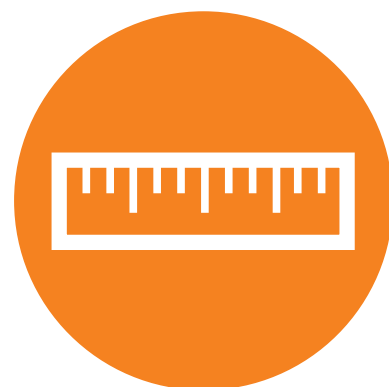
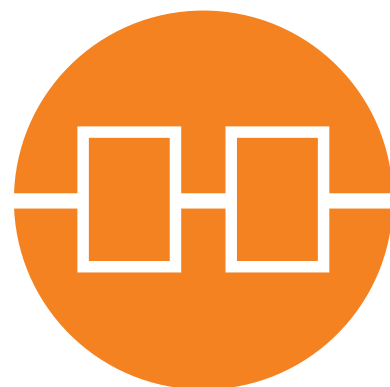
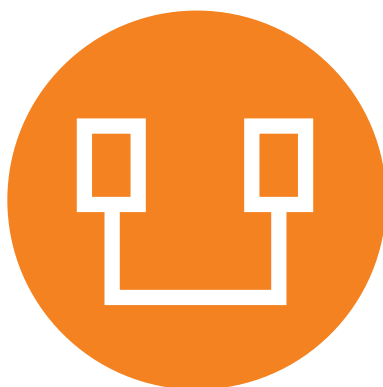


# OVERVOLTAGE PROTECTION

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	$I_{max} = 40$ kA
Housing	Modular design



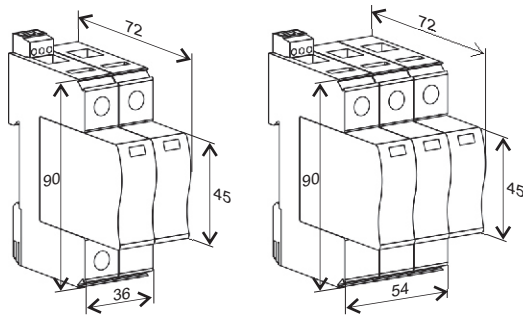
### Technical data

Type			PV ISPRO C(R) 40/xxxx					
			75	300	600	1000	1200	
<b>Electrical characteristic</b>								
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					
<b>Mechanical characteristic</b>								
Terminal screw torque		Nm	max. 3.5					
Temperature range		°C	-40 ... +80					
Terminal cross section	solid	mm <sup>2</sup>	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	2TE	2TE	2TE	3TE	

## PV ISAFE C(R) 40

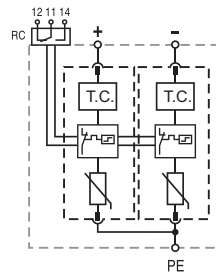
PV ISAFE C(R) 40/xxxx (with remote contacts)			
Remote contacts			YES
Contact ratings	250 V	A	0.5
	125 V		3
Terminal cross section		mm <sup>2</sup>	max. 1.5
Remote terminal torque		Nm	0.25

### Dimensions

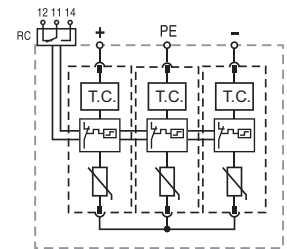


### Connection diagram

PV ISAFE CR 40/75 - 1000



PV ISAFE CR 40/1200



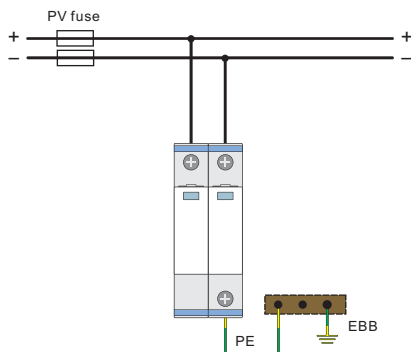
### Accessory part for PV ISAFE C(R) 40/xxxx

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

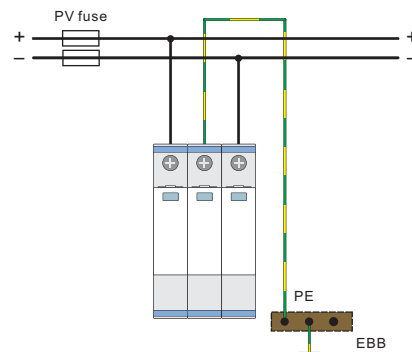


### Connections

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	$I_{max} = 40$ kA per pole
Safety	Immunity against TOV
Housing	Modular design

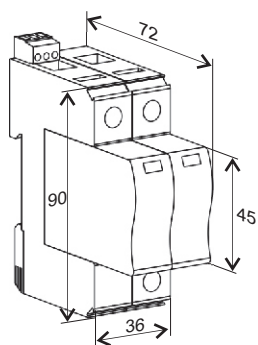
### Technical data

Type		ISAFE C(R) 80/xxx (2+0)		
		150	275	440
<b>Electrical characteristic</b>				
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 withstand 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	
<b>Mechanical characteristic</b>				
Terminal screw torque		Nm	max. 3.5	
Temperature range		°C	-40 ... +80	
Terminal cross section	solid	mm <sup>2</sup>	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	

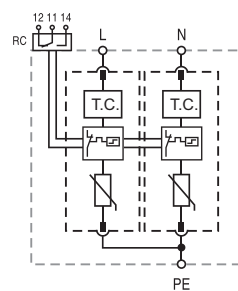
## ISAFE C(R) 80 (2+0)

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 <sup>2</sup>	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

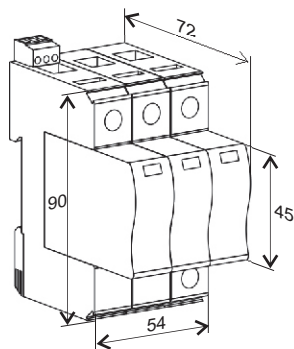
### Technical data

Type		ISAFE C(R) 120/xxx (3+0)			
		150	275	440	
<b>Electrical characteristic</b>					
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 withstand 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		
<b>Mechanical characteristic</b>					
Terminal screw torque		Nm	max. 3.5		
Temperature range		°C	-40 ... +80		
Terminal cross section	solid	mm <sup>2</sup>	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		

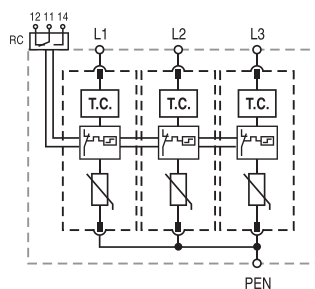
## ISAFE C(R) 120 (3+0)

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 <sup>2</sup>	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

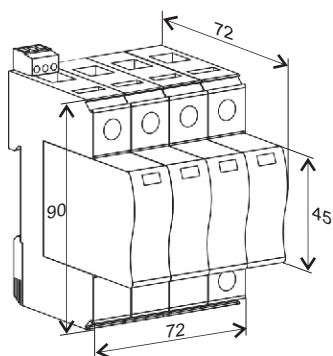
Type		ISAFE C(R) 160/xxx (4+0)		
		150	275	440
<b>Electrical characteristic</b>				
Standards				IEC-61643-1
Max. continuous operating voltage (AC/DC)	$U_c$ V	150/200	275/350	440/580
Nominal discharge current (8/20)	$I_n$ kA	20 per pole		
Max. discharge current (8/20)	$I_{max}$ kA	40 per pole		
Protection 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 withstand 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		
<b>Mechanical characteristic</b>				
Terminal screw torque	Nm	max. 3.5		
Temperature range	°C	-40 ... +80		
Terminal cross section	solid	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			



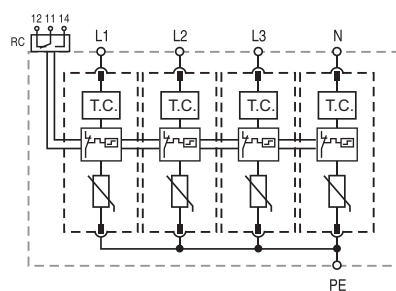
## ISAFE C(R) 160 (4+0)

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 <sup>2</sup>	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



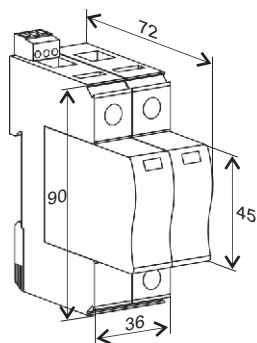
### Technical data

Type		ISAFE C(R) 80/xxx (1+1)			
		150		275	
<b>Electrical characteristic</b>					
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		
<b>Mechanical characteristic</b>					
Terminal screw torque		Nm	max. 3.5		
Temperature range		°C	-40 ... +80		
Terminal cross section	solid	mm <sup>2</sup>	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		

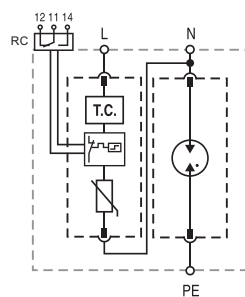
## ISAFE C(R) 80 (1+1)

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 <sup>2</sup>	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



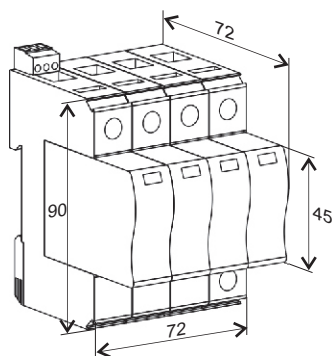
### Technical data

Type		ISAFE C(R) 80/xxx (1+1)			
		150	275	440	
<b>Electrical characteristic</b>					
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		
<b>Mechanical characteristic</b>					
Terminal screw torque		Nm	max. 3.5		
Temperature range		°C	-40 ... +80		
Terminal cross section	solid	mm <sup>2</sup>	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		

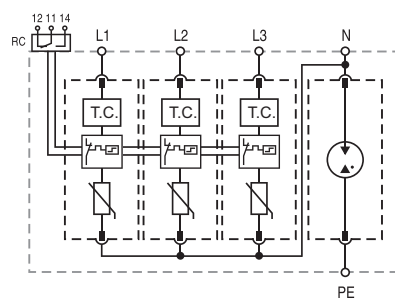
## ISAFE C(R) 160 (3+1)

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 <sup>2</sup>	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



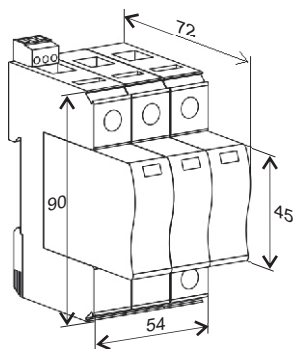
### Technical data

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 <sup>2</sup>	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

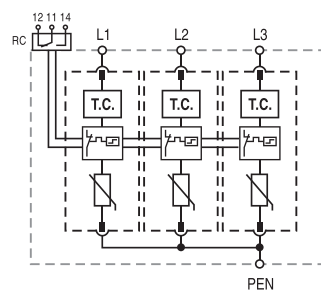
## WT ISAFE C(R) 750 (3+0)

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 <sup>2</sup>	max. 1.5
Remote terminal torque		Nm	0.25

Dimensions



Connection diagram



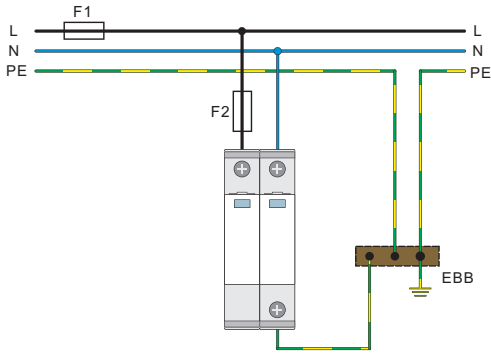
Accessory part for WT ISAFE C(R) 750 (3+0)

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

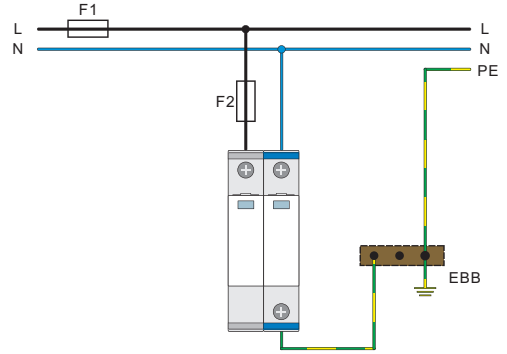


## ISAFE C(R) CONNECTIONS

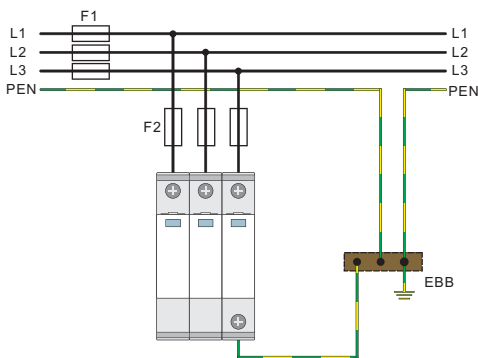
### TN-S Network (Single-phase)



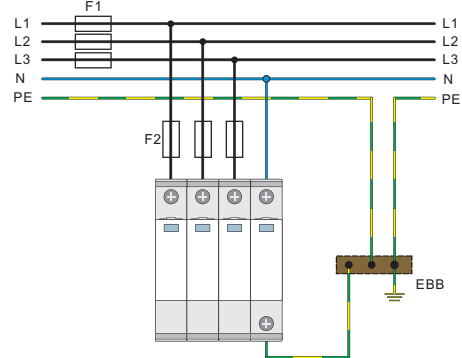
### TT Network (Single-phase)



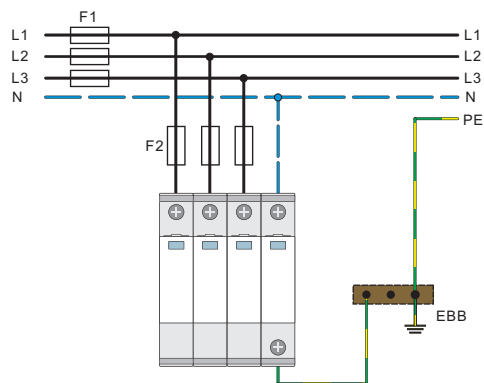
### TN-C Network (Three-phase)



### TN-S Network (Three-phase)

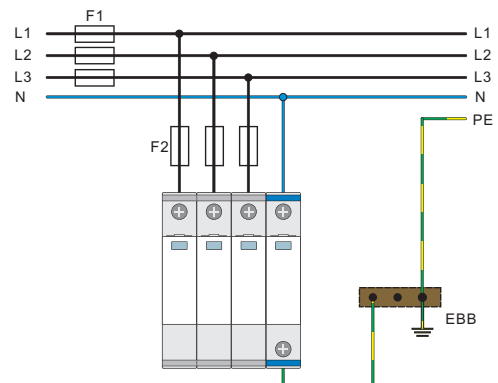


### IT Network (Three-phase)



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

### ISAFE C(R) 40/1200 PV





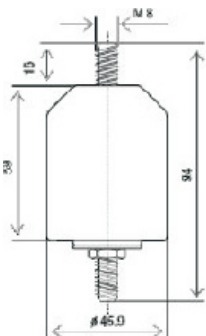
Category IEC/EN/VDE	Class II/Type 2/A
Location of use	Overhead power lines
Connections	TN-C, TN-S, IT
Protection modes	L/N - PE
Protective element	MOV
High surge discharge rating	$I_{max} = 30 \text{ kA}$
Housing	Compact design



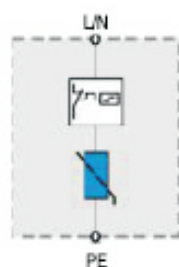
### Technical data

Type			ISPRO AQ 30				
			150	275	320	385	440
<b>Electrical characteristic</b>							
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				
<b>Mechanical characteristic</b>							
Terminal screw torque		Nm	max. 3.5				
Temperature range		°C	-40 ... +80				
Terminal cross section	L/N		M8				
	PE		6 mm <sup>2</sup> (stranded)				
Mounting			Outdoors				
Degree of protection			IP 20				
Housing material			Thermoplastic; extinguishing degree UL 94 V-0				
Dimensions			/				

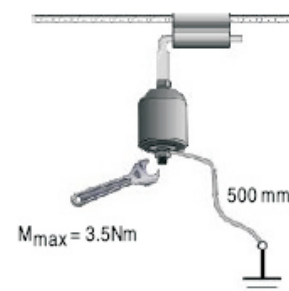
Dimensions



Connection diagram



Mounting





**Iskra MIS, d. d.**  
Ljubljanska c. 24a  
SI-4000 Kranj, Slovenia

Tel.: +386 4 237 21 12  
Fax: +386 4 237 21 29

E-mail: [info@iskra-mis.si](mailto:info@iskra-mis.si)  
[www.iskra-mis.si](http://www.iskra-mis.si)