

THOR

PROTECTOR OF LIGHTNING PROTECTION
– SINCE 2006 –

Catalogue Surge Protective Devices



Company Profile

THOR is a manufacturer specialised in the development and production of surge protective devices since 2006. THOR offers a complete range of SPDs, such as AC power SPD, PV system SPD, Signal and network SPD, Coaxial RF SPD, lightning rod, lightning box, etc.

THOR SPDs are applied to lightning protection in different low-voltage system fields, such as industry, solar power generation systems, telecommunications, network data centers, office buildings, and homes, etc.



Semi-automatic welding equipment

- Maintain consistent temperature of welding iron head
- Maintain consistent tin production during welding
- More precise welding positions
- Reduce false soldering caused by manual welding



Semi-automatic factory inspection pressure sensitive tester

- Accurately set the positive and negative tolerances for voltage and leakage current
- Supporting fixtures to improve testing efficiency
- If the detection data exceeds the set range, there is an alarm warning function
- MOV 100% factory inspection



Simulated lightning impact test bench (capable of meeting T2:120KA/T1:25KA)

- By simulating lightning stroke testing, the product's ability to withstand lightning current can be verified. It can guarantee the most reliable and safe high-quality products for users.



Enterprise Certificates

As a manufacturer of surge protective devices that pursues high quality, THOR invests a considerable proportion of its annual revenue in innovation, research and development, and international certification to meet the needs of customers in different fields, obtaining more and more certificates to ensure that our SPDs can be distributed in every corner of the world.



Features of THOR Surge Protective Device

Example: TRS5-B+C

Lock system for fixing
of modules



Biconnect terminals



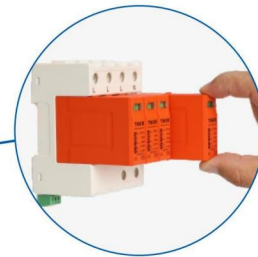
DIN rail 35mm



Optical lifetime status
indication



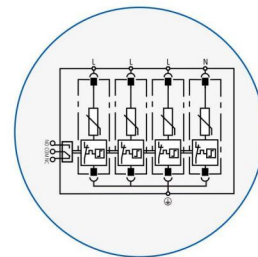
Pluggable modules



Remote signalling



Circuit diagram

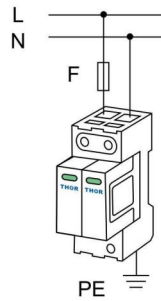


AC SPD Wiring diagram

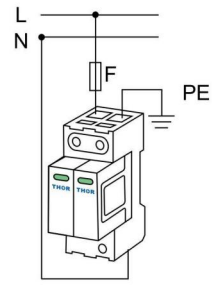
Single phase system



"1+0"
Connection

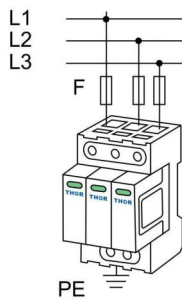


"2+0"
Connection

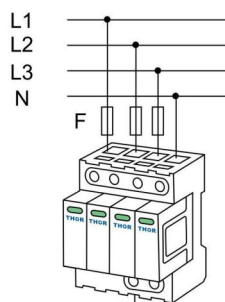


"1+1"
Connection

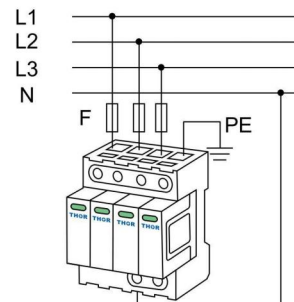
Three phase system



"3+0"
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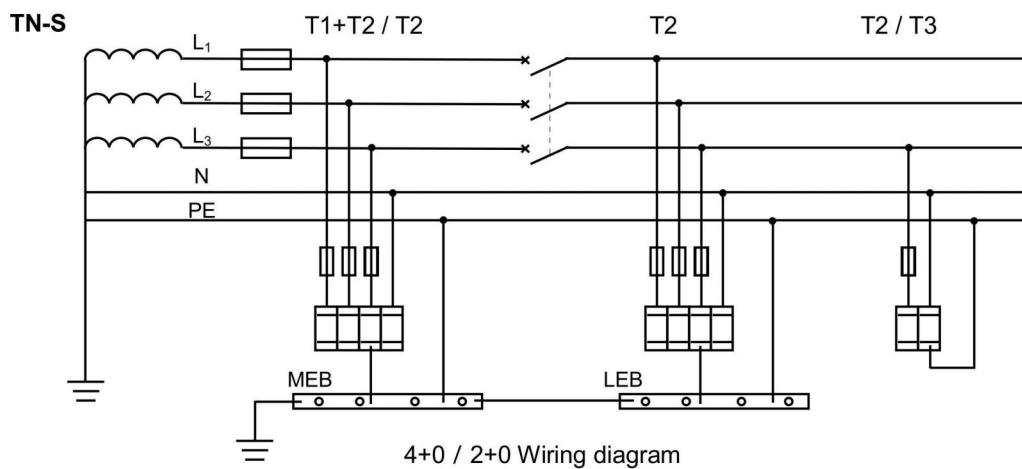


"4+0"
Connection

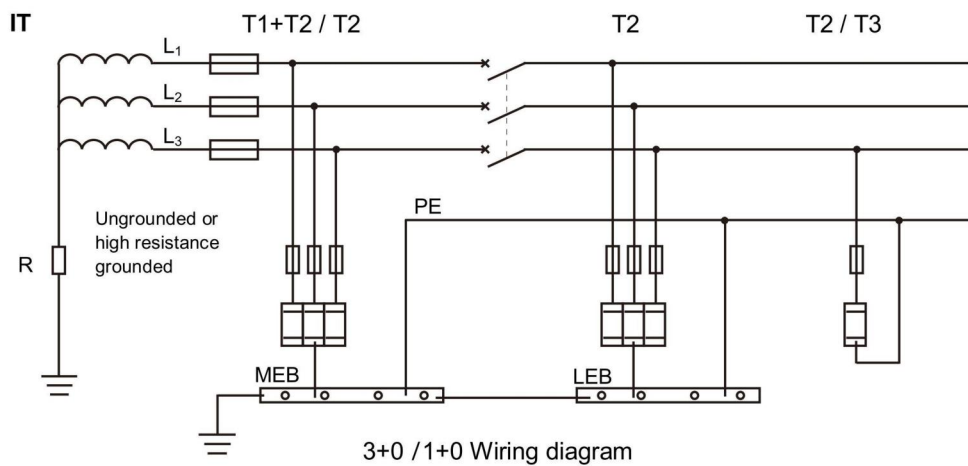
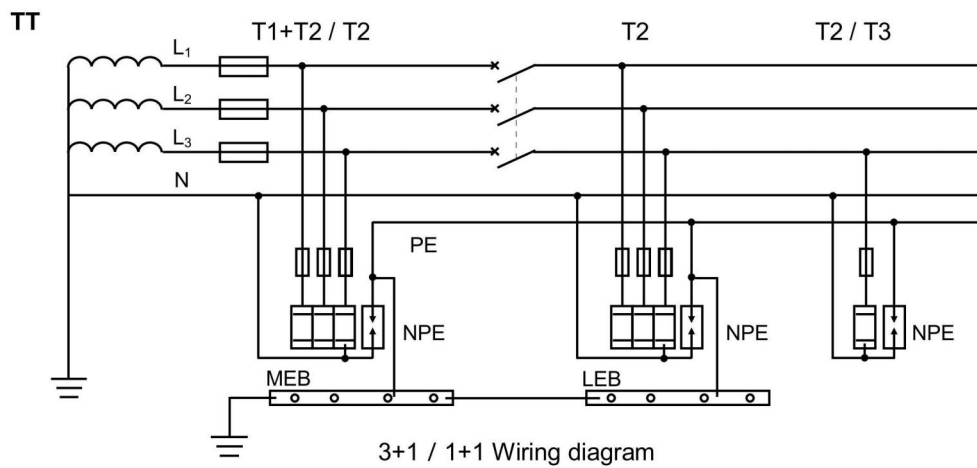
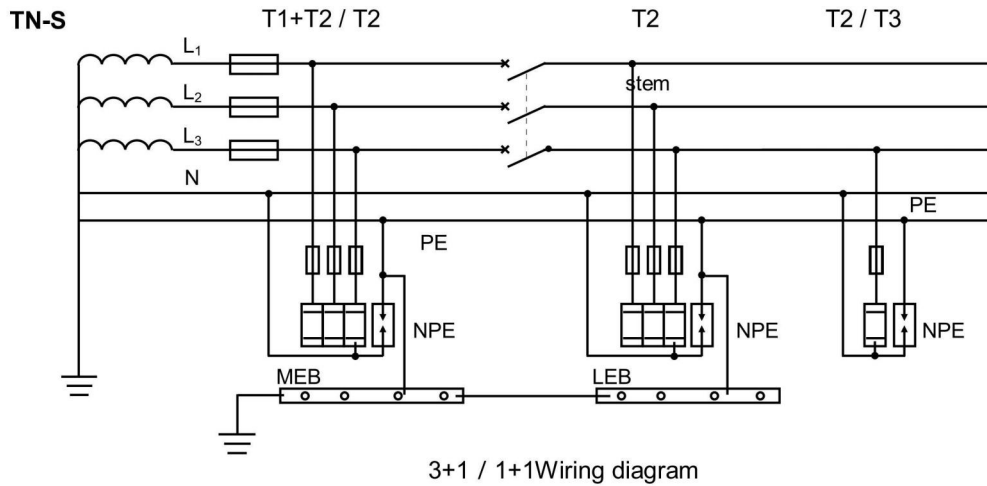


"3+1"
Connection

Connection of AC SPD in networks

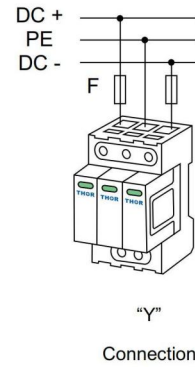
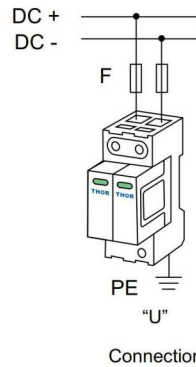
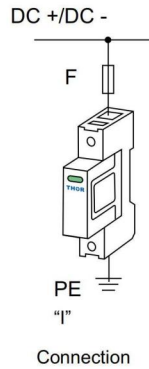


Connection of AC SPD in networks

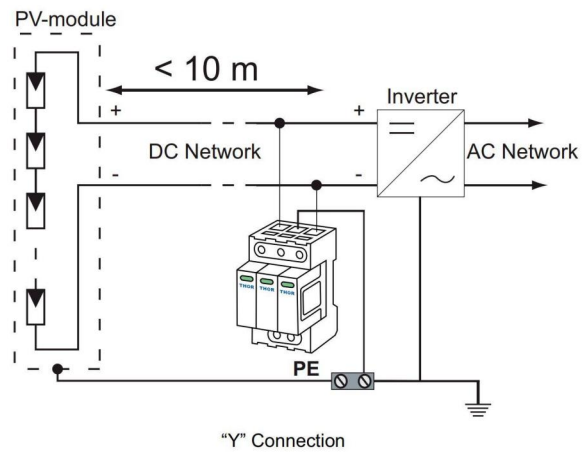
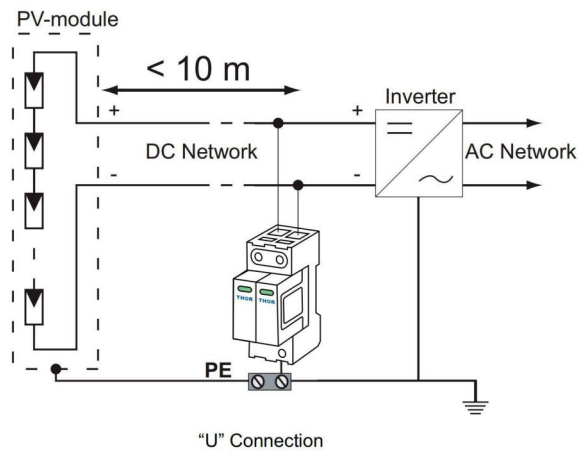
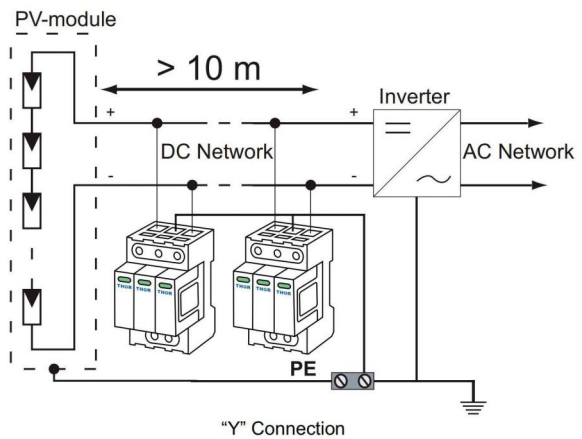
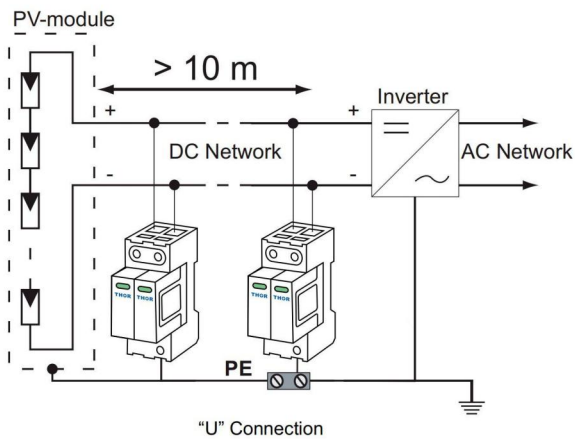


DC SPD Wiring diagram

Photovoltaic system



Connection of DC SPD in networks



Content

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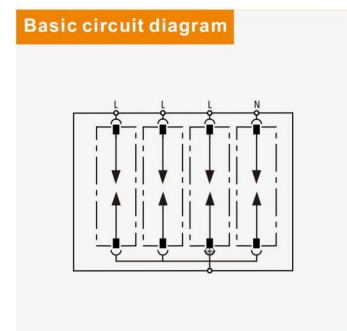
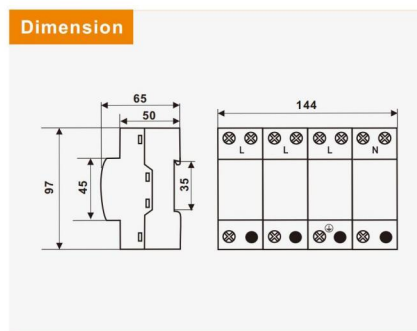
LIGHTNING BOX

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TRS-A Series SPD

SPD type 1-surge arrester, Graphite gap
visual fault signalling

- Graphite gap surge arrester
- Installation to main distribution boards
- For protection against impact direct or indirect lightning strikes in wide range of applications
-houses, office and industrial buildings



Parameter/Type		TRS-A15	TRS-A25	TRS-A50
Nominal volatge	U_n	230V AC		
Maximum operating voltage	U_c	275V AC		
Lightning impulse current (10/350 μ s)	I_{imp}	15kA	25kA	50kA
Voltage protection level	U_p	$\leq 2,0kV$	$\leq 2,2kV$	$\leq 2,5kV$
Insulation resistance group		$> 100m\Omega$		
Response time	t_a	$< 100ns$		
Cross-section of connected conductors solid(min/max)		$16mm^2/35mm^2$		
Cross-section of connected conductors stranded(min/max)		$16mm^2/35mm^2$		
Fault indication		—		
Degree of protection		IP20		
Range of operating temperatures (min/ max)		$-40^{\circ}C \sim +85^{\circ}C$		
Humidity range		5%~95%		
Mounting		DIN rail 35 mm		
According to standard		EN 61643-11:2012, IEC 61643-11:2011/T1		
Remarks		Other U_c can be customized. (420VAC, 385VAC, 320VAC, etc.)		

TRS-B C D Series SPD

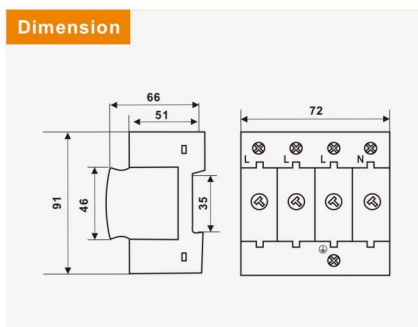
SPD type 2—surge arrester, MOV
Pluggable module, visual fault signalling

- Varistor surge arrester
- Installation to sub-distribution boards
- For protection of installations and equipments against impact of induced overvoltage during a lightning strike or switching overvoltages.

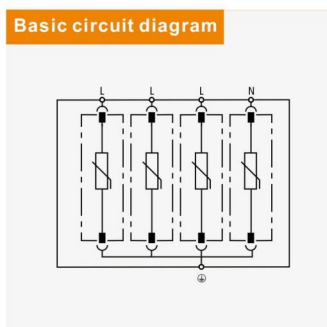
Product



Dimension



Basic circuit diagram

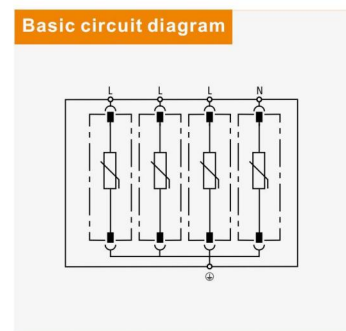
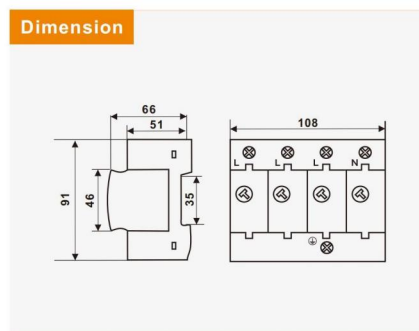


Parameter/Type		TRS-D10	TRS-D20	TRS-C40	TRS-B60
Nominal voltage	U_n	230V AC			
Maximum operating voltage	U_c	275V AC			
Nominal discharge current (8/20μs)	I_n	5kA	10kA	20 kA	30 kA
Maximum discharge current (8/20μs)	I_{max}	10kA	20kA	40kA	60kA
Voltage protection level	U_p	$\leq 0,7kV$	$\leq 1,0kV$	$\leq 1,5 kV$	$\leq 1,8 kV$
Response time	t_a	< 25ns			
Cross-section of connected conductors solid(min/max)		16mm ² /35mm ²			
Cross-section of connected conductors stranded(min/max)		16mm ² /35mm ²			
Fault indication		red indication field			
Degree of protection		IP20			
Range of operating temperatures (min/ max)		-40°C~+85°C			
Humidity range		5%~95%			
Mounting		DIN rail 35 mm			
According to standard		EN 61643-11:2012, IEC 61643-11:2011/T2			
Remarks		Other U_c can be customized.(420VAC,385VAC,320VAC,etc.)			

TRS-B Series SPD

SPD type 2-surge arrester, MOV
Pluggable module, visual fault signalling

- Varistor surge arrester
- Installation to sub-distribution boards
- For protection of installations and equipments against impact of induced overvoltage during a lightning strike or switching overvoltages.



Parameter/Type		TRS-B80	TRS-B100
Nominal voltage	U_n	230V AC	
Maximum operating voltage	U_c	275V AC	
Nominal discharge current (8/20μs)	I_n	40kA	60kA
Maximum discharge current (8/20 μs)	I_{max}	80kA	100kA
Voltage protection level	U_p	≤ 1,8kV	≤ 2,0kV
Response time	t_a	< 25ns	
Cross-section of connected conductors solid(min/max)		16mm ² /35mm ²	
Cross-section of connected conductors stranded(min/max)		16mm ² /35mm ²	
Fault indication		red indication field	
Degree of protection		IP20	
Range of operating temperatures (min/ max)		-40°C~+85 °C	
Humidity range		5%~95%	
Mounting		DIN rail 35 mm	
According to standard		EN 61643-11:2012, IEC 61643-11:2011/T2	
Remarks		Other U_c can be customized. (420VAC, 385VAC, 320VAC, etc.)	

TRS2 Series SPD -Height 91mm

SPD type 2-surge arrester, MOV

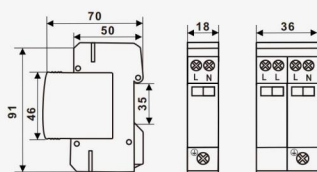
Pluggable module, visual fault signalling

- Varistor surge arrester
- For protection of installations and equipments against impact of induced overvoltage during a lightning strike or switching overvoltages.
- Optional remote fault signalling(s)

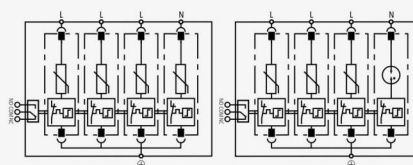
Product



Dimension



Basic circuit diagram



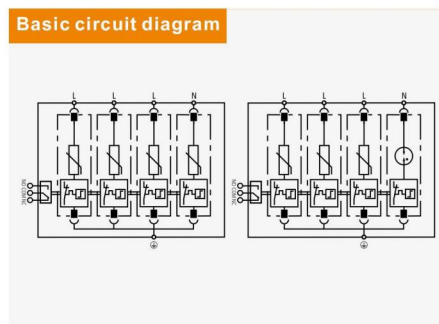
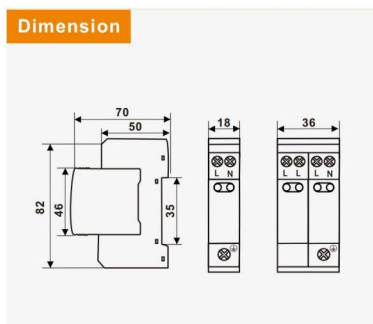
Parameter/Type	TRS2–C40			
Maximum operating voltage	2P/4P		1P+N/3P+N	
Nominal volatge	U _n	230V AC		
Maximum operating voltage	U _c	L/N–PE:275V AC	L/N–PE:320V AC	L–PE:275V AC, N–PE:255V AC L–PE:320V AC, N–PE:255V AC
Nominal discharge current (8/20μs)	I _n	20kA		
Maximum discharge current (8/20μs)	I _{max}	40kA		
Voltage protection level	U _p	≤1,3KV	≤1,5KV	≤1,3KV ≤1,5KV
Response time	t _a	< 25ns		
Cross–section of connected conductors solid(min/max)		16mm ² /35mm ²		
Cross–section of connected conductors stranded(min/max)		16mm ² /35mm ²		
Fault indication		red indication field		
Remote indication		potential–free change–over contact		
remote indication contacts		250V/0,5A AC,250V/0,1A DC		
Cross–section of remote indication conductors		1,5mm ²		
Degree of protection		IP20		
Range of operating temperatures (min/ max)		–40°C~ +85°C		
Humidity range		5%~95%		
Mounting		DIN rail 35 mm		
According to standard		EN 61643–11:2012, IEC 61643–11:2011/T2		

TRS2 Series SPD -Height 82mm

SPD type 2—surge arrester, MOV

Pluggable module, visual fault signalling

- Varistor surge arrester
- Installation to sub-distribution boards
- For protection of installations and equipments against impact of induced overvoltage during a lightning strike or switching overvoltages.



Parameter/Type	TRS2–C40			
Maximum operating voltage	2P/4P		1P+N/3P+N	
Nominal volatge	U _n	230V AC		
Maximum operating voltage	U _c	L/N–PE:275V AC	L/N–PE:320V AC	L–PE:275V AC, N–PE:255V AC L–PE:320V AC, N–PE:255V AC
Nominal discharge current (8/20μs)	I _n	20kA		
Maximum discharge current (8/20μs)	I _{max}	40kA		
Voltage protection level	U _p	≤1,3KV	≤1,5KV	≤1,3KV ≤1,5KV
Response time	t _a	< 25ns		
Cross–section of connected conductors solid(min/max)		16mm ² /35mm ²		
Cross–section of connected conductors stranded(min/max)		16mm ² /35mm ²		
Fault indication		red indication field		
Remote indication		potential–free change–over contact		
remote indication contacts		250V/0,5A AC,250V/0,1A DC		
Cross–section of remote indication conductors		1,5mm ²		
Degree of protection		IP20		
Range of operating temperatures (min/ max)		–40°C~ +85°C		
Humidity range		5%~95%		
Mounting		DIN rail 35 mm		
According to standard		EN 61643–11:2012, IEC 61643–11:2011/T2		

TRS4 Series SPD

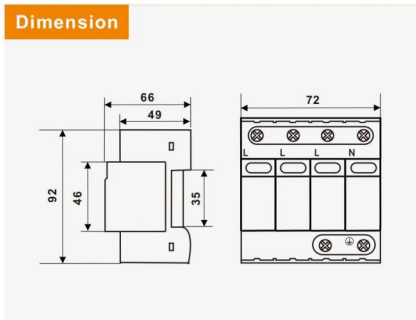
SPD type 2—surge arrester, MOV
Pluggable module, visual fault signalling

- Varistor surge arrester
- Installation to sub-distribution boards
- For protection of installations and equipments against impact of induced overvoltage during a lightning strike or switching overvoltages.
- Optional remote fault signalling(s)

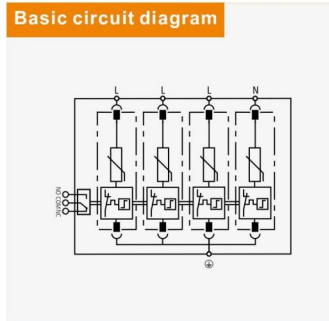
Product



Dimension



Basic circuit diagram



Parameter/Type		TRS4-D20		TRS4-C40		TRS4-B60
Nominal volatge	U _n	230 V AC				
Maximum operating voltage	U _c	275 V AC	320 V AC	275 V AC	320 V AC	275 V AC
Nominal discharge current (8/20μs)	I _n	10kA		20kA		30kA
Maximum discharge current (8/20μs)	I _{max}	20kA		40kA		60kA
Voltage protection level	U _p	≤ 1,2KV		≤ 1,5 KV		≤ 1,8 KV
Response time	t _a	< 25ns				
Cross-section of connected conductors solid(min/max)		16mm ² /35mm ²				
Cross-section of connected conductors stranded(min/max)		16mm ² /35mm ²				
Fault indication		red indication field				
Remote indication		potential-free change-over contact				
remote indication contacts		250V/0,5A AC,250V/0,1A DC				
Cross-section of remote indication conductors		1,5mm ²				
Degree of protection		IP20				
Range of operating temperatures (min/ max)		-40°C~+85°C				
Humidity range		5%~95%				
Mounting		DIN rail 35 mm				
According to standard		EN 61643-11:2012,IEC 61643-11:2011/T2				
Remarks		Other Uc can be customized.(420VAC,385VAC,320VAC,etc.)				

TRS6 Series SPD

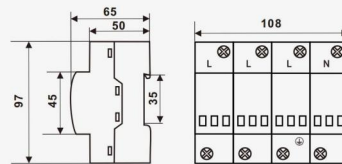
SPD type 2—surge arrester, MOV
Pluggable module, visual fault signalling

- Varistor surge arrester
- Installation to sub-distribution boards (Imax:80kA) or main distribution boards (Imax:100kA)
- For protection of installations and equipments against impact of induced overvoltage during a lightning strike or switching overvoltages.
- Optional remote fault signalling(s)

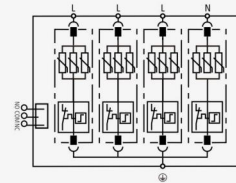
Product



Dimension



Basic circuit diagram



Parameter/Type		TRS6-B80	TRS6-B100
Nominal voltage	U_n	380V AC	
Maximum operating voltage	U_c	385V AC	
Nominal discharge current (8/20μs)	I_n	40kA	60kA
Maximum discharge current (8/20μs)	I_{max}	80kA	100kA
Voltage protection level	U_p	$\leq 2,4kV$	$\leq 2,5kV$
Response time	t_a	< 25ns	
Cross-section of connected conductors solid(min/max)		16mm ² /35mm ²	
Cross-section of connected conductors stranded(min/max)		16mm ² /35mm ²	
Fault indication		red indication field	
Remote indication		potential-free change-over contact	
remote indication contacts		250V/0,5A AC, 250V/0,1A DC	
Cross-section of remote indication conductors		1,5mm ²	
Degree of protection		IP20	
Range of operating temperatures (min/ max)		-40°C ~ +85°C	
Humidity range		5%~95%	
Mounting		DIN rail 35 mm	
According to standard		EN 61643-11:2012, IEC 61643-11:2011/T2	
Remarks		Other U_c can be customized. (420VAC, 385VAC, 320VAC, etc.)	

TRS7 Series SPD

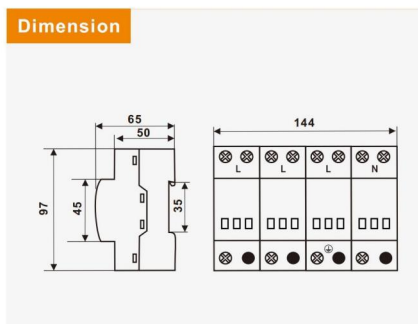
SPD type 2—surge arrester, MOV
Pluggable module, visual fault signalling

- Varistor surge arrester
- Installation to sub-distribution boards (Imax:80kA) or main distribution boards (Imax:100kA/120kA/150kA)
- For protection of installations and equipments against impact of induced overvoltage during a lightning strike or switching overvoltages.
- Optional remote fault signalling(s)

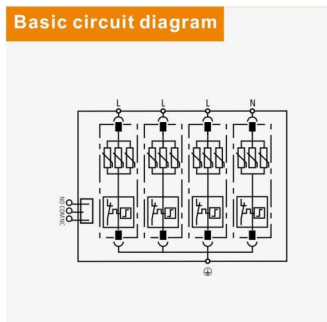
Product



Dimension



Basic circuit diagram

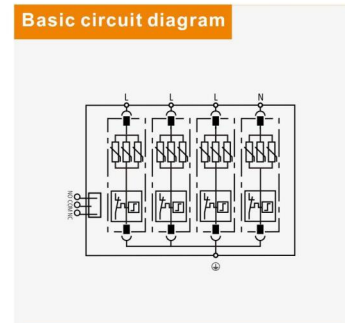
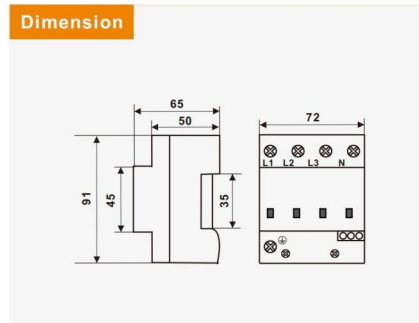


Parameter/Type		TRS7-B80	TRS7-B100	TRS7-B120	TRS7-B150
Nominal voltage	U_n	380V AC			
Maximum operating voltage	U_c	385V AC			
Nominal discharge current (8/20μs)	I_n	40kA	60kA	80kA	100kA
Maximum discharge current (8/20μs)	I_{max}	80kA	100kA	120kA	150kA
Voltage protection level	U_p	≤2,4kV	≤2,5kV	≤3,0kV	≤3,5kV
Response time	t_a	<25ns			
Cross-section of connected conductors solid(min/max)		16mm ² /35mm ²			
Cross-section of connected conductors stranded(min/max)		16mm ² /35mm ²			
Fault indication		red indication field			
Remote indication		potential-free change-over contact			
remote indication contacts		250V/0,5A AC, 250V/0,1A DC			
Cross-section of remote indication conductors		1,5mm ²			
Degree of protection		IP20			
Range of operating temperatures (min/ max)		-40°C~+85°C			
Humidity range		5%~95%			
Mounting		DIN rail 35 mm			
According to standard		EN 61643-11:2012, IEC 61643-11:2011/T2			
Remarks		Other U_c can be customized. (420VAC, 385VAC, 320VAC, etc.)			

TRS8 Series SPD

SPD type 1+2–surge arrester, MOV+GDT
visual fault signalling

- Varistor and GDT surge arrester
- For protection of installations and equipments against impact of induced overvoltage during a lightning strike or switching overvoltages.
- Optional remote fault signalling(s)



Parameter/Type		TRS8-B+C
Nominal voltage	U_n	230V AC
Maximum operating voltage	U_c	275V AC
Lightning impulse current(10/350 μ s)	I_{imp}	12,5kA
Nominal discharge current (8/20 μ s)	I_n	30kA
Maximum discharge current (8/20 μ s)	I_{max}	60kA
Voltage protection level	U_p	$\leq 1,5kV$
Response time	t_a	< 25ns
Cross-section of connected conductors solid(min/max)		16mm ² /35mm ²
Cross-section of connected conductors stranded(min/max)		16mm ² /35mm ²
Fault indication		red indication field
Remote indication		potential-free change-over contact
remote indication contacts		250V/0,5A AC, 250V/0,1A DC
Cross-section of remote indication conductors		1,5mm ²
Degree of protection		IP20
Range of operating temperatures (min/ max)		-40°C~+85°C
Humidity range		5%~95%
Mounting		DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011/T1+T2

TRS9 Series SPD

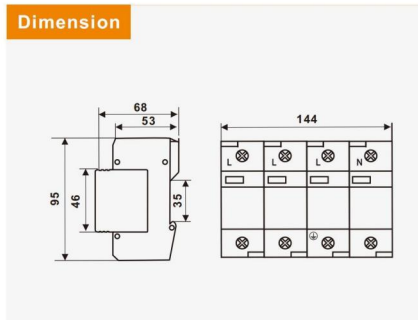
SPD type 2—surge arrester, MOV
Pluggable module, visual fault signalling

- Varistor surge arrester
- Installation to sub-distribution boards (Imax:80kA) or main distribution boards (Imax:100kA/120kA/150kA)
- For protection of installations and equipments against impact of induced overvoltage during a lightning strike or switching overvoltages.
- Optional remote fault signalling(s)

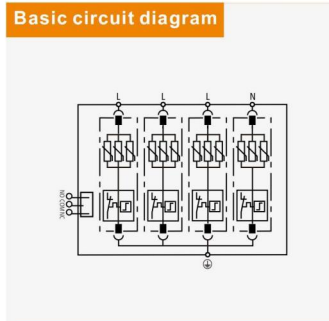
Product



Dimension



Basic circuit diagram

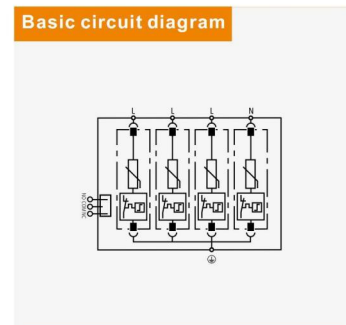
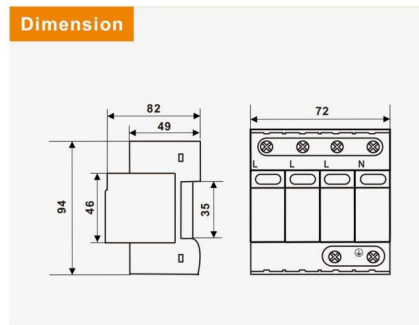


Parameter/Type		TRS9-B80	TRS9-B100	TRS9-B120	TRS9-B150
Nominal voltage	U_n	380V AC			
Maximum operating voltage	U_c	385V AC			
Nominal discharge current (8/20μs)	I_n	40kA	60kA	80kA	100kA
Maximum discharge current (8/20μs)	I_{max}	80kA	100kA	120kA	150kA
Voltage protection level	U_p	≤2,4kV	≤2,5kV	≤3,0kV	≤3,5kV
Response time	t_a	<25ns			
Cross-section of connected conductors solid(min/max)		16mm ² /35mm ²			
Cross-section of connected conductors stranded(min/max)		16mm ² /35mm ²			
Fault indication		red indication field			
Remote indication		potential-free change-over contact			
remote indication contacts		250V/0,5A AC, 250V/0,1A DC			
Cross-section of remote indication conductors		1,5mm ²			
Degree of protection		IP20			
Range of operating temperatures (min/ max)		-40°C~+85°C			
Humidity range		5%~95%			
Mounting		DIN rail 35 mm			
According to standard		EN 61643-11:2012, IEC 61643-11:2011/T2			
Remarks		Other U_c can be customized. (420VAC, 385VAC, 320VAC, etc.)			

TRS5 Series SPD

SPD type 1+2--surge arrester, MOV
Pluggable module,visual fault signalling

- Varistor surge arrester
- For protection of installations and equipments against impact of induced overvoltage during a lightning strike or switching overvoltages.
- Optional remote fault signalling(s)
- Installation to main distribution or sub-distribution boards



Parameter/Type		TRS5-B+C	
Nominal volatge	U_n	230V AC	
Maximum operating voltage	U_c	275V AC	
Lightning impulse current(10/350 μ s)	I_{imp}	7kA	12,5kA
Nominal discharge current (8/20 μ s)	I_n	20kA	
Maximum discharge current (8/20 μ s)	I_{max}	50kA	
Voltage protection level	U_p	$\leq 1,3kV$	
Response time	t_a	< 25ns	
Cross-section of connected conductors solid(min/max)		16mm ² /35mm ²	
Cross-section of connected conductors stranded(min/max)		16mm ² /35mm ²	
Fault indication		red indication field	
Remote indication		potential-free change-over contact	
remote indication contacts		250V/0,5A AC,250V/0,1A DC	
Cross-section of remote indication conductors		1,5mm ²	
Degree of protection		IP20	
Range of operating temperatures (min/ max)		-40°C~+85°C	
Humidity range		5%~95%	
Mounting		DIN rail 35 mm	
According to standard		EN 61643-11:2012,IEC 61643-11:2011/T1+T2	
Remarks		Other U_c can be customized.(320VAC)	

TRS5 Dual Series SPD

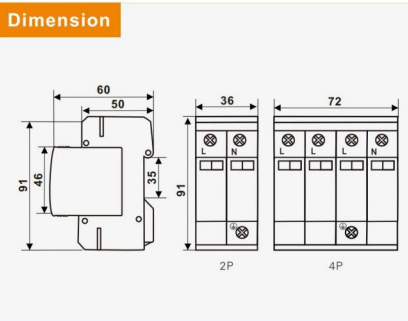
SPD type 1+2--surge arrester, MOV
Pluggable module,visual fault signalling

- Varistor surge arrester
- For protection of installations and equipments against impact of induced overvoltage during a lightning strike or switching overvoltages.
- Optional remote fault signalling(s)
- Installation to main distribution or sub-distribution boards

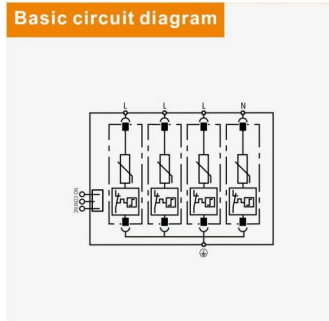
Product



Dimension



Basic circuit diagram

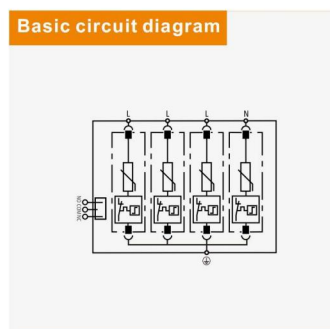
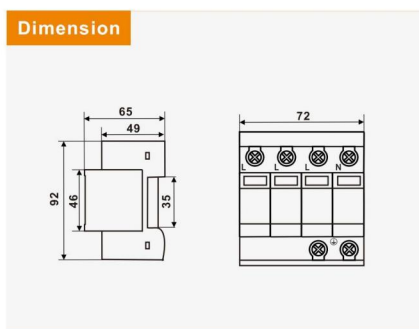


Parameter/Type		TRS5-B+C
Nominal volatge	U_n	230V AC
Maximum operating voltage	U_c	275V AC
Lightning impulse current(10/350 μ s)	I_{imp}	12,5kA
Nominal discharge current (8/20 μ s)	I_n	20kA
Maximum discharge current (8/20 μ s)	I_{max}	50kA
Voltage protection level	U_p	$\leq 1,3kV$
Response time	t_a	< 25ns
Cross-section of connected conductors solid(min/max)		16mm ² /35mm ²
Cross-section of connected conductors stranded(min/max)		16mm ² /35mm ²
Fault indication		red indication field
Remote indication		potential-free change-over contact
remote indication contacts		250V/0,5A AC,250V/0,1A DC
Cross-section of remote indication conductors		1,5mm ²
Degree of protection		IP20
Range of operating temperatures (min/ max)		-40°C~+85°C
Humidity range		5%~95%
Mounting		DIN rail 35 mm
According to standard		EN 61643-11:2012,IEC 61643-11:2011/T1+T2
Remarks		Other U_c can be customized.(420VAC,385VAC,320VAC,etc.)

TR30B+C SPD TUV approved

SPD type 1+2–surge arrester, MOV
Pluggable module, visual fault signalling

- Varistor surge arrester
- For protection of installations and equipments against impact of induced overvoltage during a lightning strike or switching overvoltages.
- Optional remote fault signalling(s)
- Installation to main distribution or sub-distribution boards



Parameter/Type		TRS30B+C
Nominal voltage	U_n	230V AC
Maximum operating voltage	U_c	275V AC
Lightning impulse current(10/350 μ s)	I_{imp}	4,5kA
Nominal discharge current (8/20 μ s)	I_n	30kA
Maximum discharge current (8/20 μ s)	I_{max}	60kA
Voltage protection level	U_p	$\leq 1,5kV$
Response time	t_a	< 25ns
Cross-section of connected conductors solid(min/max)		16mm ² /35mm ²
Cross-section of connected conductors stranded(min/max)		16mm ² /35mm ²
Fault indication		red indication field
Remote indication		potential-free change-over contact
remote indication contacts		250V/0,5A AC, 250V/0,1A DC
Cross-section of remote indication conductors		1,5mm ²
Degree of protection		IP20
Range of operating temperatures (min/ max)		-40°C~+85°C
Humidity range		5%~95%
Mounting		DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011/T1+T2
Remarks		Other U_c can be customized. (420VAC, 385VAC, 320VAC, etc.)

TRS3 Series DC SPD

DC Surge Protector for EV Charger / Energy Storage System (ESS) /

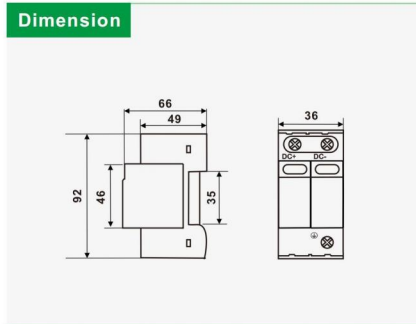
Telcom Communication

- Varistor surge arrester
- Installation to DC network
- For protection of DC network where the separating spark-over distance is kept or without LPS
- Optional remote fault signalling(S)

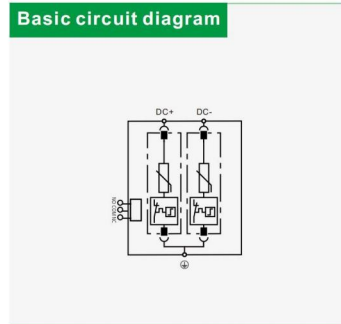
Product



Dimension



Basic circuit diagram

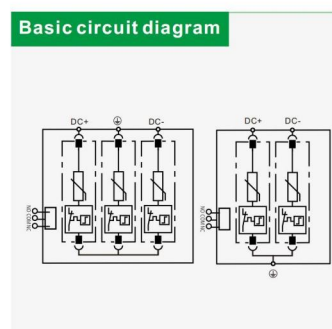
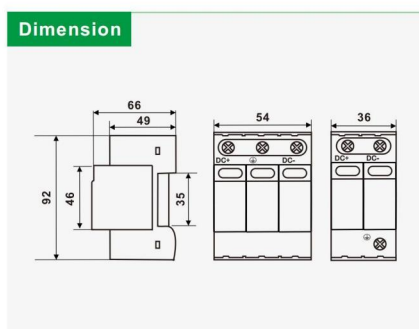


Parameter/Type		TRS3-C40			
Nominal PV Voltage	U_{ocsto}	24V DC	48V DC	75V DC	110V DC
Max. PV Operating Voltage	U_{cpv}	36V DC	65V DC	80V DC	180V DC
Nominal discharge current (8/20 μ s)	I_n	20kA			
Maximum discharge current (8/20 μ s)	I_{max}	40kA			
Voltage protection level mode +/PE, -/PE	U_p	$\leq 0,6kV$	$\leq 0,7kV$	$\leq 0,8kV$	$\leq 0,9kV$
Short-circuit current rating	I_{scpv}	10kA			
Response time	t_a	< 25ns			
Cross-section of connected conductors solid(min/max)		16mm ² /35mm ²			
Cross-section of connected conductors stranded(min/max)		16mm ² /35mm ²			
Fault indication		red indication field			
Remote indication		potential-free change-over contact			
Remote indication contacts		250V/0,5A AC, 250V/0,1A DC			
Cross-section of remote indication conductors		1,5mm ²			
Degree of protection		IP20			
Range of operating temperatures (min/ max)		-40°C~+85°C			
Humidity range		5%~95%			
Mounting		DIN rail 35 mm			
According to standard		EN 61643-31:2012, IEC 61643-31:2011/T2			
Remarks		Other U_{cpv} can be customized.			

TRS3 Series PV SPD

SPD PV type 2-surge arrester for PV installation
Pluggable module, visual fault signalling

- Varistor surge arrester
- Installation to PV system
- For protection of PV systems where the separating spark-over distance is kept or without LPS
- Optional remote fault signalling(s)



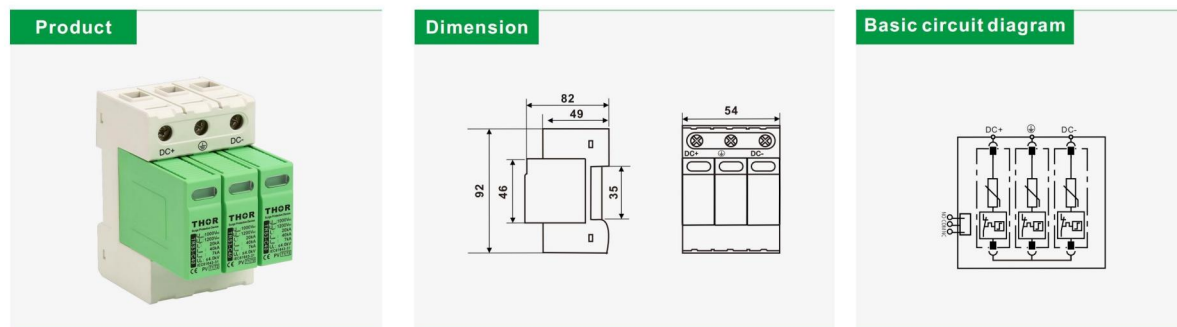
Parameter/Type	TRS3-C40						
PV connection type	U			Y			
Nominal PV Voltage U_{ocstc}	500V DC	600V DC	800V DC	1000V DC	1250V DC	1500V DC	
Max. PV Operating Voltage U_{cpv}	600V DC	720V DC	960V DC	1200V DC	1500V DC	1800V DC	
Nominal discharge current (8/20 μ s) I_n	20kA						
Maximum discharge current (8/20 μ s) I_{max}	40kA						
Voltage protection level mode +/PE, -/PE U_p	$\leq 2,0kV$	$\leq 2,3kV$	$\leq 3,0kV$	$\leq 4,0kV$	$\leq 5,0kV$	$\leq 6,0kV$	
Short-circuit current rating I_{scpv}	10kA						
Response time t_a	< 25ns						
Cross-section of connected conductors solid(min/max)	16mm ² /35mm ²						
Cross-section of connected conductors stranded(min/max)	16mm ² /35mm ²						
Fault indication	red indication field						
Remote indication	potential-free change-over contact						
Remote indication contacts	250V/0,5A AC, 250V/0,1A DC						
Cross-section of remote indication conductors	1,5mm ²						
Degree of protection	IP20						
Range of operating temperatures (min/ max)	-40°C~+85°C						
Humidity range	5%~95%						
Mounting	DIN rail 35 mm						
According to standard	EN 61643-31:2012, IEC 61643-31:2011/T2						
Remarks	Other U_{cpv} can be customized.						

TRS3 Series high modules PV SPD

SPD PV type 1+2–lightning current and surge arresters for PV installation

Pluggable module, visual fault signalling, module locking

- Varistor surge arrester
- For protection of PV systems on the roofs, where the separating spark-over distance is not kept (connection to LPS)
- Optional remote fault signalling(s)



Parameter/Type		TRS3-C40		
PV connection type		Y		
Nominal PV Voltage	U_{ocstc}	1000V DC	1250V DC	1500V DC
Max. PV Operating Voltage	U_{cpv}	1200V DC	1500V DC	1800V DC
Lightning impulse current(10/350μs)	I_{imp}	7kA	5kA	5kA
Nominal discharge current (8/20μs)	I_n	20kA		
Maximum discharge current (8/20μs)	I_{max}	40kA		
Voltage protection level mode +/PE, -/PE	U_p	≤4,0kV	≤5,0kV	≤6,0kV
Short-circuit current rating	I_{scpv}	10kA		
Response time	t_a	< 25ns		
Cross-section of connected conductors solid(min/max)		16mm ² /35mm ²		
Cross-section of connected conductors stranded(min/max)		16mm ² /35mm ²		
Fault indication		red indication field		
Remote indication		potential-free change-over contact		
Remote indication contacts		250V/0,5A AC, 250V/0,1A DC		
Cross-section of remote indication conductors		1,5mm ²		
Degree of protection		IP20		
Range of operating temperatures (min/ max)		-40°C~+85°C		
Humidity range		5%~95%		
Mounting		DIN rail 35 mm		
According to standard		EN61643-31:2012, IEC61643-31:2011/T1+T2		
Remarks		Other U_{cpv} can be customized.(1200VDC, 1500VDC, etc.)		

TRSS-RJ45 Series SPD

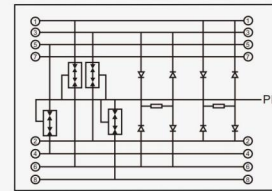
SPD for Data Networks and Ethernet Applications

- Ideally suited for retrofitting, Protection of all lines
- For installation in conformity with the lightning protection zone concept at the boundaries from OB-2 and higher

Product



Basic circuit diagram



Parameter/Type	TRSS-RJ45	TRSS-RJ45	TRSS-RJ45	TRSS-RJ45/24 19" Cabinet
Material/Ports numbers	PA66/Aluminum/single port	Rail type	IP68 waterproof	Aluminum/24 ports
Nominal volatge	48V			
Maximum operating voltage(d.c.)	50V			
Maximum operating voltage(a.c.)	34V			
Maximum operating voltage(d.c)pair-pai(PoE)	57V			
Nominal Current	1A			
Current flow (8/20 μs)(L-L)	5kA			
Current flow (8/20 μs)(L-PE)	10kA			
Voltage protection level(L-L)	60V			
Voltage protection level(L-PE)	500V			
Cut-off frequency	250MHz			
Insertion loss at 250 MHz(1000Mbps)	≤0,5dB			
Connection (inputy output)	Rj45 Socket/RJ45 socket			
Pinning	Data: 1/2/3/6;PoE:4/5/7/8			
Response time t_a	<25ns			
Degree of Protection	IP20			
Range of operating temperatures(min/max)	-40°C~+85°C			
Humidity range	5%~95%			
According to standard	EN 61643-21:2012,IEC 61643-21:2011			

TRSS-485 Series SPD

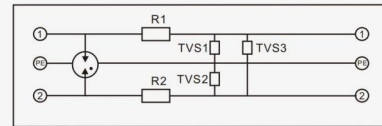
RS485 surge protector. The surge protector is connected in series in front of the protected equipment, and is mainly suitable for communication lines, remote signaling, measurement and control systems, access control intercom systems, automatic control systems, security systems, etc., which can effectively absorb the energy generated by surges impact, and introduce energy into the earth through the grounding cable.

- Protect a pair of signal lines from lightning surge
- DIN rail installation saves a lot of space
- A variety of protection voltages are available, such as 5V 12V 24V 100V.
- The maximum discharge current is 10kA.

Product



Basic circuit diagram



Parameter/Type	TRSS-485				
Material/ width	Aluminum, PA66/ 7mm, 14mm, 18mm .				
Nominal volatge U_n	5V	12V	24V	100	
Maximum operating voltage U_c	8V	15V	30V	110	
Frequency	30 MHz				
Insertion loss	≤0,5dB				
Standing wave	1,2				
Nominal discharge current (8/ 20μs) I_n	5 kA				
Maximum discharge current (8/ 20μs) I_{max}	10 kA				
Voltage protection level U_p	< 20V	< 40V	< 60V	< 150V	
Mounting	DIN rail 35mm				
Degree of protection	IP20				
Range of operating temperatures (min/ max)	−40°C~+85°C				
Humidity range	5%~95%				
According to standard	EN 61643–21:2012, IEC 61643–21:2011				

TRSS-DB Series SPD

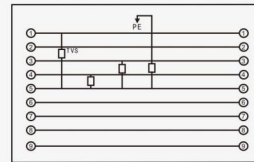
TRSS-DB serial lightning protection device is designed according to IEC and GB standards, and is widely used in the surge protection of the DB serial communication system in industrial control, telecommunications, local area networks and commercial and military fields. The grounding cable can be grounded through the metal shell of the DB serial port. The grounding path should be as short as possible, and the length should not exceed 1.5 meters.

- Fine protect the communication line
- Fast response, and low limit voltage
- Terminal type: DB9, DB15, DB25
- Low insert loss .

Product



Basic circuit diagram



Parameter/Type		TRSS-DB9/DB15/DB25	
Nominal voltage	U_n	5V	12V
Maximum operating voltage	U_c	8V	15V
Transmission speed	f_p	45 MHz	
Insertion loss		$\leq 0,5$ dB	
Nominal discharge current (8/20 μ s)	I_n	100A	
Voltage protection level	U_p	< 80V	
Degree of protection		IP20	
Range of operating temperatures (min/max)		$-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$	
Humidity range		5%~95%	
According to standard		EN 61643-21:2012, IEC 61643-21:2011	

TRSC Lightning counter

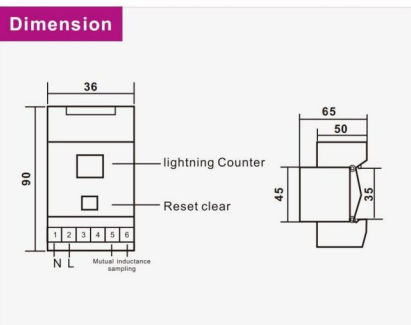
TRSC surge protector lightning counter is adopted standard Din-rail style installation can test and record the discharge frequency of the lightning arrester that is recording the lightning current rush frequency beyond certain degree which is convenient for the users to do statistics and analysis on the lightning situation in specific area. It can be used accompanying with various lightning arresters also it can be used such as the supported product of the surge protection box.

- Counting Precisely
- It has a strong ability of Anti-interference
- It can preserve the data for one month after the disconnection of power
- It can be used simply and matched the use of kinds of Power protectors and equipments

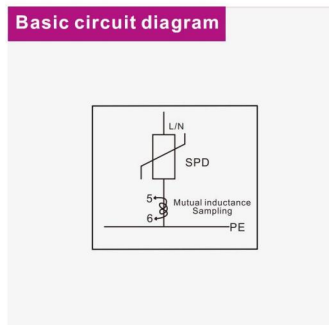
Product



Dimension



Basic circuit diagram



Parameter/Type	TRSC
Rated voltage U_n	220 V
Current	T2(8/20 μ s): 5–100 kA/ T1(10/350 μ s): 15–50 kA
Number of Counts (times)	0–99
Sampling mode	Mutual inductance sampling
Degree of protection	IP20
Range of operating temperatures (min/ max)	–40°C~+85°C
Humidity range	5%~95%
Mounting	DIN rail 35mm

TRSW Series coaxial SPD

TRSW Coaxial cable Surge Protector should be installed between two coaxial cable connectors or two communication equipments to effectively prevent the communication equipments from being damaged by transient forming from nearby strike. This product has high capacity of surge current and a wide frequency range, thus it is ideal protector for various communication equipment.

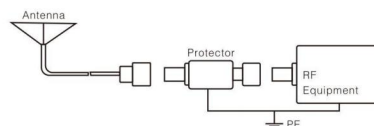
Installation:

This protector is applicable in indoors, it should be installed between two coaxial cable connectors or two communication equipments, the cross section of grounding wire should no less than 4mm², and be wired with the earthing terminal of prevented equipment.

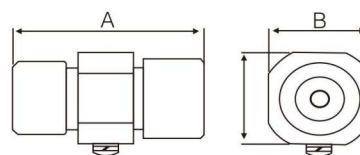
Features:

- With replaceable integrated gas discharge tube
- Fast response without interruption
- Metal shell N, SMA, BNC, TNC, F type connectors, easy to install.

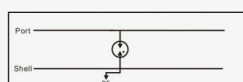
Installing figure:



Dimension(mm):



Basic circuit diagram



Interface Type	BNC	N	TNC	SMA
A	57.2	59.4	57.2	48.4
B	25	25	25	25
C	25	25	25	25

Parameter/Type	TRSW					
Frequency Range	(BNC: DC-2GHz) (N、TNC、SMA:DC-2.5GHz)					
Impedence	50Ω					
VSWR	<1.2					
Insertion loss	≤0.3dB					
Input Power	< 20W	< 50W	< 100W	< 200W	< 400W	< 500W
Initial Discharge Voltage	≥50V	≥70V	≥120V	≥190V	≥280V	≥280V
Current Capacity	10kA					
Interface Type	BNC; N; TNC; SMA					
Housing material	Brass HPb59-1, GB4425-84					
Degree of protection	IP20					
Range of operating temperatures (min/ max)	-40℃~+85℃					
Humidity range	5%~95%					
According to standard	EN 61643-21:2012, IEC 61643-21:2011					

TRSS-LED Series SPD

LED Street Lights Power SPD: TRSS-LED designed for protecting LED , Driver and could be connected perfectly with its input port, sealed enclosure, waterproof and dustproof, IP67 protection grade belongs to Class III power SPD. This SPD use common mode, differential mode, full protection with leakage current and cut the overcurrent capabilities.

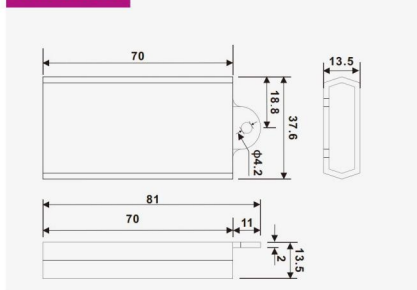
The product size small, 81x 37.6x 13.5mm (Dose not contain the connection line), using parallel wiring, attached with L, N and PE cable, very convenient in installing. TRSS-LED able to withstand voltage 20kV. the level of protection is below 1.1kV, especially good for protecting LED Street lights from lightning surge damage.

- Protect LED Street lights from lightning surge
- Convenient in installation
- Use parallel wiring, attached with L, N and PE cable
- The maximum discharge current is 10kA

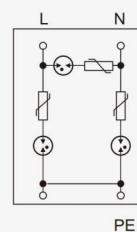
Product



Dimension



Basic circuit diagram



Parameter/Type		TRSS-LED
Rated voltage	U_n	110–277V AC
Max. Continuous voltage	U_c	390V AC
Normal discharge current(8/20μs)	I_n	5KA
Max. discharge current(8/20μs)	I_{max}	10KA
Nominal discharge voltage	V_n	10KV
Maximum discharge voltage	V_{max}	20KV
Voltage protection level	U_p	1.1KV
Response time	t_a	< 25ns
Cross- section area		1.5mm ² flexible
Operating temperature range		–40°C~+85°C
Mounting on		Custom
Enclosure material		ABS765A
Size		81x37.6x13.5mm
Test standards		EN 61643–11:2012, IEC 61643–11:2011
Fault indicator		Indicator can be option
Outer casing protection grade		IP67
Weight		57g

TRSB-Lightning rod

Lightning Rod is used for protecting the buildings to avoid lightning strike. Lightning rod grounding plays an important part of the air termination network of a lightning protection system.

Building Lightning Rod, alternate named lightning protection devices, used for protecting the building when raining and lightning. The lightning rod installed on the building and transfer the electric to earthing metal to protect the building. Our lightning rod comply with UNE 21.186 NFC 17. 102 or EN 50.164/1 EN 62.305 standard. Customized lightning rod available.

Working Principles:

During thunderstorm conditions when the lightning down-leader is approaching ground level, an upward leader may be created by any conductive surface. In the case of a passive lightning rod, the upward leader propagates only after a long period of charge reorganization. In the case of PDC series, the initiation time of an upward leader is greatly reduced. The PDC series generates controlled magnitude and frequency pulses at the tip of the terminal during high static fields characteristic prior to a lightning discharge. This enables the creation of an upward leader from the terminal that propagates towards the downward leader coming from the thundercloud.



Part I: Protection range of direct lightning arrester

Rolling ball radius(R):

Class I lightning protection building	30m(National buildings, arsenal, etc.)
Class II lightning protection building	45m (Government institutional units, etc.)
Class III lightning protection building	60m(civil buildings, etc.)

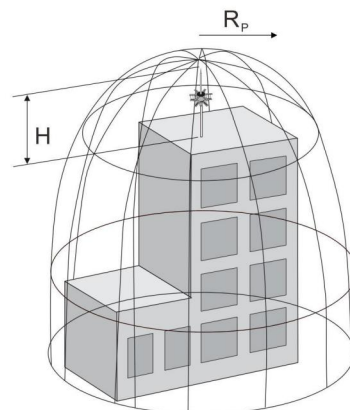
Part II : Selection of lightning protection type

Type	R	Lightning Rod height (h)/ protecting range (x)		
Class I	30m	30/30	15/25	10/22.3
Class II	45m	45/45	22.5/38	10/28
Class III	60m	60/60	30/51.9	10/33

Part III : Caculation of protecting range

Protecting range	X
Lightning rod height	H
Rolling ball radius	R

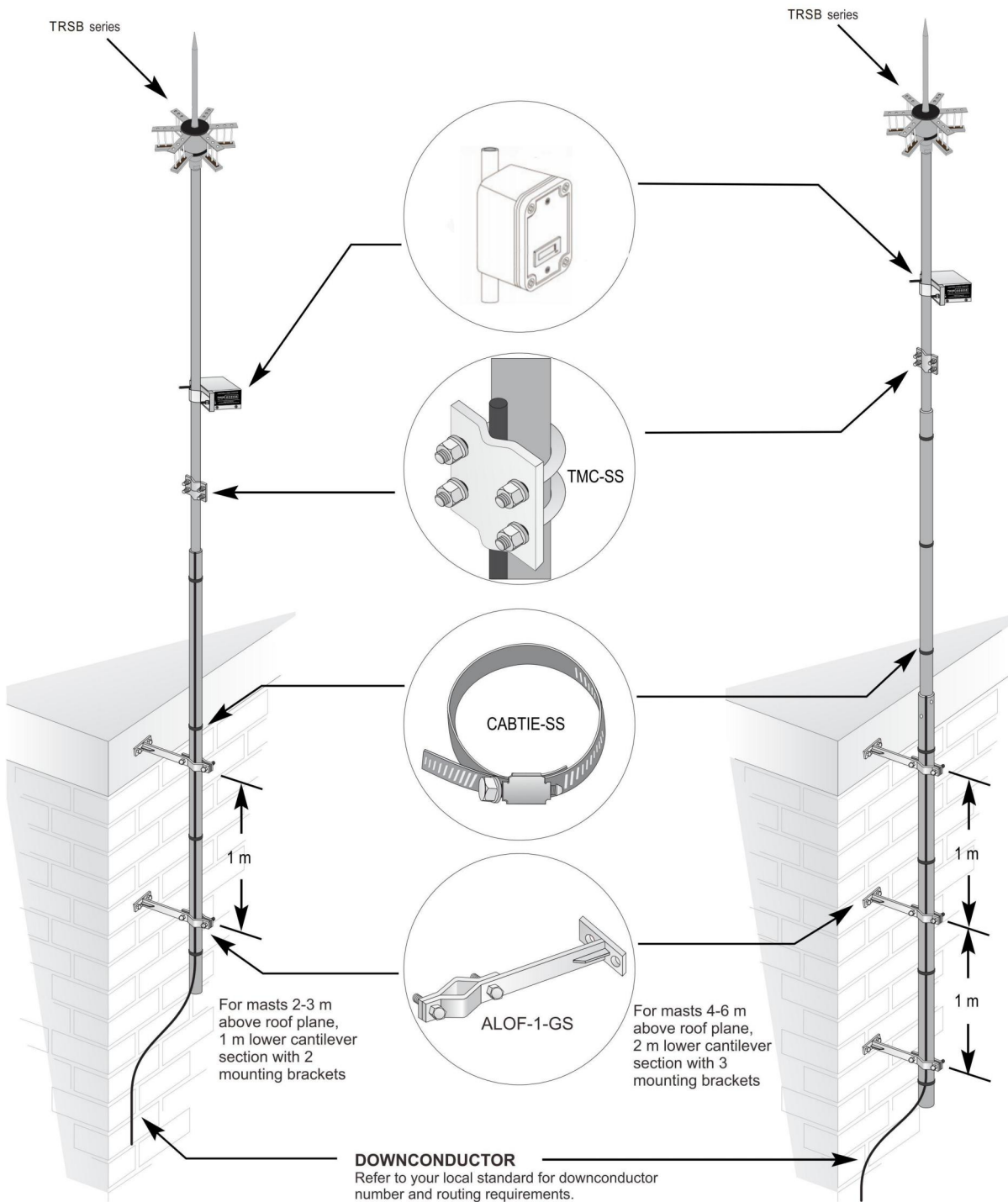
$$\text{Protecting range } X = \sqrt{R^2 - (R-h)^2}$$



Typical MAST Installation Arrangement

■ For Cantilevered Mast

Lightning Rod



TRSX Series Lightning box

I:Application

This product is applicable to low-voltage power supply and distribution system with power grid voltage below 1000V and frequency of 50/60Hz. It is connected to the power line of three-phase power supply and distribution system in parallel to prevent damage to power supply system and electrical equipment caused by impulse surge and transient overvoltage caused by lightning stroke.

This product has the advantages of large reserve current capacity, up to a level of 15kA (10/350us), safety and reliability, reasonable structure, and convenient installation. At the same time, it is designed with Kevin wiring method to ensure the best protection effect on the power supply system.

This power supply lightning protection box is widely used for lightning protection and overvoltage protection of the main power supply in communication equipment rooms, computer rooms, communication, power, factories, mines, finance, civil aviation, railways, and other systems.

II:Working principle

Under normal working voltage, the lightning protection module is in a high resistance state, which does not affect the normal operation of the circuit. The failure indicator light of the lightning protection box does not light up (the lightning protector is working normally). When an instantaneous pulse overvoltage occurs on the line due to lightning strikes or switch operations, the lightning arrester module quickly conducts within nanosecond time, and the lightning counter displays a cumulative count of times to short-circuit the overvoltage to the ground and release it. When the pulse overvoltage disappears, the lightning protection module automatically restores the high resistance state, without affecting the user's power supply. When the surge current is too large and the current capacity exceeds the maximum value, the lightning protection module deteriorates. The overcurrent and overheat release devices in this module will automatically disconnect the lightning protection module circuit, protecting the power circuit from being affected and preventing fires; At this point, the failure indicator light turns red, indicating that the lightning arrester is faulty and reminding the user to replace it in a timely manner.

III:Installation

(1) The lightning protection box of this power supply can only be installed by professional personnel, and the installation position is in a place that cannot be directly touched by human hands. Before installation confirm that it is a non live installation and check if the power lightning protection box is intact. After power on, the working indicator light (green light) should light up normally, and the failure indicator light (not lit) should go out. If there is damage or the red indicator light is lit, it cannot be used.

(2) An independent air switch or fuse with a capacity of 32A–63A should be installed at the front of the lightning protection box.

(3) Connect according to the L, N, and PE marked on the lightning protection box. The cross-sectional area of the connecting line of the phase line should not be less than 6mm^2 . The cross-sectional area of the wire connection should not be less than 10mm^2 and should be as short, flat, and straight as possible.



Parameter/Type	TRSX-20	TRSX-40	TRSX-60	TRSX-80	TRSX-100
Protected mode	L-PE;N-PE				
Nominal voltage U_n	380V AC				
Maximum operating voltage U_c	385V AC				
Nominal discharge current (8/20 μ s) I_n	10kA	20kA	30kA	40kA	50kA
Maximum discharge current (8/20 μ s) I_{max}	20KA	40KA	60KA	80KA	100KA
Voltage protection level U_p	$\leq 1.5kV$	$\leq 2.0kV$	$\leq 2.0kV$	$\leq 2.4kV$	$\leq 2.5kV$
Response time t_a	<25ns				
The nominal cross-sectional area of the copper conductor for operation connection	Single or multiple stranded copper wire: 6mm ² – 25mm ²				
Fault indication	red indication field				
Degree of protection	IP20				
Range of operating temperatures (min/max)	-40°C~+85°C				
Humidity range	5%~95%				
Mounting	Wall mounted installation				
According to standard	EN 61643-11:2012, IEC 61643-11:2011 / T2				
Remarks	Other U_c can be customized.(420VAC, 385VAC, 320VAC, etc.)				



Cherish resources
Be kind to the environment



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