

SURGE PROTECTIVE DEVICES

DC and AC SPDs



04

DC SURGE PROTECTIVE DEVICES

Advanced protection for PV systems - SAPV Series

DC

Surge
Protective
Devices

Up to 1500V DC

- Optimized for photovoltaic systems in DC application, ensuring maximum performance and reliability.
- According to standard EN 50539-11.
- Certified Surge Protective Device (SPD) Type 2 / Class II and Type 1+2 / Class I+II.
- Incorporates Metal Oxide Varistors (MOV) for superior surge discharge performance.
- Pluggable solution, to facilitate maintenance.
- Equipped with an integrated disconnection system (OCFM) for safe end-of-life operation.
- Front-side local status indication for real-time monitoring.
- Optional remote status signaling with a changeover relay.
- IP20-rated terminals for enhanced safety.
- Designed for quick and secure DIN rail mounting.
- Suitable for indoor installations in controlled environments.



Discover more about our range of SPD SAPV Series.
Visit our website or contact our technical team for further information.



SAPV Series



TYPE 2 / Class II



Max. continuous operating voltage	Impulse current (10/350 µs)	Tot. discharge current (10/350 µs)	Nominal discharge current (8/20 µs)	Max. discharge current (8/20 µs)	Voltage protection level		Code	Remote signaling
U_{CPV} (Vdc)	I_{imp} (kA)	I_{tot} (kA)	I_n (kA)	I_{max} (kA)	U_p (kV)			
					(DC+) - PE, (DC-) - PE	(DC+) - (DC-)		
600	-	-	20	40	2,2	-	SAPV060T2	No
1000	-	-	20	40	4	4	SAPV100T2	No
1500	-	-	20	40	5,2	5,2	SAPV150T2	No
600	-	-	20	40	2,2	-	SAPV060T2R	Yes
1000	-	-	20	40	4	4	SAPV100T2R	Yes
1500	-	-	20	40	5,2	5,2	SAPV150T2R	Yes



TYPE 1+2 / Class I+II



Max. continuous operating voltage	Impulse current (10/350 µs)	Tot. discharge current (10/350 µs)	Nominal discharge current (8/20 µs)	Max. discharge current (8/20 µs)	Voltage protection level		Code	Remote signaling
U_{CPV} (Vdc)	I_{imp} (kA)	I_{tot} (kA)	I_n (kA)	I_{max} (kA)	U_p (kV)			
					(DC+) - PE, (DC-) - PE	(DC+) - (DC-)		
600	6,25	12,5	20	40	2,2	-	SAPV060T12	No
1000	6,25	12,5	20	40	4	4	SAPV100T12	No
1500	6,25	12,5	20	40	5,2	5,2	SAPV150T12	No
600	6,25	12,5	20	40	2,2	-	SAPV060T12R	Yes
1000	6,25	12,5	20	40	4	4	SAPV100T12R	Yes
1500	6,25	12,5	20	40	5,2	5,2	SAPV150T12R	Yes

Accessories

Replacement plug



Description	Max. continuous operating voltage	Code	Type / Class
For SPD DC Type 2 / Class II	U_{CPV} (Vdc)		
	600	SAXCPV060T2	2 / II
	1000	SAXCPV100T2	2 / II
	1500	SAXCPV150T2	2 / II
For SPD DC Type 1+2 / Class I+II	600	SAXCPV060T12	1+2 / I+II
	1000	SAXCPV100T12	1+2 / I+II
	1500	SAXCPV150T12	1+2 / I+II

Technical data

				SAPV060T2	SAPV060T2R
Standards					
Applicable Standards				IEC 61643-31 / EN 50536-11	
Technical data					
Maximum continuous operating voltage	(DC+) - PE, (DC-) - PE	U _{CPV}	V	600	
	(DC+) - (DC-)			-	
Nominal discharge current (8/20 μs)		I _n	kA	20	
Impulse Discharge Current (10/350 μs)		I _{imp}	kA	-	
Total discharge current (10/350 μs)		I _{tot}	kA	-	
Total discharge current (8/20 μs)		I _{tot}	kA	40	
Maximum discharge current (8/20 μs)		I _{max}	kA	40	
Voltage protection level	(DC+) - PE, (DC-) - PE	U _p	V	2,2	
	(DC+) - (DC-)			-	
Response time		t _A	ns	< 25	
Short-circuit current rating		I _{scpv}	kA	10	
Number of ports		Nr		1	
Functional data					
IEC/EN category	Type / Class			2 / II	
Protective elements				High energy MOV	
Mechanical characteristics					
Terminal screw torque		M _{max}	Nm	4,5	
Conductor cross section (max)		Solid, Stranded	mm ²	35	
			AWG	2	
		Flexible		25	
			AWG	4	
Mounting				35 mm DIN rail, EN 60715	
Degree of protection				IP20 (built-in)	
Housing material				Thermoplastic Extinguishing Degree UL 94 V-0	
Thermal Protection				Yes	
Operating State / Fault Indication				Green ok / Red defect	
Remote Contacts	Switching capacity	AC	V	-	250 / 125
			A	-	0,5 / 0,2
		DC	V	-	250 / 75
			A	-	0,1 / 0,5
	Conductor cross section (max)	Solid		-	1,5
			AWG	-	16
Dimensions (W-D-H)			mm	36 x 67 x 90	36 x 67 x 96
Weight			g	29,9	30,3
Ambient conditions					
Permissible operating humidity			%HR	5 ÷ 95	
Operating temperature		T _a	°C	-40 ÷ +70	
Atmospheric pressure and altitude			k Pa	80 ÷ 106	
			m	-500 / 2000	
Installation				Indoor	
Accessories					
Replacement plug				SAXCPV060T2	

TYPE 2 / Class II

SAPV100T2		SAPV100T2R		SAPV150T2		SAPV150T2R	
IEC 61643-31 / EN 50536-11				IEC 61643-31 / EN 50536-11			
1000				1500			
1000				1500			
20				20			
-				-			
-				-			
40				40			
40				40			
4				5,2			
4				5,2			
< 25				< 25			
10				10			
1				1			
2 / II				2 / II			
High energy MOV				High energy MOV			
4,5				4,5			
35				35			
2				2			
25				25			
4				4			
35 mm DIN rail, EN 60715				35 mm DIN rail, EN 60715			
IP20 (built-in)				IP20 (built-in)			
Thermoplastic Extinguishing Degree UL 94 V-0				Thermoplastic Extinguishing Degree UL 94 V-0			
Yes				Yes			
Green ok / Red defect				Green ok / Red defect			
-	250 / 125	-	250 / 125	-	250 / 125	-	250 / 125
-	0,5 / 0,2	-	0,5 / 0,2	-	0,5 / 0,2	-	0,5 / 0,2
-	250 / 75	-	250 / 75	-	250 / 75	-	250 / 75
-	0,1 / 0,5	-	0,1 / 0,5	-	0,1 / 0,5	-	0,1 / 0,5
-	1,5	-	1,5	-	1,5	-	1,5
-	16	-	16	-	16	-	16
54 x 67 x 90	54 x 67 x 96	54 x 67 x 90	54 x 67 x 96	54 x 67 x 90	54 x 67 x 96	54 x 67 x 90	54 x 67 x 96
29,9	30,3	32,4	33,1	32,4	33,1	32,4	33,1
5 ÷ 95				5 ÷ 95			
-40 ÷ +70				-40 ÷ +70			
80 ÷ 106				80 ÷ 106			
-500 / 2000				-500 / 2000			
Indoor				Indoor			
SAXCPV100T2				SAXCPV150T2			

Technical data

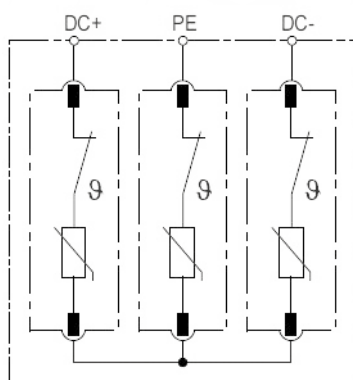
				SAPV060T12	SAPV060T12R
Standards					
Applicable Standards				IEC 61643-31 / EN 50536-11	
Technical data					
Maximum continuous operating voltage	(DC+) - PE, (DC-) - PE	U _{CPV}	V	600	
	(DC+) - (DC-)			-	
Nominal discharge current (8/20 μs)		I _n	kA	20	
Impulse Discharge Current (10/350 μs)		I _{imp}	kA	6,25	
Total discharge current (10/350 μs)		I _{tot}	kA	12,5	
Total discharge current (8/20 μs)		I _{tot}	kA	40	
Maximum discharge current (8/20 μs)		I _{max}	kA	40	
Voltage protection level	(DC+) - PE, (DC-) - PE	U _P	V	2,2	
	(DC+) - (DC-)			-	
Response time		t _A	ns	< 25	
Short-circuit current rating		I _{scpv}	kA	10	
Number of ports		Nr		1	
Functional data					
IEC/EN category	Type / Class			1+2 / I+II	
Protective elements				High energy MOV	
Mechanical characteristics					
Terminal screw torque		M _{max}	Nm	4,5	
Conductor cross section (max)		Solid, Stranded	mm ²	35	
			AWG	2	
		Flexible		25	
			AWG	4	
Mounting				35 mm DIN rail, EN 60715	
Degree of protection				IP20 (built-in)	
Housing material				Thermoplastic Extinguishing Degree UL 94 V-0	
Thermal Protection				Yes	
Operating State / Fault Indication				Green ok / Red defect	
Remote Contacts	Switching capacity	AC	V	-	250 / 125
			A	-	0,5 / 0,2
		DC	V	-	250 / 75
			A	-	0,1 / 0,5
	Conductor cross section (max)	Solid		-	1,5
			AWG	-	16
Dimensions (W-D-H)			mm	54 x 81 x 90	54 x 81 x 96
Weight			g	44	44,7
Ambient conditions					
Permissible operating humidity			%HR	5 ÷ 95	
Operating temperature		T _a	°C	-40 ÷ +70	
Atmospheric pressure and altitude			k Pa	80 ÷ 106	
			m	-500 / 2000	
Installation				Indoor	
Accessories					
Replacement plug				SAXCPV060T12	

TYPE 1+2 / Class I+II

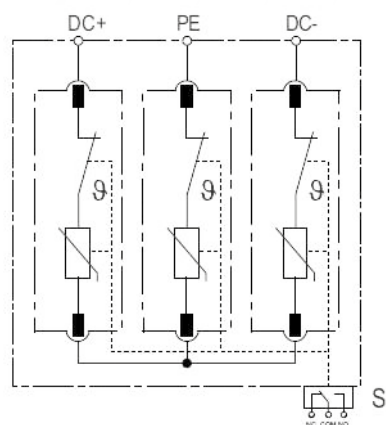
SAPV100T12	SAPV100T12R	SAPV150T12	SAPV150T12R
IEC 61643-31 / EN 50536-11		IEC 61643-31 / EN 50536-11	
1000		1500	
1000		1500	
20		20	
6,25		6,25	
12,5		12,5	
40		40	
40		40	
4		5,2	
4		5,2	
< 25		< 25	
10		10	
1		1	
1+2 / I+II		1+2 / I+II	
High energy MOV		High energy MOV	
4,5		4,5	
35		35	
2		2	
25		25	
4		4	
35 mm DIN rail, EN 60715		35 mm DIN rail, EN 60715	
IP20 (built-in)		IP20 (built-in)	
Thermoplastic Extinguishing Degree UL 94 V-0		Thermoplastic Extinguishing Degree UL 94 V-0	
Yes		Yes	
Green ok / Red defect		Green ok / Red defect	
-	250 / 125	-	250 / 125
-	0,5 / 0,2	-	0,5 / 0,2
-	250 / 75	-	250 / 75
-	0,1 / 0,5	-	0,1 / 0,5
-	1,5	-	1,5
-	16	-	16
54 x 81 x 90	54 x 81 x 96	54 x 81 x 90	54 x 81 x 96
44	44,7	46,2	47
5 ÷ 95		5 ÷ 95	
-40 ÷ +70		-40 ÷ +70	
80 ÷ 106		80 ÷ 106	
-500 / 2000		-500 / 2000	
Indoor		Indoor	
SAXCPV100T12		SAXCPV150T12	

Electrical circuit

SAPV ... T2
SAPV ... T12

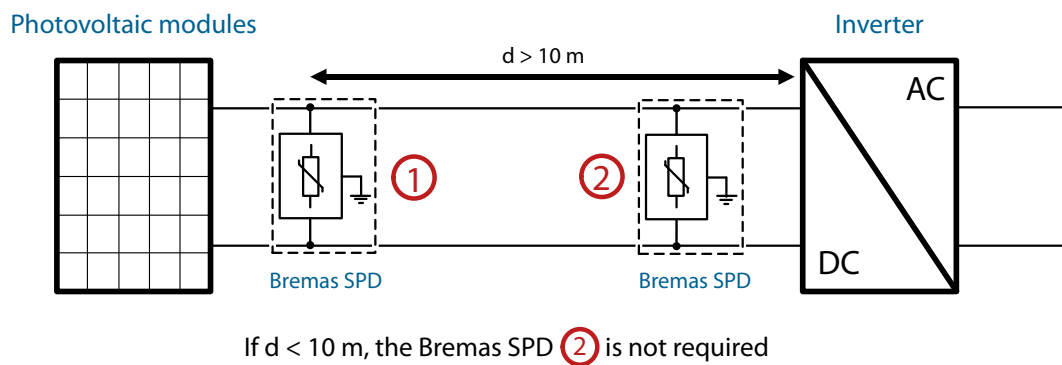


SAPV ... T2R
SAPV ... T12R



Features

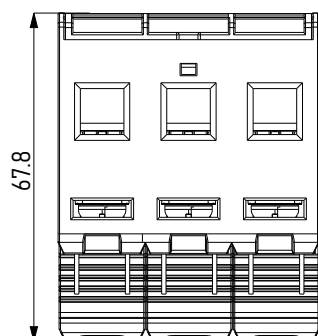
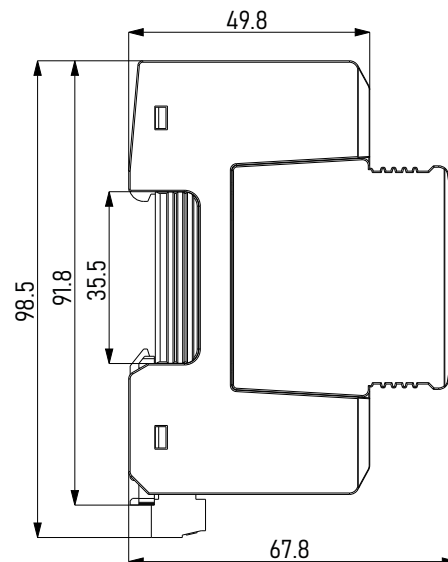
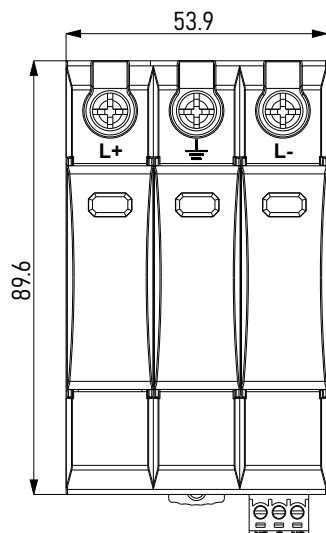
Mounting



Dimensions

SAPV ... T2
SAPV ... T2R

Dimension in mm

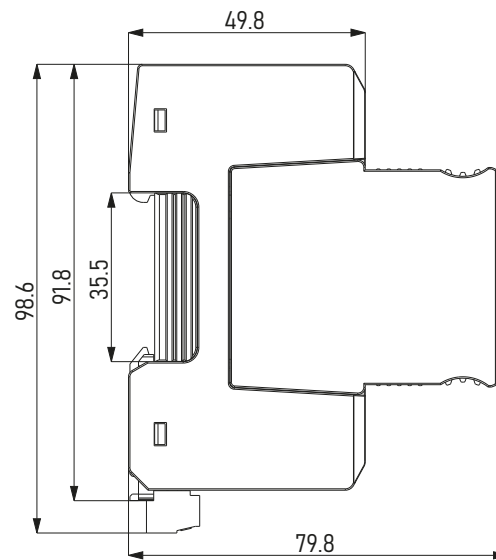
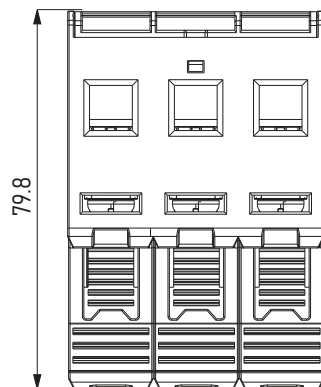
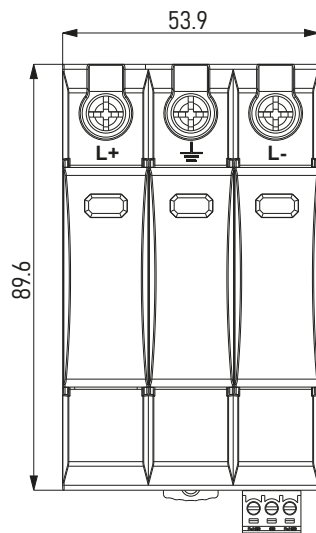


Dimensions

SAPV ... T12

SAPV ... T12R

Dimension in mm



AC SURGE PROTECTIVE DEVICES

Advanced protection for LV systems - SA Series

AC

Surge
Protective
Devices

- Engineered to safeguard low-voltage distribution boards from atmospheric surges.
- Delivers optimal surge protection for TN-S and TT systems.
- Certified Surge Protective Device (SPD) Type 2 / Class II and Type 1+2 / Class I+II.
- Incorporates Metal Oxide Varistors (MOV) and Gas Discharger Tubes (GDT) for superior surge discharge performance.
- Pluggable design for easy maintenance, featuring a mechanical coding system to prevent replacement errors.
- Equipped with an integrated disconnection system (OCFM) for safe end-of-life operation.
- Front-side local status indication for easy monitoring.
- Optional remote status signaling with a changeover relay.
- IP20-rated terminals for enhanced safety.
- Designed for quick and secure DIN rail mounting.
- Suitable for indoor installations in controlled environments.



Discover more about our range of SPD SA Series.
Visit our website or contact our technical team for further information.



SA Series



TYPE 2 / Class II



Max. continuous operating voltage		Impulse current (10/350 μs)		Nominal discharge current (8/20 μs)		Max. discharge current (8/20 μs)		Voltage protection level		Code	Remote signaling
U _{CPV} (Vdc)		I _{imp} (kA)		I _n (kA)		I _{max} (kA)		U _P (kV)			
L-N	N-PE	L-N	N-PE	L-N	N-PE	L-N	N-PE	L-N	N-PE		
320	255	-	-	20		40		1,6	1,5	SA40T2A1N032	No
320	255	-	-	20		40		1,6	1,5	SA40T2A1N032R	Yes



Max. continuous operating voltage		Impulse current (10/350 µs)		Nominal discharge current (8/20 µs)		Max. discharge current (8/20 µs)		Voltage protection level		Code	Remote signaling
U _{CPV} (Vdc)		I _{imp} (kA)		I _n (kA)		I _{max} (kA)		U _P (kV)			
L-N	N-PE	L-N	N-PE	L-N	N-PE	L-N	N-PE	L-N	N-PE		
320	255	-	-	20		40		1,6	1,5	SA40T2A3N032	No
320	255	-	-	20		40		1,6	1,5	SA40T2A3N032R	Yes



TYPE 1+2 / Class I+II



Max. continuous operating voltage		Impulse current (10/350 μs)		Nominal discharge current (8/20 μs)		Max. discharge current (8/20 μs)		Voltage protection level		Code	Remote signaling
U _{CPV} (Vdc)		I _{imp} (kA)		I _n (kA)		I _{max} (kA)		U _p (kV)			
L-N	N-PE	L-N	N-PE	L-N	N-PE	L-N	N-PE	L-N	N-PE		
320	255	12,5	25	20	25	50		1,6	1,5	SA40T121N032	No
320	255	12,5	25	20	25	50		1,6	1,5	SA40T121N032R	Yes



Max. continuous operating voltage		Impulse current (10/350 μs)		Nominal discharge current (8/20 μs)		Max. discharge current (8/20 μs)		Voltage protection level		Code	Remote signaling
U _{CPV} (Vdc)		I _{imp} (kA)		I _n (kA)		I _{max} (kA)		U _p (kV)			
L-N	N-PE	L-N	N-PE	L-N	N-PE	L-N	N-PE	L-N	N-PE		
320	255	12,5	50	20	25	50	100	1,6	1,5	SA40T123N032	No
320	255	12,5	50	20	25	50	100	1,6	1,5	SA40T123N032R	Yes

Accessories

Replacement plug



Description	Max. continuous operating voltage	Suitable for	Code	Type / Class
	U_{cny} (Vdc)			
For SPD AC Type 2 / Class II	320	L-N	SAXC40320T2	2 / II
	255	N-PE	SAXC40260T2	2 / II
For SPD AC Type 1+2 / Class I+II	320	L-N	SAXC40320T12	1+2 / I+II
	255	N-PE	SAXC40260T12	1+2 / I+II

Technical data

TYPE 2 / Class II

TYPE 1+2 / Class I+II

				SA40T2A 1N/3N 032	SA40T2A 1N/3N 032 R	SA40T12 1N/3N 032	SA40T12 1N/3N 032 R
Standards							
Applicable Standards				IEC EN 61643-31		IEC EN 61643-31	
Technical data							
Nominal AC Voltage (50/60 Hz)		U _n	V _{AC}	230		230	
Maximum continuous operating voltage	L-N	U _C		320		320	
	N-PE			255		255	
Nominal discharge current (8/20 μs)	L-N	I _n	kA	20		20	
	N-PE			20		25	
Impulse discharge current (10/350 μs)	L-N	I _{imp}	kA	-		12,5	
	N-PE			-		25 (1N) / 50 (3N)	
Maximum discharge current (8/20 μs)	L-N	I _{max}	kA	40		50	
	N-PE			40		50 (1N) / 100 (3N)	
Specific energy	L-N	W/R	kJ / Ω	-		36 (1N) / 39 (3N)	
	N-PE			-		156 (1N) / 625 (3N)	
Charge	L-N	Q	A _S	-		6,25	
	N-PE			-		12,5 (1N) / 25 (3N)	
Voltage protection level	L-N		kV	1,6		1,6	
	N-PE			1,5		1,5	
Follow current interrupt rating	N-PE	A _{rms}		100		100	
Response time	L-N	t _A	ns	< 25		< 25	
	N-PE			< 100		< 100	
Back-up fuse (max)	gL / gG		A	125		160	
Short-circuit current rating	L-N	I _{sccr}	kA	25 / 50		25 / 50	
TOV withstand 5s	L-N	U _t	V	335		335	
TOV 120min	L-N		V	440		440	
		mode		Safe fail		Safe fail	
TOV withstand 200ms	N-PE		V	1200		1200	
Number of ports		Nr		1		1	
Functional data							
IEC/EN category	Type / Class			2 / II		1+2 / I+II	
Protective elements				High energy MOV and GDT		High energy MOV and GDT	
Protection mode				L-N / N-PE		L-N / N-PE	

TYPE 2 / Class II

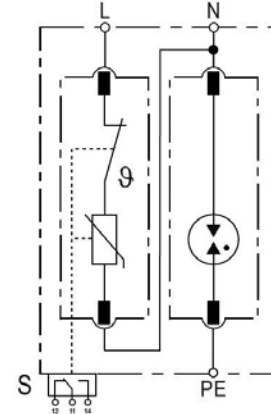
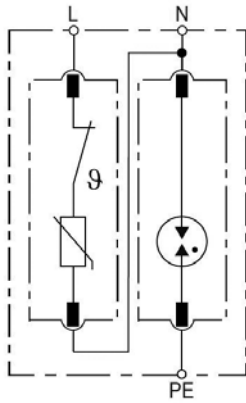
TYPE 1+2 / Class I+II

				SA40T2A 1N/3N 032	SA40T2A 1N/3N 032 R	SA40T12 1N/3N 032	SA40T12 1N/3N 032 R
Mechanical characteristics							
Terminal screw torque		M _{max}	Nm	4,5		4,5	
Conductor cross section (max)		Solid, Stranded	mm ²	35		35	
			AWG	2		2	
		Flexible		25		25	
			AWG	4		4	
Mounting				35 mm DIN rail, EN 60715		35 mm DIN rail, EN 60715	
Degree of protection				IP20 (built-in)		IP20 (built-in)	
Housing material				UL 94 V-0 (non-spread and self-extinguishing characteristics)		UL 94 V-0 (non-spread and self-extinguishing characteristics)	
Thermal Protection				Yes		Yes	
Operating State / Fault Indication				Green ok / Red defect		Green ok / Red defect	
Remote Contacts	Switching capacity	AC	V	-	250 / 125	-	250 / 125
			A	-	0,5 / 0,2	-	0,5 / 0,2
		DC	V	-	250 / 75	-	250 / 75
			A	-	0,1 / 0,5	-	0,1 / 0,5
	Conductor cross section (max)	Solid		-	1,5	-	1,5
			AWG	-	16	-	16
Dimensions (W-D-H)			mm	36 x 67 x 90 (1N)	36 x 67 x 96 (1N)	36 x 81 x 90 (1N)	36 x 81 x 96 (1N)
				72 x 67 x 90 (3N)	72 x 67 x 96 (3N)	72 x 81 x 90 (3N)	72 x 81 x 96 (3N)
Weight	1N/3N		g	19 / 36,5	19,3 / 37,2	25,2 / 54	25,8 / 54,9
Ambient conditions							
Permissible operating humidity			%HR	5 ÷ 95		5 ÷ 95	
Operating temperature		T _a	°C	-40 ÷ +70		-40 ÷ +70	
Atmospheric pressure and altitude			k Pa	80 ÷ 106		80 ÷ 106	
			m	-500 / 2000		-500 / 2000	
Installation				Indoor		Indoor	
Accessories							
Replacement plug	L-N			SAXC40320T2		SAXC40320T12	
	N-PE			SAXC40260T2		SAXC40260T12	

Electrical circuit

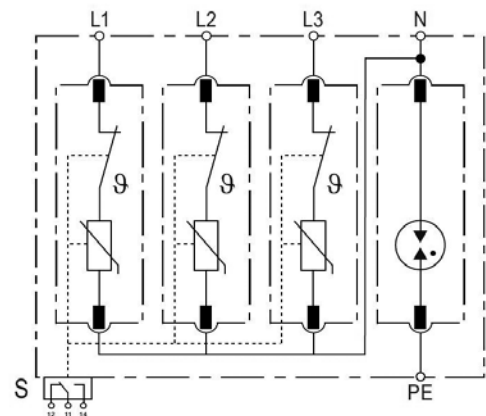
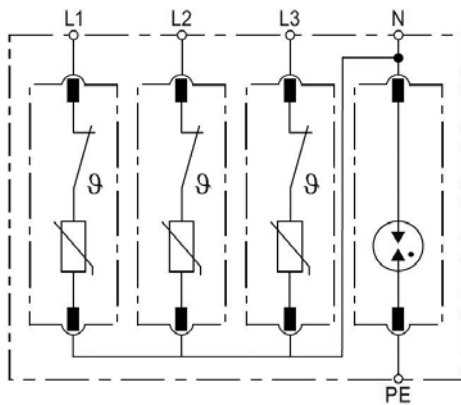
SA40T21N ...
SA40T121N ...

SA40T21N ... R
SA40T121N ... R



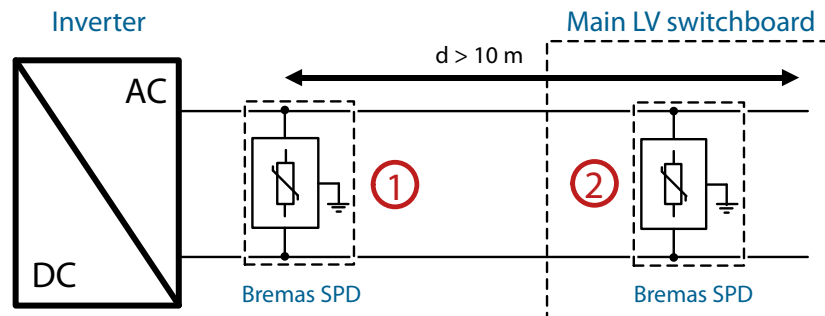
SA40T23N ...
SA40T123N ...

SA40T23N ... R
SA40T123N ... R



Features

Mounting

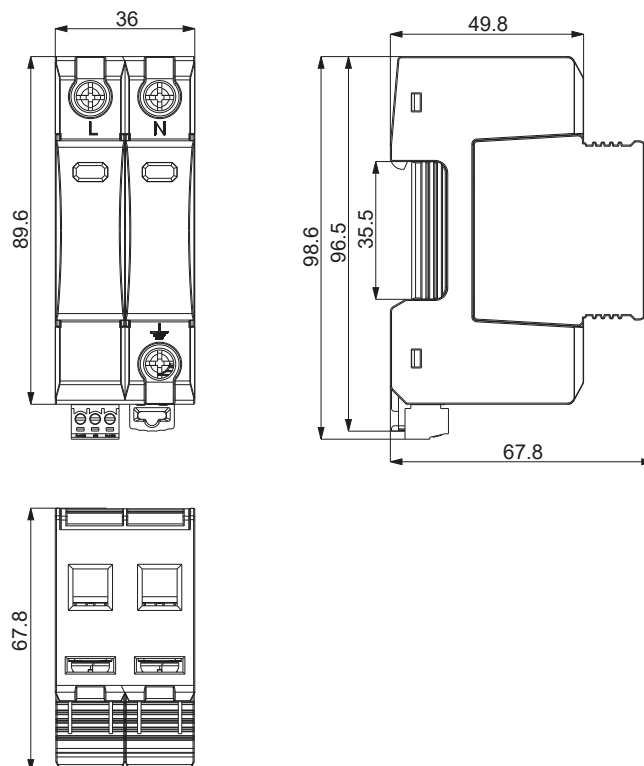


If $d < 10 \text{ m}$, the Brema SPD ② is not required

Dimensions

SA40T21N ...
SA40T21N ... R

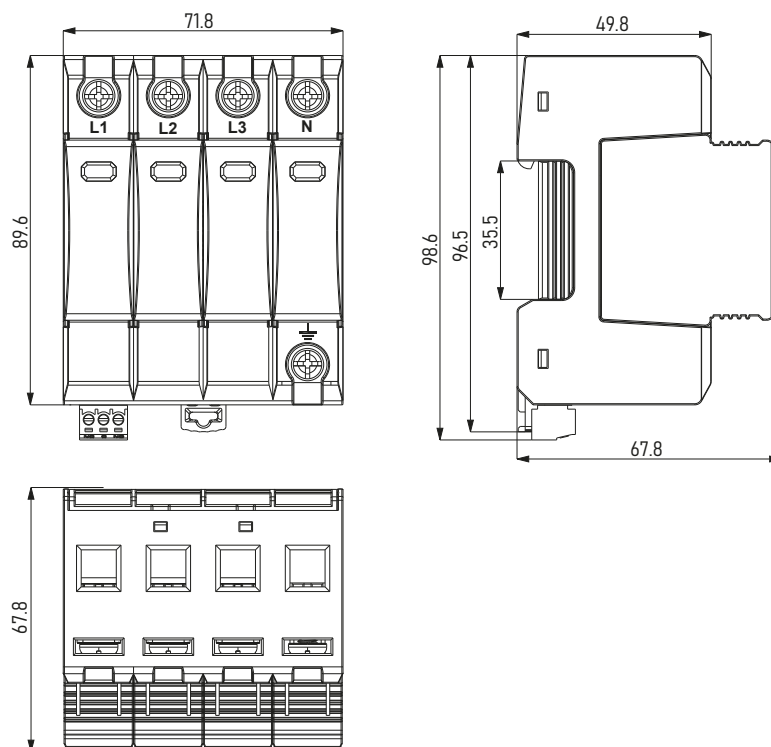
Dimension in mm



Dimensions

SA40T23N ...
SA40T23N ... R

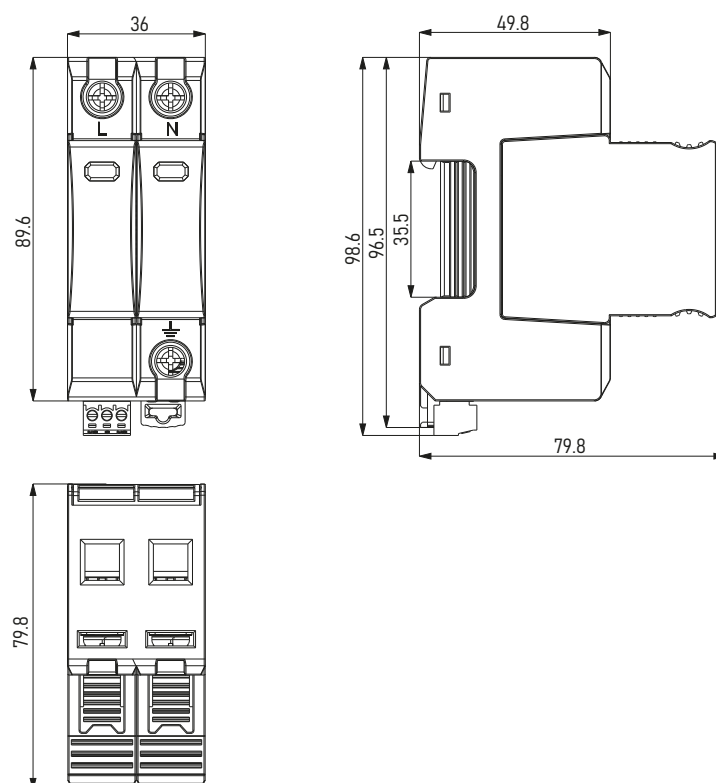
Dimension in mm



Dimensions

SA40T121N ...
SA40T121N ... R

Dimension in mm



Dimensions

SA40T123N ...

SA40T123N ... R

Dimension in mm

