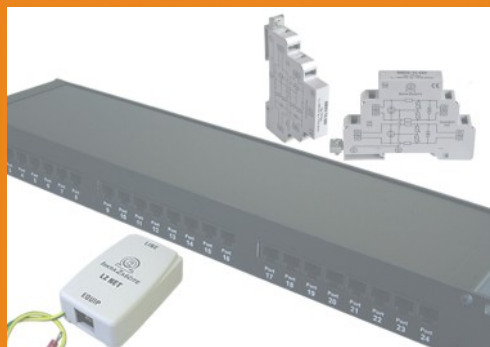


Surge Protection



Low Voltage Power Systems

Data / Signal Systems

Telecommunication Systems



ISKRA ZAŠČITE

Presentation of the Company ISKRA ZAŠČITE

The company Iskra Zaščite was founded in 1989 in order to develop and produce surge protection devices for various applications of protecting electrical and electronic appliances in industry, business facilities and people's homes. Despite a number of different technologies which have been appearing on the market in the field of surge protection devices, Iskra Zaščite has remained loyal to varistor technology and thus contributed its part to the development of this particular technology. The company also provided guidelines for the development of varistors which represent the main basic components of modern surge protection devices.

The catalogue, which is in front of you, contains overvoltage arresters, which are intended for a protection of Low Voltage Power Supply Systems. Overvoltage arresters are in catalogue arranged from their high to low discharge capability and in accordance with designations of IEC standards. Separately are introduced products that are designed for protecting power supply systems of up-to date technology, as are photovoltaic and wind turbines systems.

Despite of well-known rule that for an efficient protection of electrical and electronic appliances is not enough to protect only power lines, in practice is often forgotten on a protection of data installations. Just for this reason we recommend to all, who do not wish their electrical and electronic devices to be exposed devastating and unpredictable effects of lightning and other overvoltage, to get acquainted also with our extensive range of overvoltage protection in data transmission, to the experts on a field of telecommunications we specially recommend to get acquainted with our production programme, which contains overvoltage protection for protection of telephone exchanges and terminals.



Surge Protection for Low Voltage Power Systems

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Surge Protection for Low Voltage Power Systems

QUICK PRODUCT SELECTION

Category IEC VDE	Description	Product Name	Page	Product Photo
Class I, II B+C	SINGLE-POLE Lightning Current and Surge Arresters I_{imp} : up to 100kA (10/350)	PROTEC BS 50	5	
		PROTEC BS 35	6	
		PROTEC BS 25	7	
		PROTUBE BS 100	8	
		PROTUBE BS 50		
	MULTI-POLE Lightning Current and Surge Arresters I_{imp} = 50kA per pole, 25kA per pole (10/350)	PROBLOC BS 100 (1+1)	12	
		PROBLOC BS 50 (2+0)	13	
		PROBLOC BS 50 (1+1)	14	
		PROBLOC BS 75 (3+0)	15	
		PROBLOC BS 100 (4+0)	16	
		PROBLOC BS 100 (3+1)	17	
	MULTI-POLE Lightning Current and Surge Arresters I_{imp} = 12.5kA per pole (10/350)	PROBLOC BS 25 (2+0)	19	
		PROBLOC BS 25 (1+1)	20	
		PROBLOC BS 37.5 (3+0)	21	
		PROBLOC BS 50 (4+0)	22	
		PROBLOC BS 50 (3+1)	23	
		INPROTEC VV, VG, VS	24	
	SINGLE-POLE & MULTI POLE Lightning Current and Surge Arresters I_{imp} = 12.5kA (10/350)	PROTEC B2S	29	
		PROTEC B2S 25 (2+0)	30	
		PROTEC B2S 25 (1+1)	31	
		PROTEC B2S 37.5 (3+0)	32	
		PROTEC B2S 50 (4+0)	33	
		PROTEC B2S 50 (3+1)	34	
		PROTEC B2N 12.5	35	
		PROTUBE B2N 50	36	
Class II C	SINGLE-POLE & MULTI POLE Surge Arresters I_{max} = up to 40kA per pole (8/20) Connections: 2+0, 1+1, 3+0, 4+0, 3+1	PROTEC C 40, 20	38, 45	
		PROTUBE C 40	39	
		PROTEC CN 40, 20	46	
		PROTUBE CN 40	48	
	MULTI POLE Surge Arresters I_{max} = 40kA per pole (8/20)	PROTEC CM 80 (2+0)	51	
		PROTEC CM 80 (1+1), 80A (1+1)	52	
	SINGLE-POLE and MULTI POLE Surge Arresters, I_{max} = up to 40kA per pole	PROTEC CG 40, 20	56	
		PROTEC CMG 40 (2+0)	58	
Class III D	SINGLE-POLE and MULTI-POLE Surge Arresters U_{oc}/I_{sc} = 10kV/5kA per pole	PROTEC D 10	60	
		PROTEC DM 10 (2+0)	61	
		PROTEC DMG 10 (2+0)	62	
		MPE-ZE50	63	
Class II A	Surge Arresters for Overhead Power Lines Plastic or silicon housing I_{max} : up to 40kA (8/20)	PROTEC AQ 40, 25	65, 68	
		PROTEC AQS 40	66	
		PROTEC A 30	67	
ISG	Isolating Spark Gaps I_{max} : 100kA (8/20)	EPZ 100	70	
		EPZ 100 Ex	71	
Class I; II B+C; C	MULTI-POLE Lightning Current and Surge Arresters for PHOTOVOLTAIC SYSTEMS	PV PROTEC BS 12.5	78	
		PV PROTEC C 40	79	
Class I; II B+C; C	MULTI-POLE Lightning Current and Surge Arresters for WIND GENERATION SYSTEMS	WT PROTEC BS 25/690	81	
		WT PROTEC BS 12.5/690	82	
		WT PROTEC C 40/690	83	
		WT PROTEC C 120/690 (3+0)	84	
Class II C	Surge Arresters RAIL and TELEPOWER DC SYSTEMS I_{max} : up to 40kA (8/20)	DC PROTEC C 40	86	
		PROTEC C 40/75	87	
		PROTEC CN 40/75	88	

Surge Protection for Low Voltage Power Systems

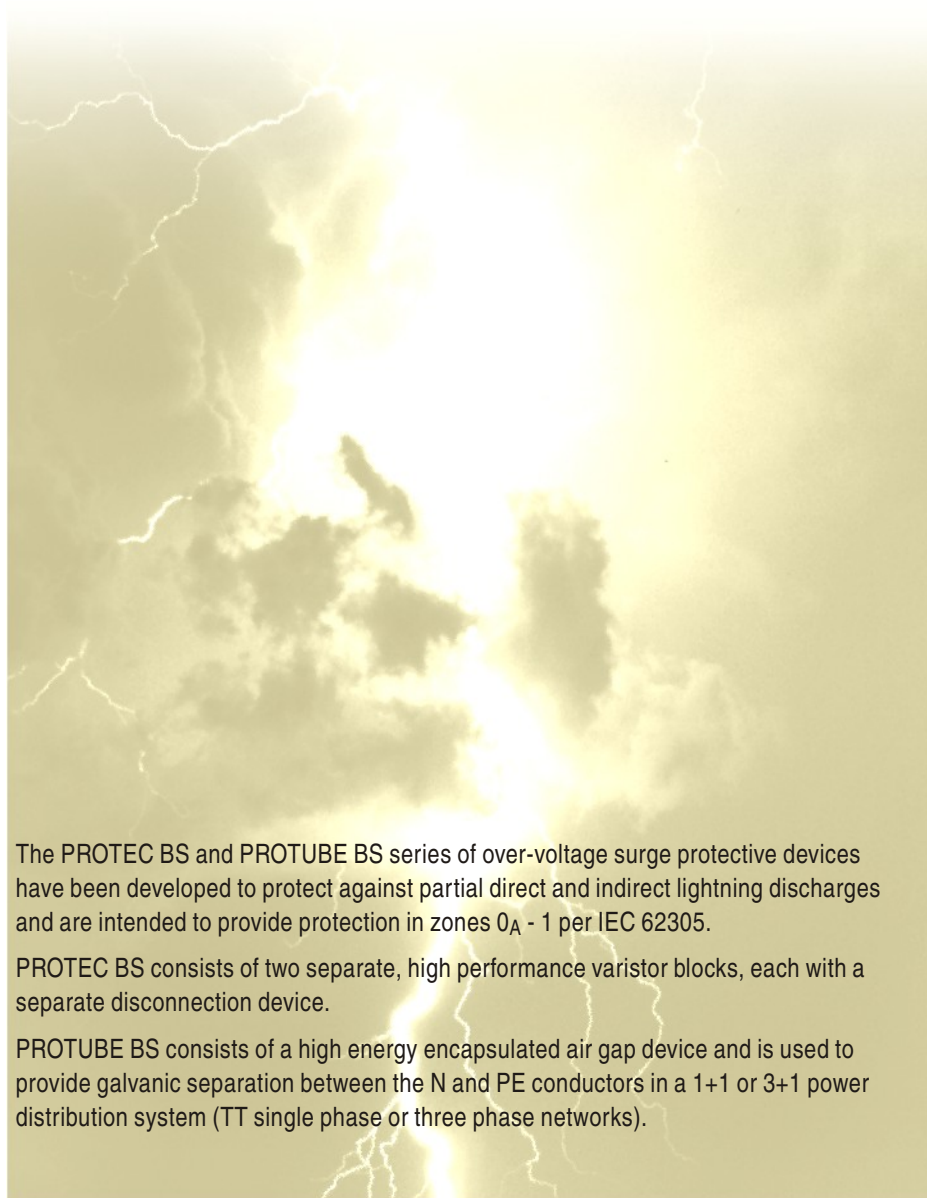
TECHNICAL CHARACTERISTICS

U _c (V _{AC})	I _{imp} (kA)/pole (10/350)	I _{max} (kA)/pole (8/20)	U _{oc} /I _{sc} (kV/kA) (1.2/50, 8/20)	Network Type				Remote Signalization of Failure	Housing
				TNC	TNS	TT	IT		
150, 275, 320, 385, 440 *	50	100		✓	✓	✓	✓	✓	Compact
150, 275, 320, 385, 440 *	35	100		✓	✓	✓	✓	✓	Compact
150, 275, 320, 385, 440 *	25	100		✓	✓	✓	✓	✓	Compact
255	100	100				✓			Compact
255	50	100				✓			Compact
150, 275, 320, 385, 440 *	50/100 (MOV/GDT)	100/100 (MOV/GDT)				✓		✓	Compact
150, 275, 320, 385, 440 *	25	100			✓			✓	Compact
150, 275, 320, 385, 440 *	25/50 (MOV/GDT)	100/100 (MOV/GDT)				✓		✓	Compact
150, 275, 320, 385, 440 *	25	100		✓				✓	Compact
150, 275, 320, 385, 440 *	25	100			✓			✓	Compact
150, 275, 320, 385, 440 *	25/100 (MOV/GDT)	100/100 (MOV/GDT)				✓		✓	Compact
150, 275, 320, 385, 440 *	12.5	50			✓			✓	Compact
150, 275, 320, 385, 440 *	12.5/50 (MOV/GDT)	50/100 (MOV/GDT)				✓		✓	Compact
150, 275, 320, 385, 440 *	12.5	50		✓				✓	Compact
150, 275, 320, 385, 440 *	12.5	50			✓			✓	Compact
150, 275, 320, 385, 440 *	12.5/50 (MOV/GDT)	50/100 (MOV/GDT)				✓		✓	Compact
150, 275, 320, 385, 440 *	12.5/50 (MOV/GDT)	80/80 (MOV/GDT)		✓	✓	✓	✓	✓	Compact
150, 275, 320, 385, 440 *	12.5	50		✓	✓	✓	✓	✓	Modular
150, 275, 320, 385, 440 *	12.5	50			✓			✓	Modular
150, 275, 320, 385, 440 *	12.5/50	50/50				✓		✓	Modular
150, 275, 320, 385, 440 *	12.5	50		✓				✓	Modular
150, 275, 320, 385, 440 *	12.5	50			✓			✓	Modular
150, 275, 320, 385, 440 *	12.5/50	50/50				✓		✓	Modular
150, 275, 320, 385, 440 *	12.5	50		✓	✓	✓	✓	✓	Compact
255	50	100				✓			Compact
75, 150, 275, 320, 385, 440 *		40, 20		✓	✓	✓	✓	✓	Modular
255		40				✓			Modular
150, 275, 320, 385, 440 *		40, 20		✓	✓	✓	✓	✓	Compact
255		40				✓			Compact
150, 275, 320, 385, 440 *		40			✓	✓		✓	Modular
150, 275, 320, 385, 440 *		40/40 (MOV/GDT)			✓	✓		✓	Modular
75, 275, 385		40, 20		✓	✓	✓	✓	✓	Modular
75, 275, 385		20		✓	✓	✓	✓	✓	Modular
150, 275, 320, 385, 440 *		10	10/5	✓	✓	✓	✓	✓	Modular
150, 275, 320, 385, 440 *		10	10/5	✓	✓	✓	✓	✓	Modular
320		10	10/5	✓	✓	✓	✓	✓	Modular
320		5	5/2.5	✓	✓		✓		Compact
150, 275, 320, 385, 440 *		40, 25							Compact
150, 275, 320, 440 *		40							Compact
150, 275, 320, 385, 440 *		30							Compact
		100							Compact
		100							Compact
550, 1000 (V _{DC}) 100, 550, 1000 (V _{DC})	12.5	40 40							Compact Modular
690	25	80							Compact
690	12.5	40							Compact
690		40							Modular
690		40							Modular
24, 48 (V _{DC})		40							Compact
75		40							Modular
75		20							Compact

* Other voltages on customer request

SINGLE-POLE Lightning Current and Surge Arresters

Category IEC / EN / VDE:	Class I, II / Type 1, 2 / B+ C
Location of use:	Main distribution boards
Protection modes:	L/N - PE, L - PEN
Protective elements:	High Energy MOV and GDT
High surge discharge ratings:	I_{imp} = up to 50kA
Internal protection and safety:	Separate thermal disconnector for each MOV block
Status indication:	Mechanical flag + remote contacts (R)
Dimensions DIN 43880:	2TE, 3TE, 4TE



The PROTEC BS and PROTUBE BS series of over-voltage surge protective devices have been developed to protect against partial direct and indirect lightning discharges and are intended to provide protection in zones 0_A - 1 per IEC 62305.

PROTEC BS consists of two separate, high performance varistor blocks, each with a separate disconnection device.

PROTUBE BS consists of a high energy encapsulated air gap device and is used to provide galvanic separation between the N and PE conductors in a 1+1 or 3+1 power distribution system (TT single phase or three phase networks).



PROTEC BS(R) 50
PROTEC BS(R) 35
PROTEC BS(R) 25
PROTUBE BS

PROTEC BS(R) 50

Single-pole
Lightning & Surge Arrester
 $I_{imp} = 50kA (10/350)$

Category IEC/EN/VDE:	Class I, II/Type 1, 2/B+C
Location of use:	Main distribution boards
Protection modes:	L/N - PE, L - PEN
Protective element:	High Energy MOV
High surge discharge ratings:	$I_{imp} = 50kA$
Housing:	Compact design

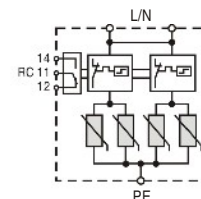


Technical data

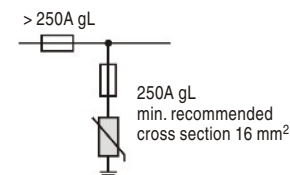
Type	PROTEC BS(R) 50/xxx					
	150	275	320	385	440	
In accordance with IEC-61643-1						
Max. continuous operating voltage (AC/DC)	U _c	150/200V	275/350V	320/420V	385/500V	440/580V
Nominal discharge current (8/20)	I _n	25kA				
Max. discharge current (8/20)	I _{max}	100kA				
Impulse current (10/350)	I _{imp}	50kA				
Specific energy		625kJ/Ω				
Charge		25As				
Protection level	U _p	< 0.6kV	< 1.2kV	< 1.2kV	< 1.6kV	< 1.9kV
Residual voltage at I _{imp}	U _{res}	< 0.7kV	< 1.2kV	< 1.2kV	< 1.5kV	< 1.8kV
Follow current	I _f	NO				
Response time	t _A	< 25ns				
Residual current at U _c	I _{PE}	< 2.5mA				
Thermal protection		YES				
Terminal screw torque		max. 4.5Nm				
Back-up fuse (if mains > 250A)		250A gL				
Short-circuit withstand current		25kA / 50Hz				
Temperature range		- 40°C + 80°C				
Terminal cross section		35mm ² (solid) / 25mm ² (stranded)				
Mounting EN 60715		35mm top-hat rail				
Degree of protection		IP 20				
Housing material		thermoplastic; extinguishing degree UL 94 V-0				
Dimensions DIN 43880		2TE		4TE		
Weight per unit		266g	374g	374g	438g	458g
Ordering code		502 314	502 315	502 316	502 296	502 297
PROTEC BSR 50/xxx (with remote contacts)						
Remote contacts		YES				
Contact ratings		AC: 250V/0.5A; 125V/3A				
Terminal cross section		max. 1.5mm ²				
Remote terminal torque		0.25Nm				
Weight per unit		271g	379g	379g	443g	463g
Ordering code		502 317	502 318	502 319	502 298	502 299
Packaging dimensions (single unit)		109 x 76.5 x 41.5mm			109 x 76.5 x 78mm	

Connection diagram

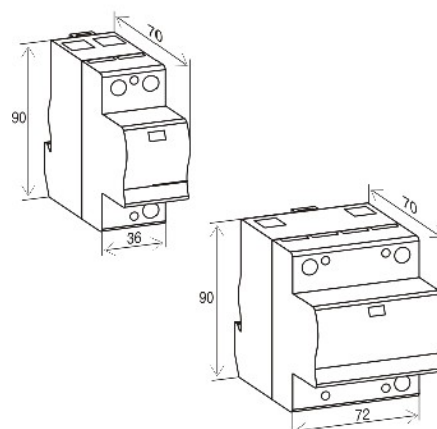
PROTEC BSR 50/xxx



Selection of back-up fuse



Dimensions



PROTEC BS(R) 35

Single-pole
Lightning and Surge Arrester
 $I_{imp} = 35kA (10/350)$

Category IEC/EN/VDE:	Class I, II/Type 1, 2/B+C
Location of use:	Main distribution boards
Protection modes:	L/N - PE, L - PEN
Protective element:	High Energy MOV
High surge discharge ratings:	$I_{imp} = 35kA$
Housing:	Compact design

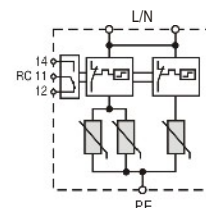


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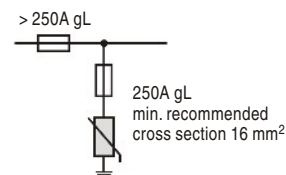
Type	PROTEC BS(R) 35/xxx					
	150	275	320	385	440	
In accordance with		IEC-61643-1				
Max. continuous operating voltage (AC/DC)	U _C	150/200V	275/350V	320/420V	385/500V	440/580V
Nominal discharge current (8/20)	I _n	25kA				
Max. discharge current (8/20)	I _{max}	100kA				
Impulse current (10/350)	I _{imp}	35kA				
Specific energy		306kJ/Ω				
Charge		17.5As				
Protection level	U _p	< 0.6kV	< 1.2kV	< 1.2kV	< 1.6kV	< 1.9kV
Residual voltage at I _{imp}	U _{res}	< 0.7kV	< 1.2kV	< 1.2kV	< 1.5kV	< 1.8kV
Follow current	I _f	NO				
Response time	t _A	< 25ns				
Residual current at U _C	I _{PE}	< 2.5mA				
Thermal protection		YES				
Terminal screw torque		max. 4.5Nm				
Back-up fuse (if mains > 250A)		250A gL				
Short-circuit withstand current		25kA / 50Hz				
Temperature range		- 40°C + 80°C				
Terminal cross section		35mm ² (solid) / 25mm ² (stranded)				
Mounting EN 60715		35mm top-hat rail				
Degree of protection		IP 20				
Housing material		thermoplastic; extinguishing degree UL 94 V-0				
Dimensions DIN 43880		2TE		3TE		
Weight per unit		254g	336g	336g	385g	415g
Ordering code		502 320	502 321	502 322	502 306	502 307
PROTEC BSR 35/xxx (with remote contacts)						
Remote contacts		YES				
Contact ratings		AC: 250V/0.5A; 125V/3A				
Terminal cross section		max. 1.5mm ²				
Remote terminal torque		0.25Nm				
Weight per unit		259g	341g	341g	390g	420g
Ordering code		502 323	502 324	502 325	502 308	502 309
Packaging dimensions (single unit)		109 x 76.5 x 41.5mm			109 x 76.5 x 60mm	

Connection diagram

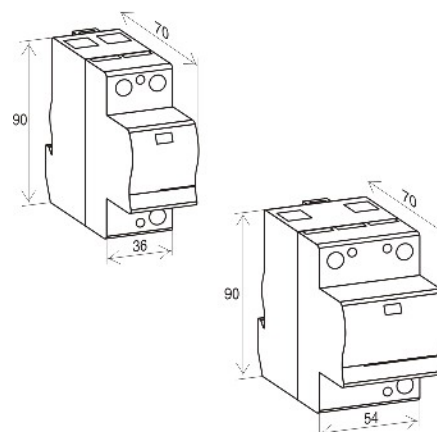
PROTEC BSR 35/xxx



Selection of back-up fuse



Dimensions



PROTEC BS(R) 25

Single-pole
Lightning and Surge Arrester
 $I_{imp} = 25kA (10/350)$

Category IEC/EN/VDE:	Class I, II/Type 1, 2/B+C
Location of use:	Main distribution boards
Protection modes:	L/N - PE, L - PEN
Protective element:	High Energy MOV
High surge discharge ratings:	$I_{imp} = 25kA$
Housing:	Compact design

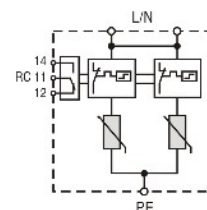


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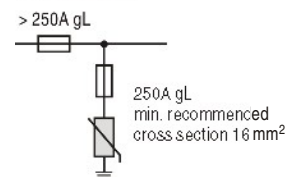
Type	PROTEC BS(R) 25/xxx					
	150	275	320	385	440	
In accordance with IEC-61643-1						
Max. continuous operating voltage (AC/DC)	U _C	150/200V	275/350V	320/420V	385/500V	440/580V
Nominal discharge current (8/20)	I _n	25kA				
Max. discharge current (8/20)	I _{max}	100kA				
Impulse current (10/350)	I _{imp}	25kA				
Specific energy		156kJ/Ω				
Charge		12.5As				
Protection level	U _p	< 0.7kV	< 1.3kV	< 1.3kV	< 1.7kV	< 2.0kV
Residual voltage at I _{imp}	U _{res}	< 0.7kV	< 1.2kV	< 1.2kV	< 1.5kV	< 1.8kV
Follow current	I _f	NO				
Response time	t _A	< 25ns				
Residual current at U _C	I _{PE}	< 2.5mA				
Thermal protection		YES				
Terminal screw torque		max. 4.5Nm				
Back-up fuse (if mains > 250A)		250A gL				
Short-circuit withstand current		25kA / 50Hz				
Temperature range		- 40°C + 80°C				
Terminal cross section		35mm ² (solid) / 25mm ² (stranded)				
Mounting EN 60715		35mm top-hat rail				
Degree of protection		IP 20				
Housing material		thermoplastic; extinguishing degree UL 94 V-0				
Dimensions DIN 43880		2TE				
Weight per unit		200g	252g	252g	268g	284g
Ordering code		502 326	502 327	502 328	502 329	502 330
PROTEC BSR 25/xxx (with remote contacts)						
Remote contacts		YES				
Contact ratings		AC: 250V/0.5A; 125V/3A				
Terminal cross section		max. 1.5mm ²				
Remote terminal torque		0.25Nm				
Weight per unit		205g	257g	257g	273g	289g
Ordering code		502 331	502 332	502 333	502 334	502 335
Packaging dimensions (single unit)		109 x 76.5 x 41.5mm				

Connection diagram

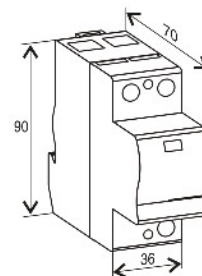
PROTEC BSR 25/xxx



Selection of back-up fuse



Dimensions



PROTUBE BS

Single-pole N-PE
 Lightning and Surge Arrester
 $I_{imp} = 100kA$, $I_{imp} = 50kA$ (10/350)

Category IEC/EN/VDE:	Class I, II/Type 1, 2/B+C
Location of use:	Main distribution boards
Protection modes:	N - PE
Protective element:	High Energy GDT
High surge discharge ratings:	$I_{imp} = 100kA$, $I_{imp} = 50kA$
Housing:	Compact design

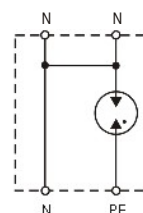


Technical data

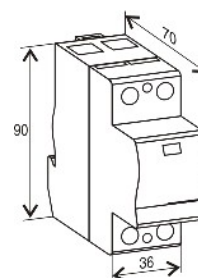
Type	PROTUBE BS 100	PROTUBE BS 50
In accordance with	IEC-61643-1	
Max. continuous operating voltage (AC)	U_c	255V
Nominal discharge current (8/20)	I_n	100kA
Max. discharge current (8/20)	I_{max}	100kA
Impulse current (10/350)	I_{imp}	100kA
Specific energy		2.5MJ/Ω
Charge		50As
Protection level	U_p	< 1.5kV
Residual voltage at I_n	U_{res}	< 1.2kV
Follow current	I_f	> 100ARMS
Response time	t_A	100ns
Terminal screw torque	Max. 4.5Nm	
Temperature range	- 40°C + 80°C	
Terminal cross section	35mm ² (solid) / 25mm ² (stranded)	
Mounting EN 60715	35mm top-hat rail	
Degree of protection	IP 20	
Housing material	thermoplastic; extinguishing degree UL 94 V-0	
Dimensions DIN 43880	2TE	
Weight per unit	238g	178g
Ordering code	503 017	503 042
Packaging dimensions (single unit)	109 x 76.5 x 41.5mm	

Connection diagram

PROTUBE BS

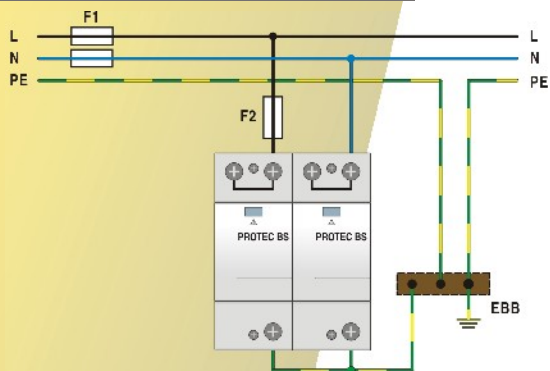


Dimensions

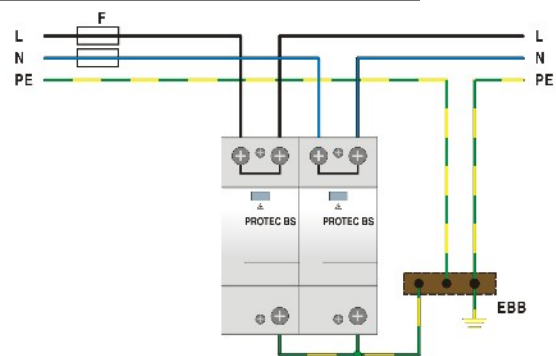


PROTEC BS, PROTUBE BS Connections

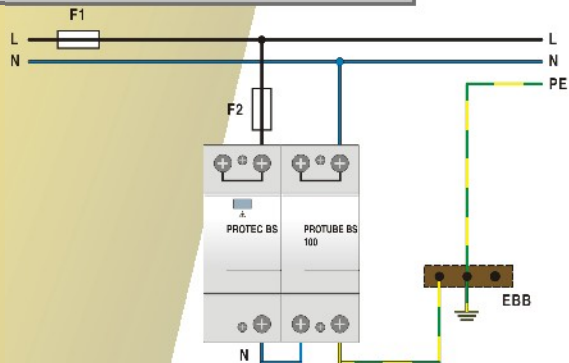
TN-S Network (T-connection)



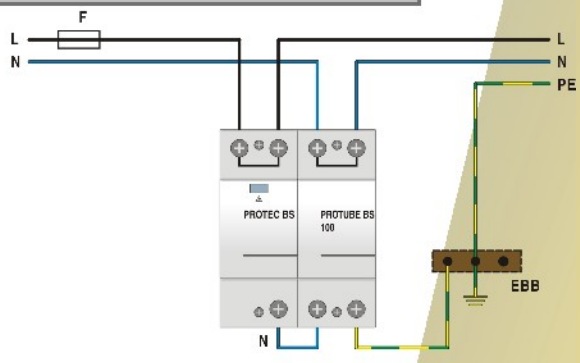
TN-S Network (V-connection)



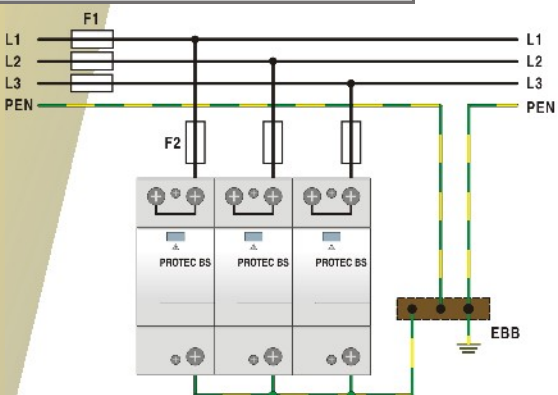
TT Network (T-connection)



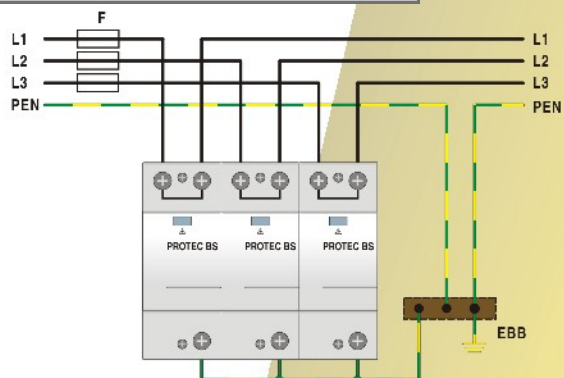
TT Network (V-connection)



TN-C Network (T-connection)

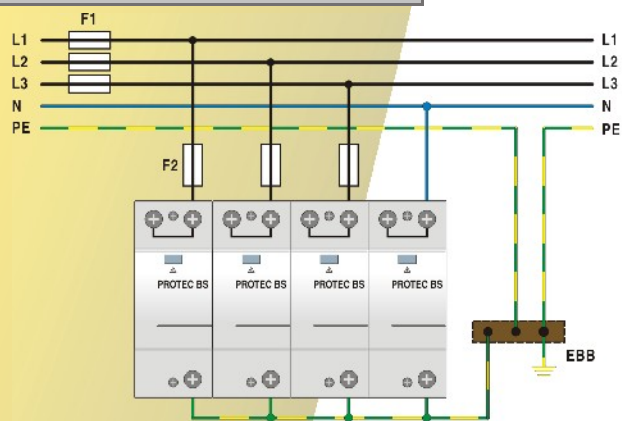


TN-C Network (V-connection)

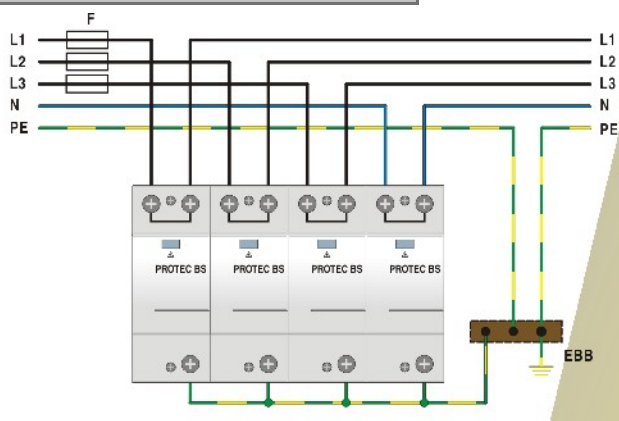


PROTEC BS, PROTUBE BS Connections

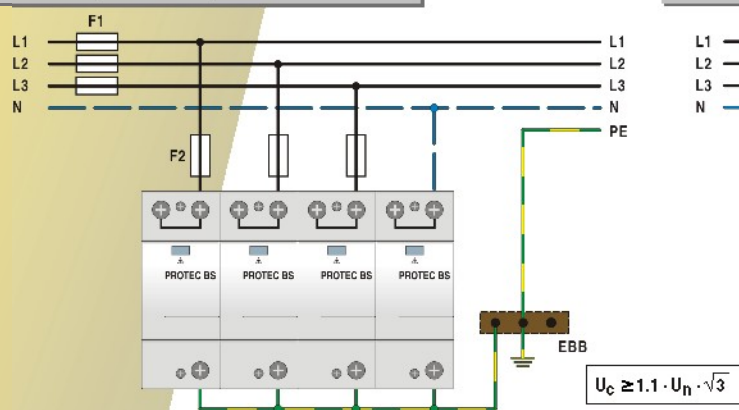
TN-S Network (T-connection)



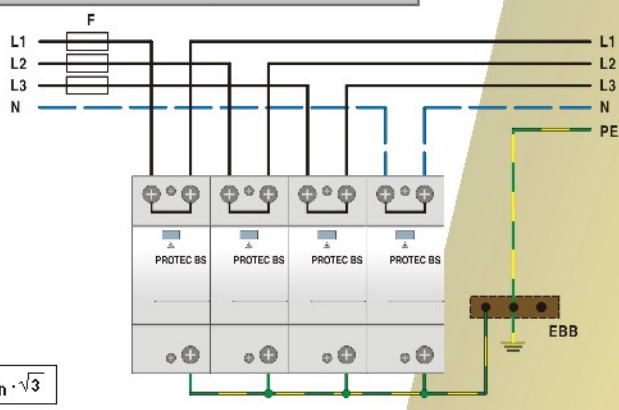
TN-S Network (V-connection)



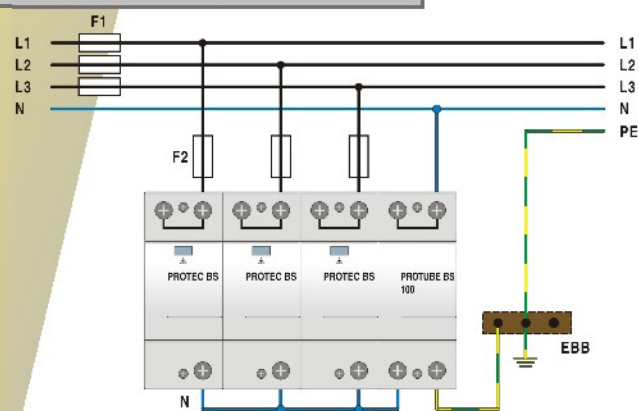
IT Network (T-connection)



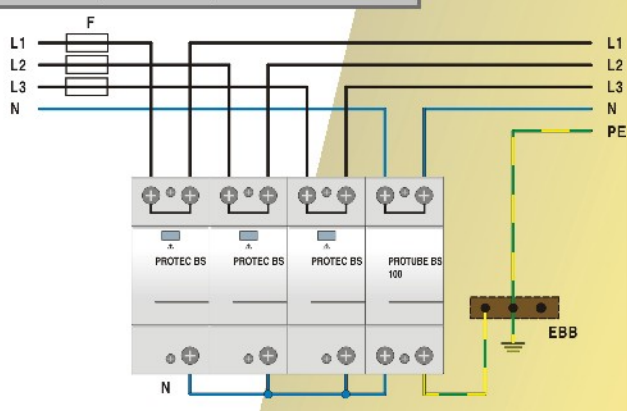
IT Network (V-connection)



TT Network (T-connection)



TT Network (V-connection)



MULTI-POLE Lightning Current and Surge Arresters

Category IEC / EN / VDE:	Class I, II / Type 1, 2 / B+ C
Location of use:	Main distribution boards
Protection modes:	L/N - PE, L - PEN
Protective elements:	High Energy MOV and GDT
High surge discharge ratings:	$I_{imp} = 50kA / pole, 25kA / pole$
Internal protection and safety:	Separate thermal disconnecter for each MOV block
Status indication:	Mechanical flag + remote contacts (R)
Dimensions DIN 43880:	2TE, 3TE, 4TE, 8TE

MULTI-POLE Lightning Current Surge Arresters

The PROBLOC BS series of over-voltage surge protective devices has been developed to protect against partial direct and indirect lightning discharges and is intended to provide protection in zones 0_A - 1, per IEC 62305.

PROBLOC BS(R) (1+1): for TT single phase networks, where N to PE galvanic isolation is required.

PROBLOC BS(R) (2+0): for TNS single phase networks with separate N and PE conductors.

PROBLOC BS(R) (3+0): for TNC three phase networks with combined PEN conductor.

PROBLOC BS(R) (4+0): for TNS three phase networks with separate N and PE conductors.

PROBLOC BS(R) (3+1): for TT three phase networks, where N to PE galvanic isolation is required.

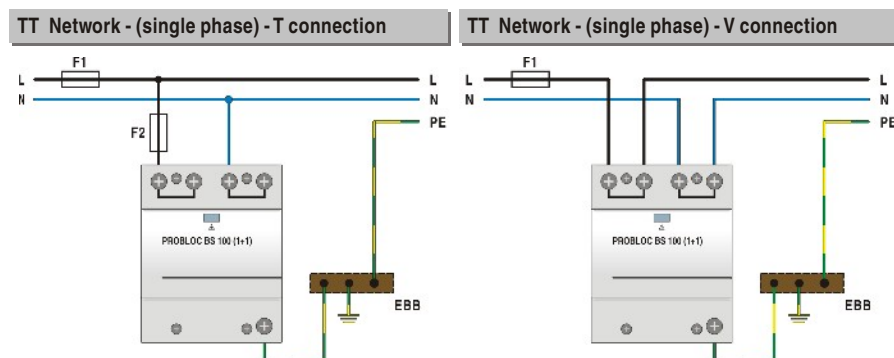


PROBLOC BS(R) 100 (1+1)
PROBLOC BS(R) 50 (2+0)
PROBLOC BS(R) 50 (1+1)
PROBLOC BS(R) 75 (3+0)
PROBLOC BS(R) 100 (4+0)
PROBLOC BS(R) 100 (3+1)

PROBLOC BS(R) 100 (1+1)

Multi-pole
Lightning and Surge Arrester
 $I_{imp} = 50kA$ per pole (10/350)

Category IEC/EN/VDE:	Class I, II/Type 1, 2/B+C
Location of use:	Main distribution boards
Protection modes:	L-N, N-PE
Protective element:	High Energy MOV, high energy GDT
High surge discharge ratings:	I_{imp} (MOV/GDT) = 50/100kA
Housing:	Compact design



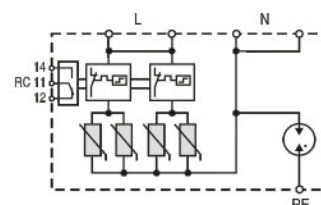
Technical data

Type	PROBLOC BS(R) 100/xxx (1+1)				
	150	275	320	385	440
In accordance with IEC-61643-1					
Max. continuous operating voltage (AC/DC)	U_c	150/200V	275/350V	320/420V	385/500V 440/580V
Nominal discharge current (8/20)	I_n (MOV/GDT)			25/100kA	
Max. discharge current (8/20)	I_{max} (MOV/GDT)			100/100kA	
Impulse current (10/350)	I_{imp} (MOV/GDT)			50/100kA	
Impulse current (L+N-PE)	I_{imp}			100kA	
Specific energy	(MOV/GDT)			625kJ/Ω/2.5MJ/Ω	
Charge	(MOV/GDT)			25As/50As	
Protection level	U_p (MOV)	< 0.7kV	< 1.3kV	< 1.3kV	< 1.8kV < 2.1kV
	U_p (GDT)			< 1.5kV	
Residual voltage at I_{imp}	U_{res} (MOV)	< 0.7kV	< 1.2kV	< 1.2kV	< 1.5kV < 1.8kV
Follow current	I_f (GDT)			> 100ARMS	
Response time	t_A (MOV/GDT)			< 25ns/100ns	
Residual current at U_c	I_{PE} (MOV/GDT)			< 2.5mA / -	
Thermal protection	(MOV/GDT)			YES / -	
Terminal screw torque				max. 4.5Nm	
Back-up fuse (if mains > 250 A)	(MOV/GDT)			250A gL / -	
Short-circuit withstand current	(MOV/GDT)			25kA/50Hz / -	
Temperature range				- 40°C + 80°C	
Terminal cross section				35mm ² (solid)/25mm ² (stranded)	
Mounting EN 60715				35mm top-hat rail	
Degree of protection				IP 20	
Housing material				thermoplastic; extinguishing degree UL 94 V-0	
Dimensions DIN 43880		4TE		8TE	
Weight per unit		430g	540g	540g	654g 698g
Ordering code		504 512	504 513	504 514	504 396 504 397
PROBLOC BSR 100/xxx (1+1) (with remote contacts)					
Remote contacts				YES	
Contact ratings				AC: 250V/0.5A; 125V/3A	
Terminal cross section				max. 1.5mm ²	
Remote terminal torque				0.25Nm	
Weight per unit		435g	545g	545g	559g 703g
Ordering code		504 515	504 516	504 517	504 398 504 399
Packaging dimensions (single unit)			109 x 76.5 x 78mm		109 x 76.5 x 148mm

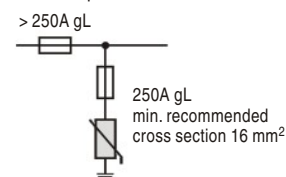


Connection diagram

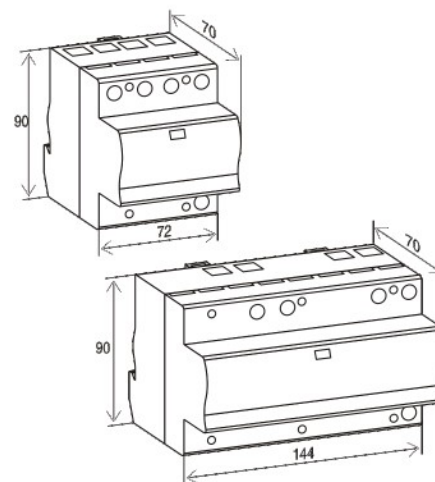
PROBLOC BSR 100/xxx (1+1)



Selection of back-up fuse

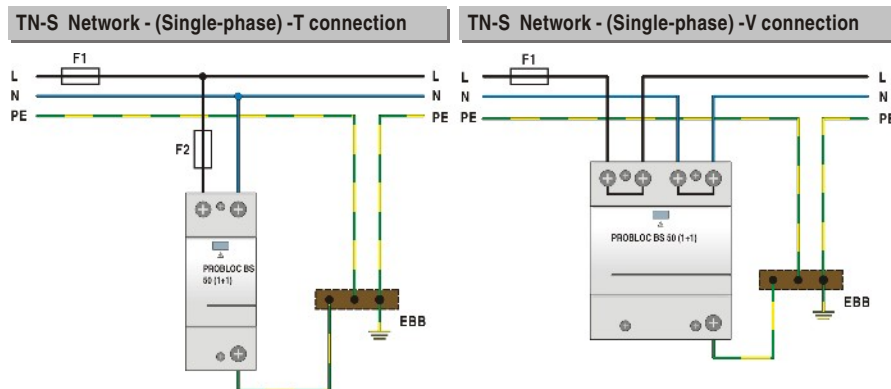


Dimensions



PROBLOC BS(R) 50 (2+0)

Category IEC/EN/VDE:	Class I, II/Type 1, 2/B+C
Location of use:	Main distribution boards
Protection modes:	L/N - PE
Protective element:	High Energy MOV
High surge discharge ratings:	$I_{imp} = 25\text{kA}$ per pole
Housing:	Compact design



Technical data

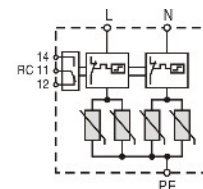
Type	PROBLOC BS(R) 50/xxx (2+0)				
	150	275	320	385	440
In accordance with	IEC-61643-1				
Max. continuous operating voltage (AC/DC)	U_c	150/200V	275/350V	320/420V	385/500V 440/580V
Nominal discharge current (8/20)	I_n	25kA per pole			
Max. discharge current (8/20)	I_{max}	100kA per pole			
Impulse current (10/350)	I_{imp}	25kA per pole			
Impulse current (L+N-PE)	I_{imp}	50kA			
Specific energy		156kJ/Ω per pole			
Charge		12.5As per pole			
Protection level	U_p	< 0.7kV	< 1.3kV	< 1.3kV	< 1.8kV < 2.1kV
Residual voltage at I_{imp}	U_{res}	< 0.7kV	< 1.2kV	< 1.2kV	< 1.5kV < 1.8kV
Follow current	I_f	NO			
Response time	t_A	< 25ns			
Residual current at U_c	I_{PE}	< 2.5mA			
Thermal protection		YES			
Terminal screw torque		max. 4.5Nm			
Back-up fuse (if mains > 250 A)		250A gL			
Short-circuit withstand current		25kA/50Hz			
Temperature range		- 40°C + 80°C			
Terminal cross section		35mm ² (solid)/25mm ² (stranded)			
Mounting EN 60715		35mm top-hat rail			
Degree of protection		IP 20			
Housing material		thermoplastic; extinguishing degree UL94 V-0			
Dimensions DIN 43880		2TE		4TE	
Weight per unit		266g	374g	374g	438g 458g
Ordering code		504 435	504 436	504 437	504 438 504 439
PROBLOC BSR 50/xxx (2+0) (with remote contacts)					
Remote contacts		YES			
Contact ratings		AC: 250V/0.5A; 125V/3A			
Terminal cross section		max. 1.5mm ²			
Remote terminal torque		0.25Nm			
Weight per unit		271g	379g	379g	443g 463g
Ordering code		504 445	504 446	504 447	504 448 504 449
Packaging dimensions (single unit)		109 x 76.5 x 41.5mm		109 x 76.5 x 78mm	

Multi-pole
Lightning and Surge Arrester
 $I_{imp} = 25\text{kA}$ per pole (10/350)

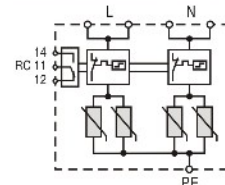


Connection diagram

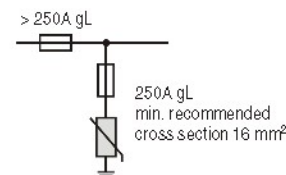
PROBLOC BSR 50/150 - 320 (2+0)



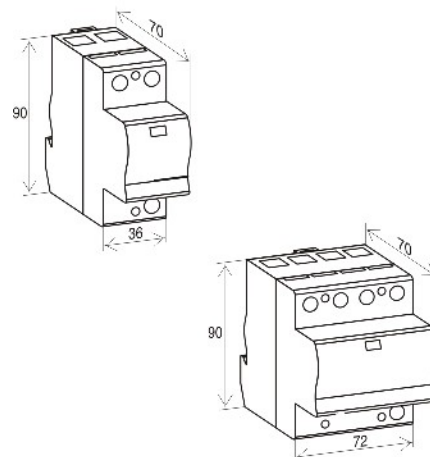
PROBLOC BSR 50/385, 440 (2+0)



Selection of back-up fuse



Dimensions

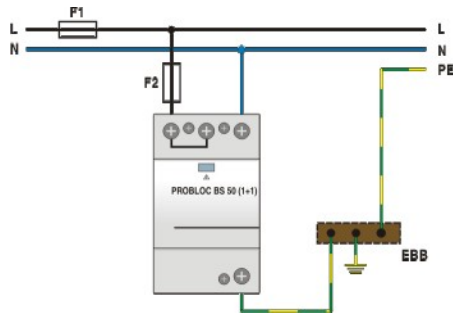


PROBLOC BS(R) 50 (1+1)

Multi-pole
Lightning and Surge Arrester
 $I_{imp} = 25kA$ per pole (10/350)

Category IEC/EN/VDE:	Class I, II/Type 1, 2/B+C
Location of use:	Main distribution boards
Protection modes:	L-N, N-PE
Protective element:	High energy MOV, High energy GDT
High surge discharge ratings:	I_{imp} (MOV/GDT)=25/50kA
Housing:	Compact design

TT Network - (single phase)



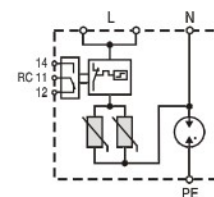
Technical data

Type	PROBLOC BS(R) 50/xxx (1+1)					
		150	275	320	385	440
In accordance with		IEC-61643-1				
Max. continuous operating voltage (AC/DC)	U _c	150/200V	275/350V	320/420V	385/500V	440/580V
Nominal discharge current (8/20)	I _n (MOV/GDT)	25/50kA				
Max. discharge current (8/20)	I _{max} (MOV/GDT)	100/100kA				
Impulse current (10/350)	I _{imp} (MOV/GDT)	25/50kA				
Impulse current (L+N-PE)	I _{imp}	50kA				
Specific energy	(MOV/GDT)	156kJ/Ω/625kJ/Ω				
Charge	(MOV/GDT)	12.5As/25As				
Protection level	U _p (MOV)	< 0.8kV	< 1.4kV	< 1.4kV	< 1.8kV	< 2.1kV
	U _p (GDT)	< 1.5kV				
Residual voltage at I _{imp}	U _{res} (MOV)	< 0.7kV	< 1.2kV	< 1.2kV	< 1.5kV	< 1.8kV
Follow current	I _f (GDT)	> 100A _{RMS}				
Response time	t _A (MOV/GDT)	< 25ns/100ns				
Residual current at U _c	I _{PE} (MOV/GDT)	< 2.5mA / -				
Thermal protection	(MOV/GDT)	YES / -				
Terminal screw torque		max 4.5Nm				
Back-up fuse (if mains > 250 A)	(MOV/GDT)	250A gL / -				
Short-circuit withstand current	(MOV/GDT)	25kA/50Hz / -				
Temperature range		- 40°C+80°C				
Terminal cross section		35mm ² (solid)/25mm ² (stranded)				
Mounting EN 60715		35mm top-hat rail				
Degree of protection		IP 20				
Housing material		thermoplastic; extinguishing degree UL 94 V-0				
Dimensions DIN 43880		3TE				
Weight per unit		308g	364g	364g	386g	408g
Ordering code		504 454	504 455	504 456	504 457	504 458
PROBLOC BSR 50/xxx (1+1) (with remote contacts)						
Remote contacts		YES				
Contact ratings		AC: 250V/0.5A; 125V/3A				
Terminal cross section		max. 1.5mm ²				
Remote terminal torque		0.25Nm				
Weight per unit		313g	369g	369g	391g	414g
Ordering code		504 459	504 460	504 461	504 462	504 463
Packaging dimensions (single unit)		109 x 76.5 x 60mm				

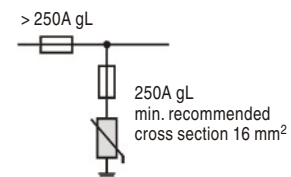


Connection diagram

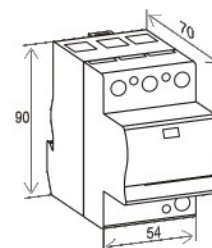
PROBLOC BSR 50/xxx (1+1)



Selection of back-up fuse

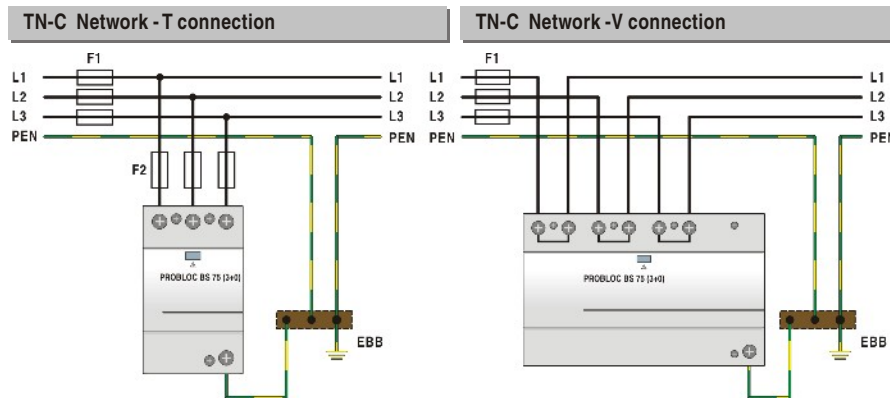


Dimensions



PROBLOC BS(R) 75 (3+0)

Category IEC/EN/VDE:	Class I, II/Type 1, 2/B+C
Location of use:	Main distribution boards
Protection modes:	L - PEN
Protective element:	High Energy MOVs
High surge discharge ratings:	$I_{imp} = 25kA$ / pole
Housing:	Compact design



Technical data

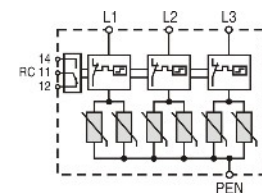
Type	PROBLOC BS(R) 75/xxx (3+0)				
	150	275	320	385	440
In accordance with	IEC-61643-1				
Max. continuous operating voltage (AC/DC)	U_c	150/200V	275/350V	320/420V	385/500V 440/580V
Nominal discharge current (8/20)	I_n	25kA per pole			
Max. discharge current (8/20)	I_{max}	100kA per pole			
Impulse current (10/350)	I_{imp}	25kA per pole			
Impulse current (L1+L2+L3-PEN)	I_{imp}	75kA			
Specific energy		156kJ/Ω per pole			
Charge		12.5As per pole			
Protection level	U_p	< 0.8kV	< 1.4kV	< 1.4kV	< 1.9kV < 2.2kV
Residual voltage at I_{imp}	U_{res}	< 0.8kV	< 1.3kV	< 1.3kV	< 1.6kV < 1.9kV
Follow current	I_f	NO			
Response time	t_A	< 25ns			
Residual current at U_c	I_{PE}	< 2.5mA			
Thermal protection		YES			
Terminal screw torque		max. 4.5Nm			
Back-up fuse (if mains > 250 A)		250A gL			
Short-circuit withstand current		25kA/50Hz			
Temperature range		- 40°C + 80°C			
Terminal cross section		35mm ² (solid)/25mm ² (stranded)			
Mounting EN 60715		35mm top-hat rail			
Degree of protection		IP 20			
Housing material		thermoplastic; extinguishing degree UL94 V-0			
Dimensions DIN 43880		3TE		8TE	
Weight per unit		400g	570g	570g	726g 792g
Ordering code		504 518	504 519	504 520	504 464 504 465
PROBLOC BSR 75/xxx (3+0) (with remote contacts)					
Remote contacts		YES			
Contact ratings		AC: 250V/0.5A; 125V/3A			
Terminal cross section		max. 1.5mm ²			
Remote terminal torque		0.25Nm			
Weight per unit		405g	575g	575g	731g 797g
Ordering code		504 521	504 522	504 523	504 466 504 467
Packaging dimensions (single unit)		109 x 76.5 x 60mm		109 x 76.5 x 148mm	

Multi-pole
Lightning and Surge Arrester
 $I_{imp} = 25kA$ per pole (10/350)

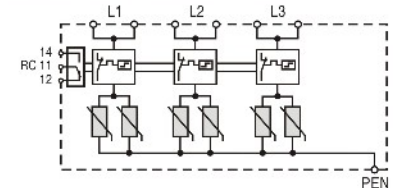


Connection diagram

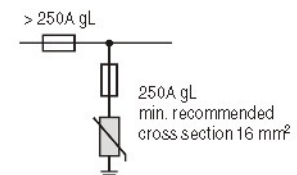
PROBLOC BSR 75/150 - 320 (3+0)



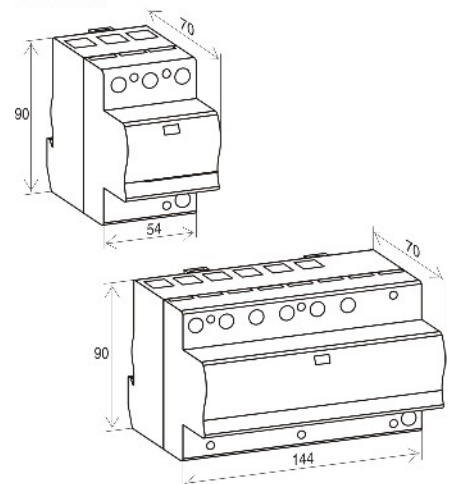
PROBLOC BSR 75/385, 440 (3+0)



Selection of back-up fuse



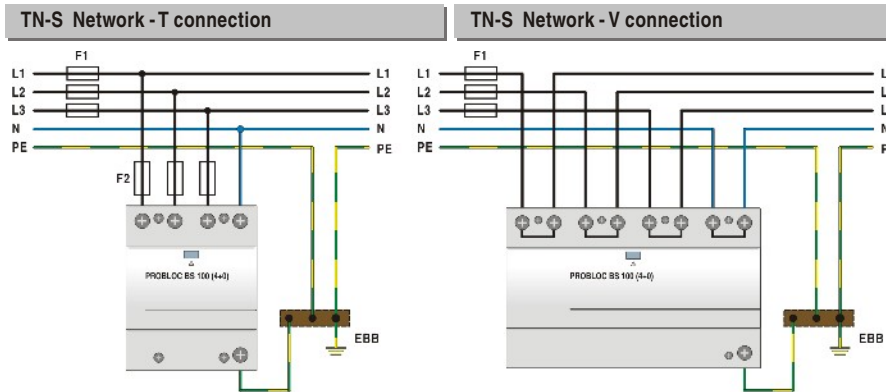
Dimensions



PROBLOC BS(R) 100 (4+0)

Multi-pole
Lightning and Surge Arrester
 $I_{imp} = 25kA$ per pole (10/350)

Category IEC/EN/VDE:	Class I, II/Type 1, 2/B+C
Location of use:	Main distribution boards
Protection modes:	L/N - PE
Protective element:	High Energy MOVs
High surge discharge ratings:	$I_{imp} = 25kA$ / pole
Housing:	Compact design



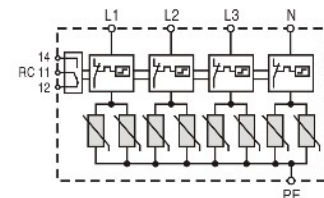
Technical data

Type	PROBLOC BS(R) 100/xxx (4+0)				
	150	275	320	385	440
In accordance with IEC-61643-1					
Max. continuous operating voltage (AC/DC)	U_c	150/200V	275/350V	320/420V	385/500V 440/580V
Nominal discharge current (8/20)	I_n	25kA per pole			
Max. discharge current (8/20)	I_{max}	100kA per pole			
Impulse current (10/350)	I_{imp}	25kA per pole			
Impulse current (L1+L2+L3+N-PE)	I_{imp}	100kA			
Specific energy		156kJ/Ω per pole			
Charge		12.5As per pole			
Protection level	U_p	< 0.8kV	< 1.4kV	< 1.4kV	< 1.9kV < 2.2kV
Residual voltage at I_{imp}	U_{res}	< 0.8kV	< 1.3kV	< 1.3kV	< 1.6kV < 1.9kV
Follow current	I_f	NO			
Response time	t_A	< 25ns			
Residual current at U_c	I_{PE}	< 2.5mA			
Thermal protection		YES			
Terminal screw torque		max. 4.5Nm			
Back-up fuse (if mains > 250 A)		250A gL			
Short-circuit withstand current		25kA/50Hz			
Temperature range		- 40°C + 80°C			
Terminal cross section		35mm ² (solid)/25mm ² (stranded)			
Mounting EN 60715		35mm top-hat rail			
Degree of protection		IP 20			
Housing material		thermoplastic; extinguishing degree UL94 V-0			
Dimensions DIN 43880		4TE		8TE	
Weight per unit		532g	756g	756g	912g 1000g
Ordering code		504 524	504 525	504 526	504 468 504 469
PROBLOC BSR 100/xxx (4+0) (with remote contacts)					
Remote contacts		YES			
Contact ratings		AC: 250V/0.5A; 125V/3A			
Terminal cross section		max. 1.5mm ²			
Remote terminal torque		0.25Nm			
Weight per unit		537g	761g	761g	917g 1005g
Ordering code		504 527	504 528	504 529	504 470 504 471
Packaging dimensions (single unit)		109 x 76.5 x 78mm		109 x 76.5 x 148mm	

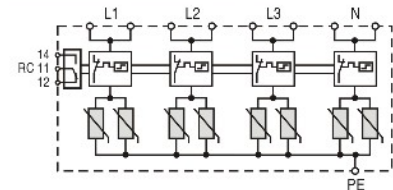


Connection diagram

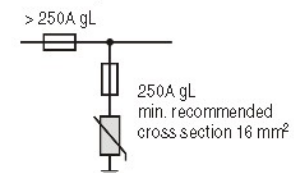
PROBLOC BSR 100/150 - 320 (4+0)



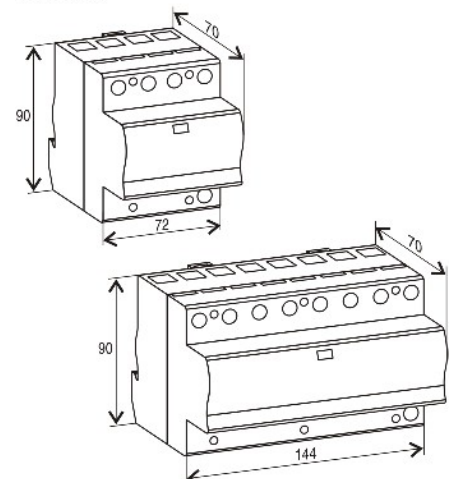
PROBLOC BSR 100/385, 440 (4+0)



Selection of back-up fuse

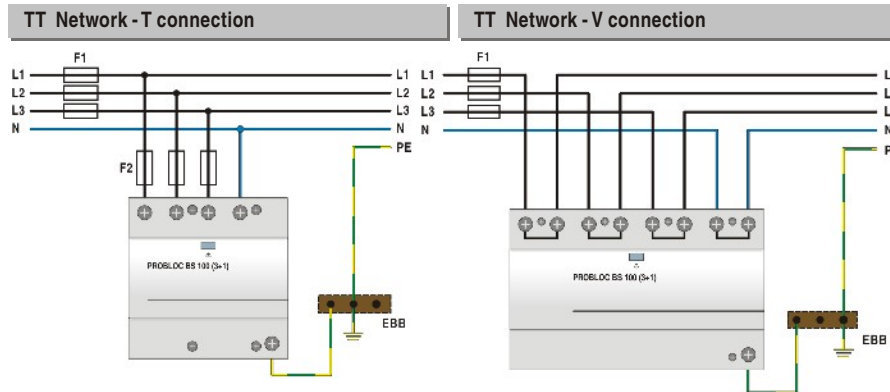


Dimensions



PROBLOC BS(R) 100 (3+1)

Category IEC/EN/VDE:	Class I, II/Type 1, 2/B+C
Location of use:	Main distribution boards
Protection modes:	L - N, N - PE
Protective element:	High Energy MOV, high energy GDT
High surge discharge ratings:	I_{imp} (MOV/GDT) = 25/100kA
Housing:	Compact design



Technical data

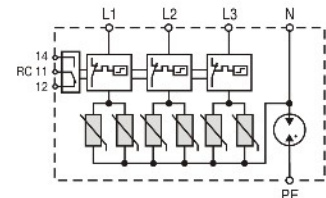
Type	PROBLOC BS(R) 100/xxx (3+1)				
	150	275	320	385	440
In accordance with	IEC-61643-1				
Max. continuous operating voltage (AC/DC)	U_c 150/200V 275/350V 320/420V 385/500V 440/580V				
Nominal discharge current (8/20)	I_n (MOV/GDT) 25/100kA				
Max. discharge current (8/20)	I_{max} (MOV/GDT) 100/100kA				
Impulse current (10/350)	I_{imp} (MOV/GDT) 25/100kA				
Impulse current (L1+L2+L3+N-PE)	I_{imp} 100kA				
Specific energy	(MOV/GDT) 156kJ/Ω / 2.5MJ/Ω				
Charge	(MOV/GDT) 12.5As/50As				
Protection level	U_p (MOV) < 0.9kV < 1.5kV < 1.5kV < 1.9kV < 2.2kV U_p (GDT) < 1.5kV				
Residual voltage at I_{imp}	U_{res} (MOV) < 0.8kV < 1.3kV < 1.3kV < 1.6kV < 1.9kV				
Follow current	I_f (GDT) > 100A _{RMS}				
Response time	t_A (MOV/GDT) < 25ns/100ns				
Residual current at U_c	I_{PE} (MOV/GDT) < 2.5mA / -				
Thermal protection	(MOV/GDT) YES / -				
Terminal screw torque	max 4.5Nm				
Back-up fuse (if mains > 250 A)	(MOV/GDT) 250A gL / -				
Short-circuit withstand current	(MOV/GDT) 25kA/50Hz / -				
Temperature range	- 40°C+80°C				
Terminal cross section	35mm ² (solid)/25mm ² (stranded)				
Mounting EN 60715	35mm top-hat rail				
Degree of protection	IP 20				
Housing material	Thermoplastic; extinguishing degree UL 94 V-0				
Dimensions DIN 43880	5TE 8TE				
Weight per unit	568g	728g	728g	834g	900g
Ordering code	504 530	504 531	504 532	504 472	504 473
PROBLOC BSR 100/xxx (3+1) (with remote contacts)					
Remote contacts	YES				
Contact ratings	AC: 250V/0.5A; 125V/3A				
Terminal cross section	max. 1.5mm ²				
Remote terminal torque	0.25Nm				
Weight per unit	573g	733g	733g	839g	905g
Ordering code	504 533	504 534	504 535	504 474	504 475
Packaging dimensions (single unit)	109 x 76.5 x 96mm 109 x 76.5 x 148mm				

Multi-pole
Lightning and Surge Arrester
 $I_{imp} = 25kA$ per pole (10/350)

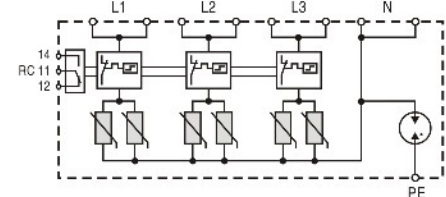


Connection diagram

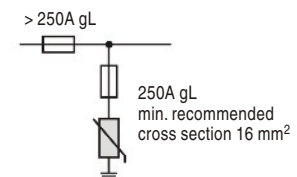
PROBLOC BSR 100/150 - 320 (3+1)



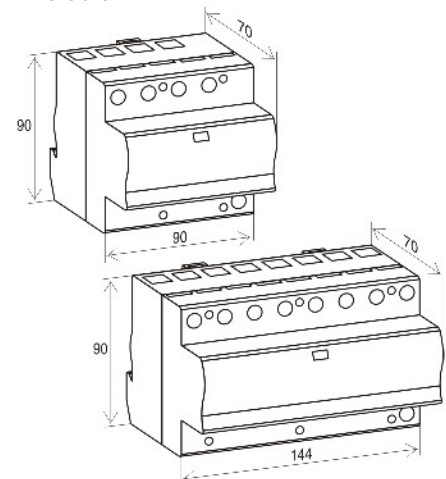
PROBLOC BSR 100/385, 440 (3+1)



Selection of back-up fuse



Dimensions



MULTI-POLE Lightning Current and Surge Arresters

Category IEC / EN / VDE:	Class I, II / Type 1, 2 / B+ C
Location of use:	Main distribution boards
Protection modes:	L/N - PE, L - PEN, L-N, N-PE
Protective elements:	High Energy MOV and GDT
High surge discharge ratings:	$I_{imp} = 12.5kA$ per pole
Internal protection and safety:	Separate thermal disconnector for each MOV block
Status indication:	Mechanical flag + remote contacts (R)
Dimensions DIN 43880:	2TE, 3TE, 4TE

The PROBLOC BS series and INPROTEC series of over-voltage surge protective devices have been developed to protect against partial direct and indirect lightning discharges and are intended to provide protection in zones 0_A - 1, per IEC 62305.

PROBLOC BS(R) (2+0): for TNS single phase networks with separate N and PE conductors.

PROBLOC BS(R) (1+1): for TT single phase networks, where N to PE galvanic isolation is required.

PROBLOC BS(R) (3+0): for TNC three phase networks with combined PEN conductor.

PROBLOC BS(R) (4+0): for TNS three phase networks with separate N and PE conductors.

PROBLOC BS(R) (3+1): for TT three phase networks, where N to PE galvanic isolation is required.

The INPROTEC VV series of over-voltage surge protective devices is intended for stand-alone use in single phase systems or for use in conjunction with the INPROTEC VV or INPROTEC VS or INPROTEC VG series when protecting a three phase system. With simple combinations of the three variants, an over-voltage protection system can be constructed for TT, TNC, TNC-S and IT networks.

INPROTEC VG(R) (1+1): for TT single phase networks, where N to PE galvanic isolation is required.

INPROTEC VV(R) (2+0): for TNS single phase networks with separate N and PE conductors.

INPROTEC VV(R)+VS(R) (3+0): for TNC three phase networks with combined PEN conductor.

INPROTEC VV(R)+VV(R) (4+0): for TNS three phase networks with separate N and PE conductors.

INPROTEC VV(R)+VV(R) (3+1): for TT three phase networks, where N to PE galvanic isolation is required.



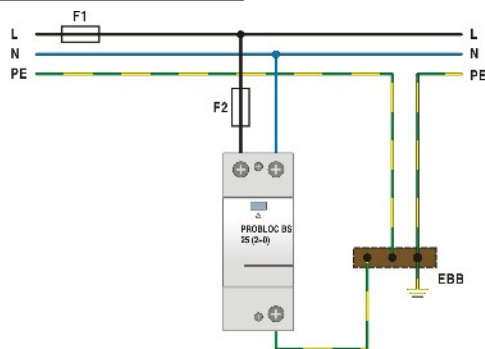
PROBLOC BS(R) 25 (2+0)
PROBLOC BS(R) 25 (1+1)
PROBLOC BS(R) 37.5 (3+0)
PROBLOC BS(R) 50 (4+0)
PROBLOC BS(R) 50 (3+1)
INPROTEC VV(R) (2+0)
INPROTEC VG(R) (1+1)
INPROTEC VS(R) (1+0)

PROBLOC BS(R) 25 (2+0)

Multi-pole
Lightning and Surge Arrester
 $I_{imp} = 12.5kA$ per pole (10/350)

Category IEC/EN/VDE:	Class I, II/Type 1, 2/B+C
Location of use:	Main distribution boards
Protection modes:	L/N - PE
Protective element:	High energy MOV
High surge discharge ratings:	$I_{imp} = 12.5kA$ / pole
Housing:	Compact design

TN-S Network (Single-phase)



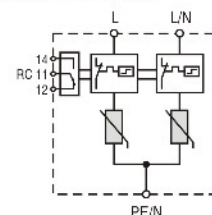
Technical data

Type	PROBLOC BS(R) 25/xxx (2+0)				
	150	275	320	385	440
In accordance with	IEC-61643-1				
Max. continuous operating voltage (AC/DC)	U_c	150/200V	275/350V	320/420V	385/500V 440/580V
Nominal discharge current (8/20)	I_n	20kA per pole			
Max. discharge current (8/20)	I_{max}	50kA per pole			
Impulse current (10/350)	I_{imp}	12.5kA per pole			
Impulse current (L+N-PE)	I_{imp}	25kA			
Specific energy		39kJ/Ω			
Charge		6.25As			
Protection level	U_p	< 0.7kV	< 1.3kV	< 1.3kV	< 1.6kV < 1.9kV
Residual voltage at I_{imp}	U_{res}	< 0.6kV	< 1.1kV	< 1.1kV	< 1.4kV < 1.7kV
Follow current	I_f	NO			
Response time	t_A	< 25ns			
Residual current at U_c	I_{PE}	< 2.5mA			
Thermal protection		YES			
Terminal screw torque		max. 4.5Nm			
Back-up fuse (if mains > 250A)		250A gL			
Short-circuit withstand current		25kA / 50Hz			
Temperature range		- 40°C + 80°C			
Terminal cross section		35mm ² (solid)/25mm ² (stranded)			
Mounting EN 60715		35mm top-hat rail			
Degree of protection		IP 20			
Housing material		thermoplastic; extinguishing degree UL 94 V-0			
Dimensions DIN 43880		2TE			
Weight per unit		198g	251g	251g	267g 283g
Ordering code		504 405	504 406	504 407	504 408 504 409
PROBLOC BSR 25/xxx (2+0) (with remote contacts)					
Remote contacts		YES			
Contact ratings		AC: 250V/0.5A; 125V/3A			
Terminal cross section		max. 1.5mm ²			
Remote terminal torque		0.25Nm			
Weight per unit		203g	256g	256g	272g 288g
Ordering code		504 420	504 421	504 422	504 423 504 424
Packaging dimensions (single unit)		109 x 76.5 x 41.5mm			

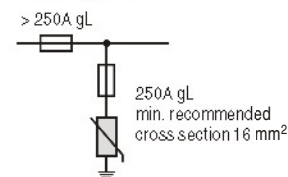


Connection diagram

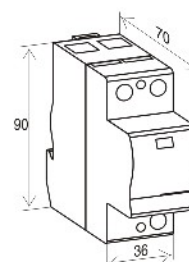
PROBLOC BSR 25/xxx (2+0)



Selection of back-up fuse



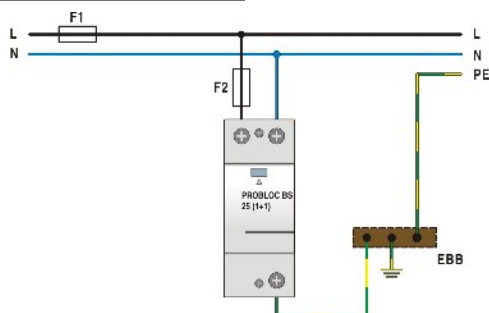
Dimensions



PROBLOC BS 25 (1+1)

Category IEC/EN/VDE:	Class I, II/Type 1, 2/B+C
Location of use:	Main distribution boards
Protection modes:	L - N, N - PE
Protective element:	High energy MOV, high energy GDT
High surge discharge ratings:	I_{imp} (MOV/GDT)=12.5/50kA
Housing:	Compact design

TT Network (Single-phase)



Technical data

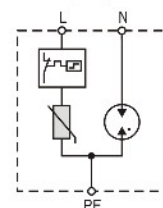
Type	PROBLOC BS 25/xxx (1+1)						
		150	275	320	385	440	
In accordance with		IEC-61643-1					
Max. continuous operating voltage (AC/DC)	U _C	150/200V	275/350V	320/420V	385/500V	440/580V	
Nominal discharge current (8/20)	I _n (MOV/GDT)	20/50kA					
Max. discharge current (8/20)	I _{max} (MOV/GDT)	50/100kA					
Impulse current (10/350)	I _{imp} (MOV/GDT)	12.5/50kA					
Impulse current (L+N-PE)	I _{imp}	25kA					
Specific energy	(MOV/GDT)	39kJ/Ω / 625kJ/Ω					
Charge	(MOV/GDT)	6.25As/25As					
Protection level	U _p (MOV)	< 0.7kV	< 1.3kV	< 1.3kV	< 1.6kV	< 1.9kV	
	U _p (GDT)	< 1.5kV					
Residual voltage at I _{imp}	U _{res} (MOV)	< 0.6kV	< 1.1kV	< 1.1kV	< 1.4kV	< 1.7kV	
Follow current	I _f (GDT)	> 100ARMS					
Response time	t _A (MOV/GDT)	< 25ns / 100ns					
Residual current at U _C	I _{PE} (MOV/GDT)	< 2.5mA / -					
Thermal protection	(MOV/GDT)	YES / -					
Terminal screw torque		max 4.5Nm					
Back-up fuse (if mains > 250 A)	(MOV/GDT)	250A gL / -					
Short-circuit withstand current	(MOV/GDT)	25kA/50Hz / -					
Temperature range		- 40°C+80°C					
Terminal cross section		35mm ² (solid)/25mm ² (stranded)					
Mounting EN 60715		35mm top-hat rail					
Degree of protection		IP 20					
Housing material		thermoplastic; extinguishing degree UL 94 V-0					
Dimensions DIN 43880		2TE					
Weight per unit		192g	245g	245g	261g	277g	
Ordering code		504 410	504 411	504 412	504 413	504 414	
Packaging dimensions (single unit)		109 x 76.5 x 41.5mm					

Multi-pole
Lightning and Surge Arrester
 I_{imp} = 12.5kA per pole (10/350)

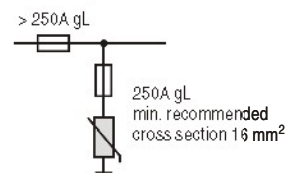


Connection diagram

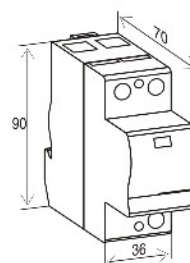
PROBLOC BS 25/xxx (1+1)



Selection of back-up fuse



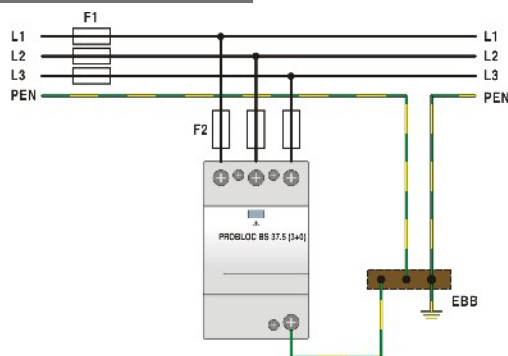
Dimensions



PROBLOC BS(R) 37.5 (3+0)

Category IEC/EN/VDE:	Class I, II/Type 1, 2/B+C
Location of use:	Main distribution boards
Protection modes:	L - PEN
Protective element:	High energy MOVs
High surge discharge ratings:	$I_{imp} = 12.5 \text{ kA/pole}$
Housing:	Compact design

TN-C Network (Three-phase)



Technical data

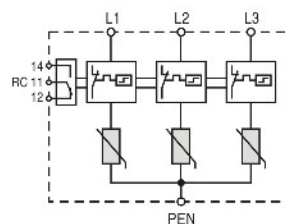
Type	PROBLOC BS(R) 37.5/xxx (3+0)				
	150	275	320	385	440
In accordance with	IEC-61643-1				
Max. continuous operating voltage (AC/DC)	U_c	150/200V	275/350V	320/420V	385/500V 440/580V
Nominal discharge current (8/20)	I_n	20kA per pole			
Max. discharge current (8/20)	I_{max}	50kA per pole			
Impulse current (10/350)	I_{imp}	12.5kA per pole			
Impulse current (L1+L2+L3-PEN)	I_{imp}	37.5kA			
Specific energy		39kJ/Ω per pole			
Charge		6.25As per pole			
Protection level	U_p	< 0.9kV	< 1.5kV	< 1.5kV	< 1.8kV < 2.1kV
Residual voltage at I_{imp}	U_{res}	< 0.7kV	< 1.2kV	< 1.2kV	< 1.5kV < 1.8kV
Follow current	I_f	NO			
Response time	t_A	< 25ns			
Residual current at U_c	I_{PE}	< 2.5mA			
Thermal protection		YES			
Terminal screw torque		max. 4.5Nm			
Back-up fuse (if mains > 250 A)		250A gL			
Short-circuit withstand current		25kA/50Hz			
Temperature range		- 40°C + 80°C			
Terminal cross section		35mm ² (solid)/25mm ² (stranded)			
Mounting EN 60715		35mm top-hat rail			
Degree of protection		IP 20			
Housing material		thermoplastic; extinguishing degree UL94 V-0			
Dimensions DIN 43880		3TE			
Weight per unit		300g	382g	382g	394g 432g
Ordering code		504 049	504 051	504 053	504 267 504 055
PROBLOC BSR 37.5/xxx (3+0) (with remote contacts)					
Remote contacts		YES			
Contact ratings		AC: 250V/0.5A; 125V/3A			
Terminal cross section		max. 1.5mm ²			
Remote terminal torque		0.25Nm			
Weight per unit		305g	387g	387g	399g 437g
Ordering code		504 057	504 059	504 061	504 269 504 063
Packaging dimensions (single unit)		109 x 76.5 x 60mm			

Multi-pole
Lightning and Surge Arrester
 $I_{imp} = 12.5 \text{ kA per pole (10/350)}$

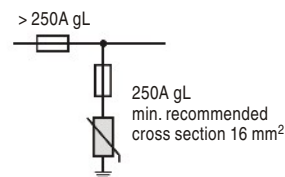


Connection diagram

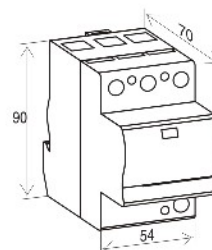
PROBLOC BSR 37.5/xxx (3+0)



Selection of back-up fuse



Dimensions



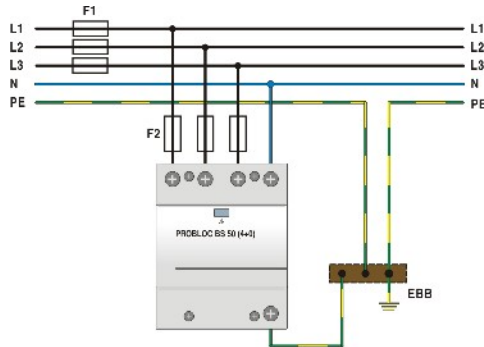
PROBLOC BS(R) 50 (4+0)

Multi-pole
Lightning and Surge Arrester
 $I_{imp} = 12.5kA$ per pole (10/350)

Category IEC/EN/VDE:	Class I, II/Type 1, 2/B+C
Location of use:	Main distribution boards
Protection modes:	L/N - PE
Protective element:	High energy MOV
High surge discharge ratings:	$I_{imp} = 12.5kA$ /pole
Housing:	Compact design



TN-S Network (Three-phase)

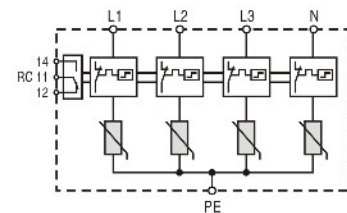


Technical data

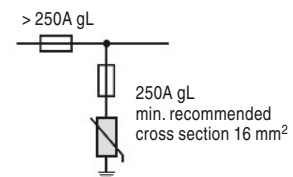
Type	PROBLOC BS(R) 50/xxx (4+0)						
		150	275	320	385	440	
In accordance with		IEC-61643-1					
Max. continuous operating voltage (AC/DC)	U _C	150/200V	275/350V	320/420V	385/500V	440/580V	
Nominal discharge current (8/20)	I _n	20kA per pole					
Max. discharge current (8/20)	I _{max}	50kA per pole					
Impulse current (10/350)	I _{imp}	12.5kA per pole					
Impulse current (L1+L2+L3+N-PE)	I _{imp}	50kA					
Specific energy		39kJ/Ω per pole					
Charge		6.25As per pole					
Protection level	U _p	< 0.9kV	< 1.5kV	< 1.5kV	< 1.8kV	< 2.1kV	
Residual voltage at I _{imp}	U _{res}	< 0.7kV	< 1.2kV	< 1.2kV	< 1.5kV	< 1.8kV	
Follow current	I _f	NO					
Response time	t _A	< 25ns					
Residual current at U _C	I _{PE}	< 2.5mA					
Thermal protection		YES					
Terminal screw torque		max. 4.5Nm					
Back-up fuse (if mains > 250 A)		250A gL					
Short-circuit withstand current		25kA/50Hz					
Temperature range		- 40°C + 80°C					
Terminal cross section		35mm ² (solid)/25mm ² (stranded)					
Mounting EN 60715		35mm top-hat rail					
Degree of protection		IP 20					
Housing material		thermoplastic; extinguishing degree UL94 V-0					
Dimensions DIN 43880		4TE					
Weight per unit		366g	462g	462g	494g	526g	
Ordering code		504 065	504 067	504 069	504 271	504 071	
PROBLOC BSR 50/xxx (4+0) (with remote contacts)							
Remote contacts		YES					
Contact ratings		AC: 250V/0.5A;125V/3A					
Terminal cross section		max. 1.5mm ²					
Remote terminal torque		0.25Nm					
Weight per unit		371g	467g	467g	499g	531g	
Ordering code		504 073	504 075	504 077	504 273	504 079	
Packaging dimensions (single unit)		109 x 76.5 x 78mm					

Connection diagram

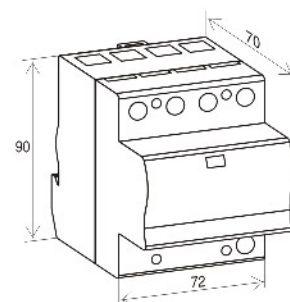
PROBLOC BSR 50/xxx (4+0)



Selection of back-up fuse



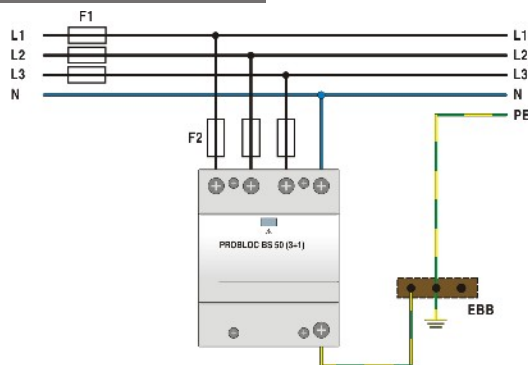
Dimensions



PROBLOC BS(R) 50 (3+1)

Category IEC/EN/VDE:	Class I, II/Type 1, 2/B+C
Location of use:	Main distribution boards
Protection modes:	L - N, N - PE
Protective element:	High energy MOV, high energy GDT
High surge discharge ratings:	I_{imp} (MOV/GDT) = 12.5/50kA
Housing:	Compact design

TT Network (Three-phase)



Technical data

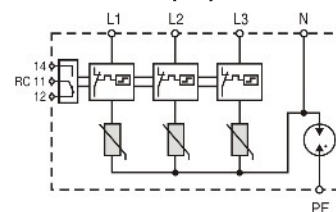
Type	PROBLOC BS(R) 50/xxx (3+1)				
	150	275	320	385	440
In accordance with	IEC-61643-1				
Max. continuous operating voltage (AC/DC)	U_c 150/200V 275/350V 320/420V 385/500V 440/580V				
Nominal discharge current (8/20)	I_n (MOV/GDT) 20/50kA				
Max. discharge current (8/20)	I_{max} (MOV/GDT) 50/100kA				
Impulse current (10/350)	I_{imp} (MOV/GDT) 12.5/50kA				
Impulse current (L1+L2+L3+N-PE)	I_{imp} 50kA				
Specific energy	(MOV/GDT) 39kJ/Ω / 625kJ/Ω				
Charge	(MOV/GDT) 6.25As/25As				
Protection level	U_p (MOV) < 0.9kV < 1.5kV < 1.5kV < 1.8kV < 2.1kV U_p (GDT) < 1.5kV				
Residual voltage at I_{imp}	U_{res} (MOV) < 0.7kV < 1.2kV < 1.2kV < 1.5kV < 1.8kV				
Follow current	I_f (GDT) > 100ARMS				
Response time	t_A (MOV/GDT) < 25ns / 100ns				
Residual current at U_c	I_{PE} (MOV/GDT) < 2.5mA / -				
Thermal protection	(MOV/GDT) YES / -				
Terminal screw torque	max 4.5Nm				
Back-up fuse (if mains > 250 A)	(MOV/GDT) 250A gL / -				
Short-circuit withstand current	(MOV/GDT) 25kA/50Hz / -				
Temperature range	- 40°C+80°C				
Terminal cross section	35mm ² (solid)/25mm ² (stranded)				
Mounting EN 60715	35mm top-hat rail				
Degree of protection	IP 20				
Housing material	thermoplastic; extinguishing degree UL 94 V-0				
Dimensions DIN 43880	4TE				
Weight per unit	442g	538g	538g	548g	577g
Ordering code	504 480	504 481	504 482	504 483	504 484
PROBLOC BSR 50/xxx (3+1) (with remote contacts)					
Remote contacts	YES				
Contact ratings	AC: 250V/0.5A; 125V/3A				
Terminal cross section	max. 1.5mm ²				
Remote terminal torque	0.25Nm				
Weight per unit	447g	543g	543g	553g	582g
Ordering code	504 485	504 486	504 487	504 488	504 489
Packaging dimensions (single unit)	109 x 76.5 x 78mm				

Multi-pole
Lightning and Surge Arrester
 I_{imp} = 12.5kA per pole (10/350)

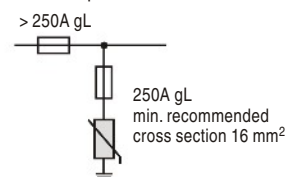


Connection diagram

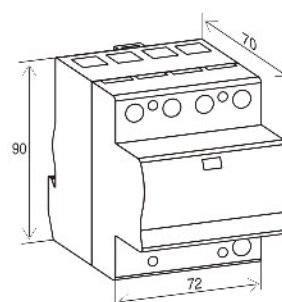
PROBLOC BSR 50/xxx (3+1)



Selection of back-up fuse



Dimensions



INPROTEC VV(R) (2+0)

Multi-pole
Lightning and Surge Arrester
 $I_{imp} = 12.5kA$ per pole (10/350)

Category IEC/EN/VDE:	Class I, II/Type 1, 2/B+C
Location of use:	Main distribution boards
Protection modes:	L/N - PE
Protective element:	High energy MOV
High surge discharge ratings:	$I_{imp} = 12.5kA$ / pole
Housing:	Compact design

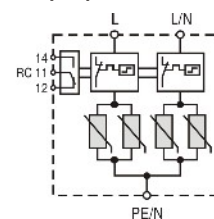


Technical data

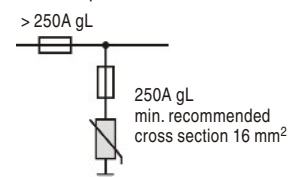
Type	INPROTEC VV(R) (2+0)					
	150	275	320	385	440	
In accordance with	IEC-61643-1					
Max. continuous operating voltage (AC/DC)	U _C	150/200V	275/350V	320/420V	385/500V	440/580V
Nominal discharge current (8/20)	I _n	40kA per pole				
Max. discharge current (8/20)	I _{max}	80kA per pole				
Impulse current (10/350)	I _{imp}	12.5kA per pole				
Impulse current (L+N-PE)	I _{imp}	25kA				
Specific energy		39kJ/Ω				
Charge		6.25As				
Protection level	U _p	< 1.0kV	< 1.8kV	< 1.8kV	< 2.2kV	< 2.4kV
Residual voltage at I _{imp}	U _{res}	< 0.6kV	< 1.1kV	< 1.1kV	< 2.1kV	< 2.3kV
Follow current	I _f	NO				
Response time	t _A	< 25ns				
Residual current at U _C	I _{PE}	< 2.5mA				
Thermal protection		YES				
Terminal screw torque		max. 4.5Nm				
Back-up fuse (if mains > 250A)		250A gL				
Short-circuit withstand current		25kA / 50Hz				
Temperature range		- 40°C + 80°C				
Terminal cross section		35mm ² (solid) / 25mm ² (stranded)				
Mounting EN 60715		35mm top-hat rail				
Degree of protection		IP 20				
Housing material		thermoplastic; extinguishing degree UL 94 V-0				
Dimensions DIN 43880		2TE				
Weight per unit		270g	300g	300g	322g	290g
Ordering code		505 017	505 019	505 021	505 061	505 023
INPROTEC VVR (2+0) (with remote contacts)						
Remote contacts		YES				
Contact ratings		AC: 250V/0.5A; 125V/3A				
Terminal cross section		max. 1.5mm ²				
Remote terminal torque		0.25Nm				
Weight per unit		275g	305g	305g	327g	295g
Ordering code		505 025	505 027	505 029	505 063	505 031
Packaging dimensions (single unit)		109 x 76.5 x 41.5mm				

Connection diagram

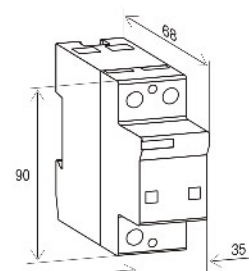
INPROTEC VVR (2+0)



Selection of back-up fuse



Dimensions



INPROTEC VG(R) (1+1)

Category IEC/EN/VDE:	Class I, II/Type 1, 2/B+C
Location of use:	Main distribution boards
Protection modes:	L - N, N - PE
Protective element:	High energy MOV, high energy GDT
High surge discharge ratings:	I_{imp} (MOV/GDT) = 12.5/50kA
Housing:	Compact design

Multi-pole
Lightning and Surge Arrester
 I_{imp} = 12.5kA per pole (10/350)

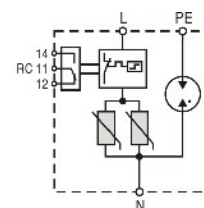


Technical data

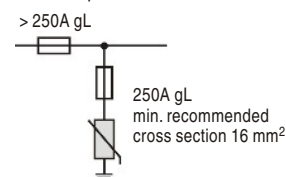
Type	INPROTEC VG(R) (1+1)						
		150	275	320	385	440	
In accordance with		IEC-61643-1					
Max. continuous operating voltage (AC/DC)	U _c	150/200V	275/350V	320/420V	385/500V	440/580V	
Nominal discharge current (8/20)	I _n (MOV/GDT)	40/40kA					
Max. discharge current (8/20)	I _{max} (MOV/GDT)	80/80kA					
Impulse current (10/350)	I _{imp} (MOV/GDT)	12.5/50kA					
Impulse current (L+N-PE)	I _{imp}	25kA					
Specific energy	(MOV/GDT)	39kJ/Ω / 625kJ/Ω					
Charge	(MOV/GDT)	6.25As/50As					
Protection level	U _p (MOV)	< 1.0kV	< 1.8kV	< 1.8kV	< 2.2kV	< 2.4kV	
	U _p (GDT)	< 1.5kV					
Residual voltage at I _{imp}	U _{res} (MOV)	< 0.6kV	< 1.1kV	< 1.1kV	< 2.1kV	< 2.3kV	
Follow current	I _f (GDT)	> 100ARMS					
Response time	t _A (MOV/GDT)	< 25ns / 100ns					
Residual current at U _c	I _{PE} (MOV/GDT)	< 2.5mA / -					
Thermal protection	(MOV/GDT)	YES / -					
Terminal screw torque		max 4.5Nm					
Back-up fuse (if mains > 250 A)	(MOV/GDT)	250A gL / -					
Short-circuit withstand current	(MOV/GDT)	25kA/50Hz / -					
Temperature range		- 40°C+80°C					
Terminal cross section		35mm ² (solid) / 25mm ² (stranded)					
Mounting EN 60715		35mm top-hat rail					
Degree of protection		IP 20					
Housing material		thermoplastic; extinguishing degree UL 94 V-0					
Dimensions DIN 43880		2TE					
Weight per unit		234g	268g	268g	288g	254g	
Ordering code		505 033	505 035	505 037	505 065	505 039	
INPROTEC VGR (1+1) (with remote contacts)							
Remote contacts		YES					
Contact ratings		AC: 250V/0.5A; 125V/3A					
Terminal cross section		max. 1.5mm ²					
Remote terminal torque		0.25Nm					
Weight per unit		239g	273g	273g	293g	259g	
Ordering code		505 041	505 043	505 045	505 067	505 047	
Packaging dimensions (single unit)		109 x 76.5 x 41.5mm					

Connection diagram

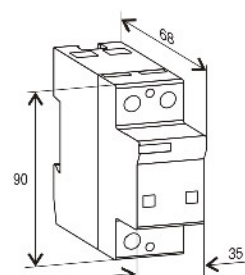
INPROTEC VGR (1+1)



Selection of back-up fuse



Dimensions



INPROTEC VS(R) (1+0)

Single-pole
Lightning and Surge Arrester
 $I_{imp} = 12.5kA (10/350)$

Category IEC/EN/VDE:	Class I, II/Type 1, 2/B+C
Location of use:	Main distribution boards
Protection modes:	L/N - PE, L - PEN
Protective element:	High Energy MOV
High surge discharge ratings:	$I_{imp} = 12.5kA$
Housing:	Compact design

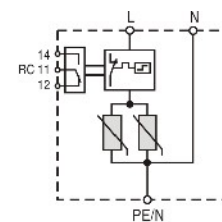


Technical data

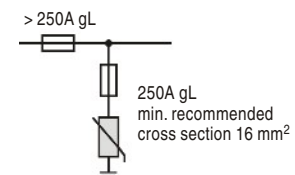
Type	INPROTEC VS(R) (1+0)					
		150	275	320	385	440
In accordance with		IEC-61643-1				
Max. continuous operating voltage (AC/DC)	U _C	150/200V	275/350V	320/420V	385/500V	440/580V
Nominal discharge current (8/20)	I _n	40kA				
Max. discharge current (8/20)	I _{max}	80kA				
Impulse current (10/350)	I _{imp}	12.5kA				
Impulse current (L+N-PE)	I _{imp}	12.5kA				
Specific energy		39kJ/Ω				
Charge		6.25As				
Protection level	U _p	< 1.0kV	< 1.8kV	< 1.8kV	< 2.2kV	< 2.4kV
Residual voltage at I _{imp}	U _{res}	< 0.6kV	< 1.1kV	< 1.1kV	< 2.1kV	< 2.3kV
Follow current	I _f	NO				
Response time	t _A	< 25ns				
Residual current at U _C	I _{PE}	< 2.5mA				
Thermal protection		YES				
Terminal screw torque		max. 4.5Nm				
Back-up fuse (if mains > 250A)		250A gL				
Short-circuit withstand current		25kA / 50Hz				
Temperature range		- 40°C + 80°C				
Terminal cross section		35mm ² (solid) / 25mm ² (stranded)				
Mounting EN 60715		35mm top-hat rail				
Degree of protection		IP 20				
Housing material		thermoplastic; extinguishing degree UL 94 V-0				
Dimensions DIN 43880		2TE				
Weight per unit		198g	232g	232g	252g	218g
Ordering code		505 001	505 003	505 005	505 057	505 007
INPROTEC VSR (1+0) (with remote contacts)						
Remote contacts		YES				
Contact ratings		AC: 250V/0.5A; 125V/3A				
Terminal cross section		max. 1.5mm ²				
Remote terminal torque		0.25Nm				
Weight per unit		203g	237g	237g	257g	223g
Ordering code		505 009	505 011	505 013	505 059	505 015
Packaging dimensions (single unit)		109 x 76.5 x 41.5mm				

Connection diagram

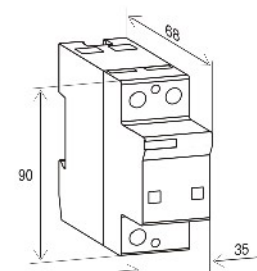
INPROTEC VSR (1+0)



Selection of back-up fuse

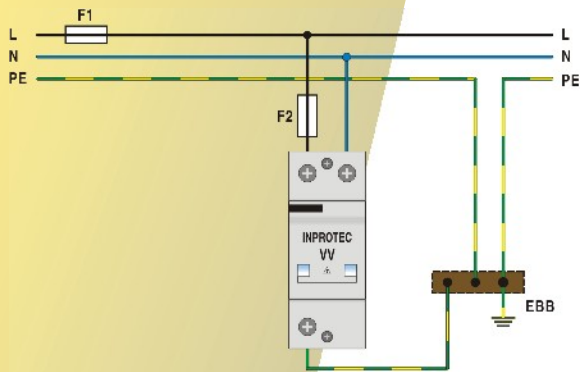


Dimensions

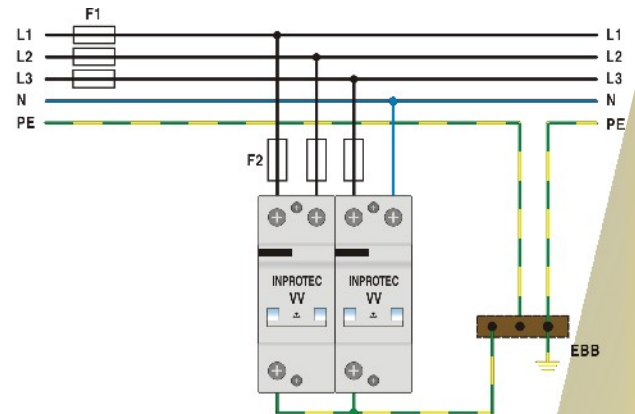


INPROTEC VV (2+0), VG (1+1), VS (1+0) Connections

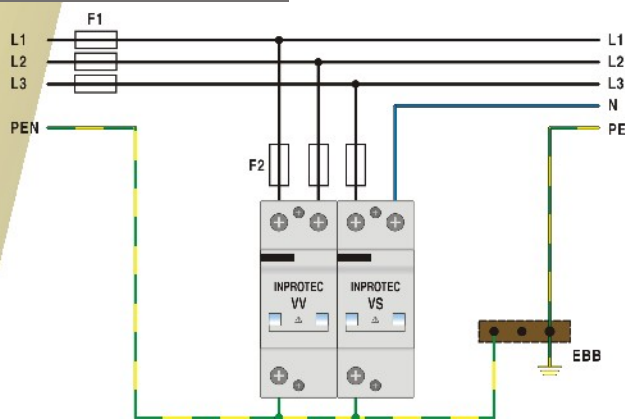
TN-S Network (Single-phase)



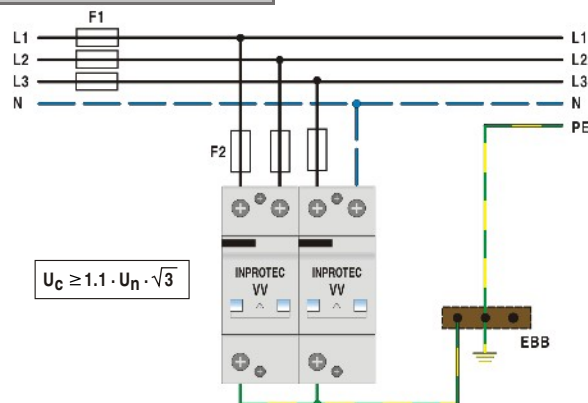
TN-S Network (Three phase)



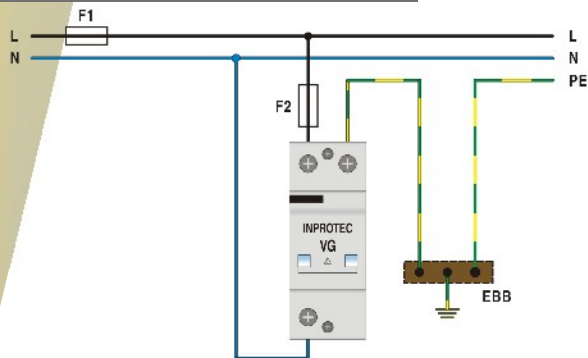
TN-C Network (Three phase)



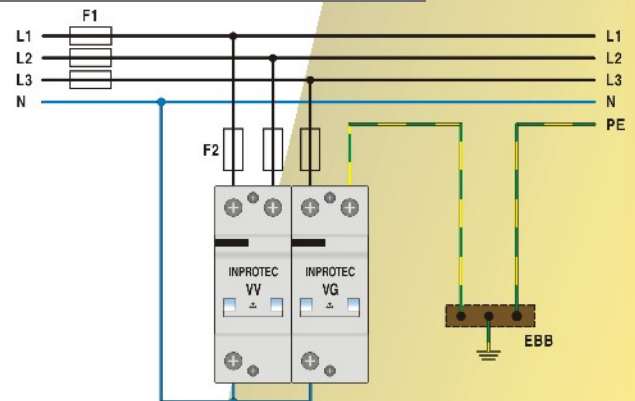
IT Network (Three phase)



TT Network (Single-phase)



TT Network (Three phase)



Modular MULTI-POLE and SINGLE-POLE Lightning Current and Surge Arresters

Category IEC / EN / VDE:	Class I, II / Type 1, 2 / B+ C
Location of use:	Main distribution boards
Protection modes:	L/N - PE, L - PEN, L-N, N-PE
Protective elements:	High Energy MOV & GDT
High surge discharge ratings:	$I_{imp} = 12.5kA$ / pole
Internal protection and safety:	Separate thermal disconnector for each MOV block
Status indication:	Mechanical flag + remote contacts (R)
Dimensions DIN 43880:	1TE, 2TE, 3TE, 4TE

PROTEC B2S(R) 12.5 Series:

The PROTEC B2S 12.5 series of overvoltage surge protective devices has been developed to protect against partial direct and indirect lightning discharges and is intended to provide protection in zones 0_A - 1, per IEC 62305.

The plug-in module / base design facilitates replacement of a failed module in situ without the need to remove system wiring.

PROTEC B2S 12.5 consists of a high performance varistor block with thermal disconnection device.

PROTEC B2S 25 (2+0) series combines two PROTEC B2S 12.5 modules to provide protection for single phase TNS networks.

PROTEC B2S 25 (1+1) combines a PROTEC B2S 12.5 and PROTUBE B2S to provide protection for TT single phase networks, where N to PE galvanic isolation is required.

PROTEC B2S 37.5 (3+0) combines three PROTEC B2S 12.5 units, to provide protection for TNC three phase networks with a combined PEN conductor.

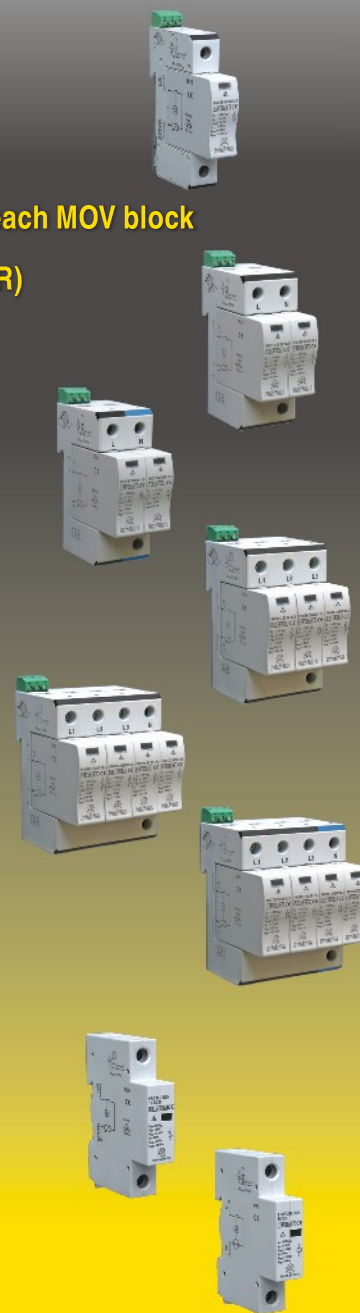
PROTEC B2S 50 (4+0) combines four PROTEC B2S 12.5 units, to provide protection for TNS three phase networks with a separate N and PE conductor.

PROTEC B2S 50 (3+1) combines three PROTEC B2S 12.5 units and a PROTUBE B2S, to provide protection for TT three phase networks, where N to PE galvanic isolation is required.

PROTEC B2N(R) 12.5 Series:

The PROTEC B2N 12.5 series of overvoltage surge protective devices has been developed to protect against partial direct and indirect lightning discharges and is intended to provide protection in zones 0_A - 1, per IEC 62305. The enclosure housing is a compact design. PROTEC B2N 12.5 consists of a high performance varistor block with thermal disconnection device.

PROTUBE B2N consists of a high energy encapsulated air gap device and is used to provide galvanic separation between the N and PE conductors in a 1+1 or 3+1 power distribution system (TT single phase or three phase networks).



PROTEC B2S(R) 12.5
PROTEC B2S(R) 25 (2+0)
PROTEC B2S(R) 25 (1+1)
PROTEC B2S(R) 37.5 (3+0)
PROTEC B2S(R) 50 (4+0)
PROTEC B2S(R) 50 (3+1)
PROTEC B2N(R) 12.5
PROTUBE B2N(R) 50

PROTEC B2S(R) 12.5

Single-pole
Lightning & Surge Arrester
 $I_{imp} = 12.5kA (10/350)$

Category IEC/EN/VDE:	Class I, II/Type 1, 2/B+C
Location of use:	Main distribution boards
Protection modes:	L/N - PE, L - PEN
Protective element:	High Energy MOV
High surge discharge ratings:	$I_{imp} = 12.5kA$
Housing:	Modular design

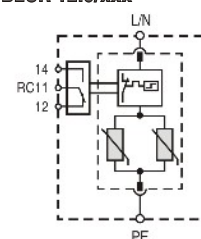


Technical data

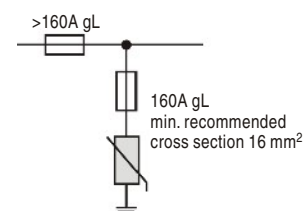
Type	PROTEC B2S(R) 12.5/xxx					
	150	275	320	385	440	
In accordance with		IEC-61643-1				
Max. continuous operating voltage (AC/DC)	U _c	150/200V	275/350V	320/420V	385/500V	440/580V
Nominal discharge current (8/20)	I _n	25kA				
Max. discharge current (8/20)	I _{max}	50kA				
Impulse current (10/350)	I _{imp}	12.5kA				
Specific energy		39kJ/Ω				
Charge		6.25As				
Protection level	U _p	< 0.8kV	< 1.3kV	< 1.4kV	< 1.7kV	< 1.8kV
Residual voltage at I _{imp}	U _{res}	< 0.6kV	< 0.9kV	< 1.0kV	< 1.3kV	< 1.4kV
Follow current	I _f	NO				
Response time	t _A	< 25ns				
Residual current at U _c	I _{PE}	< 2.5mA				
Thermal protection		YES				
Terminal screw torque		max. 3.5Nm				
Back-up fuse (if mains > 250A)		160A gL				
Short-circuit withstand current		25kA / 50Hz				
Temperature range		- 40°C+ 80°C				
Terminal cross section		35mm ² (solid)/25mm ² (stranded)				
Mounting EN 60715		35mm top-hat rail				
Degree of protection		IP 20				
Housing material		thermoplastic; extinguishing degree UL 94 V-0				
Dimensions DIN 43880		1TE				
Weight per unit		141g	161g	177g	189g	191g
Ordering code		506 017	506 018	506 019	506 020	506 021
PROBLOC B2SR 12.5/xxx (with remote contacts)						
Remote contacts		YES				
Contact ratings		AC: 250V/0.5A; 125V/3A				
Terminal cross section		max. 1.5mm ²				
Remote terminal torque		0.25Nm				
Weight per unit		146g	166g	182g	194g	196g
Ordering code		506 022	506 023	506 024	506 025	506 026
Packaging dimensions (single unit)		108 x 74 x 24mm				

Connection diagram

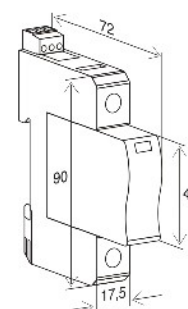
PROTEC B2SR 12.5/xxx



Selection of back-up fuse



Dimensions



Accessory part for PROTEC B2S(R) 12.5/xxx

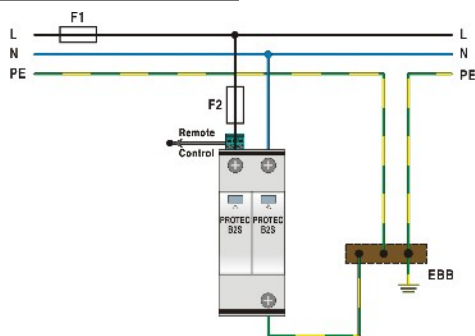
Type	Module PROTEC B2S 12.5/xxx				
	150	275	320	385	440
Ordering code	506 001	506 002	506 003	506 004	506 005
Packaging dimensions (12 pcs.)	219 x 62 x 47mm				



PROTEC B2S(R) 25 (2+0)

Multi-pole
Lightning & Surge Arrester
 $I_{imp} = 12.5kA$ per pole (10/350)

TN-S Network (Single-phase)



Technical data

Type	PROTEC B2S(R) 25/xxx (2+0)					
	150	275	320	385	440	
In accordance with	IEC-61643-1					
Max. continuous operating voltage (AC/DC)	U _c	150/200V	275/350V	320/420V	385/500V	440/580V
Nominal discharge current (8/20)	I _n	25kA per pole				
Max. discharge current (8/20)	I _{max}	50kA per pole				
Impulse current (10/350)	I _{imp}	12.5kA per pole				
Impulse current (L+N-PE)	I _{imp}	25kA				
Specific energy	39kJ/Ω per pole					
Charge	6.25As per pole					
Protection level	U _p	< 0.8kV	< 1.3kV	< 1.4kV	< 1.7kV	< 1.8kV
Residual voltage at I _{imp}	U _{res}	< 0.6kV	< 0.9kV	< 1.0kV	< 1.3kV	< 1.4kV
Follow current	I _f	NO				
Response time	t _A	< 25ns				
Residual current at U _c	I _{PE}	< 2.5mA				
Thermal protection	YES					
Terminal screw torque	max. 3.5Nm					
Back-up fuse (if mains > 250A)	160A gL					
Short-circuit withstand current	25kA / 50Hz					
Temperature range	- 40°C+ 80°C					
Terminal cross section	35mm ² (solid)/25mm ² (stranded)					
Mounting EN 60715	35mm top-hat rail					
Degree of protection	IP 20					
Housing material	thermoplastic; extinguishing degree UL 94 V-0					
Dimensions DIN 43880	2TE					
Weight per unit	274g	314g	346g	370g	374g	
Ordering code	506 027	506 028	506 029	506 030	506 031	
PROBLOC B2SR 25/xxx (2+0) (with remote contacts)						
Remote contacts	YES					
Contact ratings	AC: 250V/0.5A; 125V/3A					
Terminal cross section	max. 1.5mm ²					
Remote terminal torque	0.25Nm					
Weight per unit	279g	319g	351g	375g	379g	
Ordering code	506 032	506 033	506 034	506 035	506 036	
Packaging dimensions (single unit)	109 x 76.5 x 41.5mm					

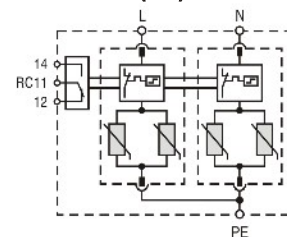
Accessory part for PROTEC B2S(R) 12.5/xxx

Type	Module PROTEC B2S 12.5/xxx				
	150	275	320	385	440
Ordering code	506 001	506 002	506 003	506 004	506 005
Packaging dimensions (12 pcs.)	219 x 62 x 47mm				

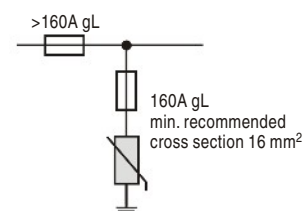


Connection diagram

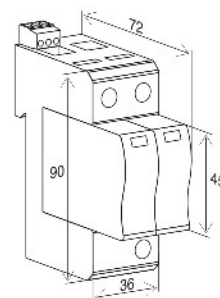
PROTEC B2SR 25/xxx (2+0)



Selection of back-up fuse

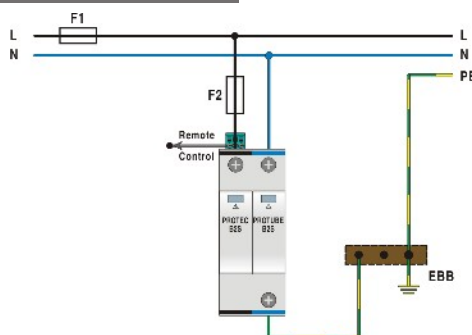


Dimensions



PROTEC B2S(R) 25 (1+1)

TT Network (Single-phase)



Technical data

Type	PROTEC B2S(R) 25/xxx (1+1)				
	150	275	320	385	440
In accordance with IEC-61643-1					
Max. continuous operating voltage (AC/DC)	U_c	150/200V	275/350V	320/420V	385/500V 440/580V
Nominal discharge current (8/20)	I_n (MOV/GDT)			25/30kA	
Max. discharge current (8/20)	I_{max} (MOV/GDT)			50/50kA	
Impulse current (10/350)	I_{imp} (MOV/GDT)			12.5/50kA	
Impulse current (L+N-PE)	I_{imp}			25kA	
Specific energy	(MOV/GDT)			39kJ/Ω / 2.5MJ/Ω	
Charge	(MOV/GDT)			6.25As/50As	
Protection level	U_p (MOV)	< 0.8kV	< 1.3kV	< 1.4kV	< 1.7kV
	U_p (GDT)			< 1.5kV	
Residual voltage at limp	U_{res} (MOV)	< 0.6kV	< 0.9kV	< 1.0kV	< 1.3kV
Follow current	I_f (GDT)			> 100ARMS	
Response time	t_A (MOV/GDT)			< 25ns / 100ns	
Residual current at U_c	I_{PE} (MOV/GDT)			< 2.5mA / -	
Thermal protection	(MOV/GDT)			YES / -	
Terminal screw torque				max 3.5Nm	
Back-up fuse (if mains > 250 A)	(MOV/GDT)			160A gL / -	
Short-circuit withstand current	(MOV/GDT)			25kA/50Hz / -	
Temperature range				- 40°C+80°C	
Terminal cross section				35mm ² (solid)/25mm ² (stranded)	
Mounting EN 60715				35mm top-hat rail	
Degree of protection				IP 20	
Housing material				thermoplastic; extinguishing degree UL 94 V-0	
Dimensions DIN 43880				2TE	
Weight per unit		270g	310g	342g	366g 370g
Ordering code		506 037	506 038	506 039	506 040 506 041

PROTEC B2SR 25/xxx (1+1) (with remote contacts)

Remote contacts	YES				
Contact ratings	AC: 250V/0.5A; 125V/3A				
Terminal cross section	max. 1.5mm ²				
Remote terminal torque	0.25Nm				
Weight per unit		275g	315g	347g	371g 375g
Ordering code		506 042	506 043	506 044	506 045 506 046
Packaging dimensions (single unit)	109 x 76.5 x 41.5mm				

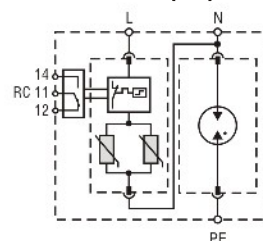
Accessory part for PROTEC B2S(R) 12.5/xxx

Type	Module PROTEC B2S 12.5/xxx				
	150	275	320	385	440
Ordering code	506 001	506 002	506 003	506 004	506 005
Type	Module PROTUBE B2S 12.5/255				
Ordering code	506 006				
Packaging dimensions (12 pcs.)	219 x 62 x 47mm				

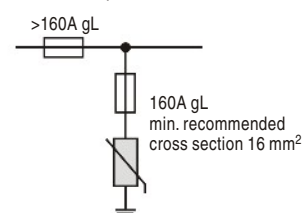


Connection diagram

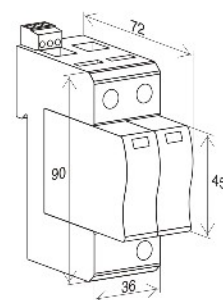
PROTEC B2SR 25/xxx (1+1)



Selection of back-up fuse



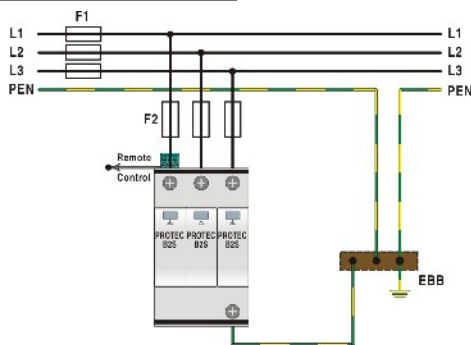
Dimensions



PROTEC B2S(R) 37.5 (3+0)

Multi-pole
Lightning & Surge Arrester
 $I_{imp} = 12.5\text{kA}$ per pole (10/350)

TN-C Network (Three-phase)



Technical data

Type	PROTEC B2S(R) 37.5/xxx (3+0)					
	150	275	320	385	440	
In accordance with	IEC-61643-1					
Max. continuous operating voltage (AC/DC)	U _C	150/200V	275/350V	320/420V	385/500V	440/580V
Nominal discharge current (8/20)	I _n	25kA per pole				
Max. discharge current (8/20)	I _{max}	50kA per pole				
Impulse current (10/350)	I _{imp}	12.5kA per pole				
Impulse current (L1+L2+L3-PEN)	I _{imp}	37.5kA				
Specific energy		39kJ/Ω per pole				
Charge		6.25As per pole				
Protection level	U _p	< 0.9kV	< 1.4kV	< 1.5kV	< 1.8kV	< 1.9kV
Residual voltage at I _{imp}	U _{res}	< 0.7kV	< 1.0kV	< 1.1kV	< 1.4kV	< 1.5kV
Follow current	I _f	NO				
Response time	t _A	< 25ns				
Residual current at U _C	I _{PE}	< 2.5mA				
Thermal protection		YES				
Terminal screw torque		max. 3.5Nm				
Back-up fuse (if mains > 250A)		160A gL				
Short-circuit withstand current		25kA / 50Hz				
Temperature range		- 40°C+ 80°C				
Terminal cross section		35mm ² (solid)/25mm ² (stranded)				
Mounting EN 60715		35mm top-hat rail				
Degree of protection		IP 20				
Housing material		thermoplastic; extinguishing degree UL 94 V-0				
Dimensions DIN 43880		3TE				
Weight per unit		408g	468g	516g	552g	558g
Ordering code		506 047	506 048	506 049	506 050	506 051
PROBLOC B2SR 37.5/xxx (3+0) (with remote contacts)						
Remote contacts		YES				
Contact ratings		AC: 250V/0.5A; 125V/3A				
Terminal cross section		max. 1.5mm ²				
Remote terminal torque		0.25Nm				
Weight per unit		413g	473g	521g	557g	563g
Ordering code		506 052	506 053	506 054	506 055	506 056
Packaging dimensions (single unit)		109 x 76.5 x 60mm				

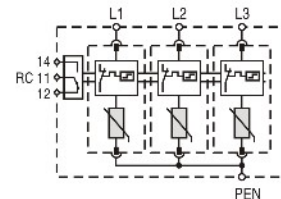
Accessory part for PROTEC B2S(R) 12.5/xxx

Type	Module PROTEC B2S(R) 12.5/xxx				
	150	275	320	385	440
Ordering code	506 001	506 002	506 003	506 004	506 005
Packaging dimensions (12 pcs.)	219 x 62 x 47mm				

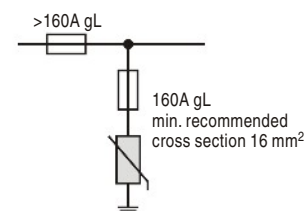


Connection diagram

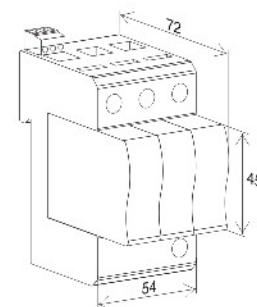
PROTEC B2SR 37.5/xxx (3+0)



Selection of back-up fuse

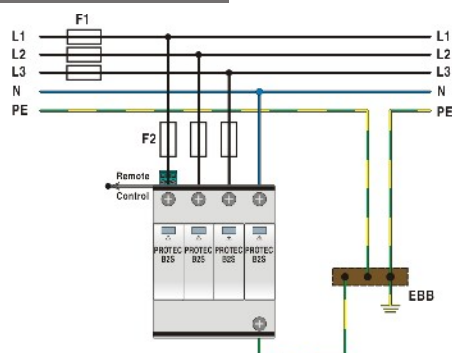


Dimensions



PROTEC B2S(R) 50 (4+0)

TN-S Network (Three-phase)



Technical data

Type	PROTEC B2S(R) 50/xxx (4+0)				
	150	275	320	385	440
In accordance with	IEC-61643-1				
Max. continuous operating voltage (AC/DC)	U_c	150/200V	275/350V	320/420V	385/500V
Nominal discharge current (8/20)	I_n	25kA per pole			
Max. discharge current (8/20)	I_{max}	50kA per pole			
Impulse current (10/350)	I_{imp}	12.5kA per pole			
Impulse current (L1+L2+L3+N-PE)	I_{imp}	50kA			
Specific energy		39kJ/Ω per pole			
Charge		6.25As per pole			
Protection level	U_p	< 0.9kV	< 1.4kV	< 1.5kV	< 1.8kV
Residual voltage at I_{imp}	U_{res}	< 0.7kV	< 1.0kV	< 1.1kV	< 1.4kV
Follow current	I_f	NO			
Response time	t_A	< 25ns			
Residual current at U_c	I_{PE}	< 2.5mA			
Thermal protection		YES			
Terminal screw torque		max. 3.5Nm			
Back-up fuse (if mains > 250A)		160A gL			
Short-circuit withstand current		25kA / 50Hz			
Temperature range		- 40°C+ 80°C			
Terminal cross section		35mm ² (solid)/25mm ² (stranded)			
Mounting EN 60715		35mm top-hat rail			
Degree of protection		IP 20			
Housing material		thermoplastic; extinguishing degree UL 94 V-0			
Dimensions DIN 43880		4TE			
Weight per unit		517g	597g	661g	709g
Ordering code		506 057	506 058	506 059	506 060
PROBLOC B2SR 50/xxx (4+0) (with remote contacts)					
Remote contacts		YES			
Contact ratings		AC: 250V/0.5A; 125V/3A			
Terminal cross section		max. 1.5mm ²			
Remote terminal torque		0.25Nm			
Weight per unit		522g	602g	667g	714g
Ordering code		506 062	506 063	506 064	506 065
Packaging dimensions (single unit)		109 x 76.5 x 78mm			

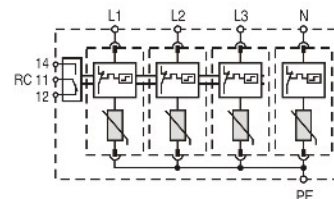
Accessory part for PROTEC B2S(R) 12.5/xxx

Type	Module PROTEC B2S 12.5/xxx				
	150	275	320	385	440
Ordering code	506 001	506 002	506 003	506 004	506 005
Packaging dimensions (12 pcs.)	219 x 62 x 47mm				

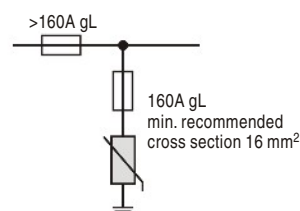


Connection diagram

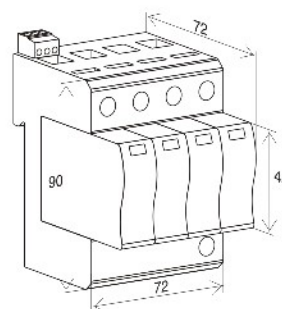
PROTEC B2SR 50/xxx (4+0)



Selection of back-up fuse



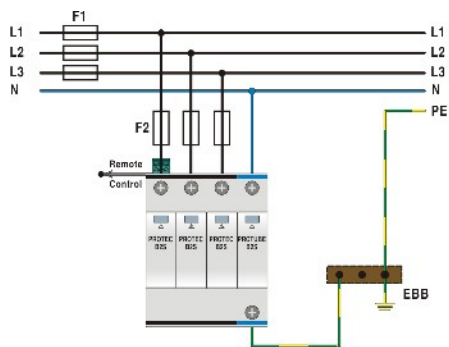
Dimensions



PROTEC B2S(R) 50 (3+1)

Multi-pole
Lightning & Surge Arrester
 $I_{imp} = 12.5\text{kA}$ per pole (10/350)

TT Network (Three-phase)



Technical data

Type	PROTEC B2S(R) 50/xxx (3+1)				
	150	275	320	385	440
In accordance with	IEC-61643-1				
Max. continuous operating voltage (AC/DC)	U_c	150/200V	275/350V	320/420V	385/500V 440/580V
Nominal discharge current (8/20)	I_n (MOV/GDT)	25kA per pole/30kA			
Max. discharge current (8/20)	I_{max} (MOV/GDT)	50kA per pole/50kA			
Impulse current (10/350)	I_{imp} (MOV/GDT)	12.5 per pole/50kA			
Impulse current (L1+L2+L3+N-PE)	I_{imp}	50kA			
Specific energy	(MOV/GDT)	39kJ/Ω / 2.5MJ/Ω			
Charge	(MOV/GDT)	6.25As/50As			
Protection level	U_p (MOV)	< 0.9kV	< 1.4kV	< 1.5kV	< 1.8kV < 1.9kV
	U_p (GDT)	< 1.5kV			
Residual voltage at I_{imp}	U_{res} (MOV)	< 0.7kV	< 1.0kV	< 1.1kV	< 1.4kV < 1.5kV
Follow current	I_f (GDT)	> 100ARMS			
Response time	t_A (MOV/GDT)	< 25ns / 100ns			
Residual current at U_c	I_{PE} (MOV/GDT)	< 2.5mA / -			
Thermal protection	(MOV/GDT)	YES / -			
Terminal screw torque		max 3.5Nm			
Back-up fuse (if mains > 250 A)	(MOV/GDT)	160A gL / -			
Short-circuit withstand current	(MOV/GDT)	25kA/50Hz / -			
Temperature range		- 40°C+80°C			
Terminal cross section		35mm ² (solid)/25mm ² (stranded)			
Mounting EN 60715		35mm top-hat rail			
Degree of protection		IP 20			
Housing material		thermoplastic; extinguishing degree UL 94 V-0			
Dimensions DIN 43880		4TE			
Weight per unit		498g	578g	642g	690g 698g
Ordering code		506 067	506 068	506 069	506 070 506 071

PROTEC B2SR 50/xxx (3+1) (with remote contacts)

Remote contacts	YES				
Contact ratings	AC: 250V/0.5A; 125V/3A				
Terminal cross section	max. 1.5mm ²				
Remote terminal torque	0.25Nm				
Weight per unit	503g	583g	647g	695g	703g
Ordering code	506 072	506 073	506 074	506 075	506 076
Packaging dimensions (single unit)	109 x 76.5 x 78mm				

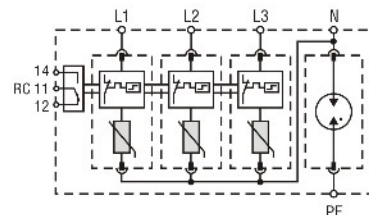
Accessory part for PROTEC B2S(R) 12.5/xxx

Type	Module PROTEC B2S 12.5/xxx				
	150	275	320	385	440
Ordering code	506 001	506 002	506 003	506 004	506 005
Type	Module PROTUBE B2S 12.5/255				
Ordering code	506 006				
Packaging dimensions (12 pcs.)	219 x 62 x 47mm				

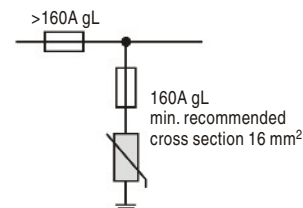


Connection diagram

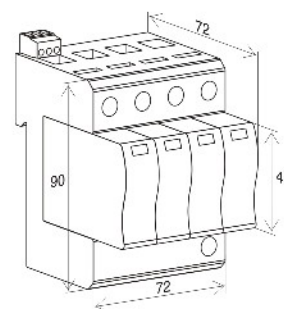
PROTEC B2SR 50/xxx (3+1)



Selection of back-up fuse



Dimensions



PROTEC B2N(R) 12.5

Single-pole
Lightning & Surge Arrester
 $I_{imp} = 12.5kA (10/350)$

Category IEC/EN/VDE:	Class I, II/Type 1, 2/B+C
Location of use:	Main distribution boards
Protection modes:	L/N - PE, L - PEN
Protective element:	High Energy MOV
High surge discharge ratings:	$I_{imp} = 12.5kA$
Housing:	Compact design

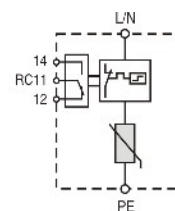


Technical data

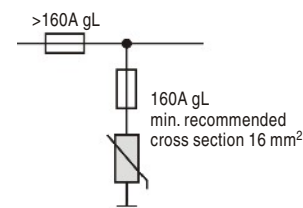
Type	PROTEC B2N(R) 12.5/xxx					
	150	275	320	385	440	
In accordance with	IEC-61643-1					
Max. continuous operating voltage (AC/DC)	U _C	150/200V	275/350V	320/420V	385/500V	440/580V
Nominal discharge current (8/20)	I _n	20kA				
Max. discharge current (8/20)	I _{max}	50kA				
Impulse current (10/350)	I _{imp}	12.5kA				
Specific energy		39kJ/Ω				
Charge		6.25As				
Protection level	U _p	< 0.8kV	< 1.5kV	< 1.6kV	< 1.7kV	< 2.0kV
Residual voltage at I _{imp}	U _{res}	< 0.7kV	< 1.2kV	< 1.3kV	< 1.4kV	< 1.9kV
Follow current	I _f	NO				
Response time	t _A	< 25ns				
Residual current at U _C	I _{PE}	< 2.5mA				
Thermal protection		YES				
Terminal screw torque		max. 3.5Nm				
Back-up fuse (if mains > 160A)		160A gL				
Short-circuit withstand current		25kA / 50Hz				
Temperature range		- 40°C+ 80°C				
Terminal cross section		35mm ² (solid)/25mm ² (stranded)				
Mounting EN 60715		35mm top-hat rail				
Degree of protection		IP 20				
Housing material		thermoplastic; extinguishing degree UL 94 V-0				
Dimensions DIN 43880		1TE				
Weight per unit		124g	150g	150g	143g	146g
Ordering code		507 501	507 503	507 505	507 535	507 507
PROTEC B2NR 12.5/xxx (with remote contacts)						
Remote contacts		YES				
Contact ratings		AC: 250V/0.5A; 125V/3A				
Terminal cross section		max. 1.5mm ²				
Remote terminal torque		0.25Nm				
Weight per unit		129g	155g	155g	148g	151g
Ordering code		507 509	507 511	507 513	507 537	507 515
Packaging dimensions (single unit)		108 x 74 x 24mm				

Connection diagram

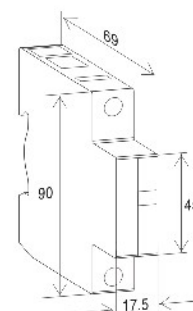
PROTEC B2NR 12.5/xxx



Selection of back-up fuse



Dimensions



PROTUBE B2N(R) 50

Single-pole N-PE
Lightning and Surge Arrester
 $I_{imp} = 50kA (10/350)$

Category IEC/EN/VDE:	Class I, II/Type 1, 2/B+C
Location of use:	Main distribution boards
Protection modes:	N - PE
Protective element:	High Energy GDT
High surge discharge ratings:	$I_{imp} = 50kA$
Housing:	Compact design

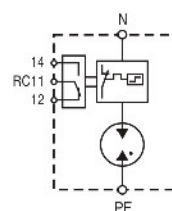


Technical data

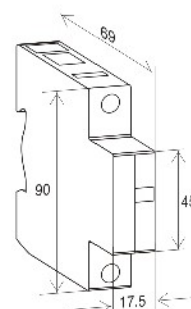
Type	PROTUBE B2N(R) 50	
In accordance with	IEC-61643-1	
Max. continuous operating voltage (AC)	U_c	255V
Nominal discharge current (8/20)	I_n	50kA
Max. discharge current (8/20)	I_{max}	100kA
Impulse current (10/350)	I_{imp}	50kA
Specific energy	625kJ/Ω	
Charge	25As	
Protection level	U_p	< 1.5kV
Residual voltage at I_n	U_{res}	< 1.2kV
Follow current	I_f	> 100ARMS
Response time	t_A	100ns
Terminal screw torque	max. 3.5Nm	
Temperature range	- 40°C + 80°C	
Terminal cross section	35mm ² (solid) / 25mm ² (stranded)	
Mounting EN 60715	35mm top-hat rail	
Degree of protection	IP 20	
Housing material	thermoplastic; extinguishing degree UL 94 V-0	
Dimensions DIN 43880	1TE	
Weight per unit	106g	
Ordering code	507 572	
PROTUBE B2NR 50 (with remote contacts)		
Remote contacts	YES	
Contact ratings	AC: 250V/0.5A; 125V/3A	
Terminal cross section	max. 1.5mm ²	
Remote terminal torque	0.25Nm	
Weight per unit	111g	
Ordering code	507 573	
Packaging dimensions (single unit)	108 x 74 x 24mm	

Connection diagram

PROTUBE B2N



Dimensions



Modular SINGLE-POLE and MULTI-POLE Surge Arresters

Category IEC / EN / VDE:	Class II / Type 2 / C
Location of use:	Branch Sub-distribution Boards
Protection modes:	L/N - PE, L - PEN, N-PE
Protective elements:	MOV and GDT
Surge discharge ratings:	I_{max} = up to 40kA per pole
Internal protection and safety:	Separate thermal disconnecter for each MOV
Status indication:	Mechanical flag + remote contacts (R)
Dimensions DIN 43880:	1TE, 2TE, 3TE, 4TE

PROTEC C(R) 40 Series:

The PROTEC C 40 series of over-voltage surge protective devices has been developed to protect against the effects of indirect lightning discharges and induced voltages and is intended to provide protection in zones 1 - 2 per IEC 62305.

PROTEC C 40 consists of a high performance varistor block with thermal disconnection device.

The plug-in module / base design facilitates replacement of a failed module in situ without the need to remove system wiring.

PROTEC C 80 (2+0) series combines two PROTEC C 40 modules to provide protection for single phase TNS networks.

PROTEC C 80 (1+1) series combines a PROTEC C 40 and PROTUBE C to provide protection for TT single phase networks, where N to PE galvanic isolation is required.

PROTEC C 120 (3+0) series combines three PROTEC C 40 modules, to provide protection for TNC three phase networks with a combined PEN conductor.

The PROTEC C 160 (4+0) series combines four PROTEC C 40 modules, to provide protection for TNS three phase networks with separate PE and N conductors.

The PROTEC C 160 (3+1) series combines three PROTEC C 40 modules and a PROTUBE C, to provide protection for TT three phase networks, where N to PE galvanic isolation is required.

PROTEC CN 40 Series:

The PROTEC CN 40 series of overvoltage surge protective devices has been developed to protect against the effects of indirect lightning discharges and induced voltages and is intended to provide protection in zones 1/2 per IEC 62305. The enclosure housing is a compact design.

PROTEC CN 40 consists of a high performance varistor block with thermal disconnection device.

PROTUBE CN consists of an encapsulated air gap device, and is used as a galvanic separation between the N-PE conductors in a 1+1 or 3+1 power distribution system (TT networks).



PROTEC C(R) 40
PROTUBE C(R) 40
PROTEC C(R) 80 (2+0)
PROTEC C(R) 80 (1+1)
PROTEC C(R) 120 (3+0)
PROTEC C(R) 160 (4+0)
PROTEC C(R) 160 (3+1)
PROTEC C(R) 20
PROTEC CN
PROTUBE CN

PROTEC C(R) 40

Single-pole
Surge Arrester
 $I_{max} = 40kA$ (8/20)

Category IEC/EN/VDE:	Class II/Type 2/C
Location of use:	Branch sub-distribution boards
Protection modes:	L/N - PE, L - PEN
Protective element:	MOV
Surge discharge ratings:	$I_{max} = 40kA$
Housing:	Modular design

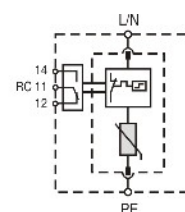


Technical data

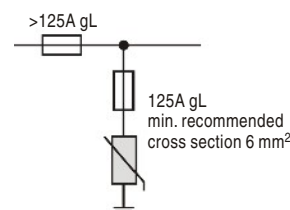
Type	PROTEC C(R) 40/xxx					
	150	275	320	385	440	
In accordance with		IEC-61643-1				
Max. continuous operating voltage (AC/DC)	U _C	150/200V	275/350V	320/420V	385/500V	440/580V
Nominal discharge current (8/20)	I _n	20kA				
Max. discharge current (8/20)	I _{max}	40kA				
Protection level	U _p	< 0.9kV	< 1.5kV	< 1.5kV	< 1.9kV	< 2.2kV
Follow current	I _f	NO				
Response time	t _A	< 25ns				
Residual current at U _C	I _{PE}	< 1.5mA				
Thermal protection		YES				
Terminal screw torque		max. 4.5Nm				
Back-up fuse (if mains > 125A)		125A gL				
Short-circuit withstand current		25kA / 50Hz				
Temperature range		- 40°C + 80°C				
Terminal cross section		35mm ² (solid) / 25mm ² (stranded)				
Mounting EN 60715		35mm top-hat rail				
Degree of protection		IP 20				
Housing material		thermoplastic; extinguishing degree UL 94 V-0				
Dimensions DIN 43880		1TE				
Weight per unit		122g	128g	128g	129g	130g
Ordering code		500 003	500 005	500 007	500 171	500 009
PROTEC CR 40/xxx (with remote contacts)						
Remote contacts		YES				
Contact ratings		AC: 250V/0.5A; 125V/3A				
Terminal cross section		max. 1.5mm ²				
Remote terminal torque		0.25Nm				
Weight per unit		127g	133g	133g	134g	135g
Ordering code		500 013	500 015	500 017	500 175	500 019
Packaging dimensions (single unit)		108 x 74 x 24mm				

Connection diagram

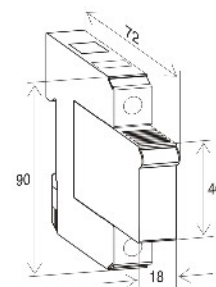
PROTEC CR 40/xxx



Selection of back-up fuse



Dimensions



Accessory part for PROTEC C(R) 40/xxx

Type	Module PROTEC C(R) 40/xxx				
	150	275	320	385	440
Ordering code	500 217	500 219	500 220	500 221	500 222
Packaging dimensions (12 pcs.)	219 x 62 x 47mm				



PROTUBE C 40

Single-pole
 N-PE Surge Arrester
 $I_{max} = 40kA (8/20)$

Category IEC/EN/VDE:	Class II/Type 2/C
Location of use:	Branch sub-distribution boards
Protection modes:	N - PE
Protective element:	GDT
Surge discharge ratings:	$I_{max} = 40kA$
Housing:	Modular design

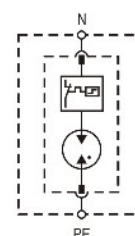


Technical data

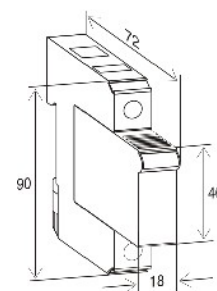
Type	PROTUBE C 40/255	
In accordance with	IEC-61643-1	
Max. continuous operating voltage (AC)	U_c	255V
Nominal discharge current (8/20)	I_n	20kA
Max. discharge current (8/20)	I_{max}	40kA
Protection level	U_p	< 2.0kV
Follow current	I_f	> 100ARMS
Response time	t_A	< 100ns
Thermal protection	YES	
Terminal screw torque	max. 4.5Nm	
Temperature range	- 40°C+80°C	
Terminal cross section	35mm ² (solid) / 25mm ² (stranded)	
Mounting EN 60715	35mm top-hat rail	
Degree of protection	IP 20	
Housing material	thermoplastic; extinguishing degree UL 94 V-0	
Dimensions DIN 43880	1TE	
Weight per unit	118g	
Ordering code	503 005	
Packaging dimensions (single unit)	108 x 74 x 24mm	

Connection diagram

PROTUBE C 40



Dimensions



Accessory part for PROTUBE C 40/255

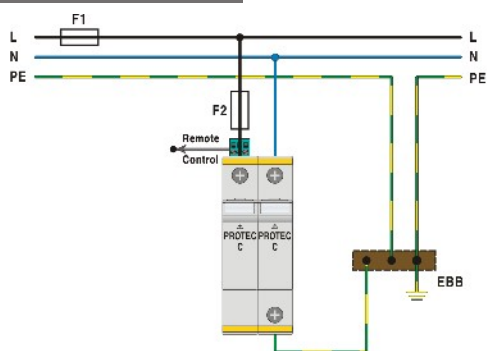
Type	Module PROTUBE C 40/255
Ordering code	500 234
Packaging dimensions (12 pcs.)	219 x 62 x 47mm



PROTEC C(R) 80 (2+0)

Multi-pole
Surge Arrester
 $I_{max} = 40\text{kA}$ per pole (8/20)

TN-S Network (Single-phase)

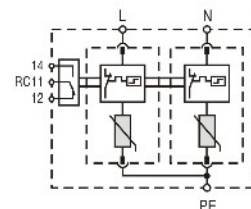


Technical data

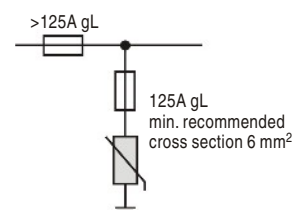
Type	PROTEC C(R) 80/xxx (2+0)					
	150	275	320	385	440	
In accordance with		IEC-61643-1				
Max. continuous operating voltage (AC/DC)	U _C	150/200V	275/350V	320/420V	385/500V	440/580V
Nominal discharge current (8/20)	I _n	20kA per pole				
Max. discharge current (8/20)	I _{max}	40kA per pole				
Protection level	U _p	< 0.9kV	< 1.5kV	< 1.5kV	< 1.9kV	< 2.2kV
Follow current	I _f	NO				
Response time	t _A	< 25ns				
Residual current at U _C	I _{PE}	< 1.5mA				
Thermal protection		YES				
Terminal screw torque		max. 4.5Nm				
Back-up fuse (if mains > 125A)		125A gL				
Short-circuit withstand current		25kA / 50Hz				
Temperature range		- 40°C + 80°C				
Terminal cross section		35mm ² (solid) / 25mm ² (stranded)				
Mounting EN 60715		35mm top-hat rail				
Degree of protection		IP 20				
Housing material		thermoplastic; extinguishing degree UL 94 V-0				
Dimensions DIN 43880		2TE				
Weight per unit		234g	244g	244g	245g	247g
Ordering code		500 073	500 075	500 077	500 179	500 079
PROTEC CR 80/xxx (2+0) (with remote contacts)						
Remote contacts		YES				
Contact ratings		AC: 250V/0.5A; 125V/3A				
Terminal cross section		max. 1.5mm ²				
Remote terminal torque		0.25Nm				
Weight per unit		239g	249g	249g	250g	252g
Ordering code		500 081	500 083	500 085	500 183	500 087
Packaging dimensions (single unit)		109 x 76.5 x 41.5mm				

Connection diagram

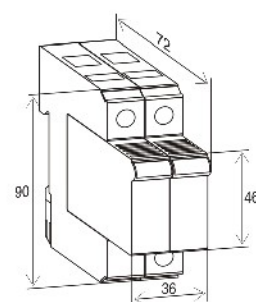
PROTEC CR 80/xxx (2+0)



Selection of back-up fuse



Dimensions



Accessory part for PROTEC C(R) 80/xxx (2+0)

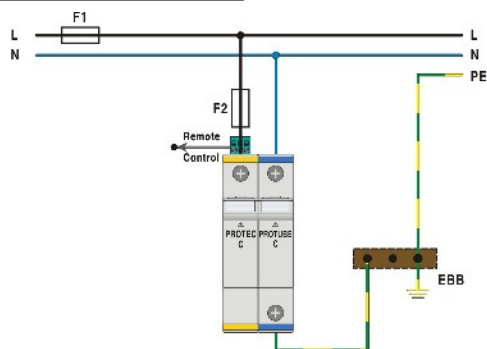
Type	Module PROTEC C(R) 40/xxx				
	150	275	320	385	440
Ordering code	500 217	500 219	500 220	500 221	500 222
Packaging dimensions (12 pcs.)	219 x 62 x 47mm				



PROTEC C(R) 80 (1+1)

Multi-pole
Surge Arrester
 $I_{max} = 40kA$ per pole (8/20)

TT Network (Single-phase)



Technical data

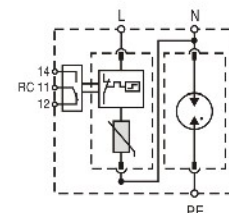
Type	PROTEC C(R) 80/xxx (1+1)				
	150	275	320	385	440
In accordance with IEC-61643-1					
Max. continuous operating voltage (AC/DC)	U_c	150/200V	275/350V	320/420V	385/500V 440/580V
Nominal discharge current (8/20)	I_n (MOV/GDT)			20/20kA	
Max. discharge current (8/20)	I_{max} (MOV/GDT)			40/40kA	
Protection level	U_p (MOV)	< 0.9kV	< 1.5kV	< 1.5kV	< 1.9kV < 2.2kV
	U_p (GDT)			< 2.0kV	
Follow current	I_f (GDT)			> 100A _{RMS}	
Response time	t_A (MOV/GDT)			< 25ns / 100ns	
Residual current at U_c	I_{PE} (MOV/GDT)			< 1.5mA / -	
Thermal protection	(MOV/GDT)			YES	
Terminal screw torque				max 4.5Nm	
Back-up fuse (if mains > 125 A)	(MOV/GDT)			125A gL / -	
Short-circuit withstand current				25kA/50Hz / -	
Temperature range				- 40°C+80°C	
Terminal cross section				35mm ² (solid) / 25mm ² (stranded)	
Mounting EN 60715				35mm top-hat rail	
Degree of protection				IP 20	
Housing material				thermoplastic; extinguishing degree UL 94 V-0	
Dimensions DIN 43880				2TE	
Weight per unit		221g	225g	225g	226g 227g
Ordering code		500 089	500 091	500 093	500 187 500 095
PROTEC CR 80/xxx (1+1) (with remote contacts)					
Remote contacts				YES	
Contact ratings				AC: 250V/0.5A; 125V/3A	
Terminal cross section				max. 1.5mm ²	
Remote terminal torque				0.25Nm	
Weight per unit		226g	230g	230g	231g 232g
Ordering code		500 097	500 099	500 101	500 191 500 103
Packaging dimensions (single unit)				109 x 76.5 x 41.5mm	

Accessory part for PROTEC C(R) 80/xxx (1+1)

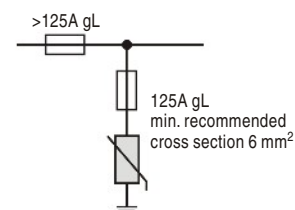
Type	Module PROTEC C(R) 40/xxx				
	150	275	320	385	440
Ordering code	500 217	500 219	500 220	500 221	500 222
Type	Module PROTUBE C 40/255				
Ordering code	500 234				
Packaging dimensions (12 pcs.)	219 x 62 x 47mm				

Connection diagram

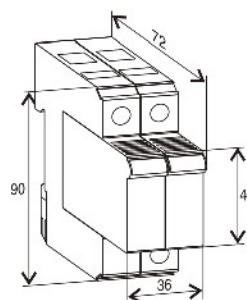
PROTEC CR 80/xxx (1+1)



Selection of back-up fuse



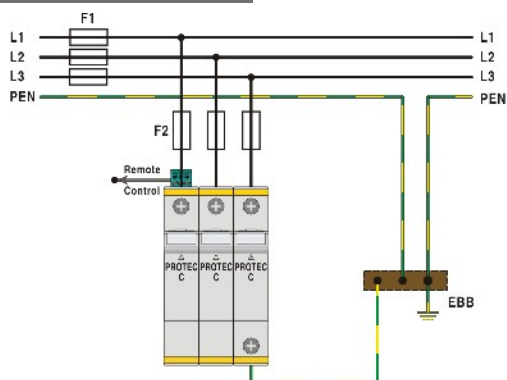
Dimensions



PROTEC C(R) 120 (3+0)

Multi-pole
Surge Arrester
 $I_{max} = 40\text{kA}$ per pole (8/20)

TN-C Network (Three-phase)

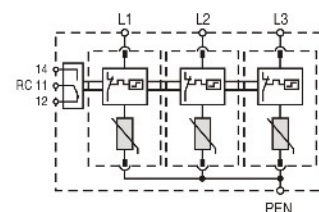


Technical data

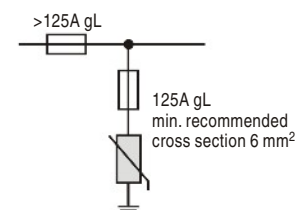
Type	PROTEC C(R) 120/xxx (3+0)					
	150	275	320	385	440	
In accordance with		IEC-61643-1				
Max. continuous operating voltage (AC/DC)	U _c	150/200V	275/350V	320/420V	385/500V	440/580V
Nominal discharge current (8/20)	I _n	20kA per pole				
Max. discharge current (8/20)	I _{max}	40kA per pole				
Protection level	U _p	< 0.9kV	< 1.5kV	< 1.5kV	< 1.9kV	< 2.2kV
Follow current	I _f	NO				
Response time	t _A	< 25ns				
Residual current at U _c	I _{PE}	< 1.5mA				
Thermal protection		YES				
Terminal screw torque		max. 4.5Nm				
Back-up fuse (if mains > 125A)		125A gL				
Short-circuit withstand current		25kA / 50Hz				
Temperature range		- 40°C + 80°C				
Terminal cross section		35mm ² (solid) / 25mm ² (stranded)				
Mounting EN 60715		35mm top-hat rail				
Degree of protection		IP 20				
Housing material		thermoplastic; extinguishing degree UL 94 V-0				
Dimensions DIN 43880		3TE				
Weight per unit		330g	352g	352g	354g	356g
Ordering code		500 105	500 107	500 109	500 195	500 111
PROTEC CR 120/xxx (3+0) (with remote contacts)						
Remote contacts		YES				
Contact ratings		AC: 250V/0.5A; 125V/3A				
Terminal cross section		max. 1.5mm ²				
Remote terminal torque		0.25Nm				
Weight per unit		335g	357g	357g	359g	361g
Ordering code		500 113	500 115	500 117	500 199	500 119
Packaging dimensions (single unit)		109 x 76.5 x 60mm				

Connection diagram

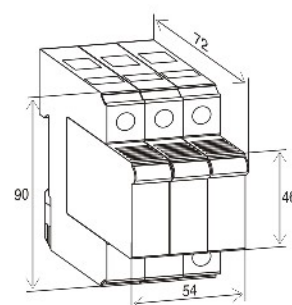
PROTEC CR 120/xxx (3+0)



Selection of back-up fuse



Dimensions



Accessory part for PROTEC C(R) 120/xxx (3+0)

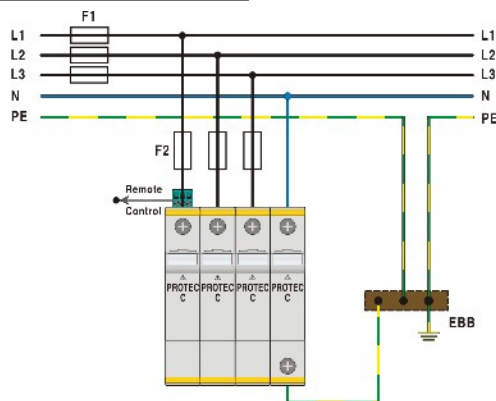
Type	Module PROTEC C(R) 40/xxx				
	150	275	320	385	440
Ordering code	500 217	500 219	500 220	500 221	500 222
Packaging dimensions (12 pcs.)	219 x 62 x 47mm				



PROTEC C(R) 160 (4+0)

Multi-pole
Surge Arrester
 $I_{max} = 40kA$ per pole (8/20)

TN-S Network (Three-phase)

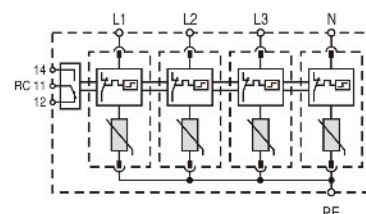


Technical data

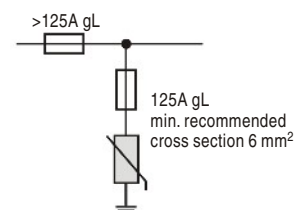
Type	PROTEC C(R) 160/xxx (4+0)				
	150	275	320	385	440
In accordance with IEC-61643-1					
Max. continuous operating voltage (AC/DC)	U_c	150/200V	275/350V	320/420V	385/500V
Nominal discharge current (8/20)	I_n	20kA per pole			
Max. discharge current (8/20)	I_{max}	40kA per pole			
Protection level	U_p	< 0.9kV	< 1.5kV	< 1.5kV	< 1.9kV
Follow current	I_f	NO			
Response time	t_A	< 25ns			
Residual current at U_c	I_{PE}	< 1.5mA			
Thermal protection		YES			
Terminal screw torque		max. 4.5Nm			
Back-up fuse (if mains > 125A)		125A gL			
Short-circuit withstand current		25kA / 50Hz			
Temperature range		- 40°C + 80°C			
Terminal cross section		35mm ² (solid) / 25mm ² (stranded)			
Mounting EN 60715		35mm top-hat rail			
Degree of protection		IP 20			
Housing material		thermoplastic; extinguishing degree UL 94 V-0			
Dimensions DIN 43880		4TE			
Weight per unit		432g	456g	456g	460g
Ordering code		500 121	500 123	500 125	500 203
PROTEC CR 160/xxx (4+0) (with remote contacts)					
Remote contacts		YES			
Contact ratings		AC: 250V/0.5A; 125V/3A			
Terminal cross section		max. 1.5mm ²			
Remote terminal torque		0.25Nm			
Weight per unit		437g	461g	461g	465g
Ordering code		500 129	500 131	500 133	500 207
Packaging dimensions (single unit)		109 x 76.5 x 78mm			

Connection diagram

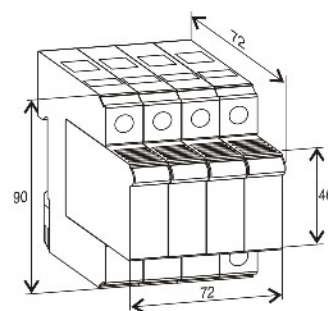
PROTEC CR 160/xxx (4+0)



Selection of back-up fuse



Dimensions



Accessory part for PROTEC C(R) 160/xxx (4+0)

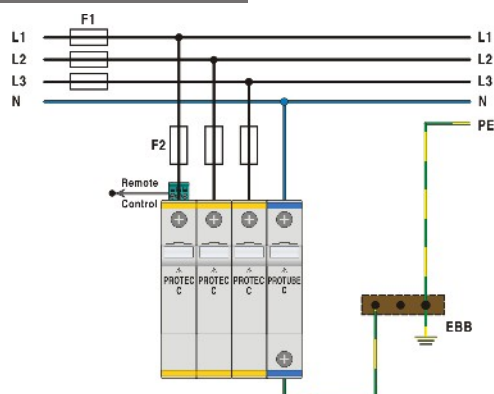
Type	Module PROTEC C(R) 40/xxx				
	150	275	320	385	440
Ordering code	500 217	500 219	500 220	500 221	500 222
Packaging dimensions (12 pcs.)	219 x 62 x 47mm				



PROTEC C(R) 160 (3+1)

Multi-pole
Surge Arrester
 $I_{max} = 40kA$ per pole (8/20)

TT Network (Three-phase)

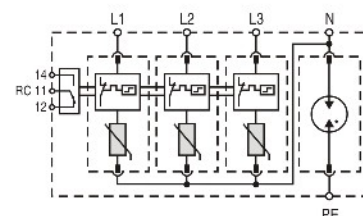


Technical data

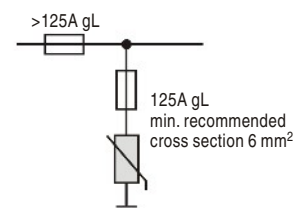
Type		PROTEC C(R) 160/xxx (3+1)				
		150	275	320	385	440
In accordance with		IEC-61643-1				
Max. continuous operating voltage (AC/DC)	U _C	150/200V	275/350V	320/420V	385/500V	440/580V
Nominal discharge current (8/20)	I _n (MOV/GDT)	20/20kA				
Max. discharge current (8/20)	I _{max} (MOV/GDT)	40/40kA				
Protection level	U _p (MOV)	< 0.9kV	< 1.5kV	< 1.5kV	< 1.9kV	< 2.2kV
	U _p (GDT)	< 2.0kV				
Follow current	I _f (GDT)	> 100A _{RMS}				
Response time	t _A (MOV/GDT)	< 25ns / 100ns				
Residual current at U _C	I _{PE} (MOV/GDT)	< 1.5mA / -				
Thermal protection	(MOV/GDT)	YES				
Terminal screw torque		max 4.5Nm				
Back-up fuse (if mains > 125 A)	(MOV/GDT)	125A gL / -				
Short-circuit withstand current		25kA/50Hz / -				
Temperature range		- 40°C+80°C				
Terminal cross section		35mm ² (solid) / 25mm ² (stranded)				
Mounting EN 60715		35mm top-hat rail				
Degree of protection		IP 20				
Housing material		thermoplastic; extinguishing degree UL 94 V-0				
Dimensions DIN 43880		4TE				
Weight per unit		423g	441g	441g	445g	447g
Ordering code		500 137	500 139	500 141	500 211	500 143
PROTEC CR 160/xxx (3+1) (with remote contacts)						
Remote contacts		YES				
Contact ratings		AC: 250V/0.5A; 125V/3A				
Terminal cross section		max. 1.5mm ²				
Remote terminal torque		0.25Nm				
Weight per unit		428g	446g	446g	450g	452g
Ordering code		500 145	500 147	500 149	500 215	500 151
Packaging dimensions (single unit)		109 x 76.5 x 78mm				

Connection diagram

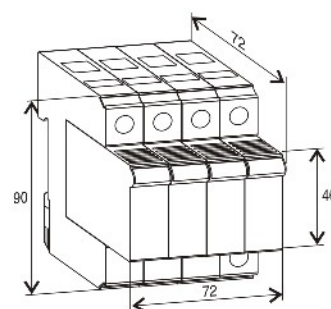
PROTEC CR 160/xxx (3+1)



Selection of back-up fuse



Dimensions



Accessory part for PROTEC C(R) 160/xxx (3+1)

Type	Module PROTEC C(R) 40/xxx				
	150	275	320	385	440
Ordering code	500 217	500 219	500 220	500 221	500 222
Type	Module PROTUBE C 40/255				
Ordering code	500 234				
Packaging dimensions (12 pcs.)	219 x 62 x 47mm				



PROTEC C(R) 20

Single-pole
Surge Arrester
 $I_{max} = 20kA$ (8/20)

Category IEC/EN/VDE:	Class II/Type 2/C
Location of use:	Branch sub-distribution boards
Protection modes:	L/N - PE, L - PEN
Protective element:	MOV
Surge discharge ratings:	$I_{max} = 20kA$
Housing:	Modular design

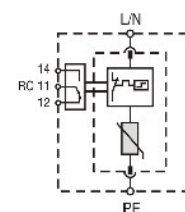


Technical data

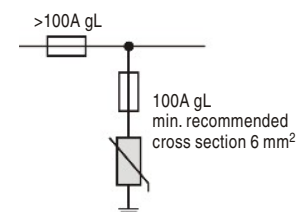
Type	PROTEC C(R) 20/xxx					
	150	275	320	385	440	
In accordance with		IEC-61643-1				
Max. continuous operating voltage (AC/DC)	U _C	150/200V	275/350V	320/420V	385/500V	440/580V
Nominal discharge current (8/20)	I _n	10kA				
Max. discharge current (8/20)	I _{max}	20kA				
Protection level	U _p	< 0.7kV	< 1.2kV	< 1.2kV	< 1.6kV	< 1.8kV
Follow current	I _f	NO				
Response time	t _A	< 25ns				
Residual current at U _C	I _{PE}	< 1.5mA				
Thermal protection		YES				
Terminal screw torque		max. 4.5Nm				
Back-up fuse (if mains > 100A)		100A gL				
Short-circuit withstand current		25kA / 50Hz				
Temperature range		- 40°C + 80°C				
Terminal cross section		35mm ² (solid) / 25mm ² (stranded)				
Mounting EN 60715		35mm top-hat rail				
Degree of protection		IP 20				
Housing material		thermoplastic; extinguishing degree UL 94 V-0				
Dimensions DIN 43880		1TE				
Weight per unit		119g	125g	125g	126g	127g
Ordering code		500 037	500 039	500 041	500 315	500 043
PROTEC CR 20/xxx (with remote contacts)						
Remote contacts		YES				
Contact ratings		AC: 250V/0.5A; 125V/3A				
Terminal cross section		max. 1.5mm ²				
Remote terminal torque		0.25Nm				
Weight per unit		124g	130g	130g	131g	132g
Ordering code		500 045	500 047	500 049	500 317	500 051
Packaging dimensions (single unit)		108 x 74 x 24mm				

Connection diagram

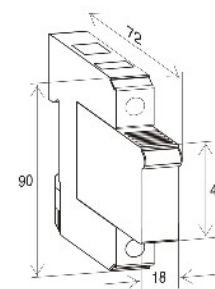
PROTEC CR 20/xxx



Selection of back-up fuse



Dimensions



Accessory part for PROTEC C(R) 20/xxx

Type	Module PROTEC C(R) 20/xxx				
	150	275	320	385	440
Ordering code	500 479	500 480	500 481	500 482	500 483
Packaging dimensions (12 pcs.)	219 x 62 x 47mm				



PROTEC CN(R) 40

Single-pole
Surge Arrester
 $I_{max} = 40kA$ (8/20)

Category IEC/EN/VDE:	Class II/Type 2/C
Location of use:	Branch sub-distribution boards
Protection modes:	L/N - PE, L - PEN
Protective element:	MOV
Surge discharge ratings:	$I_{max} = 40kA$
Housing:	Compact design

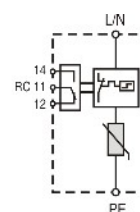


Technical data

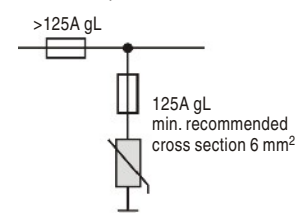
Type	PROTEC CN(R) 40/xxx					
	150	275	320	385	440	
In accordance with IEC-61643-1						
Max. continuous operating voltage (AC/DC)	U _C	150/200V	275/350V	320/420V	385/500V	440/580V
Nominal discharge current (8/20)	I _n	20kA				
Max. discharge current (8/20)	I _{max}	40kA				
Protection level	U _p	< 0.9kV	< 1.5kV	< 1.5kV	< 1.9kV	< 2.2kV
Follow current	I _f	NO				
Response time	t _A	< 25ns				
Residual current at U _C	I _{PE}	< 1.5mA				
Thermal protection		YES				
Terminal screw torque		max. 3.5Nm				
Back-up fuse (if mains > 125A)		125A gL				
Short-circuit withstand current		25kA / 50Hz				
Temperature range		- 40°C+80°C				
Terminal cross section		35mm ² (solid) / 25mm ² (stranded)				
Mounting EN 60715		35mm top-hat rail				
Degree of protection		IP 20				
Housing material		thermoplastic; extinguishing degree UL 94 V-0				
Dimensions DIN 43880		1TE				
Weight per unit		134g	112g	112g	139g	140g
Ordering code		507 003	507 005	507 007	507 021	507 009
PROTEC CNR 40/xxx (with remote contacts)						
Remote contacts		YES				
Contact ratings		AC: 250V/0.5A; 125V/3A				
Terminal cross section		max. 1.5mm ²				
Remote terminal torque		0.25Nm				
Weight per unit		139g	117g	117g	144g	145g
Ordering code		507 013	507 015	507 017	507 023	507 019
Packaging dimensions (single unit)		108 x 74 x 24mm				

Connection diagram

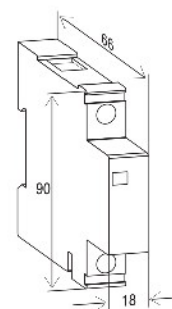
PROTEC CNR



Selection of back-up fuse



Dimensions



PROTEC CN(R) 20

Single-pole
Surge Arrester
 $I_{max} = 20kA$ (8/20)

Category IEC/EN/VDE:	Class II/Type 2/C
Location of use:	Branch sub-distribution boards
Protection modes:	L/N - PE, L - PEN
Protective element:	MOV
Surge discharge ratings:	$I_{max} = 20kA$
Housing:	Compact design

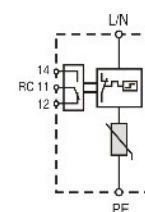


Technical data

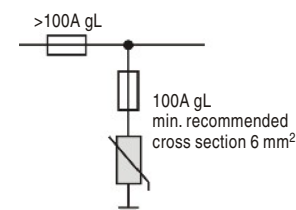
Type	PROTEC CN(R) 20/xxx					
	150	275	320	385	440	
In accordance with		IEC-61643-1				
Max. continuous operating voltage (AC/DC)	U _C	150/200V	275/350V	320/420V	385/500V	440/580V
Nominal discharge current (8/20)	I _n	10kA				
Max. discharge current (8/20)	I _{max}	20kA				
Protection level	U _p	< 0.7kV	< 1.2kV	< 1.2kV	< 1.6kV	< 1.8kV
Follow current	I _f	NO				
Response time	t _A	< 25ns				
Residual current at U _C	I _{PE}	< 1.5mA				
Thermal protection		YES				
Terminal screw torque		max. 3.5Nm				
Back-up fuse (if mains > 100A)		100A gL				
Short-circuit withstand current		25kA / 50Hz				
Temperature range		- 40°C + 80°C				
Terminal cross section		35mm ² (solid) / 25mm ² (stranded)				
Mounting EN 60715		35mm top-hat rail				
Degree of protection		IP 20				
Housing material		thermoplastic; extinguishing degree UL 94 V-0				
Dimensions DIN 43880		1TE				
Weight per unit		131g	109g	109g	136g	137g
Ordering code		507 253	507 254	507 255	507 256	507 257
PROTEC CNR 20/xxx (with remote contacts)						
Remote contacts		YES				
Contact ratings		AC: 250V/0.5A; 125V/3A				
Terminal cross section		max. 1.5mm ²				
Remote terminal torque		0.25Nm				
Weight per unit		136g	114g	114g	141g	142g
Ordering code		507 258	507 259	507 260	507 261	507 262
Packaging dimensions (single unit)		108 x 74 x 24mm				

Connection diagram

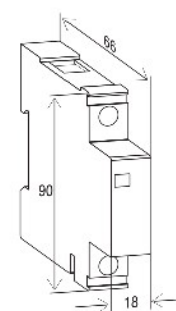
PROTEC CNR



Selection of back-up fuse



Dimensions



PROTUBE CN 40

Single-pole
 N-PE Surge Arrester
 $I_{\max} = 40\text{kA (8/20)}$

Category IEC/EN/VDE:	Class II/Type 2/C
Location of use:	Branch sub-distribution boards
Protection modes:	N-PE
Protective element:	GDT
Surge discharge ratings:	$I_{\max} = 40\text{kA}$
Housing:	Compact design

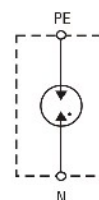


Technical data

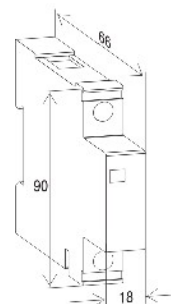
Type	PROTUBE CN	
In accordance with	IEC-61643-1	
Max. continuous operating voltage (AC)	U_c	255V
Nominal discharge current (8/20)	I_n	20kA
Max. discharge current (8/20)	$I_{\max}$	40kA
Protection level	U_p	< 1.2kV
Follow current	I_f	> 100ARMS
Response time	t_A	< 100ns
Terminal screw torque	max. 3.5Nm	
Temperature range	- 40°C + 80°C	
Terminal cross section	35mm ² (solid) / 25mm ² (stranded)	
Mounting EN 60715	35mm top-hat rail	
Degree of protection	IP 20	
Housing material	thermoplastic; extinguishing degree UL 94 V-0	
Dimensions DIN 43880	1TE	
Weight per unit	122g	
Ordering code	507 574	
Packaging dimensions (single unit)	108 x 74 x 24mm	

Connection diagram

PROTUBE CN

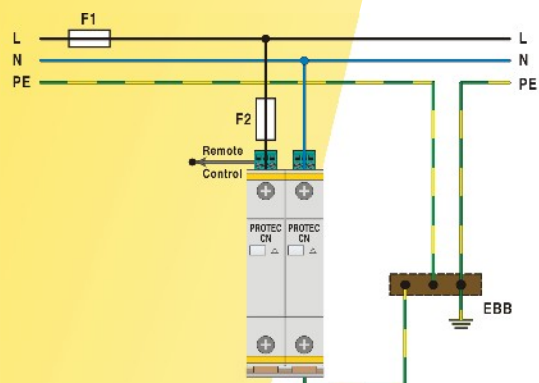


Dimensions

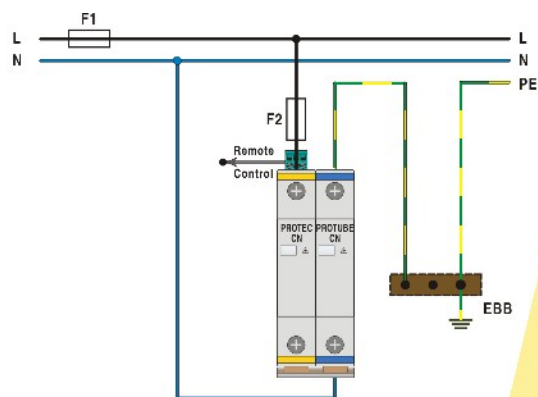


PROTEC CN, PROTUBE CN Connections

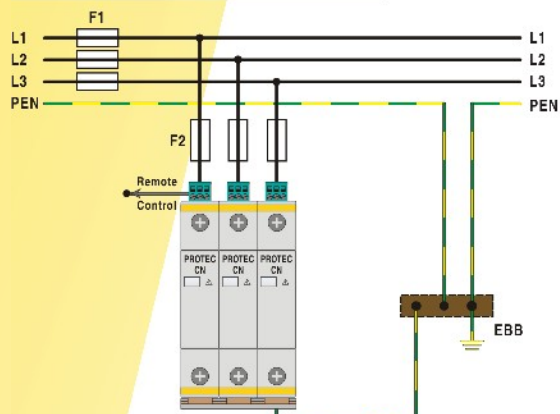
TN-S Network (Single-phase)



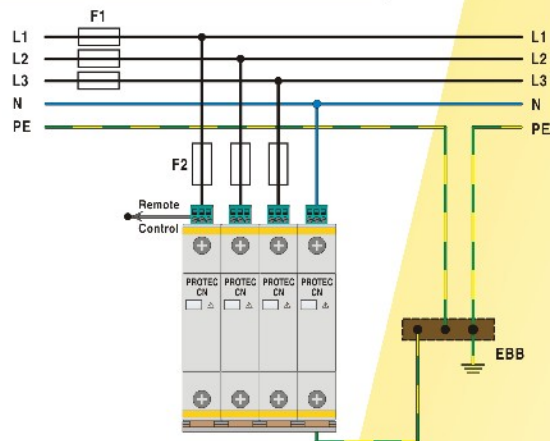
TT Network (Single-phase)



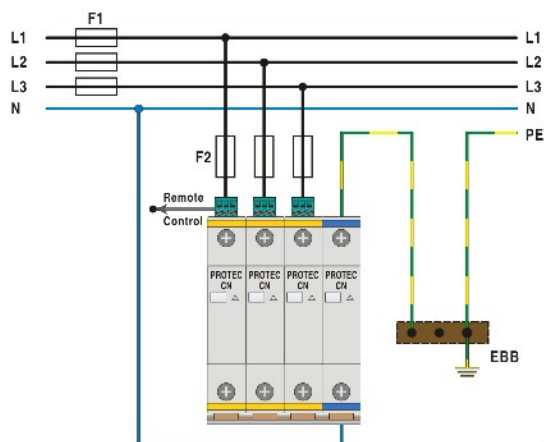
TN-C Network (Three-phase)



TN-S Network (Three-phase)



TT Network (Three-phase)



Modular MULTI-POLE Surge Arresters

Category IEC / EN / VDE:	Class II / Type 2 / C
Location of use:	Branch Sub-distribution Boards
Protection modes:	L/N - PE, L - PEN, N-PE
Protective elements:	MOV and GDT
Surge discharge ratings:	$I_{max} = 40kA$ per pole
Internal protection and safety:	Separate thermal disconnecter for each MOV
Status indication:	Mechanical flag + remote contacts (R)
Dimensions DIN 43880:	1TE

PROTEC CM(R) 80 Series:

The PROTEC CM 80 series of over-voltage surge protective devices has been developed to protect against the effects of indirect lightning discharges and induced voltages and is intended to provide protection in zones 1 - 2 per IEC 62305.

The plug-in module / base design facilitates replacement of a failed module in situ without the need to remove system wiring.

PROTEC CM 80 (2+0) consists of two high performance varistor blocks with thermal disconnection devices providing both L-PE and N-PE protection modes.

PROTEC CM 80 (1+1) consists of high performance varistor blocks with thermal disconnection and encapsulated air gap device providing both L-N and N-PE protection modes.

The plug-in module / base design facilitates replacement of a failed module without the need to remove system wiring.



PROTEC CM 80 (2+0)
PROTEC CM 80 (1+1)
PROTEC CM 80A (1+1)

PROTEC CM(R) 80 (2+0)

Multi-pole
Surge Arrester
 $I_{max} = 40kA$ per pole (8/20)

Category IEC/EN/VDE:	Class II/Type 2/C
Location of use:	Branch sub- distribution boards
Protection modes:	L/N - PE
Protective element:	MOV
Surge discharge ratings:	$I_{max} = 40kA$ per pole
Housing:	Modular design

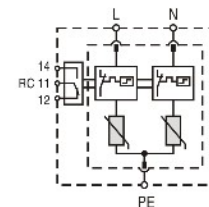


Technical data

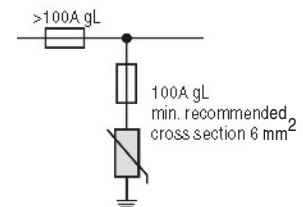
Type		PROTEC CM(R) 80/xxx (2+0)				
		150	275	320	385	440
In accordance with		IEC-61643-1				
Max. continuous operating voltage (AC/DC)	U _c	150/200V	275/350V	320/420V	385/500V	440/580V
Nominal discharge current (8/20)	I _n	15kA per pole				
Max. discharge current (8/20)	I _{max}	40kA per pole				
Protection level	U _p	< 0.8kV	< 1.4kV	< 1.4kV	< 1.8kV	< 2.0kV
Follow current	I _f	NO				
Response time	t _A	< 25ns				
Residual current at U _c	I _{PE}	< 1.5mA				
Thermal protection		YES				
Terminal screw torque:	Upper terminals	max. 2Nm				
	Lower terminal	max. 3.5Nm				
Back-up fuse (if mains > 100A)		100A gL				
Short-circuit withstand current		25kA / 50Hz				
Temperature range		- 40°C + 80°C				
Terminal cross section:	Upper terminals	6mm ² (solid) / 4mm ² (stranded)				
	Lower terminal	35mm ² (solid) / 25mm ² (stranded)				
Mounting EN 60715		35mm top-hat rail				
Degree of protection		IP 20				
Housing material		thermoplastic; extinguishing degree UL 94 V-0				
Dimensions DIN 43880		1TE				
Weight per unit		134g	144g	144g	150g	152g
Ordering code		508 001	508 003	508 005	508 109	508 007
PROTEC CMR 80/xxx (2+0) (with remote contacts)						
Remote contacts		YES				
Contact ratings		AC: 250V/0.5A; 125V/3A				
Terminal cross section		max. 1.5mm ²				
Remote terminal torque		0.25Nm				
Weight per unit		139g	149g	149g	155g	157g
Ordering code		508 009	508 011	508 013	508 111	508 015
Packaging dimensions (single unit)		108 x 74 x 24mm				

Connection diagram

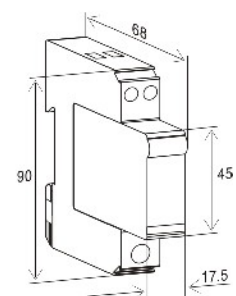
PROTEC CMR 80 (2+0)



Selection of back-up fuse



Dimensions



Accessory part for PROTEC CM(R) 80/xxx (2+0)

Type	Module PROTEC CM(R) 80/xxx (2+0)				
	150	275	320	385	440
Ordering code	508 174	508 164	508 175	508 146	508 147
Packaging dimensions (12 pcs.)	219 x 62 x 47mm				



PROTEC CM(R) 80 (1+1)

Multi-pole
Surge Arrester
 $I_{max} = 40kA$ per pole (8/20)

Category IEC/EN/VDE:	Class II/Type 2/C
Location of use:	Branch sub-distribution boards
Protection modes:	L - N, N - PE
Protective element:	MOV and GDT
Surge discharge ratings:	$I_{max} = 40/40kA$ (MOV/GDT)
Housing:	Modular design

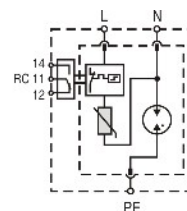


Technical data

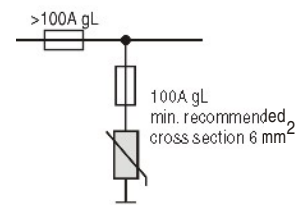
Type		PROTEC CM(R) 80/xxx (1+1)				
		150	275	320	385	440
In accordance with		IEC-61643-1				
Max. continuous operating voltage (AC/DC)	U _c	150/200V	275/350V	320/420V	385/500V	440/580V
Nominal discharge current (8/20)	I _n (MOV/GDT)	15kA/20kA				
Max. discharge current (8/20)	I _{max} (MOV/GDT)	40kA/40kA				
Protection level	U _p (MOV)	< 0.8kV	< 1.4kV	< 1.4kV	< 1.8kV	< 2.0kV
Protection level	U _{res} (GDT)	< 1.5kV				
Follow current	I _f (MOV/GDT)	NO/100A _{RMS}				
Response time	t _A (MOV/GDT)	< 25ns/< 100ns				
Residual current at U _c	I _{PE}	< 1.5mA				
Thermal protection		YES				
Terminal screw torque:	Upper terminals	max. 2Nm				
	Lower terminal	max. 3.5Nm				
Back-up fuse (if mains > 100 A)		100A gL				
Short-circuit withstand current		25kA/50Hz				
Temperature range		- 40°C + 80°C				
Terminal cross section:	Upper terminals	6mm ² (solid) / 4mm ² (stranded)				
	Lower terminal	35mm ² (solid) / 25mm ² (stranded)				
Mounting EN 60715		35mm top-hat rail				
Degree of protection		IP 20				
Housing material		thermoplastic; extinguishing degree UL 94 V-0				
Dimensions DIN 43880		1TE				
Weight per unit		124g	126g	126g	129g	130g
Ordering code		508 045	508 047	508 049	508 117	508 051
PROTEC CMR 80/xxx (1+1) (with remote contacts)						
Remote contacts		YES				
Contact ratings		AC: 250V/0.5A; 125V / 3A				
Terminal cross section		max. 1.5mm ²				
Remote terminal torque		0.25Nm				
Weight per unit		129g	131g	131g	134g	135g
Ordering code		508 053	508 055	508 057	508 119	508 059
Packaging dimensions (single unit)		108 x 74 x 24mm				

Connection diagram

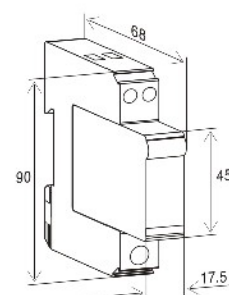
PROTEC CMR 80 (1+1)



Selection of back-up fuse



Dimensions



Accessory part for PROTEC CM(R) 80/xxx (1+1)

Type	Module PROTEC CM(R) 80/xxx (1+1)				
	150	275	320	385	440
Ordering code	508 186	508 187	508 188	508 189	508 190
Packaging dimensions (12 pcs.)	219 x 62 x 47mm				



PROTEC CM(R) 80A (1+1)

Multi-pole
Surge Arrester
 $I_{max} = 40kA$ per pole (8/20)

Category IEC/EN/VDE:	Class II/Type 2/C
Location of use:	Branch sub-distribution boards
Protection modes:	L - N, N - PE
Protective element:	MOV and GDT
Surge discharge ratings:	$I_{max} = 40/40kA$ (MOV/GDT)
Housing:	Modular design

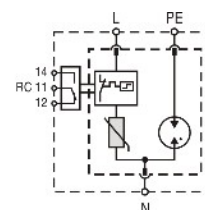


Technical data

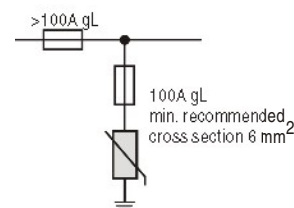
Type	PROTEC CM(R) 80A/xxx (1+1)					
		150	275	320	385	440
In accordance with		IEC-61643-1				
Max. continuous operating voltage (AC/DC)	U _c	150/200V	275/350V	320/420V	385/500V	440/580V
Nominal discharge current (8/20)	I _n (MOV/GDT)	15kA/20kA				
Max. discharge current (8/20)	I _{max} (MOV/GDT)	40kA/40kA				
Protection level	U _p (MOV)	< 0.8kV	< 1.4kV	< 1.4kV	< 1.8kV	< 2.0kV
Protection level	U _{res} (GDT)	< 1.5kV				
Follow current	I _f (MOV/GDT)	NO/100A _{RMS}				
Response time	t _A (MOV/GDT)	< 25ns/< 100ns				
Residual current at U _c	I _{PE}	< 1.5mA				
Thermal protection		YES				
Terminal screw torque:	Upper terminals	max. 2Nm				
	Lower terminal	max. 3.5Nm				
Back-up fuse (if mains > 100 A)		100A gL				
Short-circuit withstand current		25kA/50Hz				
Temperature range		- 40°C + 80°C				
Terminal cross section:	Upper terminals	6mm ² (solid) / 4mm ² (stranded)				
	Lower terminal	35mm ² (solid) / 25mm ² (stranded)				
Mounting EN 60715		35mm top-hat rail				
Degree of protection		IP 20				
Housing material		thermoplastic; extinguishing degree UL 94 V-0				
Dimensions DIN 43880		1TE				
Weight per unit		124g	126g	126g	129g	130g
Ordering code		508 120	508 122	508 124	508 126	508 128
PROTEC CMR 80A/xxx (1+1) (with remote contacts)						
Remote contacts		YES				
Contact ratings		AC: 250V/0.5A; 125V / 3A				
Terminal cross section		max. 1.5mm ²				
Remote terminal torque		0.25Nm				
Weight per unit		129g	131g	131g	134g	135g
Ordering code		508 130	508 132	508 134	508 136	508 138
Packaging dimensions (single unit)		108 x 74 x 24mm				

Connection diagram

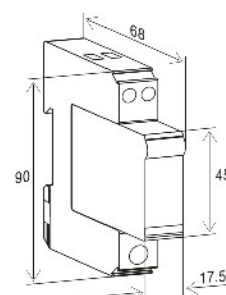
PROTEC CMR 80A (1+1)



Selection of back-up fuse



Dimensions



Accessory part for PROTEC CM(R) 80A/xxx (1+1)

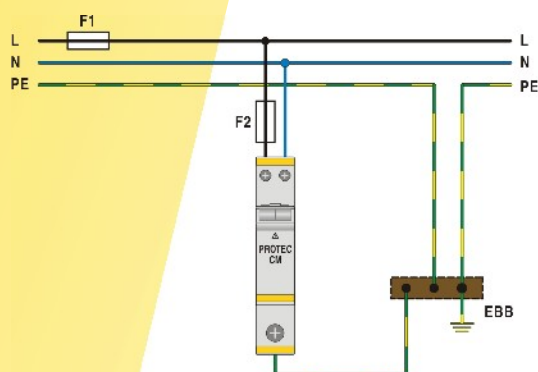
Type	Module PROTEC CM(R) 80A/xxx (1+1)				
	150	275	320	385	440
Ordering code	508 176	508 143	508 177	508 144	508 145
Packaging dimensions (12 pcs.)	219 x 62 x 47mm				



PROTEC CM Connections

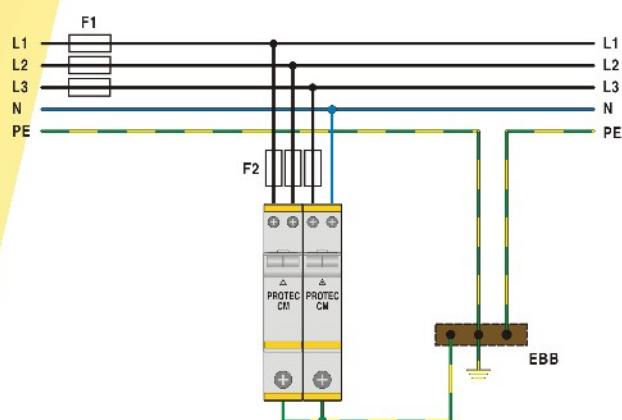
TN-S Network (Single-phase)

PROTEC CM 80 (2+0)



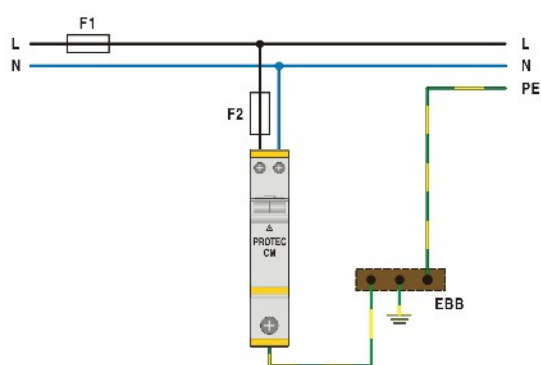
TN-S Network (Three phase)

2x PROTEC CM 80 (2+0)



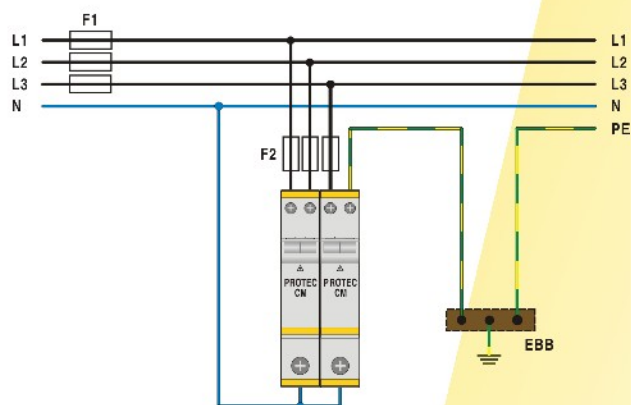
TT Network (Single-phase)

PROTEC CM 80 (1+1)



TT Network (Three phase)

PROTEC CM 80 (2+0); PROTEC CM 80A (1+1)



Modular SINGLE and MULTI-POLE Surge Arresters, Reduced Leakage current

Category IEC / EN / VDE:	Class II / Type 2 / C
Location of use:	Branch Sub-distribution Boards
Protection modes:	L-PE, N-PE
Protective elements:	MOV and GDT
Surge discharge ratings:	$I_{\max}$ = up to 40kA per pole
Internal protection and safety:	Separate thermal disconnecter for each MOV
Status indication:	Mechanical flag + remote contacts (R)
Dimensions DIN 43880:	1TE

PROTEC CG Series:

The PROTEC CG series of over-voltage surge protective devices has been developed to protect against indirect lightning discharges and induced voltages and is intended to provide protection in zones 1 - 2 per IEC 62305.

PROTEC CG consists of a high performance varistor blocks with thermal disconnection device in series with an encapsulated air gap to limit leakage current.

The plug-in module / base design facilitates replacement of a failed module in situ without the need to remove system wiring.

PROTEC CMG Series:

The PROTEC CMG series of over voltage surge protective devices has been developed to protect against indirect lightning discharges and induced voltages and is intended to provide protection in zones 1/2 as per IEC 62305.

It consists of a two high performance varistor blocks with thermal disconnection devices in series with an encapsulated air gap to limit leakage current. It provides both L-PE and N-PE protection modes.

The plug-in module / base design facilitates replacement of a failed module without the need to remove system wiring.



PROTEC CG(R) 40
PROTEC CG(R) 20
PROTEC CMG(R) 40 (2+0)

PROTEC CG(R) 40

Single-pole
Surge Arrester
 $I_{max} = 40kA$ (8/20)

Category IEC/EN/VDE:	Class II/Type 2/C
Location of use:	Branch sub-distribution boards
Protection modes:	L/N - PE, L - PEN
Protective element:	MOV and GDT
Surge discharge ratings:	$I_{max} = 40kA$
Housing:	Modular design

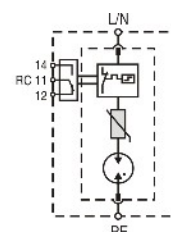


Technical data

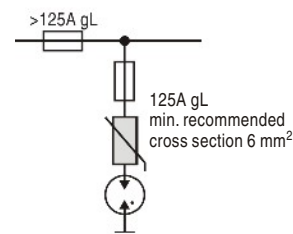
Type	PROTEC CG(R) 40 /xxx			
	75	275	385	
In accordance with IEC-61643-1				
Max. continuous operating voltage (AC/DC)	U_C	75/100V	275/350V	385/500V
Nominal discharge current (8/20)	I_n (MOV/GDT)	20kA	20kA	20kA
Max. discharge current (8/20)	I_{max} (MOV/GDT)	40kA	40kA	40kA
Protection level	U_p (MOV)	< 1.5kV	< 1.5kV	< 1.8kV
Protection level	U_{res} (GDT)		< 1.5kV	
Follow current	I_f (MOV/GDT)		NO/100A _{RMS}	
Response time	t_A (MOV/GDT)		< 25ns / < 100ns	
Residual current at U_C	I_{PE}		< 1.5mA	
Thermal protection			YES	
Terminal screw torque			Max. 4.5Nm	
Back-up fuse (if mains > 125 A)			125A gL	
Short-circuit withstand current			25kA / 50Hz	
Temperature range			- 40°C + 80°C	
Terminal cross section			35mm ² (solid) / 25mm ² (stranded)	
Mounting EN 60715			35 mm top-hat rail	
Degree of protection			IP 20	
Housing material			thermoplastic; extinguishing degree UL 94 V-0	
Dimensions DIN 43880			1TE	
Weight per unit		112g	130g	132g
Ordering code		500 323	500 325	500 327
PROTEC CGR 40/xxx (with remote contacts)				
Remote contacts			YES	
Contact ratings			AC: 250V/0.5A; 125V/3A	
Terminal cross section			max. 1.5mm ²	
Remote terminal torque			0.25Nm	
Weight per unit		117g	135g	137g
Ordering code		500 329	500 331	500 333
Packaging dimensions (single unit)			108 x 74 x 24mm	

Connection diagram

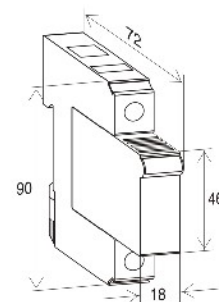
PROTEC CGR 40



Selection of back-up fuse



Dimensions



Accessory part for PROTEC CG(R) 40/xxx

Type	Module PROTEC CG(R) 40/xxx		
	75	275	385
Ordering code	500 484	500 485	500 486
Packaging dimensions (12 pcs.)		219 x 62 x 47mm	



PROTEC CG(R) 20

Single-pole
Surge Arrester
 $I_{max} = 20kA (8/20)$

Category IEC/EN/VDE:	Class II/Type 2/C
Location of use:	Branch sub-distribution boards
Protection modes:	L/N - PE
Protective element:	MOV and GDT
Surge discharge ratings:	$I_{max} = 20kA$
Housing:	Modular design

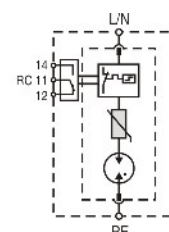


Technical data

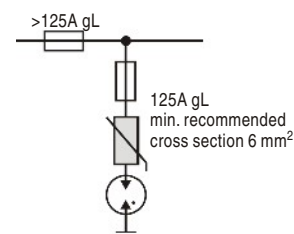
Type	PROTEC CG(R) 20 /xxx			
	75	275	385	
In accordance with IEC-61643-1				
Max. continuous operating voltage (AC/DC)	U_c	75/100V	275/350V	385/500V
Nominal discharge current (8/20)	I_n (MOV/GDT)	10kA	10kA	10kA
Max. discharge current (8/20)	I_{max} (MOV/GDT)	20kA	20kA	20kA
Protection level	U_p (MOV)	< 1.5kV	< 1.5kV	< 1.8kV
Protection level	U_{res} (GDT)		< 1.5kV	
Follow current	I_f (MOV/GDT)		NO/100A _{RMS}	
Response time	t_A (MOV/GDT)		< 25ns / < 100ns	
Residual current at U_c	I_{PE}		< 1.5mA	
Thermal protection		YES		
Terminal screw torque		max. 4.5Nm		
Back-up fuse (if mains > 125 A)		125A gL		
Short-circuit withstand current		25kA / 50Hz		
Temperature range		- 40°C + 80°C		
Terminal cross section		35mm ² (solid) / 25mm ² (stranded)		
Mounting EN 60715		35 mm top-hat rail		
Degree of protection		IP 20		
Housing material		thermoplastic; extinguishing degree UL 94 V-0		
Dimensions DIN 43880		1TE		
Weight per unit		110g	128g	130g
Ordering code		500 239	500 241	500 243
PROTEC CGR 20/xxx (with remote contacts)				
Remote contacts		YES		
Contact ratings		AC: 250V/0.5A; 125V/3A		
Terminal cross section		max. 1.5mm ²		
Remote terminal torque		0.25Nm		
Weight per unit		115g	133g	135g
Ordering code		500 245	500 247	500 249
Packaging dimensions (single unit)		108 x 74 x 24mm		

Connection diagram

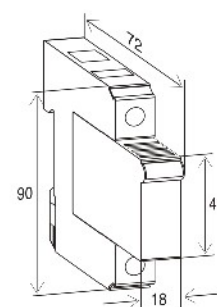
PROTEC CGR 20



Selection of back-up fuse



Dimensions



Accessory part for PROTEC CG(R) 20/xxx

Type	Module PROTEC CG(R) 20/xxx		
	75	275	385
Ordering code	500 487	500 488	500 489
Packaging dimensions (12 pcs.)	219 x 62 x 47mm		



PROTEC CMG(R) 40 (2+0)

Multi-pole
Surge Arrester
 $I_{max} = 20kA$ per pole (8/20)

Category IEC/EN/VDE:	Class II/Type 2/C
Location of use:	Branch sub-distribution boards
Protection modes:	L/N - PE
Protective element:	MOV and GDT
Surge discharge ratings:	$I_{max} = 20kA$
Housing:	Modular design

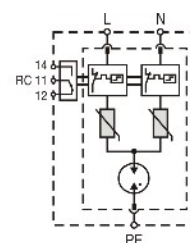


Technical data

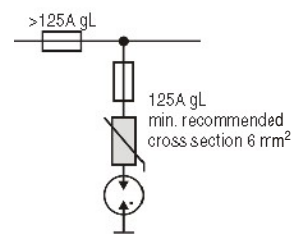
Type		PROTEC CMG(R) 40 /xxx (2+0)	
		150	275
In accordance with		IEC-61643-1	
Max. continuous operating voltage (AC/DC)	U _c	150/200V	275/350V
Nominal discharge current (8/20)	I _n (MOV/GDT)	10kA	10kA
Max. discharge current (8/20)	I _{max} (MOV/GDT)	20kA	20kA
Protection level	U _p (MOV)	< 1.5kV	< 1.5kV
Protection level	U _{res} (GDT)	< 1.5kV	
Follow current	I _f (MOV/GDT)	NO/100A _{RMS}	
Response time	t _A (MOV/GDT)	< 25ns / < 100ns	
Residual current at U _c	I _{PE}	< 1.5mA	
Thermal protection		YES	
Terminal screw torque:	Upper terminals	max. 2Nm	
	Lower terminal	max. 3.5Nm	
Back-up fuse (if mains > 125 A)		125A gL	
Short-circuit withstand current		25kA / 50Hz	
Temperature range		- 40°C + 80°C	
Terminal cross section:	Upper terminals	6mm ² (solid) / 4mm ² (stranded)	
	Lower terminal	35mm ² (solid) / 25mm ² (stranded)	
Mounting EN 60715		35 mm top-hat rail	
Degree of protection		IP 20	
Housing material		thermoplastic; extinguishing degree UL 94 V-0	
Dimensions DIN 43880		1TE	
Weight per unit		130g	146g
Ordering code		508 197	508 198
PROTEC CMGR 40/xxx (2+0) (with remote contacts)			
Remote contacts		YES	
Contact ratings		AC: 250V/0.5A; 125V/3A	
Terminal cross section		max. 1.5mm ²	
Remote terminal torque		0.25Nm	
Weight per unit		135g	151g
Ordering code		508 199	508 200
Packaging dimensions (single unit)		108 x 74 x 24mm	

Connection diagram

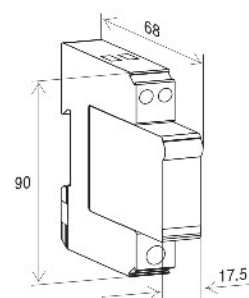
PROTEC CMGR 40



Selection of back-up fuse



Dimensions



Accessory part for PROTEC CMG(R) 40/xxx (2+0)

Type	Module PROTEC CMG(R) 40/xxx (2+0)	
	150	275
Ordering code	508 201	508 202
Packaging dimensions (12 pcs.)	219 x 62 x 47mm	



SINGLE and MULTI-POLE Surge Arresters

Category IEC / EN / VDE:	Class III / Type 3 / D
Location of use:	Branch Sub-distribution Boards
Protection modes:	L/N - PE
Protective elements:	MOV and GDT
Surge discharge ratings:	$U_{OC} / I_{SC} = 10kV / 5kA$ per pole (1.2/50, 8/20)
Internal protection and safety:	Separate thermal disconnecter for each MOV
Status indication:	Mechanical flag + remote contacts (R)
Dimensions DIN 43880:	1TE

PROTEC D(R) 10 Series:

The PROTEC D series of overvoltage surge protective devices has been developed to protect against indirect lightning discharges and induced voltages. It is intended to provide protection in zones 2 - 3 as per IEC 62305. The plug-in module / base design facilitate replacement of a failed module without the need to remove system wiring etc.

PROTEC D consists of a high performance varistor block with thermal disconnection device.

PROTEC DM consists of two performance varistor blocks with thermal disconnection devices configured to provide multi-pole protection to L-PE and N-PE in one enclosure.

PROTEC DMG consists of two performance varistor blocks with thermal disconnection devices and galvanic isolation N to PE for TT single phase networks.

MPE-ZE50 is similar in internal construction to the PROTEC DMG and is intended for inclusion in cable duct raceways. An LED indicator is provided for external visual indication of operating status.



**PROTEC D(R) 10
PROTEC DM(R) 10
PROTEC DMG(R) (2+0)
MPE-ZE50**

PROTEC D(R)

Single-pole
Surge Arrester
 $U_{OC}/I_{SC} = 10kV/5kA (1.2/50, 8/20)$

Category IEC/EN/VDE:	Class III/Type 3/D
Location of use:	Branch sub-distribution boards
Protection modes:	L/N - PE
Protective element:	MOV
Surge discharge ratings:	$U_{OC}/I_{SC} = 10kV/5kA$
Housing:	Modular design

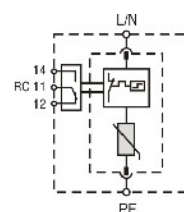


Technical data

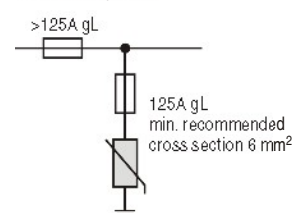
Type	PROTEC D(R) 10/xxx					
	150	275	320	385	440	
In accordance with		IEC-61643-1				
Max. continuous operating voltage (AC/DC)	U _C	150/200V	275/350V	320/420V	385/500V	440/580V
Combination wave(1.2/50, 8/20)	U _{OC} /I _{SC}	10kV/5kA				
Max. discharge current (8/20)	I _{max}	10kA				
Protection level at U _{OC} /I _{SC}	U _P	< 0.8kV	< 1.2kV	< 1.2kV	< 1.6kV	< 2.0kV
Follow current	I _f	NO				
Response time	t _A	< 25ns				
Residual current at U _C	I _{PE}	< 1.5mA				
Thermal protection		YES				
Terminal screw torque		max. 4.5Nm				
Back-up fuse (if mains > 125A)		125A gL				
Short-circuit withstand current		10kA/50Hz				
Temperature range		- 40°C + 80°C				
Terminal cross section		35mm ² (solid)/25mm ² (stranded)				
Mounting EN 60715		35mm top-hat rail				
Degree of protection		IP 20				
Housing material		thermoplastic; extinguishing degree UL 94 V-0				
Dimensions DIN 43880		1TE				
Weight per unit		124g	130g	130g	131g	132g
Ordering code		508 601	508 603	508 605	508 617	508 607
PROTEC DR 10/xxx (with remote contacts)						
Remote contacts		YES				
Contact ratings		AC: 250V/0.5A; 125V/3A				
Terminal cross section		max. 1.5mm ²				
Remote terminal torque		0.25Nm				
Weight per unit		129g	135g	135g	136g	137g
Ordering code		508 609	508 611	508 613	508 619	508 615
Packaging dimensions (single unit)		108 x 74 x 24mm				

Connection diagram

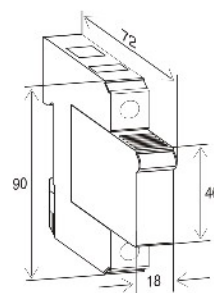
PROTEC DR 10/xxx



Selection of back-up fuse



Dimensions



Accessory part for PROTEC D(R) 10/xxx

Type	Module PROTEC D(R) 10/xxx				
	150	275	320	385	440
Ordering code	508 620	508 621	508 622	508 623	508 624
Packaging dimensions (12 pcs.)	219 x 62 x 47mm				



PROTEC DM(R) (2+0)

Category IEC/EN/VDE:	Class III/Type 3/D
Location of use:	Branch sub-distribution boards
Protection modes:	L/N - PE
Protective element:	MOV
Surge discharge ratings:	$U_{oc}/I_{sc} = 10kV/5kA$ / pole
Housing:	Modular design

Technical data

Type		150	275	320	385	440
In accordance with IEC-61643-1						
Max. continuous operating voltage (AC/DC)	U_c	150/200V	275/350V	320/420V	385/500V	440/580V
Combination wave(1.2/50, 8/20)	U_{oc}/I_{sc}	10kV/5kA per pole				
Max. discharge current (8/20)	I_{max}	10kA per pole				
Protection level at U_{oc}/I_{sc}	U_p	< 0.8kV	< 1.2kV	< 1.2kV	< 1.6kV	< 2.0kV
Follow current	I_f	NO				
Response time	t_A	< 25ns				
Residual current at U_c	I_{PE}	< 1.5mA				
Thermal protection		YES				
Terminal screw torque:	Upper terminals	max. 2Nm				
	Lower terminal	max. 3.5Nm				
Back-up fuse (if mains > 63A)		63A gL				
Short-circuit withstand current		10kA / 50Hz				
Temperature range		- 40°C + 80°C				
Terminal cross section:	Upper terminals	6mm ² (solid)/4mm ² (stranded)				
	Lower terminal	35mm ² (solid)/25mm ² (stranded)				
Mounting EN 60715		35mm top-hat rail				
Degree of protection		IP 20				
Housing material		thermoplastic; extinguishing degree UL 94 V-0				
Dimensions DIN 43880		1TE				
Weight per unit		136g	140g	150g	153g	155g
Ordering code		508 029	508 031	508 033	508 113	508 035
PROTEC DMR 10/xxx (2+0) (with remote contacts)						
Remote contacts		YES				
Contact ratings		AC: 250V/0.5A; 125V/3A				
Terminal cross section		max. 1.5mm ²				
Remote terminal torque		0.25Nm				
Weight per unit		141g	145g	155g	158g	160g
Ordering code		508 037	508 039	508 041	508 115	508 043
Packaging dimensions (single unit)		108 x 74 x 24mm				

Accessory part for PROTEC DM(R) 10/xxx (2+0)

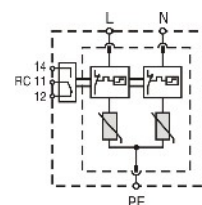
Type	Module PROTEC DM(R) 10/xxx (2+0)				
	150	275	320	385	440
Ordering code	508 191	508 192	508 193	508 194	508 195
Packaging dimensions (12 pcs.)	219 x 62 x 47mm				

Multi-pole
Surge Arrester
 $U_{oc}/I_{sc} = 10kV/5kA$ per pole (1.2/50, 8/20)

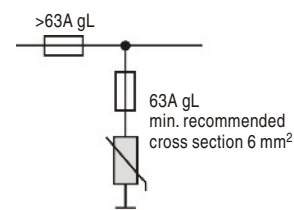


Connection diagram

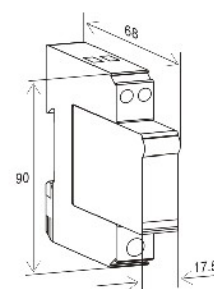
PROTEC DMR 10/xxx (2+0)



Selection of back-up fuse



Dimensions



PROTEC DMG(R) (2+0)

Multi-pole
Surge Arrester
 $U_{OC}/I_{SC} = 10\text{kV}/5\text{kA}$ per pole (1.2/50, 8/20)

Category IEC/EN/VDE:	Class III/Type 3/D
Location of use:	Branch sub-distribution boards
Protection modes:	L/N - PE
Protective element:	MOV and GDT
High surge discharge ratings:	$U_{OC}/I_{SC} = 10\text{kV}/5\text{kA}$ /pole
Housing:	Modular design

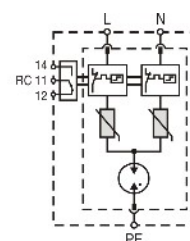


Technical data

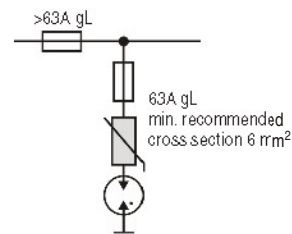
Type		PROTEC DMG(R) (2+0) 320
In accordance with		IEC-61643-1
Max. continuous operating voltage (AC/DC)	U _C	320/420V
Combination wave(1.2/50, 8/20)	U _{OC} /I _{SC}	10kV/5kA per pole
Max. discharge current (8/20)	I _{max}	10kA
Protection level at U _{OC} /I _{SC}	U _p	< 1.0kV
Follow current	I _f	NO
Response time	t _A	100ns
Residual current at U _C	I _{PE}	/
Thermal protection		YES
Terminal screw torque:	Upper terminals	max. 2Nm
	Lower terminal	max. 3.5Nm
Back-up fuse (if mains > 63A)		63A gL
Short-circuit withstand current		10kA/50Hz
Temperature range		- 40°C + 80°C
Terminal cross section:	Upper terminals	6mm ² (solid) / 4mm ² (stranded)
	Lower terminal	35mm ² (solid) / 25mm ² (stranded)
Mounting EN 60715		35 mm top-hat rail
Degree of protection		IP 20
Housing material		thermoplastic; extinguishing degree UL 94 V-0
Dimensions DIN 43880		1TE
Weight per unit		118g
Ordering code		508 021
PROTEC DMGR (2+0) (with remote contacts)		
Remote contacts		YES
Contact ratings		AC: 250V/0.5A; 125V/3A
Terminal cross section		max. 1.5mm ²
Remote terminal torque		0.25Nm
Weight per unit		123g
Ordering code		508 027
Packaging dimensions (single unit)		108 x 74 x 24mm

Connection diagram

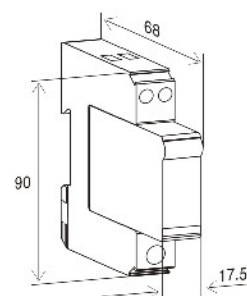
PROTEC DMGR 20



Selection of back-up fuse



Dimensions



Accessory part for PROTEC DMG(R) (2+0)

Type	Module PROTEC DMG(R) (2+0) 320
Ordering code	508 196
Packaging dimensions (12 pcs.)	219 x 62 x 47mm



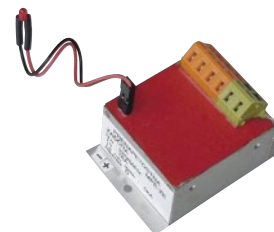
MPE-ZE50

Category IEC/EN/VDE:	Class III/Type 3/D
Location of use:	Cable ducts
Protection modes:	L/N - PE
Protective element:	MOV and GDT
Surge discharge ratings:	$U_{OC}/I_{SC} = 5kV/2.5kA$
Fault indication:	Red LED
Housing:	Compact design

Technical data

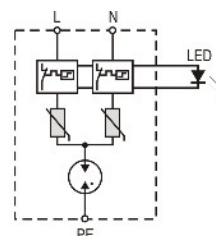
Type	MPE-ZE50	
In accordance with	IEC-61643-1	
Max. continuous operating voltage (AC/DC)	U_C	320/420V
Combination wave (1.2/50, 8/20)	U_{OC}/I_{SC}	5kV/2.5kA per pole
Max. discharge current (8/20)	I_{max}	5kA
Protection level at U_{OC}/I_{SC}	U_P	< 1.5kV
Follow current	I_f	NO
Response time	t_A	< 100ns
Thermal protection	YES	
Back-up fuse (if mains > 35A)	35A gL	
Short-circuit withstand current	10kA/50Hz	
Temperature range	- 40°C+80°C	
Terminal cross section	2.5mm ² (stranded)	
Mounting	cable ducts	
Degree of protection	IP 20	
Housing material	thin plate (metal)	
Dimensions	/	
Weight per unit	52g	
Ordering code	121 207	
Packaging dimensions (single unit)		

Multi-pole Surge Arrester $U_{OC}/I_{SC} = 5kV/2.5kA$ per pole (1.2/50, 8/20)

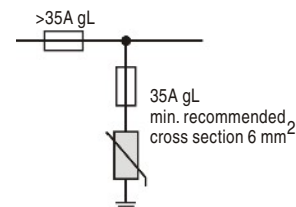


Connection diagram

MPE-ZE50



Selection of back-up fuse



Surge Arresters for Overhead Power Lines

Category IEC / EN / VDE:	Class II / Type 2 / A
Protection modes:	L/N - PE
Protective elements:	MOV
Surge discharge ratings:	I_{max} : up to 40kA (8/20)
Housing:	COMPACT HOUSING

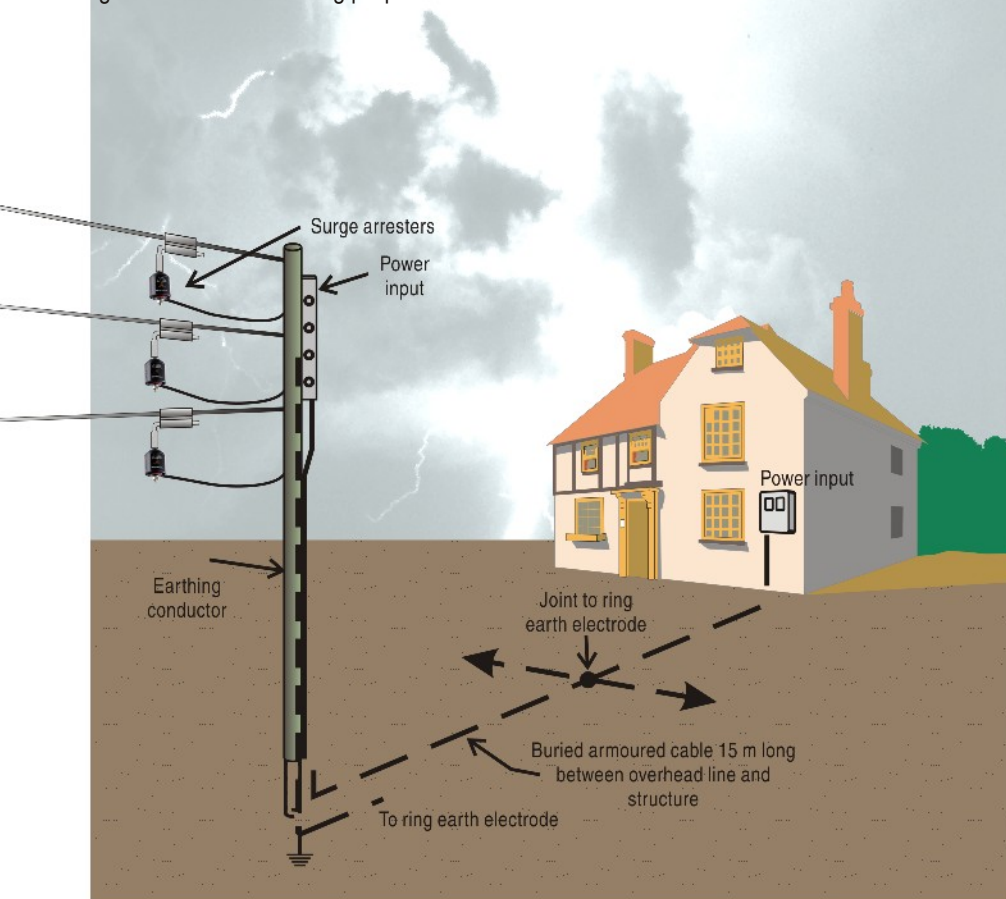
PROTEC A Series:

The PROTEC A series of overvoltage surge protective devices has been developed to protect against indirect lightning discharges on overhead power lines. It consists of a high performance varistor block with disconnection device which protects against short circuit conditions.

PROTEC A - provides visual status indication via a bright RED pop-out flag in the event of failure which can easily be seen from beneath the line.

PROTEC AQ - provides a more compact design.

PROTEC AQS - provides the same compactness as the AQ but with a silicon jacket for greater hermetic sealing properties.



PROTEC AQ 40
PROTEC AQS 40
PROTEC A 30
PROTEC AQ 25

PROTEC AQ 40

Single-pole
Surge Arrester
 $I_{max} = 40\text{kA (8/20)}$

Category IEC/EN/VDE:	Class II/Type 2/A
Location of use:	Overhead power lines
Protection modes:	L/N - PE
Protective element:	MOV
Surge discharge ratings:	$I_{max} = 40\text{kA}$
Housing:	Compact design

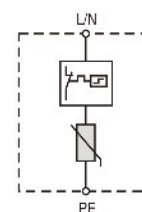


Technical data

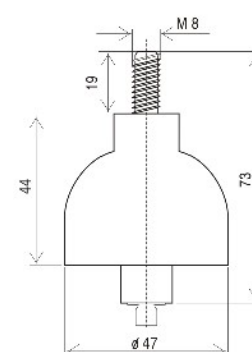
Type	PROTEC AQ 40/xxx				
	150	275	320	385	440
In accordance with IEC-61643-11					
Max. continuous operating voltage (AC/DC) U_C	150/200V	275/350V	320/420V	385/500V	440/580V
Nominal discharge current (8/20) I_n	20kA				
Max. discharge current (8/20) I_{max}	40kA				
Protection level U_p	< 1.2kV	< 1.7kV	< 1.8kV	< 2.1kV	< 2.3kV
Follow current I_f	NO				
Response time t_A	< 25ns				
Residual current at U_C I_{PE}	< 2mA				
Thermal protection	YES				
Terminal screw torque	max. 3.5Nm				
Back-up fuse	NO				
Temperature range	- 40°C + 80°C				
Terminal cross section L/N	M8				
PE	6 mm ² (stranded)				
Mounting	outdoors				
Housing material	thermoplastic; extinguishing degree UL 94-VO				
Dimensions DIN 43880	/				
Weight per unit	144g	146g	149g	154g	157g
Ordering code	509 029	509 031	509 033	509 047	509 035
Packaging dimensions (60 pcs.)	290 x 250 x 210mm				

Connection diagram

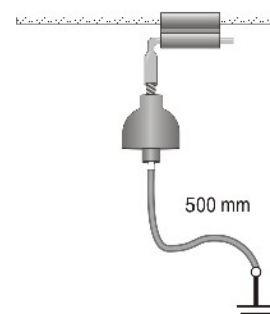
PROTEC AQ 40/xxx



Dimensions



Mounting



PROTEC AQS 40

Single-pole
Surge Arrester
 $I_{max} = 40kA$ (8/20)

Category IEC/EN/VDE:	Class II/Type 2/A
Location of use:	Overhead power lines
Protection modes:	L/N - PE
Protective element:	MOV
Surge discharge ratings:	$I_{max} = 40kA$
Housing:	Compact design

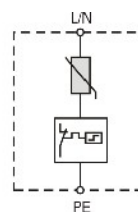


Technical data

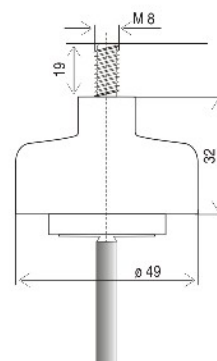
Type		PROTEC AQS 40/xxx			
		150	275	320	440
In accordance with		IEC-61643-11			
Max. continuous operating voltage (AC/DC)	U_C	150/200V	275/350V	320/420V	440/580V
Nominal discharge current (8/20)	I_n	20kA	20kA	20kA	20kA (10kA)
Max. discharge current (8/20)	I_{max}	40kA			
Protection level	U_p	< 0.9kV	< 1.4kV	< 1.4kV	< 2.0kV (< 1.8kV)
Follow current	I_f	NO			
Response time	t_A	< 25ns			
Residual current at U_C	I_{PE}	< 2mA			
Thermal protection		YES			
Terminal screw torque		max. 3.5Nm			
Back-up fuse		NO			
Short-circuit withstand current		25kA / 50Hz			
Temperature range		- 40°C + 80°C			
Terminal cross section	L/N PE	M8 6mm ² (stranded)			
Mounting		outdoors			
Housing material		silicon			
Weight per unit		122g	126g	130g	134g
Ordering code		509 049	509 051	509 053	509 055
Packaging dimensions (100 pcs.)		382 x 349 x 250mm			

Connection diagram

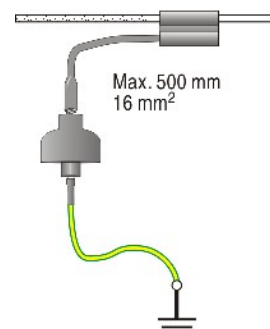
PROTEC AQS 40/xxx



Dimensions



Mounting



PROTEC A 30

Single-pole
Surge Arrester
 $I_{\max} = 40\text{kA (8/20)}$

Category IEC/EN/VDE:	Class II/Type 2/A
Location of use:	Overhead power lines
Protection modes:	L/N - PE
Protective element:	MOV
Surge discharge ratings:	$I_{\max} = 30\text{kA}$
Housing:	Compact design

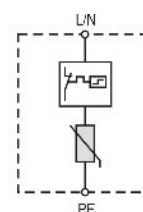


Technical data

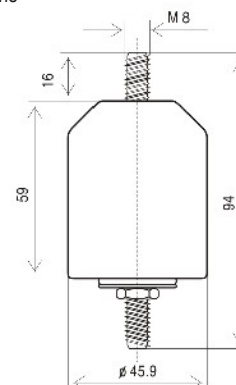
Type	PROTEC A 30/xxx					
	150	275	320	385	440	
In accordance with		IEC-61643-11				
Max. continuous operating voltage (AC/DC)	U _C	150/200V	275/350V	320/420V	385/500V	440/580V
Nominal discharge current (8/20)	I _n	15kA				
Max. discharge current (8/20)	I _{max}	30kA				
Protection level	U _p	< 1.0kV	< 1.3kV	< 1.5kV	< 1.6kV	< 1.8kV
Follow current	I _f	NO				
Response time	t _A	< 25ns				
Residual current at U _C	I _{PE}	< 2mA				
Thermal protection		YES				
Terminal screw torque		max. 3.5Nm				
Back-up fuse		NO				
Temperature range		- 40°C + 80°C				
Terminal cross section	L/N	M8				
	PE	6 mm ² (stranded)				
Mounting		outdoors				
Housing material		thermoplastic; extinguishing degree UL 94-VO				
Dimensions DIN 43880		/				
Weight per unit		132g	134g	137g	142g	145g
Ordering code		509 009	509 011	509 013	509 043	509 015
Packaging dimensions (single unit)		105 x 54 x 50mm				

Connection diagram

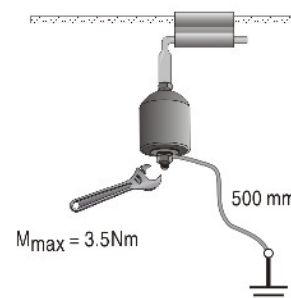
PROTEC A 30/xxx



Dimensions



Mounting



PROTEC AQ 25

Single-pole
Surge Arrester
 $I_{max} = 25kA (8/20)$

Category IEC/EN/VDE:	Class II/Type 2/A
Location of use:	Overhead power lines
Protection modes:	L/N - PE
Protective element:	MOV
Surge discharge ratings:	$I_{max} = 25kA$
Housing:	Compact design

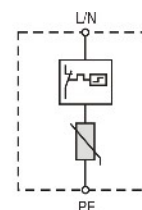


Technical data

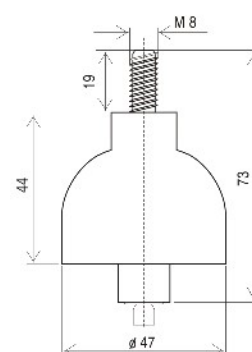
Type	PROTEC AQ 25/xxx					
	150	275	320	385	440	
In accordance with		IEC-61643-11				
Max. continuous operating voltage (AC/DC)	U _C	150/200V	275/350V	320/420V	385/500V	440/580V
Nominal discharge current (8/20)	I _n	10kA				
Max. discharge current (8/20)	I _{max}	25kA				
Protection level	U _p	< 0.9kV	< 1.3kV	< 1.4kV	< 1.7kV	< 1.9kV
Follow current	I _f	NO				
Response time	t _A	< 25ns				
Residual current at U _C	I _{PE}	< 2mA				
Thermal protection		YES				
Terminal screw torque		max. 3.5Nm				
Back-up fuse		NO				
Temperature range		- 40°C + 80°C				
Terminal cross section	L/N	M8				
	PE	6 mm ² (stranded)				
Mounting		outdoors				
Housing material		thermoplastic; extinguishing degree UL 94-VO				
Dimensions DIN 43880		/				
Weight per unit		104g	106g	108g	110g	112g
Ordering code		509 017	509 019	509 021	509 045	509 023
Packaging dimensions (60 pcs.)		295 x 245 x 210mm				

Connection diagram

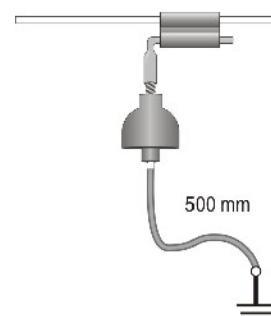
PROTEC AQ 25/xxx



Dimensions



Mounting



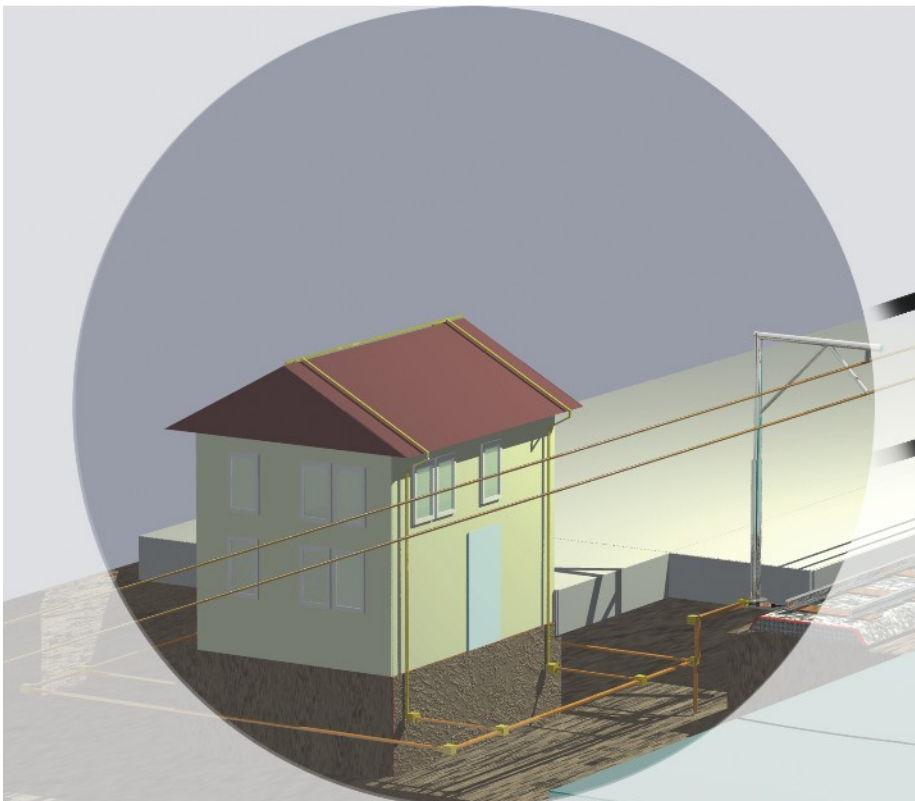
Isolating Spark Gaps (ISG) for Equipotential Bonding

I_{max} : 100kA (8/20)

The EPZ series of isolating spark gaps have been developed to prevent unsafe potential gradients from establishing between adjacent metallic structures or surfaces during lightning discharges. This is achieved by an internal voltage switching component which operates to establish equi-potential equalisation when its predetermined spark-over voltage is reached, thereby preventing damage to equipment or eliminating unsafe conditions to personnel.

The EPZ has been developed for use in applications such as: lightning protection grounding, where for instance circumstances may dictate that a “clean” signal ground can not be directly connected to a “dirty” power system ground. It has also found wide application in the petrochemical industry in the protection of oil and gas pipeline insulating flanges from flash-overs during direct or nearby lightning discharges or when ground faults of nearby power transmission lines can cause large potential gradients across these flanges. The EPZ is available in a hermetically sealed version for direct burial applications. It is also available with Baseefa Ex approval certificate for use in hazardous locations.

These devices have been developed to meet the requirements EN 50164-3 Lightning Protection Components (LPC) - Requirements for Isolating Spark Gaps, and the soon to be released standard IEC 62561-3 Ed. 1.0 - Requirements for Lightning Protection Components (LPC) - Part 3: Requirements for isolating spark gaps.



EPZ 100
EPZ 100 Ex

EPZ 100

Equipotential Bonding
 $I_{max} = 100kA (8/20)$

Location of use:	Exposed environments or direct burial
Protection element:	GDT
High surge discharge rating:	$I_{max} = 100kA$
Housing:	Corrosion resistant enclosure with hermetic environmental seal and flying leads for ease of connection.

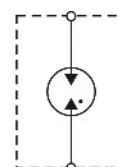


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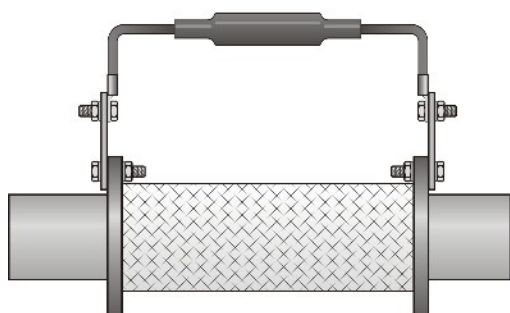
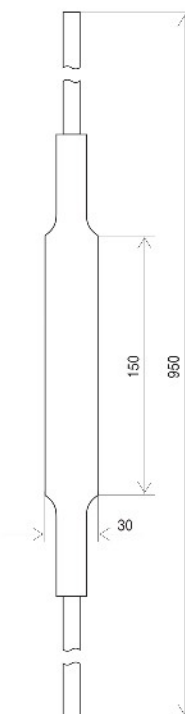
Type	EPZ 100/xxx	
	350	500
Electrical Characteristics		
U _{sd} N (100 V/s)	350V	500V
U _{si} (1 kV/μs)	1000V	1500V
I _{max} (8/20 μs)	100kA	100kA
Capacitance	< 10pf	
Resistance	> 1GΩ	
Dimensions		
Nom. outer diameter	28mm	
Nom. length	140mm	
Length with cables	1m approx.	
Cable		
Cross sectional area	16mm ²	
Length	450mm approx.	
Number of conductors	≥ 462/0.21	
Insulation	Double insulated	
Environmental protection	UV stabilised, flame retardant	
Resistant	Acids, solvents and oils	
Connection	Suitable for screw or lug termination	
Physicals		
Housing	IP 67	
Application	Below / above grade	
Weight	0.5kg approx.	
Operating temperature	-30°C ... +70°C	
LIMITATIONS		
Connections	Electrical connections must be terminated in a suitably certified enclosure or safe area	
Service temperature range	-30°C ... +70°C	
Ordering code	509 509	509 511

Connection diagram

EPZ 100



Dimensions



EPZ 100 Ex

Equipotential Bonding
 $I_{max} = 100kA (8/20)$

Location of use:	Exposed environments or direct burial
Protection element:	GDT
High surge discharge rating:	$I_{max} = 100kA$
Housing:	Corrosion resistant enclosure with hermetic environmental seal and flying leads for ease of connection.

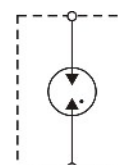


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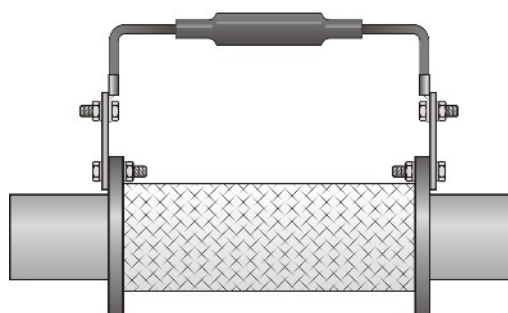
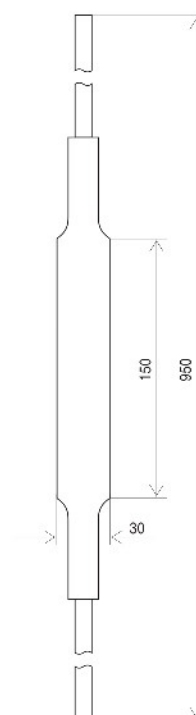
Type	EPZ 100/xxx Ex	
	350	500
Electrical Characteristics		
U _{sdcN} (100 V/s)	350V	500V
U _{si} (1 kV/μs)	1000V	1500V
I _{max} (8/20 μs)	100kA	100kA
Capacitance	< 10pf	
Resistance	> 1GΩ	
Dimensions		
Nom. outer diameter	28mm	
Nom. length	140mm	
Length with cables	1m approx.	
Cable		
Cross sectional area	16mm ²	
Length	450mm approx.	
Number of conductors	≥ 462/0.21	
Insulation	Double insulated	
Environmental protection	UV stabilised, flame retardant	
Resistant	Acids, solvents and oils	
Connection	Suitable for screw or lug termination	
Physicals		
Housing	IP 67	
Application	Below / above grade	
Weight	0.5kg approx.	
Operating temperature	-30°C ... +70°C	
LIMITATIONS		
Connections	Electrical connections must be terminated in a suitably certified enclosure or safe area	
Service temperature range	-30°C ... +70°C	
Ordering code	322 973	322 975

Connection diagram

EPZ 100 Ex



Dimensions

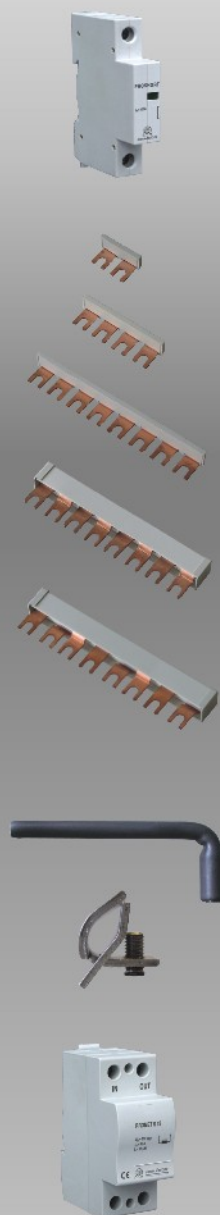


CONNECTION ACCESSORIES

CONNECTION ACCESSORIES

ISKRA is able to provide a large range of connection accessories, such as its PROBAR series of insulated busbar inter-connects for use with its PROTEC DIN rail family, as its fixing and fastening devices for use on overhead lines for its PROTEC A series. The PROSHORT is an accessory used with the PROTEC family to provide simple through connections when needed to facilitate ease of wiring installations.

PROSHORT CONNECTION PARTS PRONET S



PROSHORT

Feed-through terminal For DIN RAIL

PROSHORT is intended for connection between different circuits.



Technical data

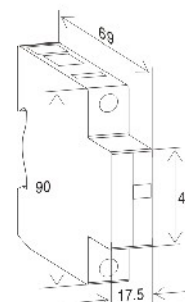
Type	PROSHORT	
Nominal voltage	U_n	230V
Nominal discharge current (8/20)	I_n	100A
Impulse current (10/350)	I_{imp}	100kA
Terminal screw torque		max. 3.5Nm
Back-up fuse		/
Short-circuit withstand current		25kA / 50Hz
Temperature range		- 40°C + 80°C
Terminal cross section		35mm ² (solid) / 25mm ² (stranded)
Mounting EN 60715		35 mm top-hat rail
Degree of protection		IP 20
Housing material		thermoplastic; extinguishing degree UL 94 V-0
Dimensions DIN 43880		1TE
Weight per unit		72g
Ordering code		501 101
Packaging dimensions (single unit)		108 x 74 x 24mm

Connection diagram

PROSHORT



Dimensions



CONNECTION PARTS

BUSBARS - Modular wiring systems

Busbars are used for bonding conductors, according to what type of system is used and number of connecting poles needed.

Single phase busbars

Type	PROBAR 1-2
No. of poles	2
Busbar cross section	16mm ²
Ordering code	501 301

Type	PROBAR 1-3
No. of poles	3
Busbar cross section	16mm ²
Ordering code	501 303

Type	PROBAR 1-4
No. of poles	4
Busbar cross section	16mm ²
Ordering code	501 305

Type	PROBAR 1-5
No. of poles	5
Busbar cross section	16mm ²
Ordering code	501 307

Type	PROBAR 1-6
No. of poles	6
Busbar cross section	16mm ²
Ordering code	501 309

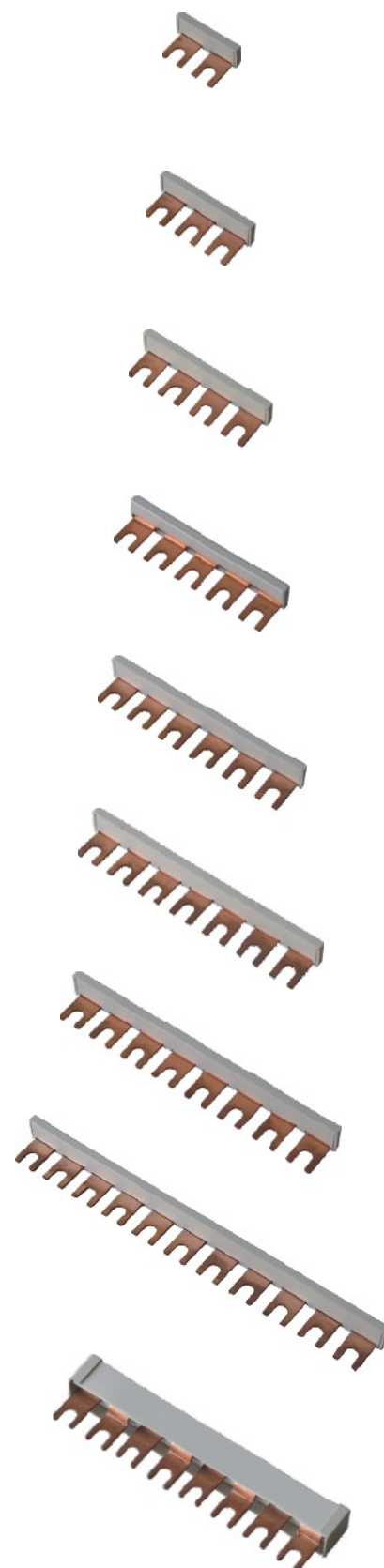
Type	PROBAR 1-7
No. of poles	7
Busbar cross section	16mm ²
Ordering code	501 311

Type	PROBAR 1-8
No. of poles	8
Busbar cross section	16mm ²
Ordering code	501 313

Type	PROBAR 1-11
No. of poles	11
Busbar cross section	16mm ²
Ordering code	501 315

Two phase busbars

Type	PROBAR 2-8
No. of poles	8
Busbar cross section	16mm ²
Ordering code	501 317

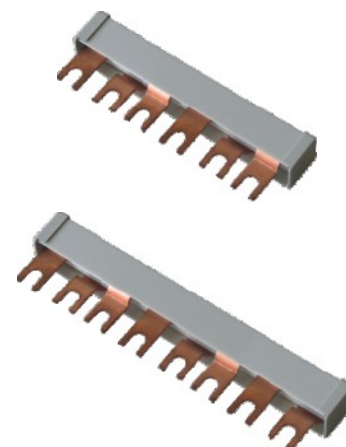


CONNECTION PARTS

Three phase busbars

Type	PROBAR 3-6
No. of poles	6
Busbar cross section	16mm ²
Ordering code	501 319

Type	PROBAR 3-8
No. of poles	8
Busbar cross section	16mm ²
Ordering code	501 321



Connection parts for PROTEC A, AQ, AQS

Type	Fixing cable
Ordering code	509 507



Type	Fixing hook
Ordering code	509 501



Type	Connection clamp for non insulated conductor PSN
Ordering code	509 503



Type	Connection clamp for insulated conductor PSI
Ordering code	509 505



PRONET S

The PRONET S decoupling coil has been developed to establish co-ordination between spark-gap lightning arresters (requirement Class I) and varistor-based surge arresters (Class II). It is only necessary to install the PRONET S if the distance between lightning arrester and surge arrester at the zone interfaces (total line length) is not more than 7 meters.

Location of use:	Main Distribution Board
Coordination element:	Inductance (L)
High nominal current:	I _n = 35A, 63A
Housing:	Compact design

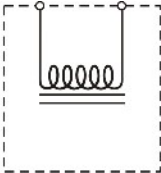


Technical data

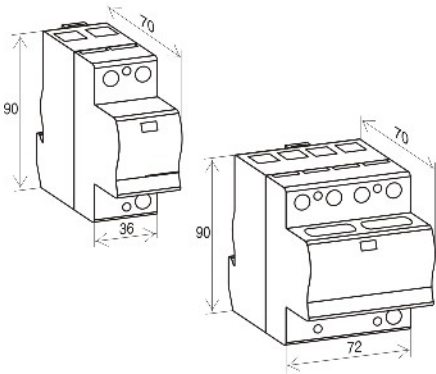
Type		PRONET S	
		35	63
Nominal discharge current (8/20)	I _n	35A	63A
Nominal voltage	U _n	230V	230V
Inductance	L	15µH	15µH
Temperature range		- 40°C+80°C	
Terminal cross section		35mm ² (solid) / 25mm ² (stranded)	
Mounting EN 60715		35 mm top-hat rail	
Degree of protection		IP 20	
Housing material		thermoplastic; extinguishing degree UL 94 V-0	
Dimensions		2TE	4TE
Weight per unit			
Ordering code		501 001	501 003
Packaging dimensions (single unit)		109 x 76.5 x 41.5mm	109 x 76.5 x 78mm

Connection diagram

PRONET S



Dimensions



MULTI-POLE Lightning Current and Surge Arresters for PHOTOVOLTAIC SYSTEMS

Category IEC / EN / VDE:	Class I, II / Type 1, 2 / B+C
Location of use:	Photovoltaic system - PV module side
Protection modes:	(+) - PE, (-) -PE
Protective elements:	High Energy Metal Oxide Varistors (MOV)
High surge discharge ratings:	$I_{imp} = 12.5\text{kA}$ per pole; $I_{max} = 40\text{kA}$ per pole
Internal protection and safety:	Separate thermal disconnecter for each MOV block
Status indication:	Mechanical flag + remote contacts (R)
Dimensions DIN 43880:	4TE, 2TE, 3TE

PV PROTEC Series:

The PV PROTEC series of overvoltage surge protective devices has been developed to protect Photovoltaic systems against partial direct and indirect lightning discharges and is intended for installation between the photovoltaic panels and DC-AC inverter.

PV PROTEC BS 12.5 - Provides common mode protection and consists of two high performance varistor stages protected by thermal disconnection devices. A unique indicator monitors all disconnectors and brings up a common status flag if any one stage should fail. The use of parallel terminal connection allow both 'T' and 'V' type wiring connections to be made.

PV PROTEC C 40 - Is intended to provide protection in zones 1 - 2 per IEC 62305 for induced surges and is intended to be used in conjunction with the PV PROTEC BS series. Again, a unique indicator monitors all disconnectors and brings up a common status flag if any one stage should fail, while the plug-in module / base design facilitates replacement of a failed module in situ without the need to remove system wiring.



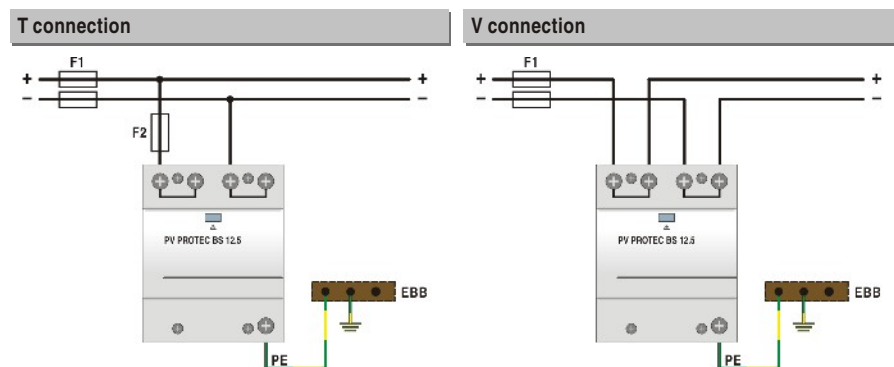
PV PROTEC BS(R) 12.5

PV PROTEC C(R) 40

PV PROTEC BS(R) 12.5

Lightning & Surge Arrester
for Photovoltaic Systems
 $I_{imp} = 12.5\text{kA}$ per pole (10/350)

Category IEC/EN/VDE:	Class I, II/Type 1, 2/B+C
Location of use:	Photovoltaic systems - PV module side
Protection modes:	(+) - PE, (-) - PE
Protective element:	High Energy MOVs
High surge discharge ratings:	$I_{imp} = 12.5\text{kA}$ per pole, $I_{max} = 40\text{kA}$ per pole
Housing:	Compact design



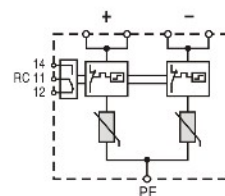
Technical data

Type	PV PROTEC BS(R) 12.5/xxxx	
	550	1000
In accordance with IEC-61643-1		
Max. continuous operating voltage (DC)	U_C	550V
Nominal discharge current (8/20)	I_n	20kA per pole
Max. discharge current (8/20)	I_{max}	40kA per pole
Impulse current (10/350)	I_{imp}	12.5kA per pole
Specific energy		39kJ/Ω
Charge		6.25As
Protection level	U_p	< 2.0kV
Residual voltage at I_{imp}	U_{res}	< 1.7kV
Follow current	I_f	NO
Response time	t_A	< 25ns
Residual current at U_C	I_{PE}	< 2.5mA
Thermal protection		YES
Terminal screw torque		max. 4.5Nm
Back-up fuse (if mains > 250A)		250A gL
Short-circuit withstand current		25kA / 50Hz
Temperature range		-40°C +80°C
Terminal cross section		35mm ² (solid) / 25mm ² (stranded)
Mounting EN 60715		35mm top-hat rail
Degree of protection		IP 20
Housing material		thermoplastic; extinguishing degree UL 94 V-0
Dimensions DIN 43880		4TE
Weight per unit		370g
Ordering code	501 507	501 541
PV PROTEC BSR 12.5/xxxx (with remote contacts)		
Remote contacts		YES
Contact ratings		AC: 250V/0.5A; 125V/3A
Terminal cross section		max. 1.5mm ²
Remote terminal torque		0.25Nm
Weight per unit		375g
Ordering code	501 517	501 545
Packaging dimensions (single unit)		109 x 76.5 x 78mm

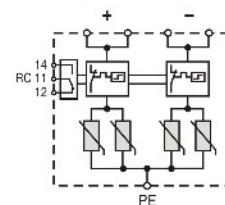


Connection diagram

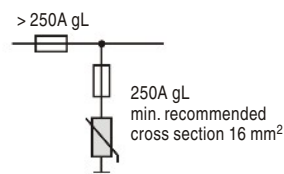
PV PROTEC BSR 12.5/550



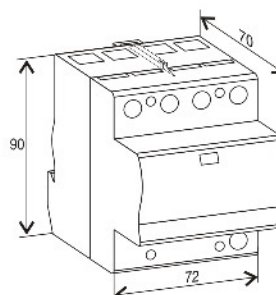
PV PROTEC BSR 12.5/1000



Selection of back-up fuse



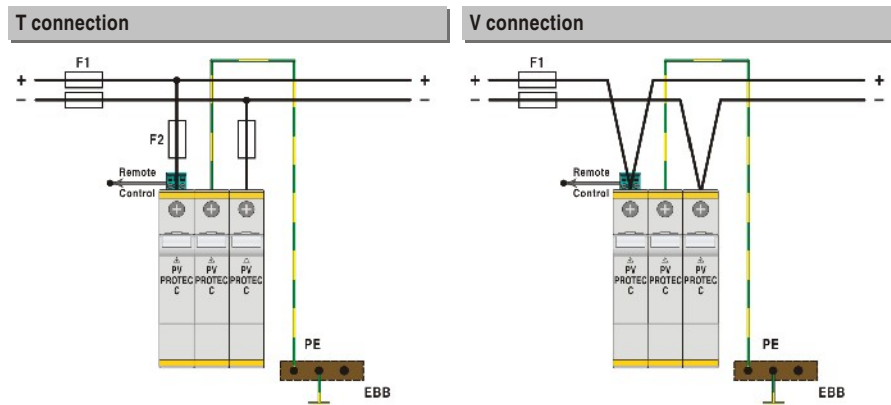
Dimensions



PV PROTEC C(R) 40

Surge Arrester
for Photovoltaic Systems
 $I_{max} = 40kA$ per pole (8/20)

Category IEC/EN/VDE:	Class II/Type 2/C
Location of use:	Branch sub-distribution boards
Protection modes:	(+) - PE, (-) - PE
Protective element:	High Energy MOVs
High surge discharge ratings:	$I_n = 20kA$ per pole, $I_{max} = 40kA$ per pole
Housing:	Modular design



Technical data

Type	PV PROTEC C(R) 40/xxxx			
		100	550	1000
In accordance with		IEC-61643-1		
Max. continuous operating voltage (DC)	U _c	100V	550V	1000V
Nominal discharge current (8/20)	I _n	20kA per pole		20kA
Max. discharge current (8/20)	I _{max}	40kA per pole		40kA
Protection level	U _p	< 0.7kV	< 2.1kV	< 4.0kV
Follow current	I _f	NO		
Response time	t _A	< 25ns		
Residual current at U _c	I _{PE}	< 1.5mA		
Thermal protection		YES		
Terminal screw torque		max. 4.5Nm		
Back-up fuse (if mains > 125A)		125A gL		
Short-circuit withstand current		25kA / 50Hz		
Temperature range		- 40°C + 80°C		
Terminal cross section		35mm ² (solid) / 25mm ² (stranded)		
Mounting EN 60715		35mm top-hat rail		
Degree of protection		IP 20		
Housing material		thermoplastic; extinguishing degree UL 94 V-0		
Dimensions DIN 43880		2TE	2TE	3TE
Weight per unit		274g	302g	398g
Ordering code		501 521	501 527	501 543
PV PROTEC CR 40/xxxx (with remote contacts)				
Remote contacts		YES		
Contact ratings		AC: 250V/0.5A; 125V/3A		
Terminal cross section		max. 1.5mm ²		
Remote terminal torque		0.25Nm		
Weight per unit		279g	307g	403g
Ordering code		501 531	501 537	501 547
Packaging dimensions (single unit)		109 x 76.5 x 41.5mm		109 x 76.5 x 60mm

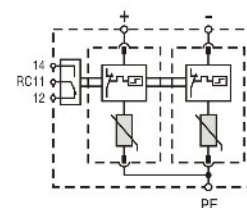
Accessory part for PV PROTEC C(R) 40/xxx

Type	Module PV PROTEC C(R) 40/xxx		
	100	550	1000
Ordering code	500 496	500 497	500 498
Packaging dimensions (12 pcs.)	219 x 62 x 47mm		

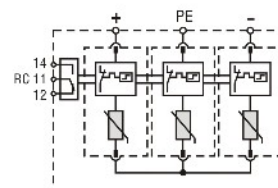


Connection diagram

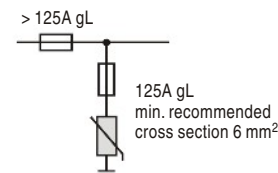
PV PROTEC C(R) 40/100
PV PROTEC C(R) 40/550



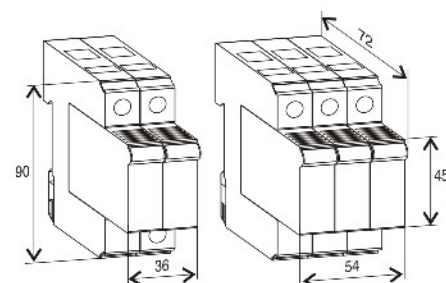
PV PROTEC C(R) 40/1000



Selection of back-up fuse



Dimensions



Lightning Current and Surge Arresters for WIND GENERATION SYSTEMS

Category IEC / EN / VDE:	Class I, II / Type 1, 2 / B+C
Location of use:	Main distribution boards
Protection modes:	L/N - PE
Protective elements:	High Energy Metal Oxide Varistors (MOV)
High surge discharge ratings:	$I_{imp} = 25kA$ per pole, $I_{max} = 40kA$ per pole
Internal protection and safety:	Separate thermal disconnecter for each MOV block
Status indication:	Mechanical flag + remote contacts (R)
Dimensions DIN 43880:	4TE, 3TE, 1TE

WT PROTEC Series:

The WT PROTEC series has been developed to meet the growing needs of wind generation facilities where exposure to direct and indirect lightning discharges is well known problem, primarily due to the often exposed location of such facilities e.g. on hill tops and open land topography.

Units are available in a range of surge ratings per recommendation in IEC 62305 such as I_{imp} 25kA and 12.5kA test class I, and I_{max} 40kA test class II.



WT PROTEC BS(R) 25
WT PROTEC BS(R) 12.5

WT PROTEC C(R) 40
WT PROTEC C(R) 120 (3+0)

WT PROTEC BS(R) 25

Single-pole
Lightning and Surge Arrester
 $I_{imp} = 25kA (10/350)$

Category IEC / EN / VDE:	Class I, II / Type 1, 2 / B+C
Location of use:	Main distribution boards
Protection modes:	L/N - PE
Protective element:	High Energy MOV
High surge discharge ratings:	$I_{imp} = 25kA$
Housing:	Compact design

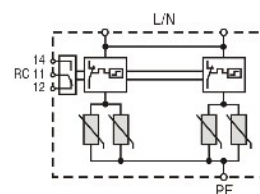


Technical data

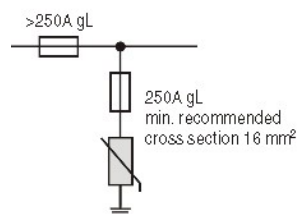
Type	WT PROTEC BS(R) 25/690	
In accordance with	IEC-61643-1	
Max. continuous operating voltage (AC/DC)	U_C	690/900V
Nominal discharge current (8/20)	I_n	40kA
Max. discharge current (8/20)	I_{max}	80kA
Impulse current (10/350)	I_{imp}	25kA
Specific energy		156kJ/Ω
Charge		12.5As
Protection level	U_p	< 2.5kV
Residual voltage at I_{imp}	U_{res}	< 2.0kV
Follow current	I_f	NO
Response time	t_A	< 25ns
Residual current at U_C	I_{PE}	< 3.5mA
Thermal protection		YES
Terminal screw torque		max. 4.5Nm
Back-up fuse (if mains > 250A)		250A gL
Short-circuit withstand current		25kA / 50Hz
Temperature range		- 40°C + 80°C
Terminal cross section		35mm ² (solid) / 25mm ² (stranded)
Mounting EN 60715		35mm top-hat rail
Degree of protection		IP 20
Housing material		thermoplastic; extinguishing degree UL 94 V-0
Dimensions DIN 43880		4TE
Weight per unit		494g
Ordering code		502 310
WT PROTEC BSR 25 (with remote contacts)		
Remote contacts		YES
Contact ratings		AC: 250V/0.5A; 125V/3A
Terminal cross section		max. 1.5mm ²
Remote terminal torque		0.25Nm
Weight per unit		499g
Ordering code		502 311
Packaging dimensions (single unit)		109 x 76.5 x 78mm

Connection diagram

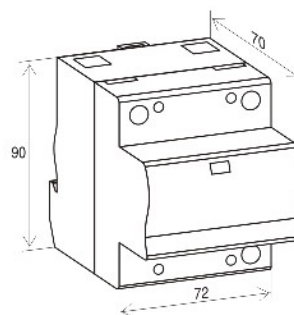
WT PROTEC BSR 25/690



Selection of back-up fuse



Dimensions



WT PROTEC BS(R) 12.5

Single-pole
Lightning and Surge Arrester
 $I_{imp} = 12.5kA (10/350)$

Category IEC / EN / VDE:	Class I, II / Type 1, 2 / B+C
Location of use:	Main distribution boards
Protection modes:	L/N - PE
Protective element:	High Energy MOV
High surge discharge ratings:	$I_{imp} = 12.5kA$
Housing:	Compact design

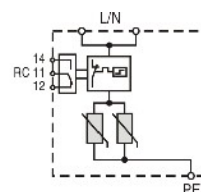


Technical data

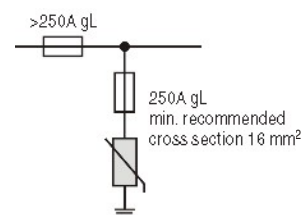
Type	WT PROTEC BS(R) 12.5/690	
In accordance with	IEC-61643-1	
Max. continuous operating voltage (AC/DC)	U _C	690/900V
Nominal discharge current (8/20)	I _n	20kA
Max. discharge current (8/20)	I _{max}	40kA
Impulse current (10/350)	I _{imp}	12.5kA
Specific energy	39kJ/Ω	
Charge	6.25As	
Protection level	U _p	< 2.5kV
Residual voltage at I _{imp}	U _{res}	< 2.0kV
Follow current	I _f	NO
Response time	t _A	< 25ns
Residual current at U _C	I _{PE}	< 2.5mA
Thermal protection	YES	
Terminal screw torque	max. 4.5Nm	
Back-up fuse (if mains > 250A)	250A gL	
Short-circuit withstand current	25kA / 50Hz	
Temperature range	- 40°C + 80°C	
Terminal cross section	35mm ² (solid) / 25mm ² (stranded)	
Mounting EN 60715	35mm top-hat rail	
Degree of protection	IP 20	
Housing material	thermoplastic; extinguishing degree UL 94 V-0	
Dimensions DIN 43880	3TE	
Weight per unit	319g	
Ordering code	502 312	
WT PROTEC BSR 12.5 (with remote contacts)		
Remote contacts	YES	
Contact ratings	AC: 250V/0.5A; 125V/3A	
Terminal cross section	max. 1.5mm ²	
Remote terminal torque	0.25Nm	
Weight per unit	324g	
Ordering code	502 313	
Packaging dimensions (single unit)	109 x 76.5 x 60mm	

Connection diagram

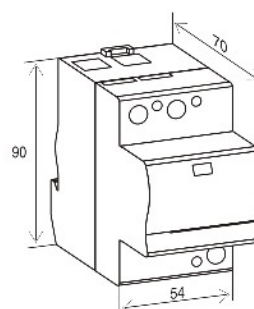
WT PROTEC BSR 12.5/690



Selection of back-up fuse



Dimensions



WT PROTEC C(R) 40

Single-pole
Surge Arrester
 $I_{max} = 40kA (8/20)$

Category IEC/EN/VDE:	Class II/Type 2/C
Location of use:	Branch sub-distribution boards
Protection modes:	L/N - PE, L - PEN
Protective element:	MOV
Surge discharge ratings:	$I_{max} = 40kA$
Housing:	Modular design



Technical data

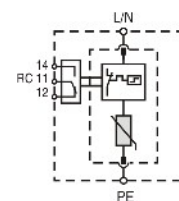
Type	WT PROTEC C(R) 40/690	
In accordance with	IEC-61643-1	
Max. continuous operating voltage (AC/DC)	U_C	690/900V
Nominal discharge current (8/20)	I_n	20kA
Max. discharge current (8/20)	I_{max}	40kA
Protection level	U_p	< 3.0kV
Follow current	I_f	NO
Response time	t_A	< 25ns
Residual current at U_C	I_{PE}	< 1.5mA
Thermal protection	YES	
Terminal screw torque	max. 4.5Nm	
Back-up fuse (if mains > 125A)	125A gL	
Short-circuit withstand current	25kA / 50Hz	
Temperature range	- 40°C + 80°C	
Terminal cross section	35mm ² (solid) / 25mm ² (stranded)	
Mounting EN 60715	35mm top-hat rail	
Degree of protection	IP 20	
Housing material	thermoplastic; extinguishing degree UL 94 V-0	
Dimensions DIN 43880	1TE	
Weight per unit	142g	
Ordering code	500 531	
WT PROTEC CR 40 (with remote contacts)		
Remote contacts	YES	
Contact ratings	AC: 250V/0.5A; 125V/3A	
Terminal cross section	max. 1.5mm ²	
Remote terminal torque	0.25Nm	
Weight per unit	147g	
Ordering code	500 492	
Packaging dimensions (single unit)	108 x 74 x 24mm	

Accessory part for WT PROTEC C(R) 40

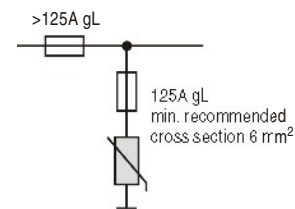
Type	Module WT PROTEC C(R) 40/xxx 690
Ordering code	500 494
Packaging dimensions (12 pcs.)	219 x 62 x 47mm

Connection diagram

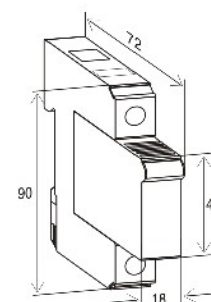
WT PROTEC CR 40/690



Selection of back-up fuse



Dimensions

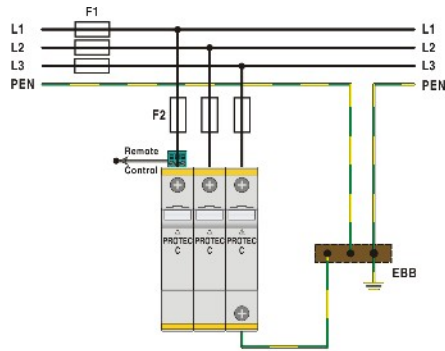


WT PROTEC C(R) 120 (3+0)

Multi-pole
Surge Arrester
 $I_{max} = 40kA$ per pole (8/20)

Category IEC/EN/VDE:	Class II/Type 2/C
Location of use:	Branch sub-distribution boards
Protection modes:	L/N - PE, L - PEN
Protective element:	MOV
Surge discharge ratings:	$I_{max} = 40kA$ per pole
Housing:	Modular design

TN-C Network (Three-phase)



Technical data

Type	WT PROTEC C(R) 120/690 (3+0)	
In accordance with	IEC-61643-1	
Max. continuous operating voltage (AC/DC)	U_C	690/900V
Nominal discharge current (8/20)	I_n	20kA per pole
Max. discharge current (8/20)	I_{max}	40kA per pole
Protection level	U_p	< 3.0kV
Follow current	I_f	NO
Response time	t_A	< 25ns
Residual current at U_C	I_{PE}	< 1.5mA
Thermal protection		YES
Terminal screw torque		max. 4.5Nm
Back-up fuse (if mains > 125A)		125A gL
Short-circuit withstand current		25kA / 50Hz
Temperature range		- 40°C + 80°C
Terminal cross section		35mm ² (solid) / 25mm ² (stranded)
Mounting EN 60715		35mm top-hat rail
Degree of protection		IP 20
Housing material		thermoplastic; extinguishing degree UL 94 V-0
Dimensions DIN 43880		3TE
Weight per unit		364g
Ordering code		500 493
WT PROTEC CR 40 (with remote contacts)		
Remote contacts		YES
Contact ratings		AC: 250V/0.5A; 125V/3A
Terminal cross section		max. 1.5mm ²
Remote terminal torque		0.25Nm
Weight per unit		369g
Ordering code		500 532
Packaging dimensions (single unit)		109 x 76.5 x 60mm

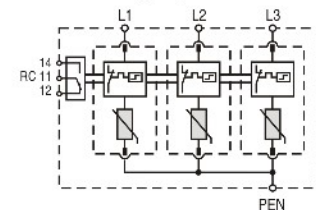
Accessory part for WT PROTEC C(R) 40/690

Type	Module WT PROTEC C(R) 40/xxx 690
Ordering code	500 494
Packaging dimensions (12 pcs.)	219 x 62 x 47mm

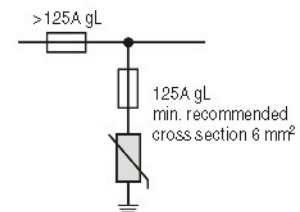


Connection diagram

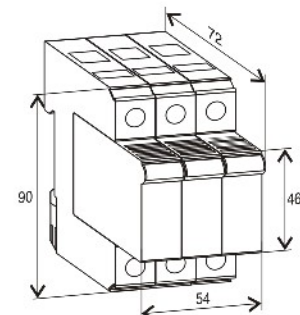
PROTEC CR 120/690 (3+0)



Selection of back-up fuse



Dimensions



Surge Arresters for RAIL and TELEPOWER DC SYSTEMS

Category IEC / EN / VDE:	Class II / Type 2 / C
Location of use:	Branch Sub-distribution Boards
Protection modes:	(+) - PE, (-) - PE, (+) - (-)
Protective elements:	MOV
Surge discharge ratings:	$I_{\max} = 40\text{kA}$
Internal protection and safety:	Separate thermal disconnecter for each MOV
Status indication:	Mechanical flag + remote contacts (R)
Dimensions DIN 43880:	1TE, 2TE

DC PROTEC Series:

The DC PROTEC series has been designed to meet the unique requirements of protection of DC power systems found in telepower and railway applications.

DC-PROTEC 24/48 - provides both common and differential mode protection using high nominal discharge rating for extended operating life under DC conditions.

PROTEC C 40/75 and PROTEC CN 40/75 - provide differential-only protection against induced over-voltages. The C model's plug-in module / base design facilitates replacement of a failed module in situ without the need to remove system wiring, while the CN enclosure provides a compact design.



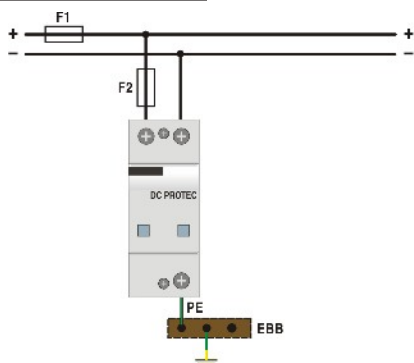
DC PROTEC C(R) 40
PROTEC C(R) 40
PROTEC CN(R) 40

DC PROTEC C(R) 40

Single-pole
Surge Arrester
 $I_{max} = 40kA (8/20)$

Category IEC/EN/VDE:	Class II/Type 2/C
Location of use:	DC power systems
Protection modes:	(+) - PE, (-) - PE, (+) - (-)
Protective element:	MOV
Surge discharge ratings:	$I_n = 20kA, I_{max} = 40kA$
Housing:	Compact design

T connection



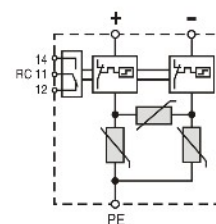
Technical data

Type	DC PROTEC C(R) 40	
	24	48
In accordance with	IEC-61643-1	
Max. continuous operating voltage (AC/DC) U_C	25/31V	40/56V
(+) - (-)	75/100V	
(+) - PE, (-) - PE	275/350V	
Nominal discharge current (8/20) I_n	20kA	
Max. discharge current (8/20) I_{max}	40kA	
Protection level U_p (+ / -)	< 0.6kV	
(+, - / PE)	< 1.5kV	
Residual voltage U_{res} (+/-)	< 0.3V	
(+, - / PE)	< 1.0kV	
Follow current I_f	NO	
Response time t_A	< 25ns	
Residual current at U_C I_{PE}	< 2.5mA	
Thermal protection	YES	
Terminal screw torque	max. 4.5Nm	
Short-circuit withstand current	25kA / 50Hz	
Temperature range	- 40°C + 80°C	
Terminal cross section	35mm ² (solid) / 25mm ² (stranded)	
Mounting EN 60715	35mm top-hat rail	
Degree of protection	IP 20	
Housing material	Thermoplastic; extinguishing degree UL 94 V-0	
Dimensions DIN 43880	2TE	
Weight per unit	196g	196g
Ordering code	510 564	510 566
DC PROTEC R 24/48 (with remote contacts)		
Remote contacts	YES	
Contact ratings	AC: 250V/0.5A; 125V/3A	
Terminal cross section	max. 1.5mm ²	
Remote terminal torque	0.25Nm	
Weight per unit	202g	202g
Ordering code	510 565	510 567
Packaging dimensions (single unit)	109 x 76.5 x 41.5mm	

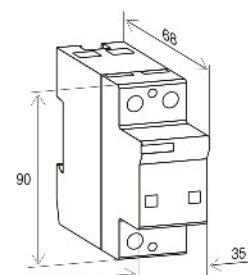


Connection diagram

DC PROTEC CR 40



Dimensions



PROTEC C(R) 40

Single-pole
Surge Arrester
 $I_{max} = 40kA (8/20)$

Category IEC/EN/VDE:	Class II/Type 2/C
Location of use:	Branch sub-distribution boards
Protection modes:	L/N - PE, L - PEN
Protective element:	MOV
Surge discharge ratings:	$I_n = 20kA, I_{max} = 40kA$
Housing:	Modular design

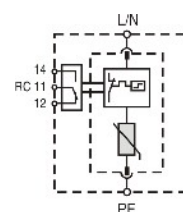


Technical data

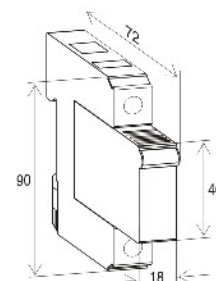
Type		PROTEC C(R) 40 75
In accordance with		IEC-61643-1
Max. continuous operating voltage (AC/DC)	U_c	75/100V
Nominal discharge current (8/20)	I_n	20kA
Max. discharge current (8/20)	I_{max}	40kA
Protection level	U_p	< 0.6kV
Follow current	I_f	NO
Response time	t_A	< 25ns
Residual current at U _c	I_{PE}	< 1.5mA
Thermal protection		YES
Terminal screw torque		max. 4.5Nm
Short-circuit withstand current		25kA / 50Hz
Temperature range		- 40°C + 80°C
Terminal cross section		35mm ² (solid) / 25mm ² (stranded)
Mounting EN 60715		35mm top-hat rail
Degree of protection		IP 20
Housing material		thermoplastic; extinguishing degree UL 94 V-0
Dimensions DIN 43880		1TE
Weight per unit		112g
Ordering code		500 001
PROTEC CR 40/75 (with remote contacts)		
Remote contacts		YES
Contact ratings		AC: 250V/0.5A; 125V/3A
Terminal cross section		max. 1.5mm ²
Remote terminal torque		0.25Nm
Weight per unit		117g
Ordering code		500 011
Packaging dimensions (single unit)		108 x 74 x 24mm

Connection diagram

PROTEC CR 40/xx



Dimensions



Accessory part for PROTEC C(R) 40/75

Type	Module PROTEC C(R) 40/75
Ordering code	500 216
Packaging dimensions (12 pcs.)	219 x 62 x 47mm



PROTEC CN(R) 40

Single-pole
Surge Arrester
 $I_{max} = 40kA (8/20)$

Category IEC/EN/VDE:	Class II/Type 2/C
Location of use:	Branch sub-distribution boards
Protection modes:	L/N - PE, L - PEN
Protective element:	MOV
Surge discharge ratings:	$I_n = 20kA, I_{max} = 40kA$
Housing:	Compact design

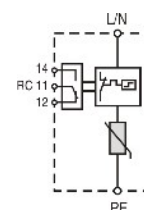


Technical data

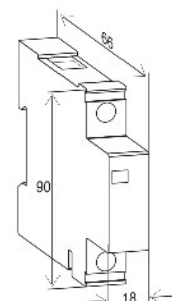
Type	PROTEC CN(R) 40/75	
In accordance with		IEC-61643-1
Max. continuous operating voltage (AC/DC)	U_C	75/100V
Nominal discharge current (8/20)	I_n	20kA
Max. discharge current (8/20)	I_{max}	40kA
Protection level	U_p	< 0.6kV
Follow current	I_f	NO
Response time	t_A	< 25ns
Residual current at U _C	I_{PE}	< 1.5mA
Thermal protection		YES
Terminal screw torque		max. 3.5Nm
Short-circuit withstand current		25kA / 50Hz
Temperature range		- 40°C + 80°C
Terminal cross section		35mm ² (solid) / 25mm ² (stranded)
Mounting EN 60715		35mm top-hat rail
Degree of protection		IP 20
Housing material	thermoplastic; extinguishing degree UL 94 V-0	
Dimensions DIN 43880		1TE
Weight per unit		127g
Ordering code	507 001	
PROTEC CNR 40/75 (with remote contacts)		
Remote contacts		YES
Contact ratings	AC: 250V/0.5A; 125V/3A	
Terminal cross section		max. 1.5mm ²
Remote terminal torque		0.25Nm
Weight per unit		132g
Ordering code	507 011	
Packaging dimensions (single unit)		108 x 74 x 24mm

Connection diagram

PROTEC CNR



Dimensions



SPD Terminology

Surge Protective Device SPD

a device that is intended to limit transient overvoltages and divert surge currents. It contains at least one nonlinear component

Maximum continuous operating voltage U_c

the maximum r.m.s. or d.c. voltage, which may be continuously applied to the SPD's mode of protection

Voltage protection level U_p

a parameter that characterizes the performance of the SPD in limiting the voltage across its terminals, which is selected from a list of preferred values. This value shall be greater than the highest value of the measured limiting voltages.

Residual voltage U_{res}

the peak value of voltage that appears between the terminals of an SPD due to the passage of discharge current temporary overvoltage test value

Impulse current I_{imp}

defined by three parameters, a current peak value I_{peak} , a charge Q and a specific energy W/R . This is used for the classification of the SPD for test class I

Nominal discharge current I_n

the crest value of the current through the SPD having a current waveshape of 8/20. This is used for the classification of the SPD for class II test and also for preconditioning of the SPD for class I and II tests

Maximum discharge current I_{max} for class II test

crest value of a current through the SPD having an 8/20 waveshape and magnitude according to the test sequence of the class II operating duty test. I_{max} is greater than I_n

1.2/50 voltage impulse

voltage impulse with a virtual front time of 1.2 μ s and a time to half-value of 50 μ s

8/20 current impulse

current impulse with a virtual front time of 8 μ s and a time to half-value of 20 μ s

Combination wave

the combination wave is delivered by a generator that applies a 1.2/50 voltage impulse across an open circuit and an 8/20 current impulse into a short circuit. The voltage, current amplitude and waveforms that are delivered to the SPD are determined by the generator and the impedance of the SPD to which the surge is applied. The short-circuit current is symbolized by I_{sc} . The open-circuit voltage is symbolized by U_{oc}

Degrees of protection provided by enclosure IP code

the extent of protection provided by an enclosure against access to hazardous parts, against ingress of solid foreign objects and/or against ingress of water (see IEC 60529)

SPD disconnecter

device (internal and/or external) required for disconnecting an SPD from the power system

Follow current I_f

current supplied by the electrical power system and flowing through the SPD after a discharge current impulse. The follow current is significantly different from the continuous operating current I_c

Back-up fuse

overcurrent device (for example, circuit-breaker or fuse), which could be part of the electrical installation located externally upstream of the SPD

References

1. IEC 61643-1 Surge protective devices connected to low voltage power distribution systems - requirements and tests;
2. IEC 61643-12 Surge protective devices connected to low voltage power distribution systems - Selection and application principles;
3. IEC 61312-1 Protection against lightning electromagnetic impulse (LEMP) - Part 1: General principle
4. IEC 61312-2 Protection against lightning electromagnetic impulse (LEMP) - Part 2: Shielding of structures, bonding inside structures and earthing;
5. IEC 61312-3 Protection against lightning electromagnetic impulse (LEMP) - Part 3: Requirements of surge protection devices (SPDs);
6. IEC 61312-4 Protection against lightning electromagnetic impulse (LEMP) - Part 4: Protection of equipment in existing structures;
7. SIST EN 50614-3 Lightning Protection Components (LCP) - Part 3: Requirements for isolating spark gaps;
8. CEI IEC 60364-5-53 Electrical installation of buildings - Part 5-53: Selection and erection of electrical equipment - isolation, switching and control;
9. IEC PAS 60099-7 Surge arresters - Part 7: Glossary of terms and definitions from IEC publications 60099-1, 60099-4, 60099-6, 61643-1, 61643-12, 61643-21, 61643-311, 61643-321, 61643-331 and 61643-341;
10. IEC 61000-4-5: Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test;
11. IEC 62305-1 Protection against lightning - Part 1: General principles;
12. IEC 62305-2 Protection against lightning - Part 2: Risk management;
13. IEC 62305-3 Protection against lightning - Part 3: Physical damage to structures and life hazard;
14. IEC 62305-4 Protection against lightning - Part 4: Electrical and electronic systems within structures;
15. ITU-T K.20 Protection against interferences: Resistibility of telecommunication switching equipment to overvoltages and overcurrents;
16. ITU-T K.21 Protection against interferences: Resistibility of subscriber's terminal to overvoltages and overcurrents;
17. ITU-T K.44 Protection against interferences: Resistibility test for telecommunication equipment exposed to overvoltages and overcurrents - Basic Recommendation;
18. IEC 61643-21 Low voltage surge protective devices - Part 21: Surge protective devices connected to telecommunications and signaling networks - Performance requirements and testing methods;
19. IEC 61643-22 Low-Voltage Surge Protective Devices - Part 22: Surge protection devices connected to telecommunications and signaling networks - Selection and application principles;
20. UL 1449

Typical component typologies used in SPDs



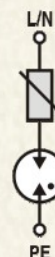
SPD comprising metal oxide varistor

- no problems with following current I_f
- quick response time $t_A (\leq 25\mu s)$ means low residual voltage
- responds well to very low overvoltages
- high surge capacity, up to 50kA 10/350 μ s



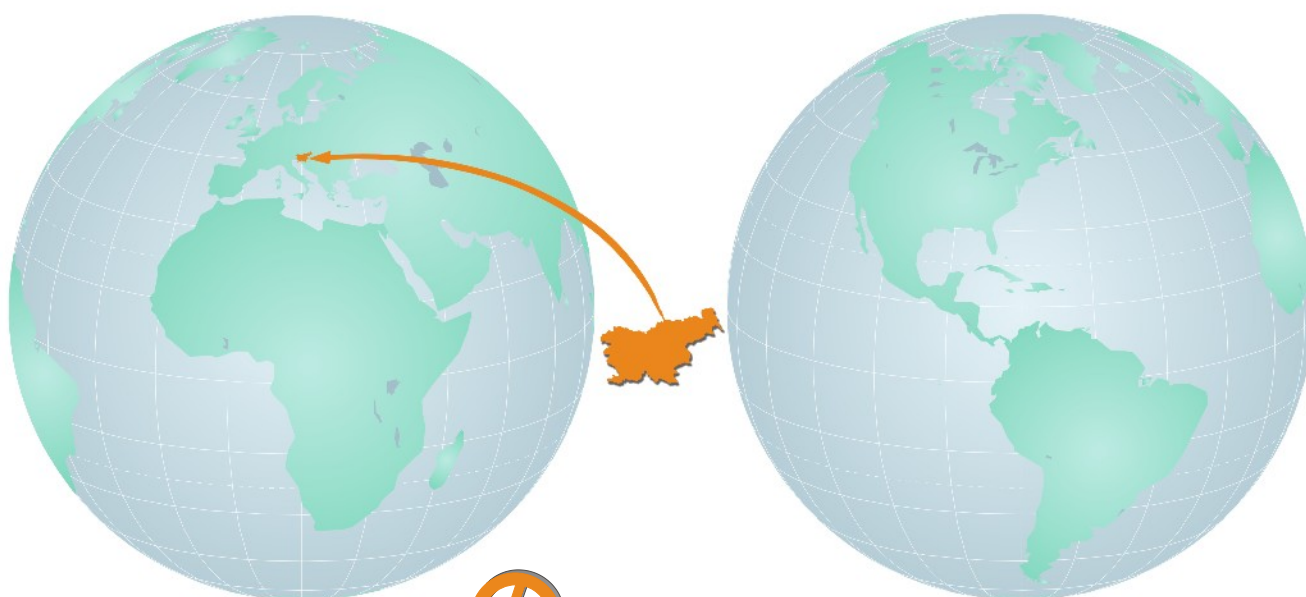
SPD comprising gas discharge tube

- high surge capacity 100kA 10/350 μ s
- no exhausting of ionised gases
- used in TT systems as galvanic separation between N-PE conductors



SPD comprising series arrangement of varistor and gas discharge tube

- no following current I_f
- quick response time $t_A (\leq 25\mu s)$ means low residual voltage
- responds well to low overvoltages
- high surge capacity, up to 25kA 10/350 μ s



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