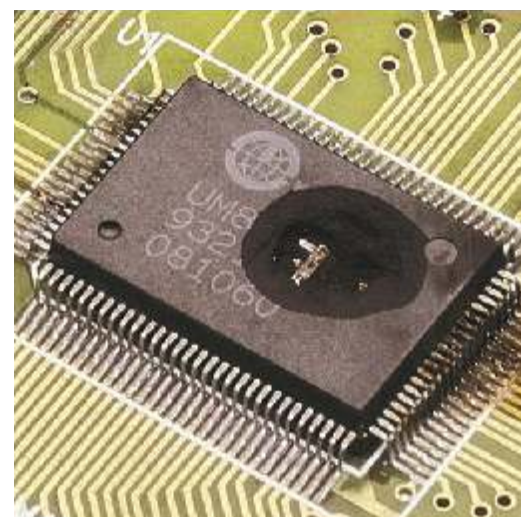
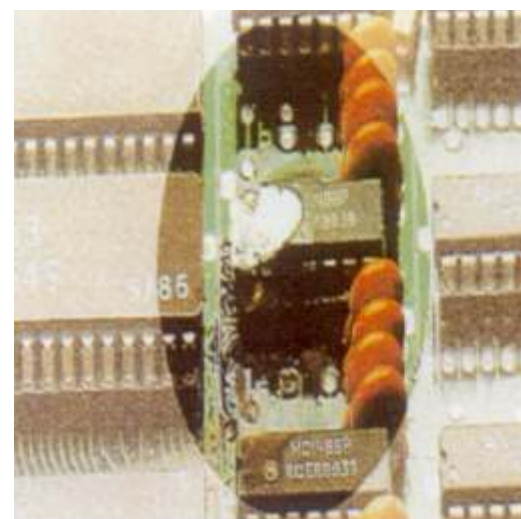
How much damage will a power surge cause? The increasing integration of electronic circuits into smaller packages has led to an increased sensitivity to surge voltage conditions. Energy levels as low as microjoules can easily cause failures to integrated circuits.

Damage to electronics and integrated circuits isn't always immediately destructive in nature. Dissipative and disruptive damage are also costly effects from surge events. Dissipative damage is the cumulative effect of low-energy switching transients that "wear-out" the internal strength of interrupted data flow and generally result in system lock-up related to computer & microprocessor based system.

Disruptive	Symptoms: Confused logic, lost files, data stream disruption and /or corruption, system lock-up. Disruptive effects are common place to most PLC/CNC user but are generally blamed on software or hard problems.
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Dissipative	Symptoms: Little or no visible damage, but components will not function properly. "Bad IC's" is usually the diagnosis. Dissipative effects are the cumulative result of electronic stress usually caused by internally generated, lower energy, but constantly present switching events.
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Destructive	Symptoms: Very visible damage: burnt boards, traces and components, Some components literally blown off the board. Wire insulation melted and metallic parts deformed. Destructive effects are generally associated with severe impulse (lightning activity) events.
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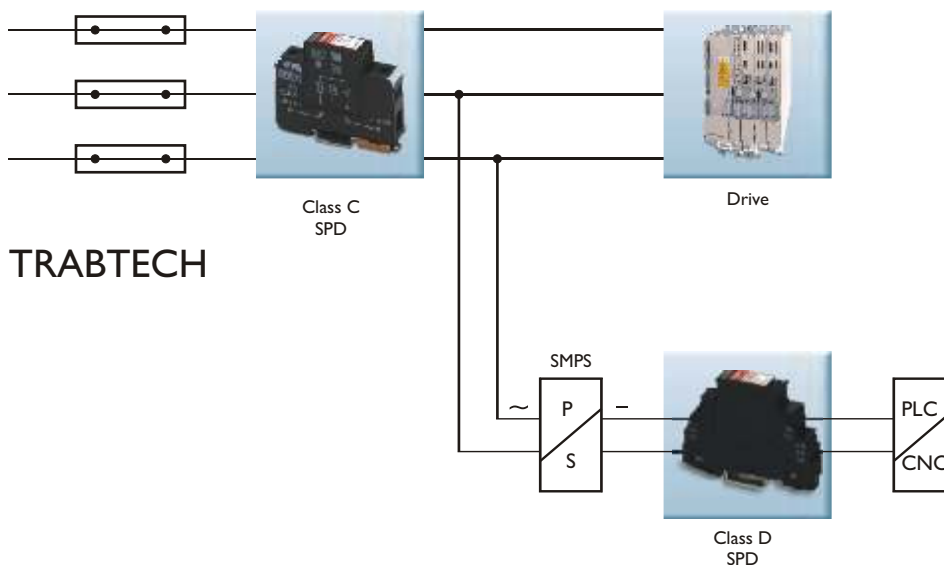


Trabtech offers all type of protective device thus adding new dimension in performance and protection

Surge Voltage Protection

TRABTECH offers all type of protective devices for signal interface and power supply units for the control technology in mechanical and plant engineering. Downtimes are usually seen as a result of surge voltages which can be prevented effectively with a comprehensive protection system.

Availability & Performance of system is enhanced. A two stage protection is recommended for the PLC/ CNC & Drives.



CLASS C - VALVETRAB at Control Panel Input of the Power Supply.

The test standards met by such surge arresters are according to IEC 61643-1 & VDE 0675 standards.

Features of Class C type surge arrester:

- Single high capacity MOV based surge arrester for phase to neutral & spark gap for neutral to earth.
- Rated voltage to suit Indian condition and TT power supply network.
- Connections parallel to the circuit- no disconnection of load.
- Pluggable MOV for easy replacement & testing.
- Visual as well as remote indication for monitoring its health status.
- Nominal repeated discharge current of 20KA, 8/20 μ s.
- Maximum discharge current of 40KA, 8/20 μ s.
- RoHS Compliance.

CLASS D - PLUGTRAB for Device Power Supply Protection

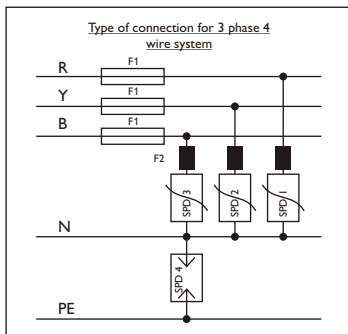
Features of Class D MAINS PLUGTRAB

- Connection in series with the supply.
- Combination of MOV and Gas Discharge tube.
- Rated voltage as per the requirement of the electronic circuit.
- Pluggable type for easy replacement without disconnection of the circuit.
- Visual as well as remote indication for monitoring its health status.
- Nominal repeated discharge current of 10KA, 8/20 μ s.
- Maximum discharge current of 20KA, 8/20 μ s.
- RoHS Compliance.

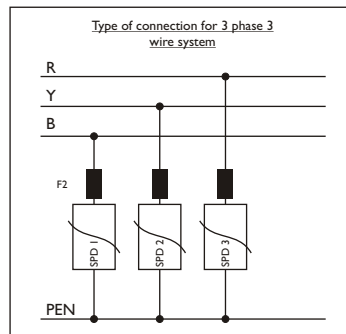


DESCRIPTION	VALVETRAB	Article No.	PLUGTRAB	Article No.
	Class C		Class D	
	Type		Type	
Plug for	24 V		PT-2PE/S-24 AC-ST	28 39 31 8
	60 V	VAL-MS 60 AC ST	PT-2PE/S-60 AC-ST	28 39 32 1
	120 V	VAL-MS 120 AC ST	PT-2PE/S-120 AC-ST	28 39 33 4
	230 V	VAL-MS 230 AC ST	PT-2PE/S-230 AC-ST	28 39 34 7
	320 V	VAL-MS 320 AC ST	—	—
Base element	VAL-MS BE	28 17 74 1	—	—
Potential free contact	VAL-MS BE/FM	28 17 73 8	PT-BE/FM	28 39 28 2

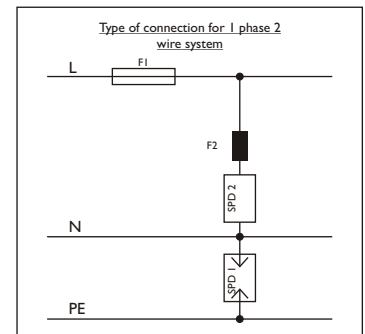
Technical data	VAL-...120	VAL-...230	VAL-...320	Technical data	...24AC	...60AC	...120AC	...230AC
IEC category/VDE requirement class:	II / C	II / C	II / C	IEC category/VDE requirement class/EN type:	III / D [T3]	III / D [T3]	III / D [T3]	III / D [T3]
Nominal Voltage U_n :	120V AC	230V AC	277V AC	Nominal voltage U_{Nj} :	24V AC	60V AC	120V AC	230V AC
Arrestor rated voltage U_c :	DC/AC 200V/150V	350V/275V AC	420V/335V AC	Arrestor rated voltage U_c :	34V AC	100V AC	150V AC	253V AC
Discharge current to PE at U_n :	≤ 0.3 mA	≤ 0.3 mA	≤ 0.3 mA	Nominal current $I_N/30^\circ\text{C}$:	26 A	26 A	26 A	26 A
Nominal discharge surge current I_n (8/20) μs : asym. (\downarrow)	20 kA	20 kA	20 kA	Nominal discharge surge current I_n (8/20) μs :	1 kA	2.5 kA	2.5 kA	3 kA
Max. discharge surge current I_{max} (8/20) μs : asym. (\downarrow)	40 kA	40 kA	40 kA	Max. discharge surge current I_{max} (8/20) μs :	2 kA	6.5 kA	10 kA	10 kA
Voltage protection level at U_p :	≤ 800 V	≤ 1.35 kV	≤ 1 kV	Combined surge U_{OC} :	2 kV	4 kV	6 kV	6 kV
Residual voltage at 5 kA	L-N/L- \downarrow /N- \downarrow	550V	1 kV	Protection level: [V] L-N / L- \downarrow / N- \downarrow	$\leq 180/\leq 550$	$\leq 400/\leq 700$	$\leq 620/\leq 850$	$\leq 1100/\leq 1500$
Response time t_r :	asym. (\downarrow)	≤ 25 ns	≤ 25 ns	Back-up fuse e:	25 A gL	25 A gL	25 A gL	25 A gL
Max required back-up fuse:	125 A gL/gG	125 A gL/gG	125 A gL/gG	Discharge current to / operating current: [μA / mA]	$\leq 1/\leq 1.5$	$\leq 1/\leq 1.5$	$\leq 1/\leq 1.5$	$\leq 1/\leq 1.5$
Remote ind. contact: PDT max. perm. operating voltage U_{max}		250VAC/125VDC		Temperature range:			-40 °C to +85 °C	
max. perm. operating current I_{max} AC (W/Ind.)		1 A/1 A		Degree of protection in acc. with			IP 20	
max. perm. operating current I_{max} DC (W/Ind.)		0.2 A/30 mA		IEC 529/ EN 60 529:				
Temperature range:		-40°C to +80°C		Insulation housing:			PA	
Protection type acc. to IEC 60 529/ EN 60 529:		IP 20		Inflammability class acc. to UL 94:			V0	
Insulation housing / Inflammability class acc. to UL 94:		PA/V0		Inflammability class in acc. with UL 94:				
Stripping length : Biconnect terminal block/remote indicator contact		14.5/7 mm		Thread:			M3	
Screw thread : Biconnect connector/remote indicator contact		M 5/M 2		Torque:			0.8 Nm	
Torque : Biconnect connector/remote indicator contact		4.5Nm/0.25 Nm		Approvals:				
Approvals :				Test standards:	IEC 61643-1:1998-02, pr EN 61643-1 E DIN VDE 0675 part 6:1989-11/A1:1996-03/A2:1996-10 UL 1449 ed.2			
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Class C



Class C



Class C

HEAD OFFICE
Phoenix Contact (India) Pvt. Ltd.
F-26/2, Okhla Industrial Area, Phase II
New Delhi 110 020 INDIA
Tel.: +91-11-41295700/800
Fax: +91-11-41611070/71
E-mail: postmaster@phoenixcontactin.com
Website: www.phoenixcontactin.com

SOUTHERN INDIA OFFICE
41 I, Barton Centre
84, M.G. Road, Bangalore 560 001
Tel.: +91-80-25091481
Telefax: +91-80-25581312

WESTERN INDIA OFFICES
504, Sagar Tech Plaza, 'B' Wing
Andheri-Kurla Road, Saki Naka
Andheri [E], Mumbai 400 072
Tel.: +91-22-28511745
Fax: +91-22-28511070

302, City Point
Dhole Patil Road
Pune - 411 001
Tel.: +91-20-30523636
Fax: +91-20-30523637