Electrical installation solutions for buildings

Arc Fault Detection Devices

Index

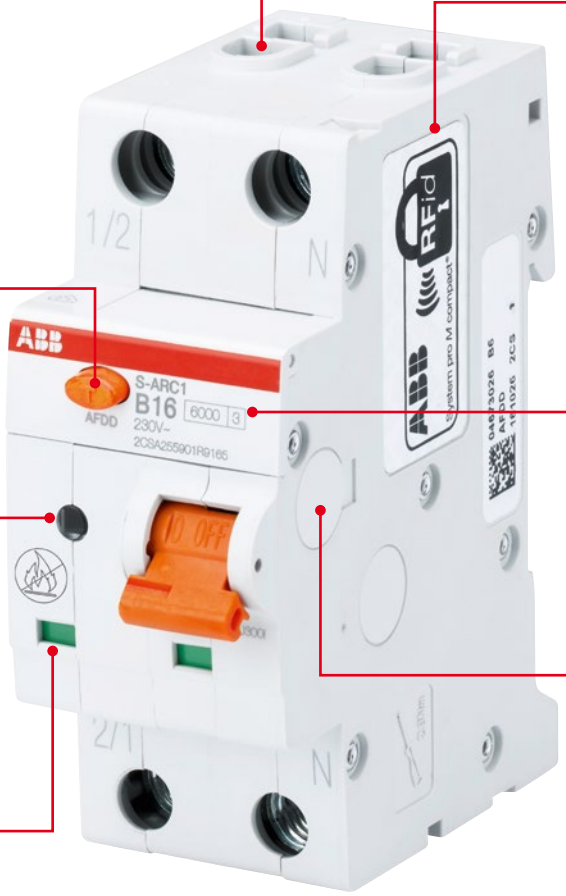
AFDD S-ARC1:
Arc Fault Detection Device Integrated with MCB

Easy to install
Twin terminals for separate feeding with busbar and cables. Connection possible both from top and bottom side.

Test pushbutton and self test
Test pushbutton to verify the correct functioning of the arc fault detection device. Internal self test is also continuously running in order to check the arc detection circuit.

LED for troubleshooting
LED troubleshooting indicator to monitor the operation of the AFDD and give indication of the cause of the trip. Possibility to recall in memory the last tripping due to arc fault and overvoltage.

Contact position indicator (CPI)
To always know the status of the contacts (red: closed; green: open) Independent from the toggle position

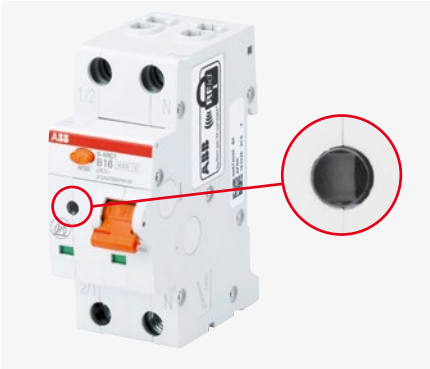


Anti counterfeiting
RFid tag containing a unique serial number assigned to ABB in order to authenticate the product.

Laser printed information
Information on the device are laser printed to ensure readability over time.

Combination with auxiliary elements
Platform suitable for combination with System pro M compact® accessories.

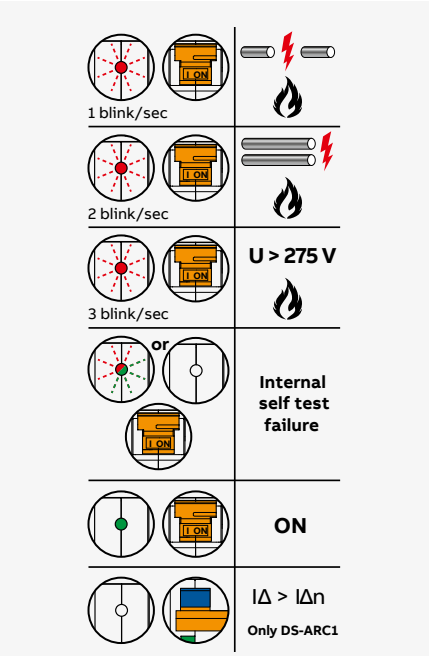
The S-ARC1 is the new 1P+N Arc Fault Detection Device (AFDD) with an integrated Miniature Circuit Breaker (MCB) in only two module width. Besides the overcurrent protection of the MCB, the S-ARC1 provides additional protection against series, parallel and earth arc faults. The series is perfectly integrated with ABB's System pro M compact® range. Combined with a Residual Current Circuit Breaker (RCCB) as upstream device, the S-ARC1 provides the best solution for complete protection of electrical installations in buildings.



LED for easy troubleshooting
LED to monitor the correct working conditions of the device and have an easier troubleshooting in case of trip. Consequently the downtime for maintenance can be reduced.
– Toggle ON: GREEN LED
– Toggle OFF: LED OFF
– Different indications after the trip, after reclosing the toggle
– Possibility to recall in memory the last tripping due to arc fault and overvoltage

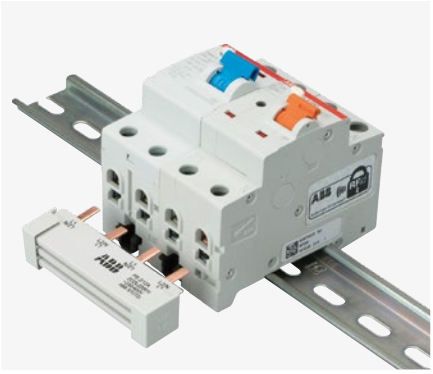
LED color	Blink/ sec	Signalling duration	Cause of trip
Green		Permanent	Manual trip, manual test , overcurrent
Red blinking	1	5 sec	Series arc
Red blinking	2	5 sec	Parallel arc
Red blinking	3	5 sec	Over voltage

In case of internal self test failure, the led can switch off or start blinking green/red alternatively.



Dedicated sticker for LED
Dedicated sticker that summarizes the LED function is present in addition to the instructions sheet.

Double slot terminals
Fail-safe terminals to avoid improper connection. Two slots of different dimensions (25 mm² and 10 mm²) available to allow the connection both with cables and busbars. Connection possible both from top and bottom side. Standard System pro M compact® clip ensures a stable fixing on DIN rail and easy and fast mounting and dismounting operations.



Compatibility with busbars
A quick and easy installation is possible in one step using a standard ABB System pro M compact® busbar: no additional cables required for the wiring.

All information on the device
Main technical information are laser-printed on the front and left side of product to ensure long readability.

AFDD

Technical features and overall dimensions

				S-ARC1	S-ARC1 M
	Standards			IEC/EN 62606; IEC/EN 60898-1	
Electrical Functions	Number of poles			1P + N	
	Rated current I_n		A	6 ≤ In ≤ 20	
	Rated voltage U_e		V	230 – 240	
	Insulation voltage U_i		V	500 V AC	
	Overvoltage category			III	
	Pollution degree			2	
	Min. operating voltage		V	170	
	Threshold for protection against overvoltage		V	275	
	Rated frequency		Hz	50/60	
	Rated breaking capacity acc. to IEC/EN 60898-1	ultimate I_{cn}	A	6000	10000
	Rated breaking capacity acc. to IEC/EN 60947-2 (only referring to short circuit test)	ultimate I_{cu}	kA	7.5	10
		service I_{cs}	kA	6	7.5
	Rated residual breaking capacity IΔm		A	6000	
	Rated impulse withstand voltage (1.2/50) U_{imp}		kV	4	
	Dielectric test voltage at ind. freq. for 1 min.		kV	2.5 (50/60 Hz, 1 min.)	
	Thermomagnetic release – characteristic	B: 3 I_n ≤ I_m ≤ 5 I_n		■	
		C: 5 I_n ≤ I_m ≤ 10 I_n		■	
	Energy limiting class			3	
Mechanical main features	Housing			Insulation group I, RAL 7035	
	Toggle			Insulation group II, Orange RAL 2004, sealable in ON-OFF-positions	
	Contact position indication			Green/red window	
	Electrical life			10000 operations	
	Mechanical life			20000 operations	
	Protection degree acc. to EN 60529	housing		IP4X	
		terminals		IP2X	
	Shock resistance acc. to IEC/EN 60068-2-27			25 g – 2 shocks – 13 ms	
	Vibration resistance acc. to IEC/EN 60068-2-6			0.2 mm or 5 g – 20 cycles at 5 … 150 … 5 Hz	
	Environmental conditions (damp heat) acc. to IEC/EN 60068-2-30		°C/ RH	28 cycles with 55°C/90 – 96 % and 25°C/95 – 100 %	
	Reference temperature for setting of thermal element		°C	30	
	Ambient temperature (with daily average ≤ +35 °C)		°C	-25 … +55	
	Storage temperature		°C	-40 … +70	
Assembly	Terminal type	top/bottom		failsafe bi-directional cylinder-lift terminal (shock-protected)	
	Terminal size for cables	top/bottom	mm²	25/25	
	Terminal size for busbars	top/bottom	mm²	10/10	
	Tightening torque	top/bottom	Nm	2.8	
	Stripping length of the cable		mm	12	
	Mounting			on DIN rail EN 60715 (35 mm) by means of mounting clip	
	Mounting position			any	
	Supply from			Top/bottom terminals	
Dimensions and weight	Dimensions (H x D x W)		mm	85 × 69 × 35	
	Weight		g	180	

AFDD

Technical features and overall dimensions

Installation				
Terminal type	top / bottom		failsafe bi-directional cylinder-lift terminal (shock protected)	failsafe bi-directional cylinder-lift terminal (shock protected)
Terminal size for cables	top / bottom	mm^2	25/25	25/25
Terminal size for busbars	top / bottom	mm^2	10/10	10/10
Tightening torque	top / bottom	Nm	2.8	2.8
Stripping length of the cable		mm	12,5	12,5
Mounting			on DIN rail EN 60715 (35mm) by means of mounting clip	on DIN rail EN 60715 (35mm) by means of mounting clip
Mounting position			Any	Any
Supply from			Top/Bottom terminals	Top/Bottom terminals
Dimensions and weight				
Dimensions (H x D x W)		mm	85 x 69 x 35 mm	85 x 69 x 35 mm
Weight		g	180	180
Combinable with accessories and auxiliaries	Auxiliary contact, signal contact/auxiliary switch, shunt trip, undervoltage release, overvoltage release			

AFDD

S-ARC1, B and C characteristic

S-ARC1, B and C characteristics
Function: protection of end user single-phase circuits against short-circuit currents, overload, earth arc faults, parallel arc faults and series arc faults.

Application: residential, commercial
Standard: IEC 62606; EN 62606; IEC 60898-1; EN 60898-1
Icn = 6 000 A

B-Characteristic

No. of poles	Rated current In A	Bbn 8012542 EAN	Order details Type code	Order code	Price 1 piece	Weight 1 piece kg	Pack unit pc.
1+N	6	750130	S-ARC1 B6	2CSA255901R9065		0.18	1
	10	178132	S-ARC1 B10	2CSA255901R9105		0.18	1
	13	750031	S-ARC1 B13	2CSA255901R9135		0.18	1
	16	178033	S-ARC1 B16	2CSA255901R9165		0.18	1
	20	749936	S-ARC1 B20	2CSA255901R9205		0.18	1

C-Characteristic

No. of poles	Rated current In A	Bbn 8012542 EAN	Order details Type code	Order code	Price 1 piece	Weight 1 piece kg	Pack unit pc.
1+N	6	177937	S-ARC1 C6	2CSA255901R9064		0.18	1
	10	749837	S-ARC1 C10	2CSA255901R9104		0.18	1
	13	500735	S-ARC1 C13	2CSA255901R9134		0.18	1
	16	886136	S-ARC1 C16	2CSA255901R9164		0.18	1
	20	175438	S-ARC1 C20	2CSA255901R9204		0.18	1

AFDD

S-ARC1 M, B and C characteristic

S-ARC1 M, B and C characteristics
Function: protection of end user single-phase circuits against short-circuit currents, overload, earth arc faults, parallel arc faults and series arc faults.

Application: residential, commercial
Standard: IEC 62606; EN 62606; IEC 60898-1; EN 60898-1
Icn = 10 000 A

S-ARC1 M - B characteristics

No. of poles	Rated current In A	Bbn 8012542 EAN	Order details Type code	Order code	Price 1 piece	Weight 1 piece kg	Pack unit pc.
1P+N	6	374312	S-ARC1 M B6	2CSA275901R9065		0.18	1
	10	342113	S-ARC1 M B10	2CSA275901R9105		0.18	1
	13	342014	S-ARC1 M B13	2CSA275901R9135		0.18	1
	16	342212	S-ARC1 M B16	2CSA275901R9165		0.18	1
	20	341215	S-ARC1 M B20	2CSA275901R9205		0.18	1

S-ARC1 M - C characteristics

No. of poles	Rated current In A	Bbn 8012542 EAN	Order details Type code	Order code	Price 1 piece	Weight 1 piece kg	Pack unit pc.
1P+N	6	339816	S-ARC1 M C6	2CSA275901R9064		0.18	1
	10	339717	S-ARC1 M C10	2CSA275901R9104		0.18	1
	13	339618	S-ARC1 M C13	2CSA275901R9134		0.18	1
	16	340416	S-ARC1 M C16	2CSA275901R9164		0.18	1
	20	340317	S-ARC1 M C20	2CSA275901R9204		0.18	1

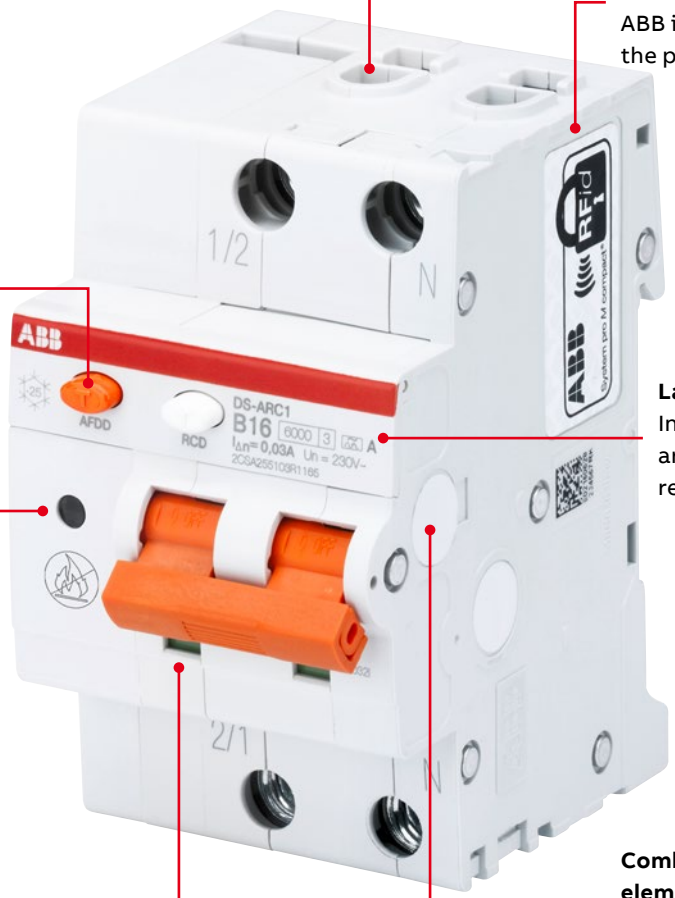
AFDD DS-ARC1:
Arc Fault Detection Device Integrated with RCBO

Easy to install
Twin terminals for separate feeding with busbar and cables. Connection possible both from top and bottom side.

Test pushbutton and self test
White test pushbutton to verify the correct functioning of RCD. Orange test pushbutton to verify the correct functioning of AFDD. Internal self test is also continuously running in order to check the arc detection circuit.

LED for troubleshooting
LED troubleshooting indicator to monitor the operation of the AFDD and give indication of the cause of the trip. Possibility to recall in memory the last tripping due to arc fault and overvoltage.

Contact position indicator (CPI)
To always know the status of the contacts (red: closed; green: open) Independent from the toggle position

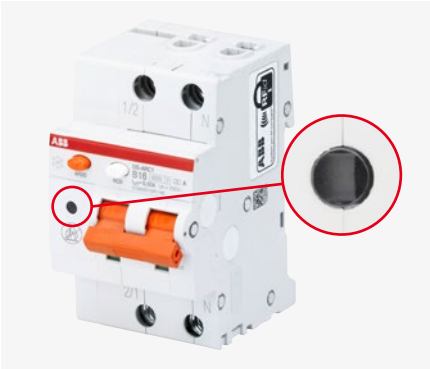


Anti counterfeiting
RFid tag containing a unique serial number assigned to ABB in order to authenticate the product.

Laser printed information
Information on the device are laser printed to ensure readability over time.

Combination with auxiliary elements
Platform suitable for combination with System pro M compact® accessories. Combination possible also with auxiliary for bottom fitting.

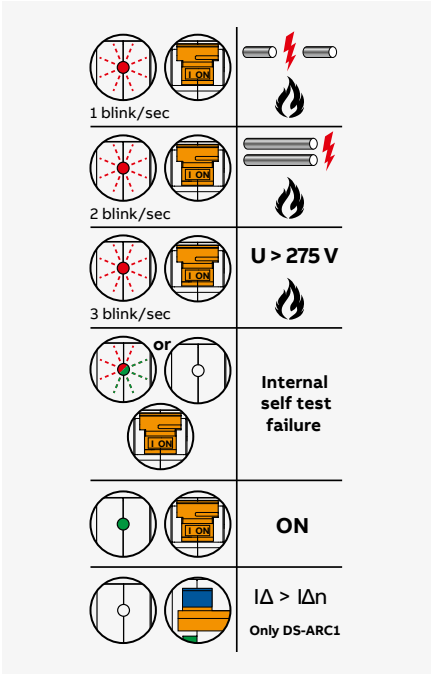
The DS-ARC1 is the new 1P+N Arc Fault Detection Device (AFDD) with an integrated residual current circuit breaker with overcurrent protection (RCBO) in only three module width.
The series offers a complete protection against arc faults and overvoltage, reducing the risk of fire.
The integrated RCBO is adding protection against overcurrent and earth fault currents: compact solution for a complete protection of people and valuable assets.



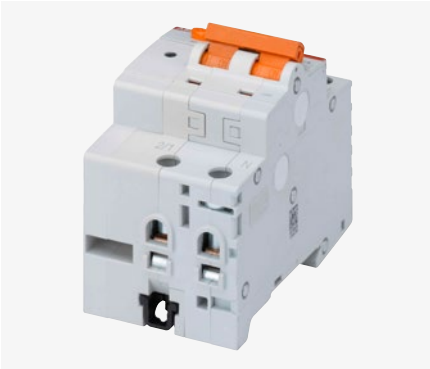
LED for easy troubleshooting
LED to monitor the correct working conditions of the device and have an easier troubleshooting in case of trip. Consequently the downtime for maintenance can be reduced.
– Toggle ON: GREEN LED
– Toggle OFF: LED OFF
– Different indications after the trip, after reclosing the toggle
– Possibility to recall in memory the last tripping due to arc fault and overvoltage

LED color	Blink/ sec	Signalling duration	Cause of trip
Green		Permanent	Manual trip, manual test , overcurrent
Red blinking	1	5 sec	Series arc
Red blinking	2	5 sec	Parallel arc
Red blinking	3	5 sec	Over voltage

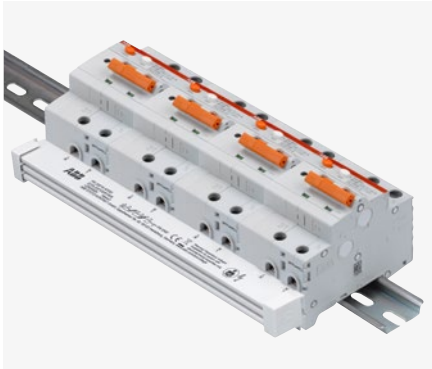
In case of internal self test failure, the led can switch off or start blinking green/red alternatively.



Dedicated sticker for LED
Dedicated sticker that summarizes the LED function is present in addition to the instructions sheet.



Double slot terminals
Fail-safe terminals to avoid improper connection. Two slots of different dimensions (25 mm² and 10 mm²) available to allow the connection both with cables and busbars. Connection possible both from top and bottom side.Standard System pro M compact® clip ensures a stable fixing on DIN rail and easy and fast mounting and dismounting operations.



Compatibility with busbars
A quick and easy installation is possible in one step using dedicated busbars for DS-ARC1 installation no additional cables required for the wiring.

Earth fault indicator
Blue flag on the toggle to identify earth fault trips, making the troubleshooting easier while reducing the downtime for maintenance operations. In case of earth fault trip, after reclosing the toggle, the LED becomes green.

AFDD

DS-ARC1 arc fault detection device with integrated RCBO – technical data

				DS-ARC1	DS-ARC1 M
	Standards			IEC/EN 62606; IEC/EN 61009-1; IEC/EN 61009-2-1	
Electrical Functions	Type (wave form of the earth leakage sensed)			A	
	Number of poles			1P + N	
	Rated current I_n		A	6 ≤ In ≤ 20	
	Rated sensitivity IΔn		A	0.03	
	Rated voltage U_e		V	230 – 240	
	Insulation voltage U_i		V	500 V AC	
	Overvoltage category			III	
	Pollution degree			2	
	Operating voltage of RCD circuit test U_t		V	170 – 264	
	Threshold for protection against overvoltage		V	275	
	Rated frequency		Hz	50/60	
	Rated breaking capacity acc. to IEC/EN 61009-1	ultimate I_{cn}	A	6000	10000
	Rated breaking capacity acc. to IEC/EN 60947-2 (only referring to short circuit test)	ultimate I_{cu}	kA	7.5	10
		service I_{cs}	kA	6	7.5
	Rated residual breaking capacity IΔm		A	6000	
	Rated impulse withstand voltage (1.2/50) U_{imp}		kV	4	
	Dielectric test voltage at ind. freq. for 1 min.		kV	2.5 (50/60 Hz, 1 min.)	
	Thermomagnetic release – characteristic	B: 3 I_n ≤ I_m ≤ 5 I_n		■	
		C: 5 I_n ≤ I_m ≤ 10 I_n		■	
	Energy limiting class			3	
	Surge current resistance (wave 8/20)			NA	
Mechanical Main features	Housing			Insulation group I, RAL 7035	
	Toggle			Insulation group II, Orange RAL 2004, sealable in ON-OFF-positions	
	Contact position indication			Green/red window	
	Earth fault trip indication			Blue flag on toggle	
	Electrical life			10000 operations	
	Mechanical life			20000 operations	
	Protection degree acc. to EN 60529	housing		IP4X	
		terminals		IP2X	
	Shock resistance acc. to IEC/EN 60068-2-27			25 g – 2 shocks – 13 ms	
	Vibration resistance acc. to IEC/EN 60068-2-6			0.2 mm or 5 g – 20 cycles at 5 … 150 … 5 Hz	
	Environmental conditions (damp heat) acc. to IEC/EN 60068-2-30		°C/ RH	28 cycles with 55°C/90 – 96 % and 25°C/95 – 100 %	
	Reference temperature for setting of thermal element		°C	30	
	Ambient temperature (with daily average ≤ +35 °C)		°C	-25 … +55	
	Storage temperature		°C	-40 … +70	
Assembly	Terminal type	top/bottom		failsafe bi-directional cylinder-lift terminal (shock-protected)	
	Terminal size for cables	top/bottom	mm²	25/25	
	Terminal size for busbars	top/bottom	mm²	10/10	
	Tightening torque	top/bottom	Nm	2.8	
	Stripping length of the cable		mm	12	
	Mounting			on DIN rail EN 60715 (35 mm) by means of mounting clip	
	Mounting position			any	
	Supply from			Top/bottom terminals	
Dimensions and weight	Dimensions (H x D x W)		mm	85 × 69 × 52.5	
	Weight		g	240	

AFDD

DS-ARC1 and DS-ARC1 M

DS-ARC1, 6 kA, B and C characteristics
Function: protection of end user single-phase circuits against short-circuit currents, overload, earth arc faults, parallel arc faults, series arc faults, earth faults currents.

Application: residential, commercial
Standard: IEC/EN 62606; IEC/EN 61009-1; IEC/EN 61009-2-1
Icn = 6 000 A

Number of poles	Rated residual currrent IΔm mA	Charac-teristics	Rated current I_n A	Bbn 8012542 EAN	Ordering details Type code	Order code	Weight 1 pcs kg	Pkg qty pce
1P+N	30	B	6	736516	DS-ARC1 B6 A30	2CSA255103R1065	0.240	1
			10	735618	DS-ARC1 B10 A30	2CSA255103R1105	0.240	1
			13	736417	DS-ARC1 B13 A30	2CSA255103R1135	0.240	1
			16	735519	DS-ARC1 B16 A30	2CSA255103R1165	0.240	1
			20	736318	DS-ARC1 B20 A30	2CSA255103R1205	0.240	1
1P+N	30	C	6	736110	DS-ARC1 C6 A30	2CSA255103R1064	0.240	1
			10	735212	DS-ARC1 C10 A30	2CSA255103R1104	0.240	1
			13	748311	DS-ARC1 C13 A30	2CSA255103R1134	0.240	1
			16	611110	DS-ARC1 C16 A30	2CSA255103R1164	0.240	1
			20	735113	DS-ARC1 C20 A30	2CSA255103R1204	0.240	1

DS-ARC1 M, 10 kA, B and C characteristics
Function: protection of end user single-phase circuits against short-circuit currents, overload, earth arc faults, parallel arc faults, series arc faults, earth faults currents.

Application: residential, commercial
Standard: IEC/EN 62606; IEC/EN 61009-1; IEC/EN 61009-2-1
Icn = 10 000 A

Number of poles	Rated residual currrent IΔm mA	Charac-teristics	Rated current I_n A	Bbn 8012542 EAN	Ordering details Type code	Order code	Weight 1 pcs kg	Pkg qty pce
1P+N	30	B	6	734710	DS-ARC1 M B6 A30	2CSA275103R1065	0.240	1
			10	733812	DS-ARC1 M B10 A30	2CSA275103R1105	0.240	1
			13	734611	DS-ARC1 M B13 A30	2CSA275103R1135	0.240	1
			16	733713	DS-ARC1 M B16 A30	2CSA275103R1165	0.240	1
			20	734512	DS-ARC1 M B20 A30	2CSA275103R1205	0.240	1
1P+N	30	C	6	734314	DS-ARC1 M C6 A30	2CSA275103R1064	0.240	1
			10	733416	DS-ARC1 M C10 A30	2CSA275103R1104	0.240	1
			13	748113	DS-ARC1 M C13 A30	2CSA275103R1134	0.240	1
			16	611011	DS-ARC1 M C16 A30	2CSA275103R1164	0.240	1
			20	748014	DS-ARC1 M C20 A30	2CSA275103R1204	0.240	1