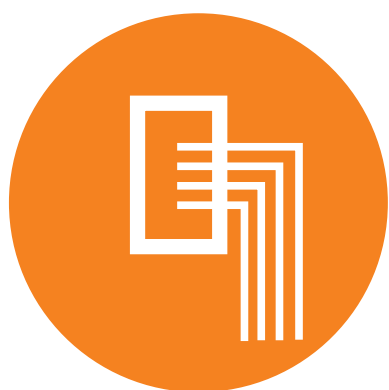
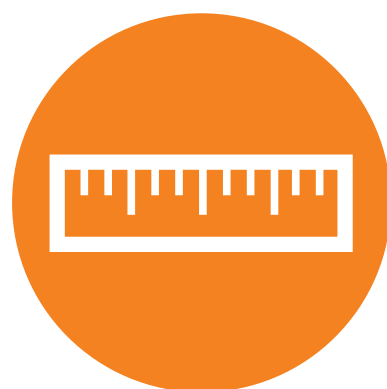
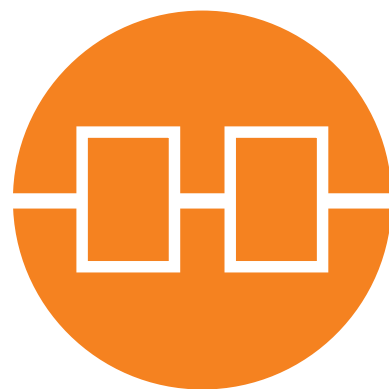
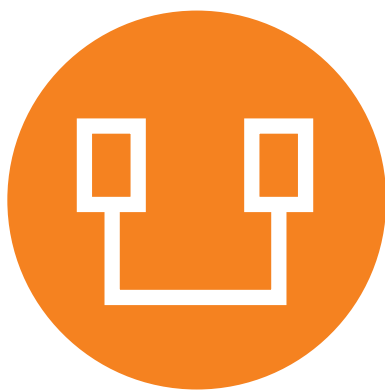


OVERVOLTAGE PROTECTION

ISAFE for low voltage power systems, photovoltaic
and wind turbine power supply systems



PV ISAFE C(R) 40

Category IEC/EN/VDE	Class II/Type 2/C
Location of use	Branch sub-distribution boards
Protection modes	((+)-(-)-PE, (+)-PE/(-)-PE
Protective element	MOV
High surge discharge rating	$I_{\max} = 40 \text{ kA}$
Housing	Modular design



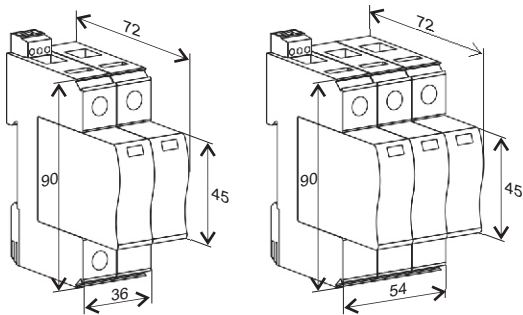
Technical data

Type			PV ISAFE C(R) 40/xxxx				
			75	300	600	1000	1200
Electrical characteristic							
Standards			IEC-61643-1, UTEC 61-470-51				
Max. continuous operating voltage (DC)	U_c	V	75	300	600	1000	1200
Nominal discharge current (8/20) (+)-PE/(-)-PE ((+)+(-)-PE)	I_n	kA	20	20	20	12.5	20
			40	40	40	25	20
Max. discharge current (8/20) (+)-PE/(-)-PE ((+)+(-)-PE)	I_{max}	kA	40	40	40	25	40
			80	80	80	50	40
Protection level	U_p	kV	< 0.6	< 1.6	< 2.2	< 2.8	< 4.4
Follow current	I_f		NO				
Response time	t_A	ns	< 25				
Thermal protection			YES				
Mechanical characteristic							
Terminal screw torque		Nm	max. 3.5				
Temperature range		°C	-40 ... +80				
Terminal cross section solid stranded		mm ²	35				
			25				
Mounting			35 mm wide mounting rail in accordance with EN 60715				
Degree of protection			IP 20				
Housing material			Thermoplastic; extinguishing degree UL 94 V-0				
Dimensions DIN 43880			2TE	2TE	2TE	2TE	3TE

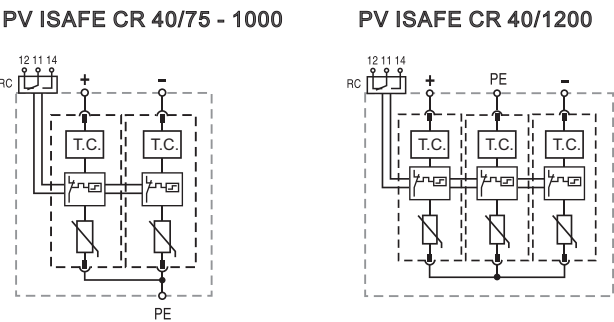
PV ISAFE C(R) 40

PV ISAFE C(R) 40/xxxx (with remote contacts)			
Remote contacts			YES
Contact ratings	250 V	A	0.5
	125 V		3
Terminal cross section		mm ²	max. 1.5
Remote terminal torque		Nm	0.25

Dimensions



Connection diagram



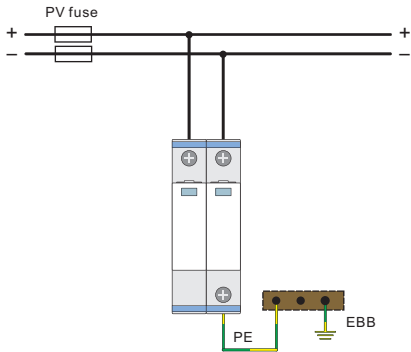
Accessory part for PV ISAFE C(R) 40/xxxx

Type	Module ISAFE C(R) 40/xxxx					
	75	300	600	1000	1200	

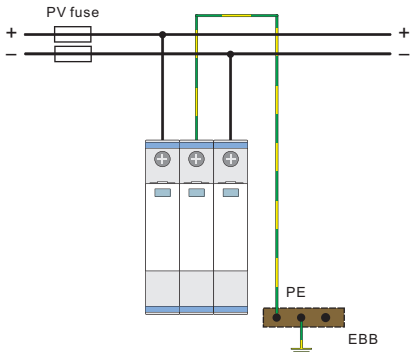


Connections

PV ISAFE C (R) 40/75 - 40/1000



PV ISAFE C (R) 40/1200



String fuses of solar array are selected according to the nominal current of photovoltaic module, multiplied by 1.4. The closest, higher value of the fuse should be selected.

Voltage withstand of fuses should be higher than the open circuit voltage of the solar array, multiplied by 1.2.

We recommend to use the fuses, that were specially designed for photovoltaic systems.

ISAFE C(R) 80 (2+0)

Category IEC/EN/VDE	Class I/Type 2/C
Location of use	Branch sub-distribution boards
Connections	TN-S
Protection modes	L/N - PE, L - PEN
Protective element	MOV
High surge discharge rating	$I_{\max} = 40 \text{ kA}$ per pole
Safety	Immunity against TOV
Housing	Modular design



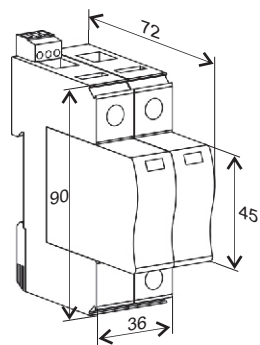
Technical data

Type			ISAFE C(R) 80/xxx (2+0)		
			150	275	440
Electrical characteristic					
Standards			IEC-61643-1		
Max. continuous operating voltage (AC/DC)	U_c	V	150/200	275/350	440/580
Nominal discharge current (8/20)	I_n	kA	20 per pole		
Max. discharge current (8/20)	I_{max}	kA	40 per pole		
Protection level	U_p	kV	< 1.0	< 1.6	< 2.2
Follow current	I_f		NO		
Response time	t_A	ns	< 25		
Thermal protection			YES		
TOV whitstand for 5 sec.	335 V		1.32 x U_{REF}		
	400 V		$\sqrt{3}$ x U_{REF}		
Short-circuit withstand current (50 Hz)		kA	25		
Mechanical characteristic					
Terminal screw torque		Nm	max. 3.5		
Temperature range		°C	-40 ... +80		
Terminal cross section	solid	mm²	35		
	stranded		25		
Mounting			35 mm wide mounting rail in accordance with EN 60715		
Degree of protection			IP 20		
Housing material			Thermoplastic; extinguishing degree UL 94 V-0		
Dimensions DIN 43880			2TE		

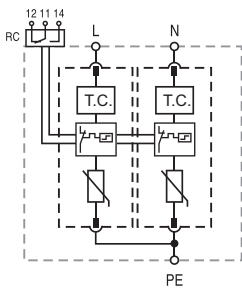
ISAFE C(R) 80 (2+0)

ISAFE C(R) 80 (2+0) (with remote contacts)				
Remote contacts				YES
Contact ratings	250 V	A		0.5
	125 V			3
Terminal cross section		mm ²		max. 1.5
Remote terminal torque		Nm		0.25

Dimensions



Connection diagram



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

Type	Module ISAFE C(R) 40/xxx		
	150	275	440



ISAFE C(R) 120 (3+0)



Category IEC/EN/VDE	Class II/Type 2/C
Location of use	Branch sub-distribution boards
Connections	TN-C
Protection modes	L - PEN
Protective element	MOV
High surge discharge rating	$I_{\max} = 40 \text{ kA}$ per pole
Safety	Immunity against TOV
Housing	Modular design

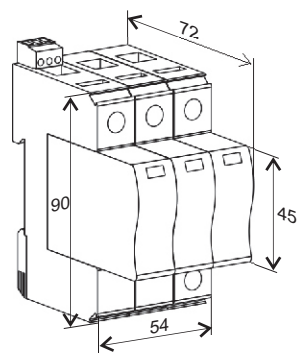
Technical data

Type			ISAFE C(R) 120/xxx (3+0)		
			150	275	440
Electrical characteristic					
Standards			IEC-61643-1		
Max. continuous operating voltage (AC/DC)	U_c	V	150/200	275/350	440/580
Nominal discharge current (8/20)	I_n	kA	20 per pole		
Max. discharge current (8/20)	I_{max}	kA	40 per pole		
Protection level	U_p	kV	< 1.0	< 1.6	< 2.2
Follow current	I_f		NO		
Response time	t_A	ns	< 25		
Thermal protection			YES		
TOV whitstand for 5 sec.	335 V		$1.32 \times U_{REF}$		
	400 V		$\sqrt{3} \times U_{REF}$		
Short-circuit withstand current (50 Hz)		kA	25		
Mechanical characteristic					
Terminal screw torque		Nm	max. 3.5		
Temperature range		°C	-40 ... +80		
Terminal cross section	solid	mm²	35		
	stranded		25		
Mounting			35 mm wide mounting rail in accordance with EN 60715		
Degree of protection			IP 20		
Housing material			Thermoplastic; extinguishing degree UL 94 V-0		
Dimensions DIN 43880			3TE		

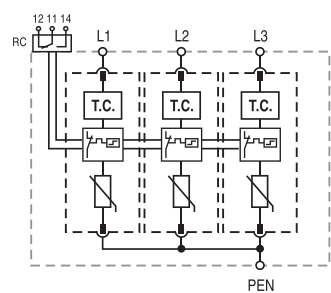
ISAFE C(R) 120 (3+0)

ISAFE C(R) 120 (3+0) (with remote contacts)			
Remote contacts			YES
Contact ratings	250 V	A	0.5
	125 V		3
Terminal cross section		mm ²	max. 1.5
Remote terminal torque		Nm	0.25

Dimensions



Connection diagram



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

Type	Module ISAFE C(R) 40/xxx		
	150	275	440



ISAFE C(R) 160 (4+0)

Category IEC/EN/VDE	Class II/Type 2/C
Location of use	Branch sub-distribution boards
Connections	TN-S, IT
Protection modes	L/N - PE
Protective element	MOV
High surge discharge rating	$I_{\max} = 40$ kA per pole
Safety	Immunity against TOV
Housing	Modular design



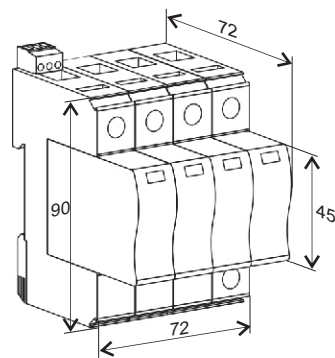
Technical data

Type			ISAFE C(R) 160/xxx (4+0)		
			150	275	440
Electrical characteristic					
Standards			IEC-61643-1		
Max. continuous operating voltage (AC/DC)	U_c	V	150/200	275/350	440/580
Nominal discharge current (8/20)	I_n	kA	20 per pole		
Max. discharge current (8/20)	I_{max}	kA	40 per pole		
Protection level	U_p	kV	< 1.0	< 1.6	< 2.2
Follow current	I_f		NO		
Response time	t_A	ns	< 25		
Thermal protection			YES		
TOV whitstand for 5 sec.	335 V		1.32 x U_{REF}		
	400 V		$\sqrt{3}$ x U_{REF}		
Short-circuit withstand current (50 Hz)		kA	25		
Mechanical characteristic					
Terminal screw torque		Nm	max. 3.5		
Temperature range		°C	-40 ... +80		
Terminal cross section	solid	mm ²	35		
	stranded		25		
Mounting			35 mm wide mounting rail in accordance with EN 60715		
Degree of protection			IP 20		
Housing material			Thermoplastic; extinguishing degree UL 94 V-0		
Dimensions DIN 43880			4TE		

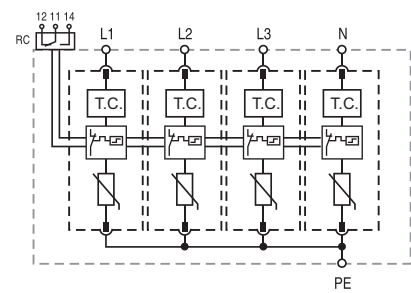
ISAFE C(R) 160 (4+0)

ISAFE C(R) 160 (4+0) (with remote contacts)			
Remote contacts			YES
Contact ratings	250 V	A	0.5
	125 V		3
Terminal cross section		mm ²	max. 1.5
Remote terminal torque		Nm	0.25

Dimensions



Connection diagram



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

Type	Module ISAFE C(R) 40/xxx		
	150	275	440



ISAFE C(R) 80 (1+1)



Category IEC/EN/VDE	Class II/Type 2/C
Location of use	Branch sub-distribution boards
Connections	TT
Protection modes	L - N, N - PE
Protective element	MOV and GDT
High surge discharge rating	$I_{\max} = 40$ kA per pole
Safety	Immunity against TOV
Housing	Modular design

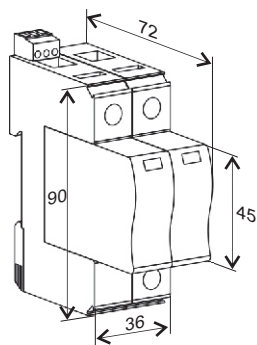
Technical data

Type			ISAFE C(R) 80/xxx (1+1)		
			150	275	440
Electrical characteristic					
Standards			IEC-61643-1		
Max. continuous operating voltage (AC/DC)	U_c	V	150/200	275/350	440/580
Nominal discharge current (8/20) (L-N/N-PE)	I_n	kA	20 per pole		
Max. discharge current (8/20) (L-N/N-PE)	I_{max}	kA	40 per pole		
Protection level (L-N)	U_p	kV	< 1.0	< 1.6	< 2.2
(N-PE)			< 2.0		
Follow current (N-PE)	I_f	A_{RMS}	100		
Response time (L-N/N-PE)	t_A	ns	< 25/100		
Thermal protection (L-N/N-PE)			YES		
TOV withstand for 5 sec.	335 V		$1.32 \times U_{REF}$		
	400 V		$\sqrt{3} \times U_{REF}$		
Short-circuit withstand current (50 Hz) (L-N/N-PE)		kA	25		
Mechanical characteristic					
Terminal screw torque		Nm	max. 3.5		
Temperature range		°C	-40 ... +80		
Terminal cross section	solid	mm ²	35		
	stranded		25		
Mounting			35 mm wide mounting rail in accordance with EN 60715		
Degree of protection			IP 20		
Housing material			Thermoplastic; extinguishing degree UL 94 V-0		
Dimensions DIN 43880			2TE		

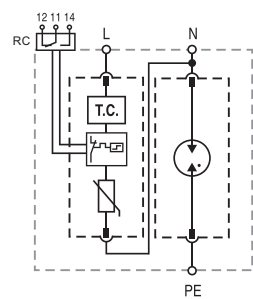
ISAFE C(R) 80 (1+1)

ISAFE C(R) 80 (1+1) (with remote contacts)				
Remote contacts				YES
Contact ratings	250 V	A		0.5
	125 V			3
Terminal cross section		mm ²		max. 1.5
Remote terminal torque		Nm		0.25

Dimensions



Connection diagram



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

Type	Module ISAFE C(R) 40/xxx		
	150	275	440
Type	Module ISAFE-G C(R) 40/285		



ISAFE C(R) 160 (3+1)



Category IEC/EN/VDE	Class II/Type 2/C
Location of use	Branch sub-distribution boards
Connections	TT
Protection modes	L - N, N - PE
Protective element	MOV and GDT
High surge discharge rating	$I_{\max} = 40$ kA per pole
Safety	Immunity against TOV
Housing	Modular design

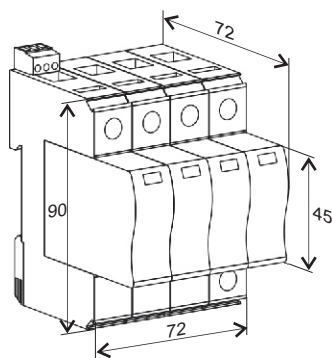
Technical data

Type			ISAFE C(R) 80/xxx (1+1)		
			150	275	440
Electrical characteristic					
Standards			IEC-61643-1		
Max. continuous operating voltage (AC/DC)	U_c	V	150/200	275/350	440/580
Nominal discharge current (8/20) (L-N/N-PE)	I_n	kA	20 per pole		
Max. discharge current (8/20) (L-N/N-PE)	I_{max}	kA	40 per pole		
Protection level (L-N)	U_p	kV	< 1.0	< 1.6	< 2.2
(N-PE)			< 2.0		
Follow current (N-PE)	I_f	A_{RMS}	100		
Response time (L-N/N-PE)	t_A	ns	< 25/100		
Thermal protection (L-N/N-PE)			YES		
TOV withstand for 5 sec.	335 V		$1.32 \times U_{REF}$		
	400 V		$\sqrt{3} \times U_{REF}$		
Short-circuit withstand current (50 Hz) (L-N/N-PE)		kA	25		
Mechanical characteristic					
Terminal screw torque		Nm	max. 3.5		
Temperature range		°C	-40 ... +80		
Terminal cross section	solid	mm ²	35		
	stranded		25		
Mounting			35 mm wide mounting rail in accordance with EN 60715		
Degree of protection			IP 20		
Housing material			Thermoplastic; extinguishing degree UL 94 V-0		
Dimensions DIN 43880			4TE		

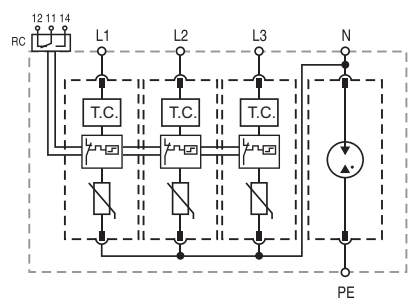
ISAFE C(R) 160 (3+1)

ISAFE C(R) 160 (3+1) (with remote contacts)				
Remote contacts				YES
Contact ratings	250 V	A	0.5	
	125 V		3	
Terminal cross section		mm ²	max. 1.5	
Remote terminal torque		Nm	0.25	

Dimensions



Connection diagram



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

Type	Module ISAFE C(R) 40/xxx		
	150	275	440
Type	Module ISAFE-G C(R) 40/255		



WT ISAFE C(R) 750 (3+0)



Category IEC/EN/VDE	Class II/Type 2/C
Location of use	Branch sub-distribution boards
Connections	TN-C
Protection modes	L - PEN
Protective element	MOV
High surge discharge rating	$I_{\max} = 25$ kA per pole
Safety	Immunity against TOV
Housing	Modular design

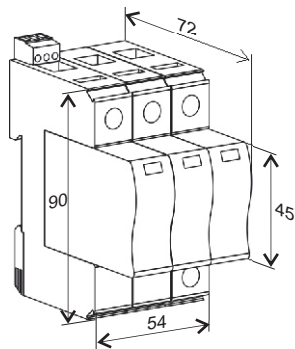
Technical data

Type				WT ISAFE C(R) 750 (3+0)
Electrical characteristic				
Standards				IEC-61643-1
Max. continuous operating voltage (AC/DC)	U_c	V		750/1000
Nominal discharge current (8/20)	I_n	kA		12.5 per pole (L-PEN) / 37.5 (L1+L2+L3-PEN)
Max. discharge current (8/20)	$I_{\max}$	kA		25 per pole (L-PEN) / 75 (L1+L2+L3-PEN)
Protection level	U_p	kV		< 2.8
Follow current	I_f			NO
Response time	t_A	ns		< 25
Thermal protection				YES
Short-circuit withstand current (50 Hz)		kA		25
Mechanical characteristic				
Terminal screw torque		Nm		max. 4.5
Temperature range		°C		-40 ... +80
Terminal cross section	solid	mm ²		35
	stranded			25
Mounting				35 mm wide mounting rail in accordance with EN 60715
Degree of protection				IP 20
Housing material				Thermoplastic; extinguishing degree UL 94 V-0
Dimensions DIN 43880				3TE

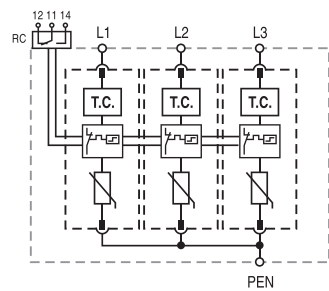
WT ISAFE C(R) 750 (3+0)

WT ISAFE C(R) 750 (3+0) (with remote contacts)				
Remote contacts				YES
Contact ratings	250 V	A	0.5	
	125 V		3	
Terminal cross section		mm ²	max. 1.5	
Remote terminal torque		Nm	0.25	

Dimensions



Connection diagram



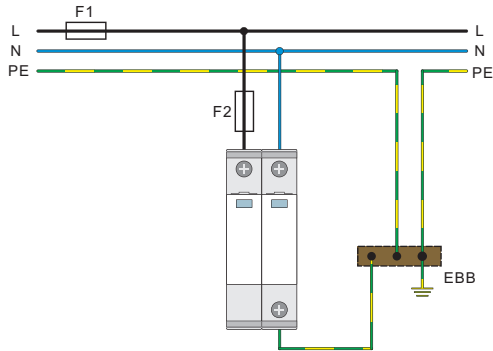
Accessory part for WT ISAFE C(R) 750 (3+0)

Type	Module WT ISAFE C(R) 750 (3+0)
------	--------------------------------

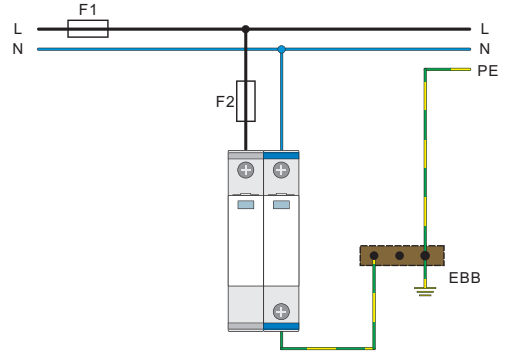


ISAFE C(R) CONNECTIONS

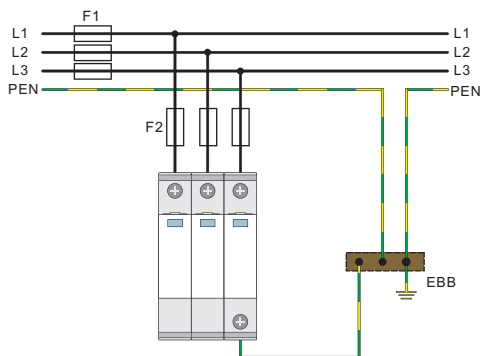
TN-S Network (Single-phase)



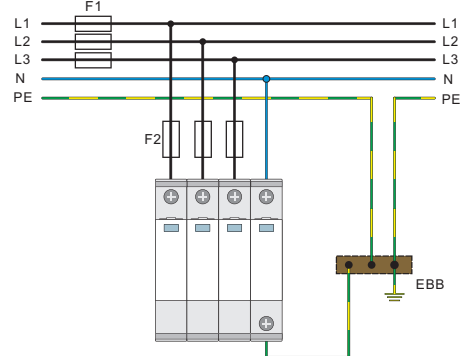
TT Network (Single-phase)



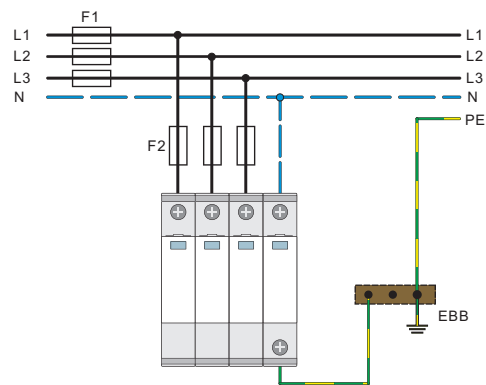
TN-C Network (Three-phase)



TN-S Network (Three-phase)

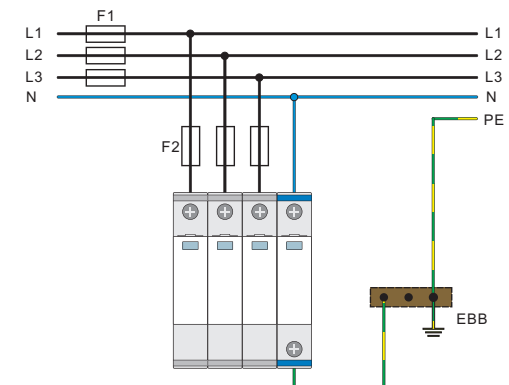


IT Network (Three-phase)



$$U_c \geq 1.1 \times U_n \cdot \sqrt{3}$$

ISAFE C(R) 40/1200 PV



ISAFE AQ 30

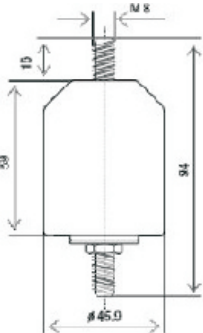


Category IEC/EN/VDE	Class II/Type 2/A
Location of use	Overhead power lines
Connections	TN-C, TN-S, IT
Protection modes	L/N - PE
Protective element	MOV
High surge discharge rating	$I_{max} = 30 \text{ kA}$
Housing	Compact design

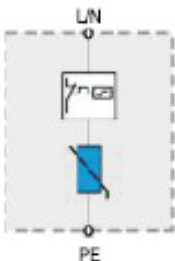
Technical data

Type			ISPRO AQ 30				
			150	275	320	385	440
Electrical characteristic							
Standards			IEC-61643-1				
Max. continuous operating voltage (AC/DC)	U_c	V	150/200	275/350	320/420	385/500	440/580
Nominal discharge current (8/20)	I_n	kA	15				
Max. discharge current (8/20)	I_{max}	kA	30				
Protection level	U_p	kV	< 1.0	< 1.3	< 1.5	< 1.6	< 1.8
Follow current	I_f		NO				
Response time	t_A	ns	< 25				
Thermal protection			YES				
Back-up fuse		kA	NO				
Short-circuit withstand current (50 Hz)		kA	25				
Mechanical characteristic							
Terminal screw torque		Nm	max. 3.5				
Temperature range		°C	-40 ... +80				
Terminal cross section	L/N		M8				
	PE		6 mm ² (stranded)				
Mounting			Outdoors				
Degree of protection			IP 20				
Housing material			Thermoplastic; extinguishing degree UL 94 V-0				
Dimensions			/				

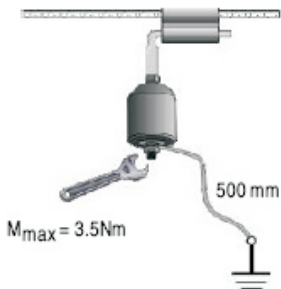
Dimensions



Connection diagram



Mounting





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