

Modular SINGLE-POLE and MULTI-POLE Surge Protective Devices

NEW

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, 2TE, 3TE, 4TE

SAFETEC C(R) 40
SAFETEC C(R) 80 (2+0)
SAFETEC C(R) 80 (1+1)
SAFETEC C(R) 120 (3+0)
SAFETEC C(R) 160 (4+0)
SAFETEC C(R) 160 (3+1)

The new SAFETEC series of surge protective devices (SPDs) provide:

- Protection from overvoltages, surge and transients on the system network
- Protection against loss of neutral, or loose neutral connections, which are common to MEN (Multiple earthed neutral) systems
- Unstable or poorly regulated power networks where sustained overvoltages for some minutes or longer may exist
- Patented TC technology prevent catastrophic failures in case of TOV (temporary overvoltages)

SAFETEC C(R) 40

Class II Single-pole Surge Protective Device $I_{max} = 40kA (8/20)$

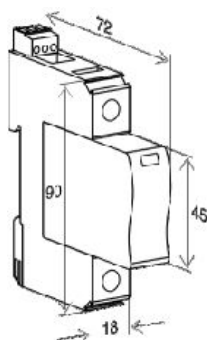


- ◆ Category IEC / EN / VDE: Class II / Type 2 / C
- ◆ Location of use: Branch sub-distribution boards
- ◆ Connections: TN-S, TN-C, IT
- ◆ Protection modes: L/N - PE
- ◆ Protective element: MOV
- ◆ High surge discharge rating: $I_{max} = 40kA$
- ◆ Safety: Immunity against TOV
- ◆ Housing: Modular design
- ◆ Complies with: IEC-61643-1

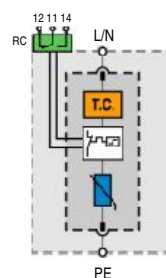
Technical data

Type		150	SAFETEC C(R) 40/xxx 275	440
Electrical characteristics				
Max. continuous operating voltage (AC/DC)	U_c	150/200V	275/350V	440/580V
Nominal discharge current (8/20)	I_n	20kA	20kA	20kA
Max. discharge current (8/20)	I_{max}	40kA	40kA	40kA
Protection level	U_p	< 1.0kV	< 1.6kV	< 2.2kV
Follow current	I_f		NO	
Response time	t_A		< 25ns	
Thermal protection			YES	
TOV withstand for 5 sec.			$1.32 \times U_{REF} (335V)$ $\sqrt{3} \times U_{REF} (400V)$	
Short-circuit withstand current			25kA/50Hz	
Mechanical characteristics				
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				
Ordering code SAFETEC C 40/xxx		516 001	516 003	516 005
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				
Ordering code SAFETEC C(R) 40/xxx (with remote contacts)		516 002	516 004	516 006
Packaging dimensions (single unit)			108 x 74 x 24mm	
Ordering code Module SAFETEC C(R) 40/xxx		516 037	516 038	516 039
Packaging dimensions (12 pcs.)			219 x 62 x 47mm	

Dimensions



Connection diagram



SAFETEC C(R) 80 (2+0)

Class II Multi-pole Surge Protective Device

$I_{max} = 40kA$ per pole (8/20)

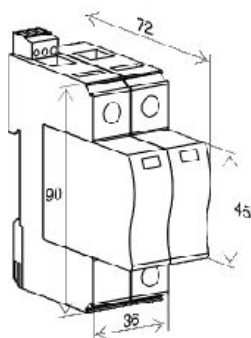


- ◆ Category IEC / EN / VDE: Class II / Type 2 / C
- ◆ Location of use: Branch sub-distribution boards
- ◆ Connections: TN-S
- ◆ Protection modes: L/N - PE, L - PEN
- ◆ Protective element: MOV
- ◆ High surge discharge rating: $I_{max} = 40kA$ per pole
- ◆ Safety: Immunity against TOV
- ◆ Housing: Modular design
- ◆ Complies with: IEC-61643-1

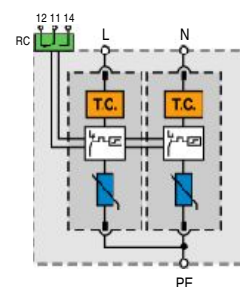
Technical data

Type	SAFETEC C(R) 80/xxx (2+0)		
	150	275	440
Electrical characteristics			
Max. continuous operating voltage (AC/DC) U_c	150/200V	275/350V	440/580V
Nominal discharge current (8/20) I_n	20kA per pole	20kA per pole	20kA per pole
Max. discharge current (8/20) I_{max}	40kA per pole	40kA per pole	40kA per pole
Protection level U_p	< 1.0kV	< 1.6kV	< 2.2kV
Follow current I_f		NO	
Response time t_A		< 25ns	
Thermal protection		YES	
TOV withstand for 5 sec.		$1.32 \times U_{REF}$ (335V)	
		$\sqrt{3} \times U_{REF}$ (400V)	
Short-circuit withstand current		25kA/50Hz	
Mechanical characteristics			
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		2TE	
Weight per unit			
Ordering code SAFETEC C 80/xxx (2+0)	516 007	516 009	516 011
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			
Ordering code SAFETEC C(R) 80/xxx (2+0) (with remote contacts)	516 008	516 010	516 012
Packaging dimensions (single unit)		109 x 76.5 x 41.5mm	
Ordering code Module SAFETEC C(R) 40/xxx	516 037	516 038	516 039
Packaging dimensions (12 pcs.)		219 x 62 x 47mm	

Dimensions



Connection diagram



SAFETEC C(R) 80 (1+1)

Class II Multi-pole Surge Protective Device $I_{max} = 40kA$ per pole (8/20)

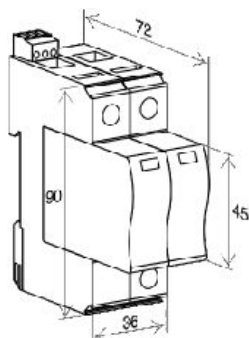


- ◆ Category IEC / EN / VDE: Class II / Type 2 / C
- ◆ Location of use: Branch sub-distribution boards
- ◆ Connections: TT
- ◆ Protection modes: L - N, N - PE
- ◆ Protective element: MOV and GDT
- ◆ High surge discharge rating: $I_{max} = 40kA$ per pole
- ◆ Safety: Immunity against TOV
- ◆ Housing: Modular design
- ◆ Complies with: IEC-61643-1

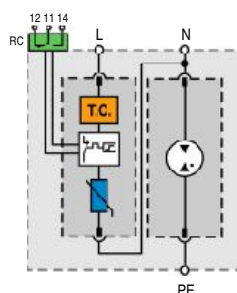
Technical data

Type	SAFETEC C(R) 80/xxx (1+1)		
	150	275	440
Electrical characteristics			
Max. continuous operating voltage (AC/DC) U_c	150/200V	275/350V	440/580V
Nominal discharge current (8/20) I_n (L-N/N-PE)	20kA per pole	20kA per pole	20kA per pole
Max. discharge current (8/20) I_{max} (L-N/N-PE)	40kA per pole	40kA per pole	40kA per pole
Protection level	U_p (L-N)	< 1.0kV	< 1.6kV
		U_p (N-PE)	< 2.0kV
Follow current I_f (N-PE)		> 100A _{RMS}	
Response time t_A (L-N/N-PE)		< 25ns/100ns	
Thermal protection (L-N/N-PE)		YES	
TOV withstand for 5 sec.		$1.32 \times U_{REF}$ (335V)	
		$\sqrt{3} \times U_{REF}$ (400V)	
Short-circuit withstand current (L-N/N-PE)		25kA/50Hz/-	
Mechanical characteristics			
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		2TE	
Weight per unit			
Ordering code SAFETEC C 80/xxx (1+1)	516 013	516 015	516 017
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			
Ordering code SAFETEC C(R) 80/xxx (1+1) (with remote contacts)	516 014	516 016	516 018
Packaging dimensions (single unit)		109 x 76.5 x 41.5mm	
Ordering code Module SAFETEC C(R) 40/xxx	516 037	516 038	516 039
Ordering code Module SAFETUBE C 40/255		516 115	
Packaging dimensions (12 pcs.)		219 x 62 x 47mm	

Dimensions



Connection diagram



SAFETEC C(R) 120 (3+0)

Class II Multi-pole Surge Protective Device

$I_{max} = 40kA$ per pole (8/20)

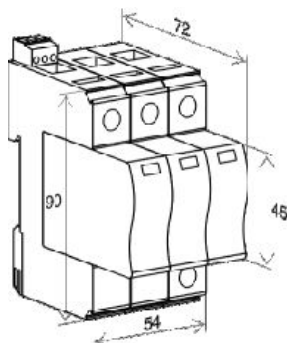


- ◆ Category IEC / EN / VDE: Class II / Type 2 / C
- ◆ Location of use: Branch sub-distribution boards
- ◆ Connections: TN-C
- ◆ Protection modes: L - PEN
- ◆ Protective element: MOV
- ◆ High surge discharge rating: $I_{max} = 40kA$ per pole
- ◆ Safety: Immunity against TOV
- ◆ Housing: Modular design
- ◆ Complies with: IEC-61643-1

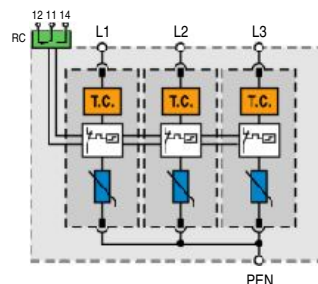
Technical data

Type	SAFETEC C(R) 120/xxx (3+0)		
	150	275	440
Electrical characteristics			
Max. continuous operating voltage (AC/DC) U_c	150/200V	275/350V	440/580V
Nominal discharge current (8/20) I_n	20kA per pole	20kA per pole	20kA per pole
Max. discharge current (8/20) I_{max}	40kA per pole	40kA per pole	40kA per pole
Protection level U_p	< 1.0kV	< 1.6kV	< 2.2kV
Follow current I_f		NO	
Response time t_A		< 25ns	
Thermal protection		YES	
TOV withstand for 5 sec.		$1.32 \times U_{REF}$ (335V)	
		$\sqrt{3} \times U_{REF}$ (400V)	
Short-circuit withstand current		25kA/50Hz	
Mechanical characteristics			
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		3TE	
Weight per unit			
Ordering code SAFETEC C 120/xxx (3+0)	516 019	516 021	516 023
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			
Ordering code SAFETEC C(R) 120/xxx (3+0) (with remote contacts)	516 020	516 022	516 024
Packaging dimensions (single unit)		109 x 76.5 x 60mm	
Ordering code Module SAFETEC C(R) 40/xxx	516 037	516 038	516 039
Packaging dimensions (12 pcs.)		219 x 62 x 47mm	

Dimensions



Connection diagram



SAFETEC C(R) 160 (4+0)

Class II Multi-pole Surge Protective Device

$I_{max} = 40kA$ per pole (8/20)

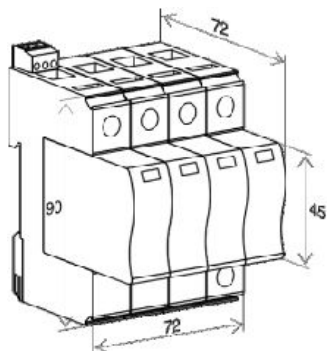


- ◆ Category IEC / EN / VDE: Class II / Type 2 / C
- ◆ Location of use: Branch sub-distribution boards
- ◆ Connections: TN-S, IT
- ◆ Protection modes: L/N - PE
- ◆ Protective element: MOV
- ◆ High surge discharge rating: $I_{max} = 40kA$ per pole
- ◆ Safety: Immunity against TOV
- ◆ Housing: Modular design
- ◆ Complies with: IEC-61643-1

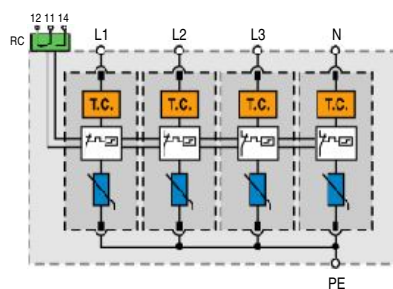
Technical data

Type	SAFETEC C(R) 160/xxx (4+0)		
	150	275	440
Electrical characteristics			
Max. continuous operating voltage (AC/DC) U_c	150/200V	275/350V	440/580V
Nominal discharge current (8/20) I_n	20kA per pole	20kA per pole	20kA per pole
Max. discharge current (8/20) I_{max}	40kA per pole	40kA per pole	40kA per pole
Protection level U_p	< 1.0kV	< 1.6kV	< 2.2kV
Follow current I_f		NO	
Response time t_A		< 25ns	
Thermal protection		YES	
TOV withstand for 5 sec.		$1.32 \times U_{REF}$ (335V) $\sqrt{3} \times U_{REF}$ (400V)	
Short-circuit withstand current		25kA/50Hz	
Mechanical characteristics			
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		4TE	
Weight per unit			
Ordering code SAFETEC C 160/xxx (4+0)	516 025	516 027	516 029
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			
Ordering code SAFETEC C(R) 160/xxx (4+0) (with remote contacts)	516 026	516 028	516 030
Packaging dimensions (single unit)		109 x 76.5 x 78mm	
Ordering code Module SAFETEC C(R) 40/xxx	516 037	516 038	516 039
Packaging dimensions (12 pcs.)		219 x 62 x 47mm	

Dimensions



Connection diagram



SAFETEC C(R) 160 (3+1)

Class II Multi-pole Surge Protective Device I_{max} = 40kA per pole (8/20)

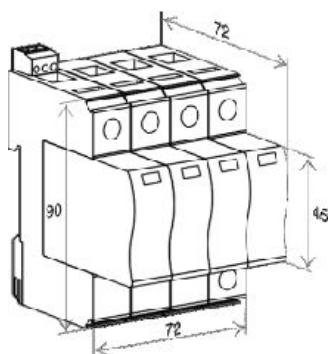


- ◆ Category IEC / EN / VDE: Class II / Type 2 / C
- ◆ Location of use: Branch sub-distribution boards
- ◆ Connections: TT
- ◆ Protection modes: L - N, N - PE
- ◆ Protective element: MOV and GDT
- ◆ High surge discharge rating: I_{max}= 40kA per pole
- ◆ Safety: Immunity against TOV
- ◆ Housing: Modular design
- ◆ Complies with: IEC-61643-1

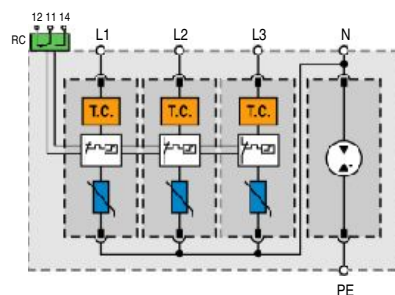
Technical data

Type	SAFETEC C(R) 160/xxx (3+1)		
	150	275	440
Electrical characteristics			
Max. continuous operating voltage (AC/DC) U _C	150/200V	275/350V	440/580V
Nominal discharge current (8/20) I _n (L-N/N-PE)	20kA per pole	20kA per pole	20kA per pole
Max. discharge current (8/20) I _{max} (L-N/N-PE)	40kA per pole	40kA per pole	40kA per pole
Protection level	U _p (L-N)	< 1.6kV	< 2.2kV
	U _p (N-PE)	< 2.0kV	
Follow current I _f (N-PE)		> 100A _{RMS}	
Response time t _A (L-N/N-PE)		< 25ns/100ns	
Thermal protection (L-N/N-PE)		YES	
TOV withstand for 5 sec.		1.32 x U _{REF} (335V) √ 3 x U _{REF} (400V)	
Short-circuit withstand current (L-N/N-PE)		25kA/50Hz/-	
Mechanical characteristics			
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		4TE	
Weight per unit			
Ordering code SAFETEC C 160/xxx (3+1)	516 031	516 033	516 035
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			
Ordering code SAFETEC C(R) 160/xxx (3+1) (with remote contacts)	516 032	516 034	516 036
Packaging dimensions (single unit)		109 x 76.5 x 78mm	
Ordering code Module SAFETEC C(R) 40/xxx	516 037	516 038	516 039
Ordering code Module SAFETUBE C 40/255		516 115	
Packaging dimensions (12 pcs.)		219 x 62 x 47mm	

Dimensions

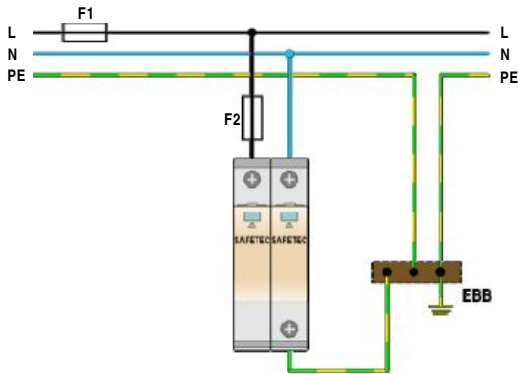


Connection diagram

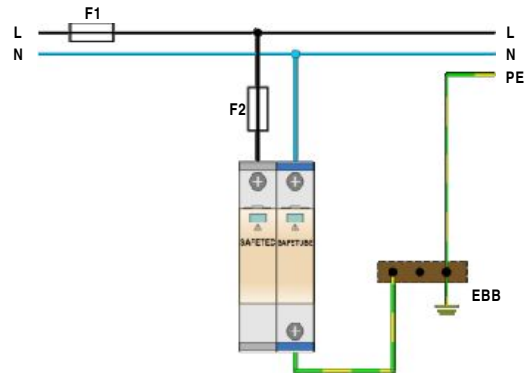


SAFETEC C(R), SAFETUBE C - Connections

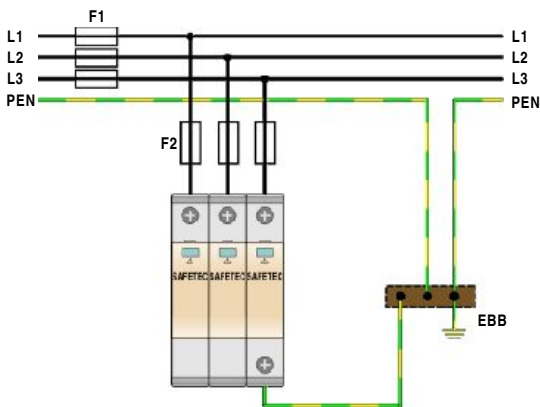
TN-S Network (Single-phase)



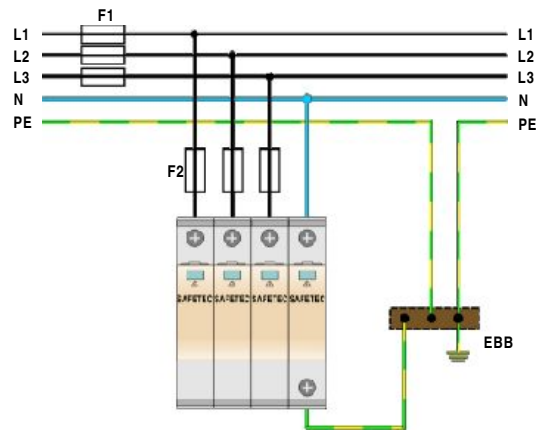
TT Network (Single-phase)



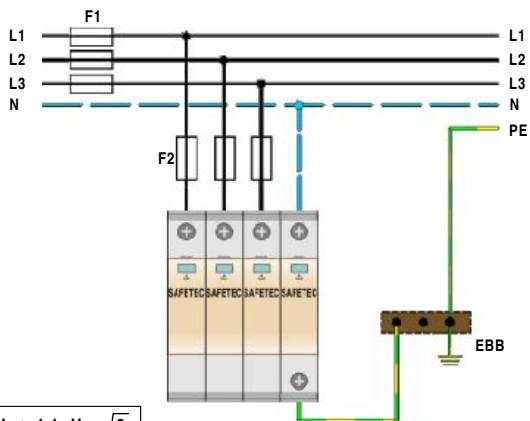
TN-C Network (Three-phase)



TN-S Network (Three-phase)



IT Network (Three-phase)



$$U_C \geq 1.1 \cdot U_N \cdot \sqrt{3}$$

TT Network (Three-phase)

