

S200 UL 489 Series Miniature Circuit Breakers



S200
UL 489 Series



Description

The S200 Series miniature circuit breaker offers a compact solution for protection requirements. The S200U AND S200UP devices are UL 489 tested current limiting and DIN rail mounted.

The S200U and S200UP is available with application-specific trip characteristics to provide maximum circuit protection.

The breakers offer thermal-magnetic trip protection according to K and Z characteristics.

For the worldwide market, the breakers carry UL, CSA, IEC, CE and many other agency approvals and certifications.

Features

- UL current limiting
- Fast breaking time (2.3 – 2.5 ms)
- Bus connection system
- Wide range of accessories
- Available with variable depth handle mechanism
- CE certified and marked
- DIN rail mounting
- Finger safe terminals
- Multi-function terminals
- Suitable for reverse feed
- UL 489 Listed - branch circuit protective device. UL File #E212323

	S200U	S200UP	S201DC
Amperage	0.2 – 63	0.2 – 25	1 – 25
Voltage	240 VAC	480Y/277VAC	60 VDC
Poles	1, 2, 3, 4	1, 2, 3, 4	1
Trip characteristics	K, Z	K, Z	K, Z
Interrupting ratings	Up to 25 kA: IEC 60947-2 10 kA: UL 489 10 kA: CSA 22.2 No. 5	Up to 25 kA: IEC 60947-2 10 kA: UL 489 10 kA: CSA 22.2 No. 5	14 kA: UL489
Auxiliary contacts	Yes	Yes	Yes
Bell alarm	Yes	Yes	Yes
Shunt trip	Yes	Yes	Yes
Bus bar	Yes	Yes	Yes

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S200U-K, 240 VAC

Branch circuit protection

UL 489, CSA 22.2 No. 5

K



S201U-K



S202U-K



S203U-K



S204U-K

No. of poles	Rated current	Catalog number	List price	No. of poles	Rated current	Catalog number	List price		
1	0.2	S201U-K0.2	\$ 38	3	0.2	S203U-K0.2	\$ 137		
	0.3	S201U-K0.3			0.3	S203U-K0.3			
	0.5	S201U-K0.5			0.5	S203U-K0.5			
	0.75	S201U-K0.75			0.75	S203U-K0.75			
	1	S201U-K1			1	S203U-K1			
	1.6	S201U-K1.6			1.6	S203U-K1.6			
	2	S201U-K2			2	S203U-K2			
	3	S201U-K3			3	S203U-K3			
	4	S201U-K4			4	S203U-K4			
	5	S201U-K5			5	S203U-K5			
	6	S201U-K6			6	S203U-K6			
	8	S201U-K8			8	S203U-K8			
	10	S201U-K10			10	S203U-K10			
	15	S201U-K15			15	S203U-K15			
	16	S201U-K16			16	S203U-K16			
	20	S201U-K20			20	S203U-K20			
	25	S201U-K25			25	S203U-K25			
	30	S201U-K30	41		30	S203U-K30	137		
	32	S201U-K32	43		32	S203U-K32	141		
	40	S201U-K40	45		40	S203U-K40	146		
	50	S201U-K50	50		50	S203U-K50	155		
	60	S201U-K60	54		60	S203U-K60	166		
	63	S201U-K63	59		63	S203U-K63	171		
	2	0.2	S202U-K0.2		91	4	0.2	S204U-K0.2	194
		0.3	S202U-K0.3				0.3	S204U-K0.3	
0.5		S202U-K0.5	0.5	S204U-K0.5					
0.75		S202U-K0.75	0.75	S204U-K0.75					
1		S202U-K1	1	S204U-K1					
1.6		S202U-K1.6	1.6	S204U-K1.6					
2		S202U-K2	2	S204U-K2					
3		S202U-K3	3	S204U-K3					
4		S202U-K4	4	S204U-K4					
5		S202U-K5	5	S204U-K5					
6		S202U-K6	6	S204U-K6					
8		S202U-K8	8	S204U-K8					
10		S202U-K10	10	S204U-K10					
15		S202U-K15	15	S204U-K15					
16		S202U-K16	16	S204U-K16					
20		S202U-K20	20	S204U-K20					
25		S202U-K25	25	S204U-K25					
30		S202U-K30	91	30	S204U-K30		194		
32		S202U-K32	93	32	S204U-K32		194		
40		S202U-K40	100	40	S204U-K40		202		
50		S202U-K50	105	50	S204U-K50		205		
60		S202U-K60	114	60	S204U-K60		211		
63		S202U-K63	123	63	S204U-K63		217		

Tripping characteristic K

UL 489
240 VAC
10 kA

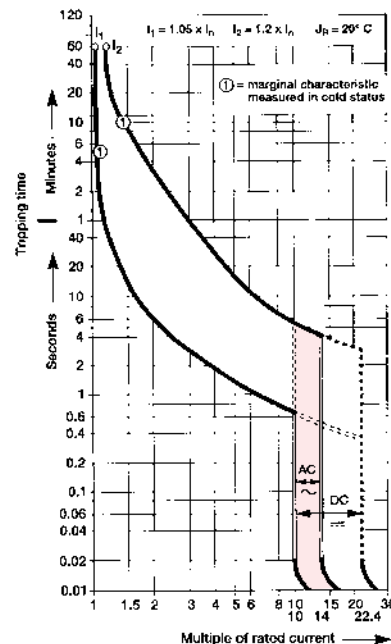
Inductive loads

- K Curve
- Designed for allowing higher in-rush currents during system start up
- Example: motors, transformers

Accessories & technical data

Accessories – See page 15.7

Technical data – See page 15.76 - 15.82



Note: This breaker for AC use only

S200U-Z, 240 VAC

Branch circuit protection

UL 489, CSA 22.2 No. 5

Miniature
circuit breakers

Z



S201U-Z



S202U-Z



S203U-Z



S204U-Z

No. of poles	Rated current	Catalog number	List price	No. of poles	Rated current	Catalog number	List price
1	0.5	S201U-Z0.5	\$ 54	3	0.5	S203U-Z0.5	\$ 182
	1	S201U-Z1			1	S203U-Z1	
	1.6	S201U-Z1.6			1.6	S203U-Z1.6	
	2	S201U-Z2			2	S203U-Z2	
	3	S201U-Z3			3	S203U-Z3	
	4	S201U-Z4			4	S203U-Z4	
	5	S201U-Z5			5	S203U-Z5	
	6	S201U-Z6			6	S203U-Z6	
	8	S201U-Z8			8	S203U-Z8	
	10	S201U-Z10			10	S203U-Z10	
	15	S201U-Z15			15	S203U-Z15	
	16	S201U-Z16			16	S203U-Z16	
	20	S201U-Z20			20	S203U-Z20	
	25	S201U-Z25			25	S203U-Z25	
	30	S201U-Z30			30	S203U-Z30	
32	S201U-Z32	57	32	S203U-Z32	185		
40	S201U-Z40	61	40	S203U-Z40	189		
50	S201U-Z50	68	50	S203U-Z50	196		
60	S201U-Z60	75	60	S203U-Z60	205		
63	S201U-Z63	80	63	S203U-Z63	212		
2	0.5	S202U-Z0.5	121	4	0.5	S204U-Z0.5	274
	1	S202U-Z1			1	S204U-Z1	
	1.6	S202U-Z1.6			1.6	S204U-Z1.6	
	2	S202U-Z2			2	S204U-Z2	
	3	S202U-Z3			3	S204U-Z3	
	4	S202U-Z4			4	S204U-Z4	
	5	S202U-Z5			5	S204U-Z5	
	6	S202U-Z6			6	S204U-Z6	
	8	S202U-Z8			8	S204U-Z8	
	10	S202U-Z10			10	S204U-Z10	
	15	S202U-Z15			15	S204U-Z15	
	16	S202U-Z16			16	S204U-Z16	
	20	S202U-Z20			20	S204U-Z20	
	25	S202U-Z25			25	S204U-Z25	
	30	S202U-Z30			30	S204U-Z30	
32	S202U-Z32	123	32	S204U-Z32	276		
40	S202U-Z40	128	40	S204U-Z40	283		
50	S202U-Z50	137	50	S204U-Z50	292		
60	S202U-Z60	146	60	S204U-Z60	304		
63	S202U-Z63	155	63	S204U-Z63	305		

Tripping characteristic Z

UL 489
240 VAC
10 kA

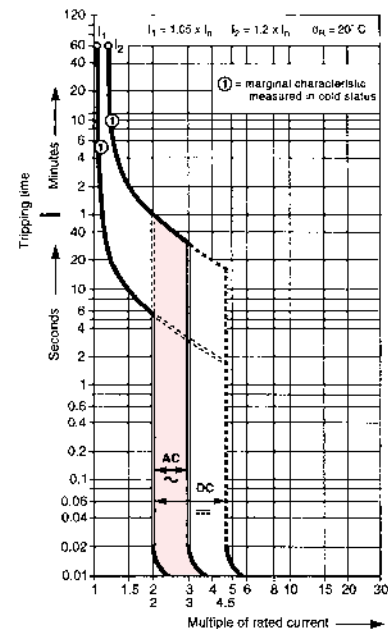
Resistive loads

- Z Curve
- Designed to provide maximum protection with a very low short circuit trip setting
- Example: semiconductors, control circuits

Accessories & technical data

Accessories – See page 15.7

Technical data – See page 15.76 - 15.82



Note: This breaker for AC use only

S200UP-K, 480Y/277 VAC

Branch circuit protection

UL 489, CSA 22.2 No. 5

K



S201UP-K



S202UP-K



S203UP-K



S204UP-K

No. of poles	Rated current	Catalog number	List prices	No. of poles	Rated current	Catalog number	List price
1	0.2	S201UP-K0.2	\$ 61	3	0.2	S203UP-K0.2	\$ 219
	0.3	S201UP-K0.3			0.3	S203UP-K0.3	
	0.5	S201UP-K0.5			0.5	S203UP-K0.5	
	0.75	S201UP-K0.75			0.75	S203UP-K0.75	
	1	S201UP-K1			1	S203UP-K1	
	1.6	S201UP-K1.6			1.6	S203UP-K1.6	
	2	S201UP-K2			2	S203UP-K2	
	3	S201UP-K3			3	S203UP-K3	
	4	S201UP-K4			4	S203UP-K4	
	5	S201UP-K5			5	S203UP-K5	
	6	S201UP-K6			6	S203UP-K6	
	8	S201UP-K8			8	S203UP-K8	
	10	S201UP-K10			10	S203UP-K10	
	15	S201UP-K15			15	S203UP-K15	
	16	S201UP-K16			16	S203UP-K16	
	20	S201UP-K20			20	S203UP-K20	
	25	S201UP-K25			25	S203UP-K25	
2	0.2	S202UP-K0.2	162	4	0.2	S204UP-K0.2	301
	0.3	S202UP-K0.3			0.3	S204UP-K0.3	
	0.5	S202UP-K0.5			0.5	S204UP-K0.5	
	0.75	S202UP-K0.75			0.75	S204UP-K0.75	
	1	S202UP-K1			1	S204UP-K1	
	1.6	S202UP-K1.6			1.6	S204UP-K1.6	
	2	S202UP-K2			2	S204UP-K2	
	3	S202UP-K3			3	S204UP-K3	
	4	S202UP-K4			4	S204UP-K4	
	5	S202UP-K5			5	S204UP-K5	
	6	S202UP-K6			6	S204UP-K6	
	8	S202UP-K8			8	S204UP-K8	
	10	S202UP-K10			10	S204UP-K10	
	15	S202UP-K15			15	S204UP-K15	
	16	S202UP-K16			16	S204UP-K16	
	20	S202UP-K20			20	S204UP-K20	
	25	S202UP-K25			25	S204UP-K25	

Tripping characteristic K

UL 489
480Y/277 VAC
10 kA

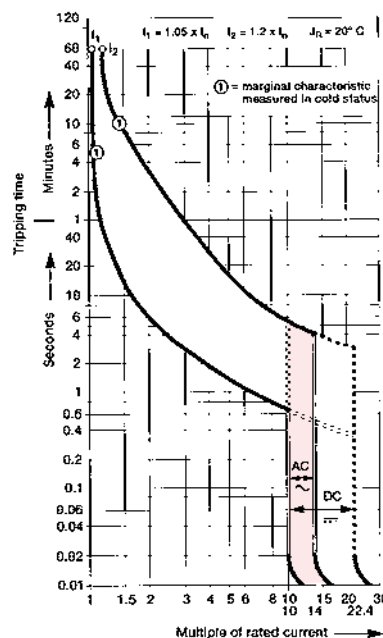
Inductive loads

- K Curve
- Designed for allowing higher in-rush currents during system start up
- Example: motors, transformers

Accessories & technical data

Accessories – See page 15.7

Technical data – See page 15.76 - 15.82



Note: This breaker for AC use only

S200UP-Z, 277/480Y/277 VAC

Branch circuit protection

UL 489, CSA 22.2 No. 5

Miniature
circuit breakers

Z



S201UP-Z



S202UP-Z



S203UP-Z



S204UP-Z

No. of poles	Rated current	Catalog number	List price	No. of poles	Rated current	Catalog number	List price
1	0.5	S201UP-Z0.5	\$ 80	3	0.5	S203UP-Z0.5	\$ 285
	1	S201UP-Z1			1	S203UP-Z1	
	1.6	S201UP-Z1.6			1.6	S203UP-Z1.6	
	2	S201UP-Z2			2	S203UP-Z2	
	3	S201UP-Z3			3	S203UP-Z3	
	4	S201UP-Z4			4	S203UP-Z4	
	5	S201UP-Z5			5	S203UP-Z5	
	6	S201UP-Z6			6	S203UP-Z6	
	8	S201UP-Z8			8	S203UP-Z8	
	10	S201UP-Z10			10	S203UP-Z10	
	15	S201UP-Z15			15	S203UP-Z15	
	16	S201UP-Z16			16	S203UP-Z16	
2	20	S201UP-Z20	212	4	20	S203UP-Z20	388
	25	S201UP-Z25			25	S203UP-Z25	
	0.5	S202UP-Z0.5			0.5	S204UP-Z0.5	
	1	S202UP-Z1			1	S204UP-Z1	
	1.6	S202UP-Z1.6			1.6	S204UP-Z1.6	
	2	S202UP-Z2			2	S204UP-Z2	
	3	S202UP-Z3			3	S204UP-Z3	
	4	S202UP-Z4			4	S204UP-Z4	
	5	S202UP-Z5			5	S204UP-Z5	
	6	S202UP-Z6			6	S204UP-Z6	
	8	S202UP-Z8			8	S204UP-Z8	
	10	S202UP-Z10			10	S204UP-Z10	
	15	S202UP-Z15			15	S204UP-Z15	
	16	S202UP-Z16			16	S204UP-Z16	
	20	S202UP-Z20			20	S204UP-Z20	
	25	S202UP-Z25			25	S204UP-Z25	

Tripping characteristic Z

UL 489

480Y/277 VAC

10 kA

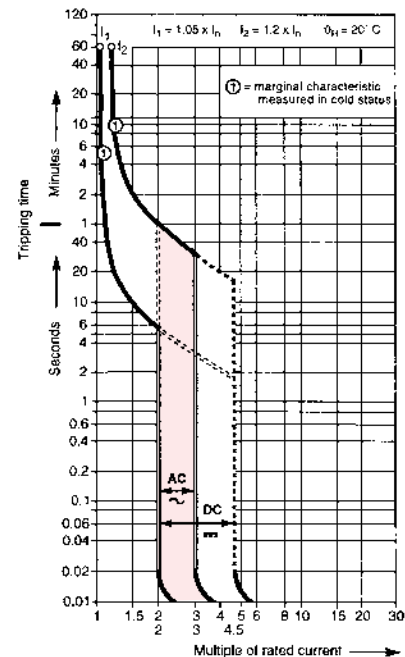
Resistive loads

- Z Curve
- Designed to provide maximum protection with a very low short circuit trip setting
- Example: semiconductors, control circuits

Accessories & technical data

Accessories – See page 15.7

Technical data – See page 15.76 - 15.82



Note: This breaker for AC use only

S201DC, 60 VDC

Branch circuit protection

UL 489, CSA 22.2 No. 5

K, Z



S201DC-K



S201DC-Z

No. of poles	Rated current	Catalog number	List price
1	1	S201DC-K1	\$ 36
	1.6	S201DC-K1.6	
	2	S201DC-K2	
	3	S201DC-K3	
	4	S201DC-K4	
	6	S201DC-K6	
	8	S201DC-K8	
	10	S201DC-K10	
	13	S201DC-K13	
	16	S201DC-K16	
	20	S201DC-K20	
1	25	S201DC-K25	38
	1	S201DC-Z1	
	1.6	S201DC-Z1.6	
	2	S201DC-Z2	
	3	S201DC-Z3	
	4	S201DC-Z4	
	6	S201DC-Z6	
	8	S201DC-Z8	
	10	S201DC-Z10	
	16	S201DC-Z16	
	20	S201DC-Z20	
	25	S201DC-Z25	

Tripping characteristic K

UL 489

60 VDC

14 kA

Inductive loads

- K Curve
- Designed for allowing higher in-rush currents during system start up
- Example: motors, transformers

Accessories & technical data

Accessories – See page 15.7

Technical data – See page 15.76 - 15.82

Tripping characteristic Z

UL 489

60 VDC

14 kA

Resistive loads

- Z Curve
- Designed to provide maximum protection with a very low short circuit trip setting

Accessories & technical data

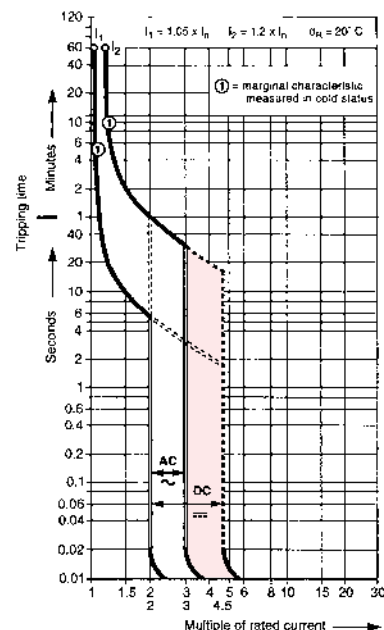
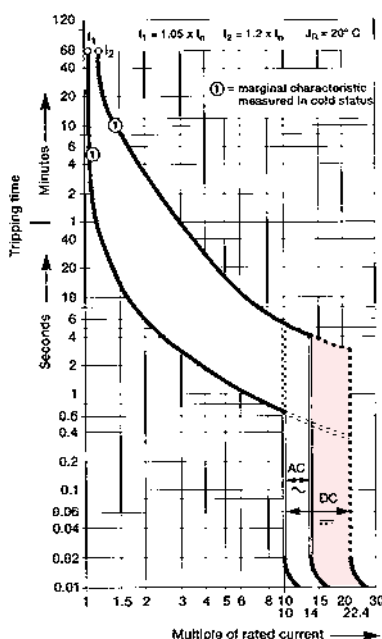
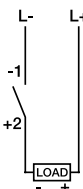
Accessories – See page 15.7

Technical data – See page 15.76 - 15.82

60 VDC

Single Pole

S201DC



Note: This breaker for DC use only.

Accessories

S200U & S200UP

UL 489, CSA 22.2 No. 5

Miniature
circuit breakers



S2C-H6RU



S2C-S6RU



S2C-DH



S2C-A1U

Auxiliary contacts

The auxiliary contacts will signal whether the breaker is in the ON or OFF position.

Description	Catalog number	List price
For field mounting: right side	S2C-H6RU	\$ 21

Bell alarm

The bell alarm includes a set of contacts that will only signal when the breaker has tripped. Typically the contacts would be connected to an alarm or bell to signal the operator that an overcurrent trip has occurred. The bell alarm also includes a test button for testing the alarm contacts without opening the breaker.

Description	Catalog number	List price
For field mounting: right side	S2C-S6RU	\$ 31

Rotary operating mechanism

Allows "through the door" operation.

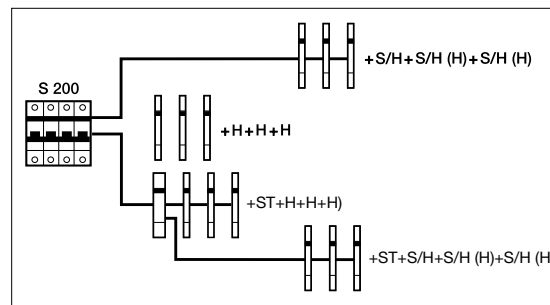
Description	Catalog number	List price
Handle mechanism	S2C-DH	\$ 71

Shunt trip

For remote tripping of breaker, a shunt trip device can be added to the MCB. The solenoid device opens the breaker after control voltage is applied.

Description	Catalog number	List price
For field mounting: right side 12...60 VAC/DC	S2C-A1U	\$ 89
For field mounting: right side 110...415 VAC 110...250 VDC	S2C-A2U	89

Possible mounting arrangements of MCB accessories



Legend	
Auxiliary contact	H
Bell alarm/Auxiliary contact	S/H
Bell alarm/Auxiliary contact used as auxiliary contact	S/H (H)
Shunt trip	ST

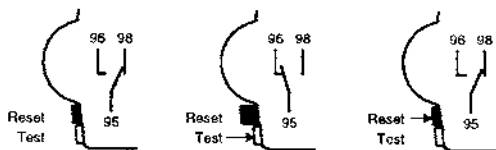
Accessories

S200U, S200UP & S201DC
UL 489, CSA 22.2 No. 5

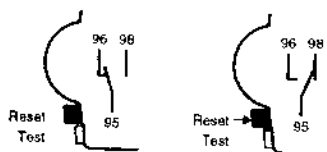
Connection drawings

Bell alarm S2C-S6RU

In ON and OFF position after hand operation

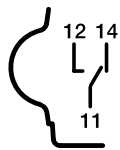


In OFF position after tripping

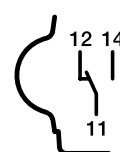


Auxiliary contact S2C-H6RU

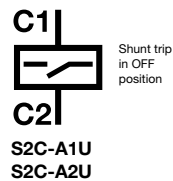
Auxiliary contact in ON position



Auxiliary contact in OFF position

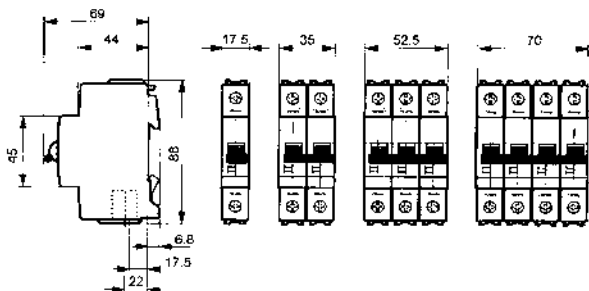


Shunt trip S2C-A...U

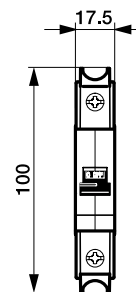
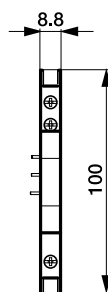


Approximate dimensions in mm

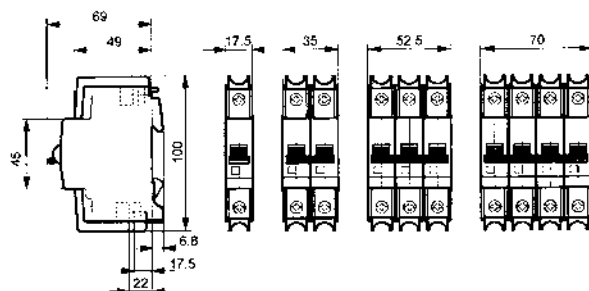
S200U



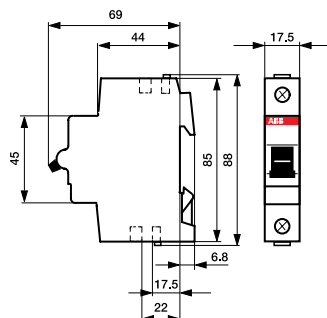
S2C-H6RU, S2C-S6RU S2C-A..U



S200UP



S201DC



Accessories

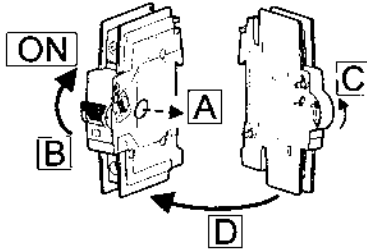
S200U & S200UP

UL 489, CSA 22.2 No. 5

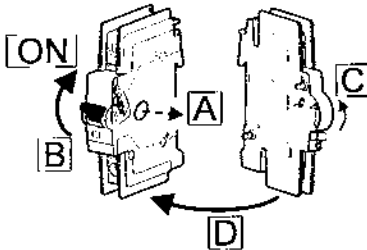
Miniature
circuit breakers

Mounting

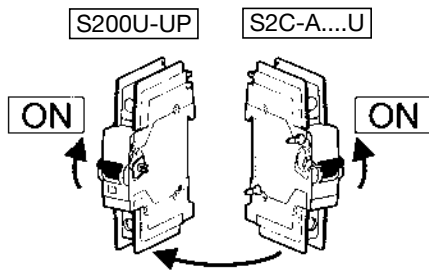
Addition of a S2C-H6RU auxiliary contact



Addition of a S2C-S6RU bell alarm contact



Addition of a S2C-A..U shunt trip

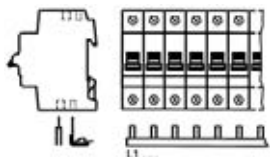


Accessories

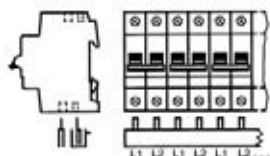
S200U & S200UP

UL 489, CSA 22.2 No. 5

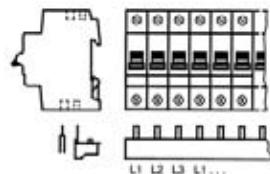
1 Phase



2 Phase



3 Phase



SZ-BSK

UL approved busbars UL file # E250145

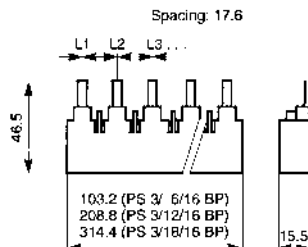
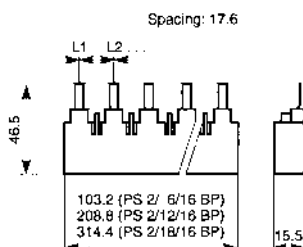
UL 489 busbar cannot be cut.

For use on:	Amp rating	Number of poles	Phases	Busbar length (mm)	Catalog number	List price
S200U	80	6	1	103.2	PS 1/6/16BP	\$ 19
S200UP		12	1	208.8	PS 1/12/16BP	30
S201DC		18	1	314.4	PS 1/18/16BP	40
S200U	80	6	2	103.2	PS 2/6/16BP	22
S200UP		12	2	208.8	PS 2/12/16BP	35
S201DC		18	2	314.4	PS 2/18/16BP	50
S200U	80	6	3	103.2	PS 3/6/16BP	25
S200UP		12	3	208.8	PS 3/12/16BP	40
S201DC		18	3	314.4	PS 3/18/16BP	60

Busbar tooth covers

Description	Catalog number	List price
Covers five unused poles of Busbar	SZ-BSK	\$ 4

Dimension drawings in mm



BUSBARS MAY BE USED ON BOTH
SIDES OF MCBS

BUSBARS MAY BE CENTER FED IN
ORDER TO INCREASE AMPACITY TO
130 AMPS

Technical data

S200U, S200UP & S201DC

UL 489, CSA 22.2 No. 5

Miniature
circuit breakers

Technical data	S200U	S200UP	S201DC
Specifications:	UL 489, CSA C 22.2 No. 5, IEC 60 947-2		UL 489, VDE 0660
UL File-Number:	E 212323, UL, Current limiting series ratings		E212323, UL
No. of poles:	1, 2, 3 & 4		1
Tripping characteristics:	K, Z		K, Z
Rated current:	0.2 (K) 0.5 (Z) ... 63 A	0.2 (K) 0.5 (Z) ... 25 A	1 - 25 A
Rated voltage:	Single pole: 240VAC Multi pole: 240VAC	Single pole: 277VAC Multi pole: 480Y/277VAC	
Short circuit capacity:	10 kA		14 kA
Frequency:	50/60 Hz		50/60 Hz
Degree of protection:	IP 20		IP 20
Mounting position:	Vertical and horizontal		Vertical and horizontal
Fixing:	35 mm DIN rail		35 mm DIN rail
Clamps only for Cu:	18-4 AWG (0.75 ... 25 mm ²)		18-4 AWG (0.75 ... 25 mm ²)
Service life, mech. and at rated load:	20,000 operations		10,000 operations
Tightening torque:	25 in. lbs (2.8 Nm)		25 in. lbs (2.8 Nm)
Ambient temperature:	- 25 °C ... + 55 °C / - 13 °F ... + 131 °F		- 25 °C ... + 55 °C / - 13 °F ... + 131 °F
Shock resistance:	30 g at least 2 impacts shock, duration 13 ms		30 g at least 2 impacts shock, duration 13 ms

Auxiliary contact S2C-H6RU and S2C-S6RU

Rated current:	10
Rated voltage AC / DC:	24
Contact:	1 pole double throw
Connection capacity mm ²	18 - 14 AWG (0.75...2.5 mm ²)
Tightening torque:	11 in.lbs (1.2 Nm)
Shock resistance acc. to DIN IEC 68-2-6:	5 g, 20 frequency cycles 5...150...5 Hz at 24 VAC/DC, 5 mA auto-reclosing < 10 ms
Mechanical service life:	10,000 operations

Shunt trip			Type	S2C-A1U	S2C-A2U
Rated voltage	AC	V		12 ... 60	110 ... 415
	DC	V		12 ... 60	110 ... 250
Max. release duration		ms		<10	<10
Min. release voltage	AC	V		7	55
	DC	V		10	80
Consumption on release	AC	VA		40 ... 200	55 ... 210
	DC	VA		40 ... 200	55 ... 110
Coil resistance		Ω		3.7	225
Terminals		AWG/mm ²		18...6 / 0.75 - 16	18...6 / 0.75 - 16
Tightening torque		in.lbs/Nm		18 / 2	18 / 2

Technical data

S200U & S200UP

UL 489, CSA 22.2 No. 5

Internal resistance and power loss

Internal resistance per pole in mΩ, power loss per pole in W.

Type	Rated current A	Device series K		Device series Z	
		mΩ	W	mΩ	W
S200U S200UP	0.2	42500	1.7	–	–
	0.3	20000	1.8	–	–
	0.5	6340	1.6	10100	2.5
	0.75	2500	1.4	–	–
	1	1400	1.4	2270	2.3
	1.6	625	1.6	1100	2.8
	2	460	1.8	619	2.5
	3	211	1.9	211	1.9
	4	163	2.6	163	2.6
	6	67	2.4	104	3.7
	8	45	2.9	55	3.5
	10	19	1.9	21	2.1
	13	–	–	–	–
	16	8.2	2.1	10.9	2.8
	20	7.3	2.9	7.3	2.9
	25	5.6	3.5	5.6	3.5
	32	4.1	4.2	4.1	4.2
	40	4.0	6.4	4.0	6.4
	50	1.2	3.0	1.8	4.4
	63	1.3	5.2	1.3	5.2

Technical data

S200U & S200UP

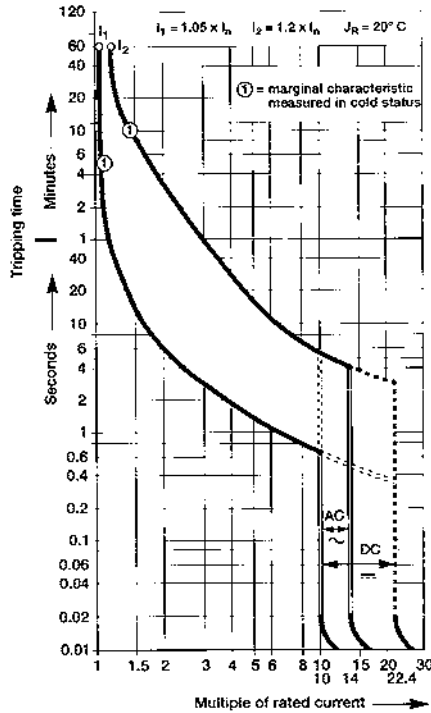
UL 489, CSA 22.2 No. 5

Miniature
circuit breakers

Tripping characteristic K (68 °F)

Breaker calibration temperature 68°F

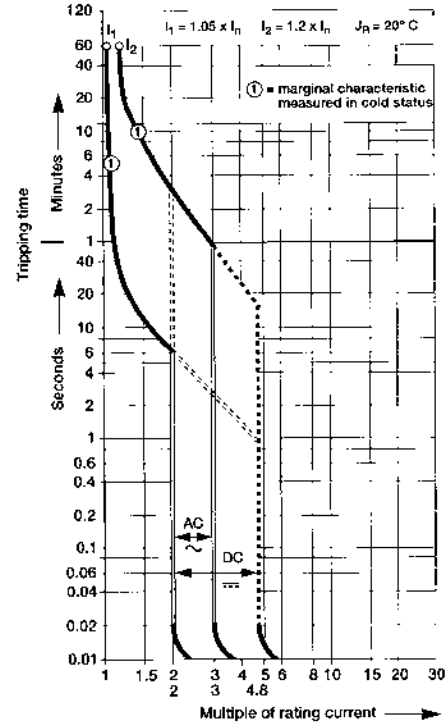
See chart below for temperature DeRating



Tripping characteristic Z (68 °F)

Breaker calibration temperature 68°F

See chart below for temperature DeRating



Temperature derating

Max. operating current values depending on the ambient temperature for a circuit-breaker of characteristics type K and Z

K and Z	Ambient temperature T (°C/°F)											
I _n (A)	−40/−40	−30/−22	−20/−4	−10/14	0/32	10/50	20/68	30/86	40/104	50/122	60/140	70/158
0.5	0.66	0.64	0.61	0.59	0.56	0.53	0.50	0.47	0.43	0.40	0.35	0.31
1.0	1.32	1.27	1.22	1.17	1.12	1.06	1.00	0.94	0.87	0.79	0.71	0.61
1.6	2.12	2.04	1.96	1.88	1.79	1.70	1.60	1.50	1.39	1.26	1.13	0.98
2.0	2.65	2.55	2.45	2.35	2.24	2.12	2.00	1.87	1.73	1.58	1.41	1.22
3.0	4.0	3.8	3.7	3.5	3.4	3.2	3.0	2.8	2.6	2.4	2.1	1.8
4.0	5.3	5.1	4.9	4.7	4.5	4.2	4.0	3.7	3.5	3.2	2.8	2.4
6.0	7.9	7.6	7.3	7.0	6.7	6.4	6.0	5.6	5.2	4.7	4.2	3.7
8.0	10.8	10.2	9.8	9.4	8.9	8.5	8.0	7.5	6.9	6.3	5.7	4.9
10.0	13.2	12.7	12.2	11.7	11.2	10.6	10.0	9.4	8.7	7.9	7.1	6.1
13.0	17.2	16.6	15.9	15.2	14.5	13.8	13.0	12.2	11.3	10.3	9.2	8.0
16.0	21.2	20.4	19.6	18.8	17.9	17.0	16.0	15.0	13.9	12.6	11.3	9.8
20.0	26.5	25.5	24.5	23.5	22.4	21.2	20.0	18.7	17.3	15.8	14.1	12.2
25.0	33.1	31.9	30.6	29.3	28.0	26.5	25.0	23.4	21.7	19.8	17.7	15.3
32.0	42.3	40.8	39.2	37.5	35.8	33.9	32.0	29.9	27.7	25.3	22.6	19.6
40.0	52.9	51.0	49.0	46.9	44.7	42.4	40.0	37.4	34.6	31.6	28.3	24.5
50.0	66.1	63.7	61.2	58.6	55.9	53.0	50.0	46.8	43.3	39.5	35.4	30.6
63.0	83.3	80.3	77.2	73.9	70.4	66.8	63.0	58.9	54.6	49.8	44.5	38.6

**S200**Supplementary protective devices
UL 1077 Series**Description**

The S200 UL 1077 Series miniature supplementary protector offers a compact solution for protection requirements. The S200 devices are DIN rail mounted.

The S200 is available with application-specific trip characteristics to provide maximum circuit protection.

The supplementary protectors offer thermal-magnetic trip protection according to B, C, D, K and Z characteristics.

For the worldwide market, the breakers carry UL, CSA, IEC, CE and many other agency approvals and certifications.

Features

- Energy limiting
- Fast breaking time (2.3 – 2.5 ms)
- Bus connection system
- Wide range of accessories
- Available with variable depth handle mechanism
- CE certified and marked
- DIN rail mounting
- Finger safe terminals
- Multi-function terminals
- Suitable for reverse feed
- UL1077 Recognized supplemental protective device. UL file # E76126

	S200	S200P	S280UC	S290
Amperage	0.5 – 63 A	0.2 – 63 A	0.2 – 63 A	80 - 125 A
Voltage	480Y/277 VAC	480Y/277 VAC	250/500 VDC	480Y/277 VAC
Poles	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4
Trip characteristics	B, C, D, K	K, Z	K, Z	C
Interrupting ratings	6 kA: IEC 60898 6 kA: UL 1077 6 kA: CSA 22.2 No. 235	Up to 25kA: IEC 60947-2 10kA: UL 1077	Up to 6kA: IEC 60947-2 10kA: UL 1077 6 kA: CSA 22.2 No. 235	Up to 10 kA: IEC 60947-2 5 kA: UL 1077 6 kA: CSA 22.2 No. 235
Auxiliary contacts	Yes	Yes	Yes	Yes
Bell alarm	Yes	Yes	Yes	Yes
Shunt trip	Yes	Yes	Yes	Yes
Undervoltage release	Yes	Yes	Yes	No
Bus bar	Yes	Yes	Yes	No

S200-B, 480Y/277 VAC

Supplemental protectors

UL 1077, CSA 22.2, No. 235

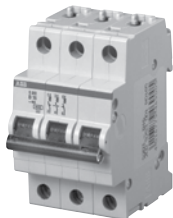
B



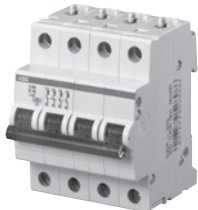
S201-B



S202-B



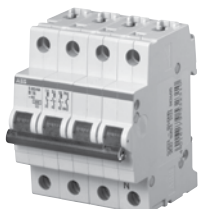
S203-B



S204-B



S201-BNA



S203-BNA

No. of poles	Rated current	Catalog number	List price	No. of poles	Rated current	Catalog number	List price
1	6	S201-B6	\$ 20	3	6	S203-B6	\$ 77
	10	S201-B10			10	S203-B10	
	13	S201-B13			13	S203-B13	
	16	S201-B16			16	S203-B16	
	20	S201-B20			20	S203-B20	
	25	S201-B25			25	S203-B25	
	32	S201-B32	25		32	S203-B32	82
	40	S201-B40	27		40	S203-B40	86
	50	S201-B50	34		50	S203-B50	93
	63	S201-B63	45		63	S203-B63	100
1 + NA	6	S201-B6NA	38	3 + NA	6	S203-B6NA	96
	10	S201-B10NA			10	S203-B10NA	
	13	S201-B13NA			13	S203-B13NA	
	16	S201-B16NA			16	S203-B16NA	
	20	S201-B20NA			20	S203-B20NA	
	25	S201-B25NA			25	S203-B25NA	
	32	S201-B32NA	45		32	S203-B32NA	100
	40	S201-B40NA	52		40	S203-B40NA	107
	50	S201-B50NA	57		50	S203-B50NA	114
	63	S201-B63NA	64		63	S203-B63NA	121
2	6	S202-B6	52	4	6	S204-B6	105
	10	S202-B10			10	S204-B10	
	13	S202-B13			13	S204-B13	
	16	S202-B16			16	S204-B16	
	20	S202-B20			20	S204-B20	
	25	S202-B25			25	S204-B25	
	32	S202-B32	57		32	S204-B32	82
	40	S202-B40	61		40	S204-B40	86
	50	S202-B50	66		50	S204-B50	83
	63	S202-B63	70		63	S204-B63	100

Tripping characteristic B

UL 1077

480Y/277VAC

6 kA

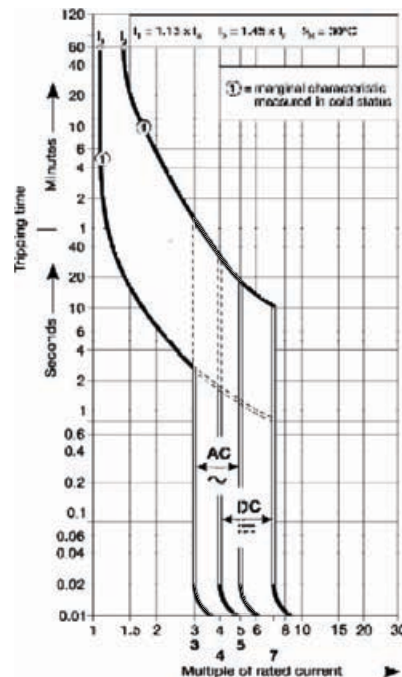
Resistive loads

- B Curve
- Designed for use in cable protection applications
- Example: control circuits, lighting

Accessories & technical data

Accessories – See page 15.26

Technical data – See page 15.76 - 15.82



Note: Switching neutral is noted by "NA" in the catalog number.

S200-C, 480Y/277 VAC

Supplemental protectors

UL 1077, CSA 22.2, No. 235

Miniature
circuit breakers

C



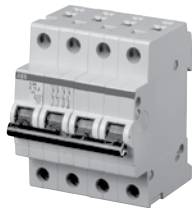
S201-C



S202-C



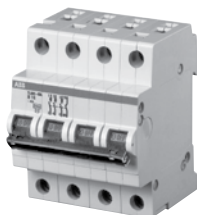
S203-C



S204-C



S201-CNA



S203-CNA

No. of poles	Rated current	Catalog number	List price	No. of poles	Rated current	Catalog number	List price	
1	0.5	S201-C0.5	\$ 22	3	0.5	S203-C0.5	\$ 80	
	1	S201-C1			1	S203-C1		
	1.6	S201-C1.6			1.6	S203-C1.6		
	2	S201-C2			2	S203-C2		
	3	S201-C3			3	S203-C3		
	4	S201-C4			4	S203-C4		
	6	S201-C6			6	S203-C6		
	8	S201-C8			8	S203-C8		
	10	S201-C10			10	S203-C10		
	13	S201-C13			13	S203-C13		
	16	S201-C16			16	S203-C16		
	20	S201-C20			20	S203-C20		
	25	S201-C25			25	S203-C25		
	32	S201-C32			25	32		S203-C32
40	S201-C40	27	40	S203-C40	89			
50	S201-C50	29	50	S203-C50	100			
63	S201-C63	34	63	S203-C63	109			
1 + NA	0.5	S201-C0.5NA	43	3 + NA	0.5	S203-C0.5NA	100	
	1	S201-C1NA			1	S203-C1NA		
	1.6	S201-C1.6NA			1.6	S203-C1.6NA		
	2	S201-C2NA			2	S203-C2NA		
	3	S201-C3NA			3	S203-C3NA		
	4	S201-C4NA			4	S203-C4NA		
	6	S201-C6NA			6	S203-C6NA		
	8	S201-C8NA			8	S203-C8NA		
	10	S201-C10NA			10	S203-C10NA		
	13	S201-C13NA			13	S203-C13NA		
	16	S201-C16NA			16	S203-C16NA		
	20	S201-C20NA			20	S203-C20NA		
	25	S201-C25NA			25	S203-C25NA		
	32	S201-C32NA			32	S203-C32NA		112
40	S201-C40NA	48	40	S203-C40NA	121			
50	S201-C50NA	54	50	S203-C50NA	121			
63	S201-C63NA	59	63	S203-C63NA	134			
2	0.5	S202-C0.5	52	4	0.5	S204-C0.5	116	
	1	S202-C1			1	S204-C1		
	1.6	S202-C1.6			1.6	S204-C1.6		
	2	S202-C2			2	S204-C2		
	3	S202-C3			3	S204-C3		
	4	S202-C4			4	S204-C4		
	6	S202-C6			6	S204-C6		
	8	S202-C8			8	S204-C8		
	10	S202-C10			10	S204-C10		
	13	S202-C13			13	S204-C13		
	16	S202-C16			16	S204-C16		
	20	S202-C20			20	S204-C20		
	25	S202-C25			25	S204-C25		121
	32	S202-C32			57	32		S204-C32
40	S202-C40	61	40	S204-C40	125			
50	S202-C50	66	50	S204-C50	144			
63	S202-C63	73	63	S204-C63	160			

Tripping characteristic C

UL 1077

480Y/277 VAC

6 kA

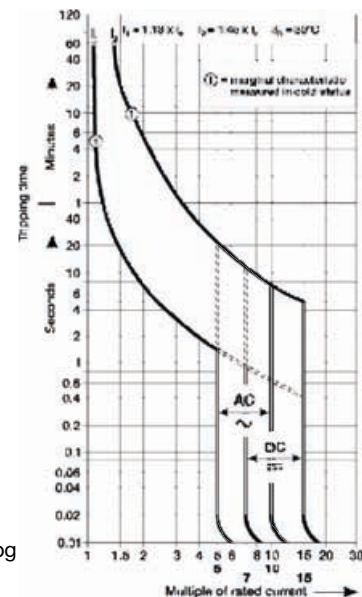
Resistive loads

- C Curve
- Designed for use with medium magnetic start up currents
- Example: lighting, control panels

Accessories & technical data

Accessories – See page 15.26

Technical data – See page 15.76 - 15.82



Note: Switching neutral is noted by "NA" in the catalog number.

S200-D, 480Y/277 VAC

Supplemental protectors

UL 1077, CSA 22.2, No. 235

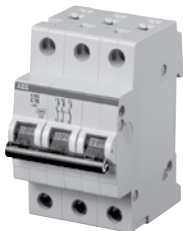
D



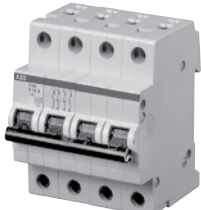
S201-D



S202-D



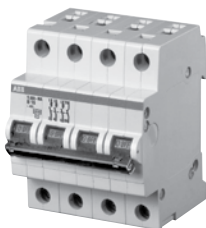
S203-D



S204-D



S201-DNA



S203-DNA

No. of poles	Rated current	Catalog number	List price	No. of poles	Rated current	Catalog number	List price
1	0.5	S201-D0.5	\$ 27	3	0.5	S203-D0.5	\$ 98
	1	S201-D1			1	S203-D1	
	1.6	S201-D1.6			1.6	S203-D1.6	
	2	S201-D2			2	S203-D2	
	3	S201-D3			3	S203-D3	
	4	S201-D4			4	S203-D4	
	6	S201-D6			6	S203-D6	
	8	S201-D8			8	S203-D8	
	10	S201-D10			10	S203-D10	
	13	S201-D13			13	S203-D13	
	16	S201-D16			16	S203-D16	
	20	S201-D20			20	S203-D20	
	25	S201-D25			25	S203-D25	
	32	S201-D32	29		32	S203-D32	98
	40	S201-D40	34		40	S203-D40	105
	50	S201-D50	38		50	S203-D50	114
	63	S201-D63	50		63	S203-D63	130
1 + NA	0.5	S201-D0.5NA	57	3 + NA	0.5	S203-D0.5NA	139
	1	S201-D1NA			1	S203-D1NA	
	1.6	S201-D1.6NA			1.6	S203-D1.6NA	
	2	S201-D2NA			2	S203-D2NA	
	3	S201-D3NA			3	S203-D3NA	
	4	S201-D4NA			4	S203-D4NA	
	6	S201-D6NA			6	S203-D6NA	
	8	S201-D8NA			8	S203-D8NA	
	10	S201-D10NA			10	S203-D10NA	
	13	S201-D13NA			13	S203-D13NA	
	16	S201-D16NA			16	S203-D16NA	
	20	S201-D20NA			20	S203-D20NA	
	25	S201-D25NA			25	S203-D25NA	
	32	S201-D32NA	61		32	S203-D32NA	139
	40	S201-D40NA	66		40	S203-D40NA	139
	50	S201-D50NA	70		50	S203-D50NA	145
	63	S201-D63NA	77		63	S203-D63NA	155
2	0.5	S202-D0.5	64	4	0.5	S204-D0.5	158
	1	S202-D1			1	S204-D1	
	1.6	S202-D1.6			1.6	S204-D1.6	
	2	S202-D2			2	S204-D2	
	3	S202-D3			3	S204-D3	
	4	S202-D4			4	S204-D4	
	6	S202-D6			6	S204-D6	
	8	S202-D8			8	S204-D8	
	10	S202-D10			10	S204-D10	
	13	S202-D13			13	S204-D13	
	16	S202-D16			16	S204-D16	
	20	S202-D20			20	S204-D20	
	25	S202-D25			25	S204-D25	
	32	S202-D32	70		32	S204-D32	155
	40	S202-D40	105		40	S204-D40	168
	50	S202-D50	114		50	S204-D50	178
	63	S202-D63	130		63	S204-D63	188

Tripping characteristic D

UL 1077

480Y/277 VAC

6 kA

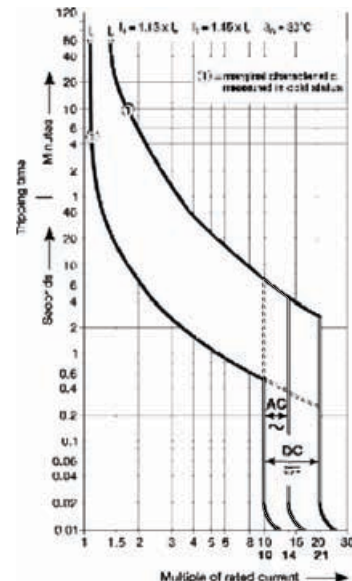
Inductive loads

- D Curve
- Designed for allowing higher in-rush currents during system start up
- Example: motors, transformers

Accessories & technical data

Accessories – See page 15.26

Technical data – See page 15.76 - 15.82



Note: Switching neutral is noted by “NA” in the catalog number.

S200-K, 480Y/277 VAC

Supplemental protectors

UL 1077, CSA 22.2, No. 235

Miniature
circuit breakers

K



S201-K



S202-K



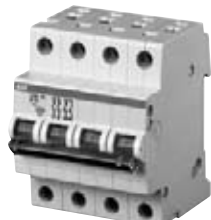
S203-K



S204-K



S201-KNA



S203-KNA

No. of poles	Rated current	Catalog number	List price	No. of poles	Rated current	Catalog number	List price
1	0.5	S201-K0.5	\$ 27	3	0.5	S203-K0.5	\$ 96
	1	S201-K1			1	S203-K1	
	1.6	S201-K1.6			1.6	S203-K1.6	
	2	S201-K2			2	S203-K2	
	3	S201-K3			3	S203-K3	
	4	S201-K4			4	S203-K4	
	5	S201-K5			5	S203-K5	
	6	S201-K6			6	S203-K6	
	8	S201-K8			8	S203-K8	
	10	S201-K10			10	S203-K10	
	13	S201-K13			13	S203-K13	
	15	S201-K15			15	S203-K15	
	16	S201-K16			16	S203-K16	
	20	S201-K20			20	S203-K20	
	25	S201-K25			25	S203-K25	
	30	S201-K30			30	S203-K30	
1 + NA	32	S201-K32	32	3 + NA	32	S203-K32	107
	40	S201-K40	36		40	S203-K40	109
	50	S201-K50	41		50	S203-K50	125
	60	S201-K60	45		60	S203-K60	137
	63	S201-K63	50		63	S203-K63	144
1 + NA	0.5	S201-K0.5NA	59	3 + NA	0.5	S203-K0.5NA	139
	1	S201-K1NA			1	S203-K1NA	
	1.6	S201-K1.6NA			1.6	S203-K1.6NA	
	2	S201-K2NA			2	S203-K2NA	
	3	S201-K3NA			3	S203-K3NA	
	4	S201-K4NA			4	S203-K4NA	
	6	S201-K6NA			6	S203-K6NA	
	8	S201-K8NA			8	S203-K8NA	
	10	S201-K10NA			10	S203-K10NA	
	13	S201-K13NA			13	S203-K13NA	
	16	S201-K16NA			16	S203-K16NA	
	20	S201-K20NA			20	S203-K20NA	
	25	S201-K25NA			25	S203-K25NA	
	32	S201-K32NA	62		32	S203-K32NA	144
	40	S201-K40NA	68		40	S203-K40NA	150
	50	S201-K50NA	77		50	S203-K50NA	169
	63	S201-K63NA	88		63	S203-K63NA	178
2	0.5	S202-K0.5	61	4	0.5	S204-K0.5	132
	1	S202-K1			1	S204-K1	
	1.6	S202-K1.6			1.6	S204-K1.6	
	2	S202-K2			2	S204-K2	
	3	S202-K3			3	S204-K3	
	4	S202-K4			4	S204-K4	
	5	S202-K5			5	S204-K5	
	6	S202-K6			6	S204-K6	
	8	S202-K8			8	S204-K8	
	10	S202-K10			10	S204-K10	
	13	S202-K13			13	S204-K13	
	15	S202-K15			15	S204-K15	
	16	S202-K16			16	S204-K16	
	20	S202-K20			20	S204-K20	
	25	S202-K25			25	S204-K25	
	30	S202-K30			30	S204-K30	
2	32	S202-K32	70	4	32	S204-K32	137
	40	S202-K40	73		40	S204-K40	146
	50	S202-K50	80		50	S204-K50	155
	60	S202-K60	98		60	S204-K60	165
	63	S202-K63	102		63	S204-K63	171

Tripping characteristic K

UL 1077
480Y/277 VAC
6 kA

Inductive loads

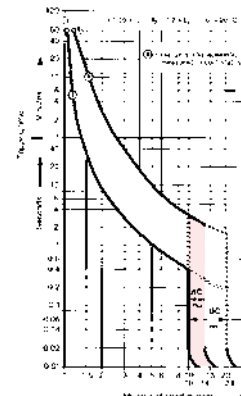
- K Curve
- Designed for allowing higher in-rush currents during system start up
- Example: motors, transformers

Accessories & technical data

Accessories – See page 15.26

Technical data – See page 15.76 - 15.82

Note: Switching neutral is noted by “NA” in the catalog number.



S200P-K, 480Y/277 VAC

Supplemental protectors

UL 1077, CSA 22.2, No. 235

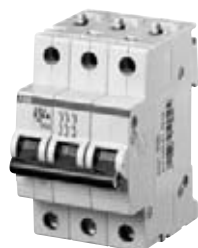
K



S201P-K



S202P-K



S203P-K

No. of poles	Rated current	Catalog number	List price	No. of poles	Rated current	Catalog number	List price
1	0.2	S201P-K0.2	\$ 54	3	0.2	S203P-K0.2	\$ 146
	0.3	S201P-K0.3			0.3	S203P-K0.3	
	0.5	S201P-K0.5			0.5	S203P-K0.5	
	0.75	S201P-K0.75			0.75	S203P-K0.75	
	1	S201P-K1			1	S203P-K1	
	1.6	S201P-K1.6			1.6	S203P-K1.6	
	2	S201P-K2			2	S203P-K2	
	3	S201P-K3			3	S203P-K3	
	4	S201P-K4			4	S203P-K4	
	6	S201P-K6			6	S203P-K6	
	8	S201P-K8			8	S203P-K8	
	10	S201P-K10			10	S203P-K10	
	13	S201P-K13			13	S203P-K13	
	16	S201P-K16			16	S203P-K16	
	20	S201P-K20			20	S203P-K20	
	25	S201P-K25			25	S203P-K25	
	32	S201P-K32			32	S203P-K32	
	40	S201P-K40	45		40	S203P-K40	157
	50	S201P-K50	54		50	S203P-K50	180
	63	S201P-K63	64		63	S203P-K63	205
2	0.2	S202P-K0.2	96	3	0.2	S203P-K0.2	\$ 146
	0.3	S202P-K0.3			0.3	S203P-K0.3	
	0.5	S202P-K0.5			0.5	S203P-K0.5	
	0.75	S202P-K0.75			0.75	S203P-K0.75	
	1	S202P-K1			1	S203P-K1	
	1.6	S202P-K1.6			1.6	S203P-K1.6	
	2	S202P-K2			2	S203P-K2	
	3	S202P-K3			3	S203P-K3	
	4	S202P-K4			4	S203P-K4	
	6	S202P-K6			6	S203P-K6	
	8	S202P-K8			8	S203P-K8	
	10	S202P-K10			10	S203P-K10	
	13	S202P-K13			13	S203P-K13	
	16	S202P-K16			16	S203P-K16	
	20	S202P-K20			20	S203P-K20	
	25	S202P-K25			25	S203P-K25	
	32	S202P-K32	100		32	S203P-K32	
	40	S202P-K40	107		40	S203P-K40	157
	50	S202P-K50	114		50	S203P-K50	180
	63	S202P-K63	130		63	S203P-K63	205

Tripping characteristic K

UL 1077
480Y/277 VAC
10 kA

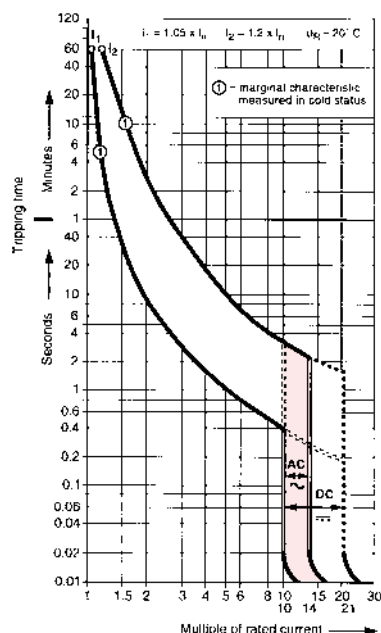
Inductive loads

- K Curve
- Designed for allowing higher in-rush currents during system start up
- Example: motors, transformers

Accessories & technical data

Accessories – See page 15.26

Technical data – See page 15.76 - 15.82



S200P-Z, 480Y/277 VAC

Supplemental protectors

UL 1077, CSA 22.2, No. 235

Miniature
circuit breakers

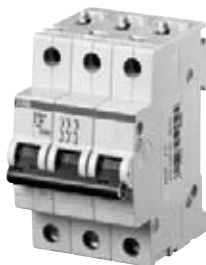
Z



S201P-Z



S202P-Z



S203P-Z

No. of poles	Rated current	Catalog number	List price	No. of poles	Rated current	Catalog number	List price		
1	0.5	S201P-Z0.5	\$ 54	3	0.5	S203P-Z0.5	\$ 187		
	1	S201P-Z1			1	S203P-Z1			
	1.6	S201P-Z1.6			1.6	S203P-Z1.6			
	2	S201P-Z2			2	S203P-Z2			
	3	S201P-Z3			3	S203P-Z3			
	4	S201P-Z4			4	S203P-Z4			
	6	S201P-Z6			6	S203P-Z6			
	8	S201P-Z8			8	S203P-Z8			
	10	S201P-Z10			10	S203P-Z10			
	16	S201P-Z16			16	S203P-Z16			
	20	S201P-Z20			20	S203P-Z20			
	25	S201P-Z25			25	S203P-Z25			
	32	S201P-Z32			57	32		S203P-Z32	192
	40	S201P-Z40			61	40		S203P-Z40	196
50	S201P-Z50	70	50	S203P-Z50	214				
63	S201P-Z63	80	63	S203P-Z63	228				
2	0.5	S202P-Z0.5	102						
	1	S202P-Z1							
	1.6	S202P-Z1.6							
	2	S202P-Z2							
	3	S202P-Z3							
	4	S202P-Z4							
	6	S202P-Z6							
	8	S202P-Z8							
	10	S202P-Z10							
	16	S202P-Z16							
	20	S202P-Z20							
	25	S202P-Z25							
	32	S202P-Z32						109	
	40	S202P-Z40						114	
50	S202P-Z50	125							
63	S202P-Z63	137							

Tripping characteristic Z

UL 1077

480Y/277 VAC

10 kA

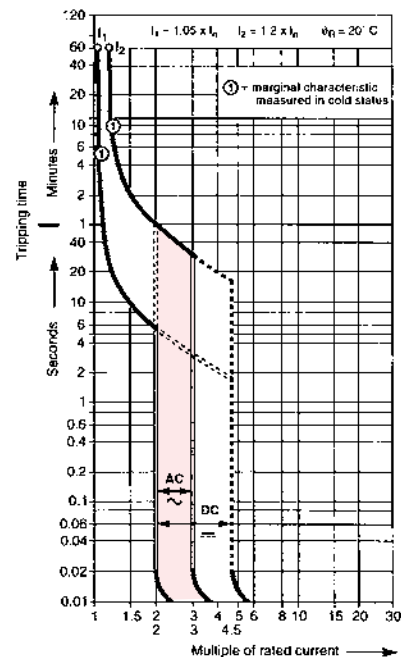
Resistive loads

- Z Curve
- Designed to provide maximum protection with a very low short circuit trip setting
- Example: semiconductors

Accessories & technical data

Accessories – See page 15.26

Technical data – See page 15.76 - 15.82



S280W-K 480Y/277 VAC

Supplemental protectors, ring tongue

UL 1077, CSA 22.2, No. 235

K



S281-KW



S282-KW

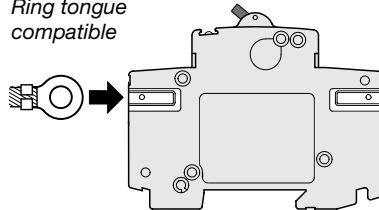


S283-KW

No. of poles	Rated current	Catalog number	List price	No. of poles	Rated current	Catalog number	List price
1	0.2	S281-K0.2W	\$ 50	3	0.2	S283-K0.2W	\$ 215
	0.3	S281-K0.3W			0.3	S283-K0.3W	
	0.5	S281-K0.5W			0.5	S283-K0.5W	
	0.75	S281-K0.75W			0.75	S283-K0.75W	
	1	S281-K1W			1	S283-K1W	
	1.6	S281-K1.6W			1.6	S283-K1.6W	
	2	S281-K2W			2	S283-K2W	
	3	S281-K3W			3	S283-K3W	
	4	S281-K4W			4	S283-K4W	
	6	S281-K6W			6	S283-K6W	
	8	S281-K8W			8	S283-K8W	
	10	S281-K10W			10	S283-K10W	
	13	S281-K13W			13	S283-K13W	
	16	S281-K16W			16	S283-K16W	
	20	S281-K20W			20	S283-K20W	
	25	S281-K25W			25	S283-K25W	
32	S281-K32W	50	32	S283-K32W	215		
40	S281-K40W	60	40	S283-K40W	240		
50	S281-K50W	70	50	S283-K50W	270		
63	S281-K63W	80	63	S283-K63W	300		
2	0.2	S282-K0.2W	145		0.2	S282-K0.2W	
	0.3	S282-K0.3W			0.3	S282-K0.3W	
	0.5	S282-K0.5W			0.5	S282-K0.5W	
	0.75	S282-K0.75W			0.75	S282-K0.75W	
	1	S282-K1W			1	S282-K1W	
	1.6	S282-K1.6W			1.6	S282-K1.6W	
	2	S282-K2W			2	S282-K2W	
	3	S282-K3W			3	S282-K3W	
	4	S282-K4W			4	S282-K4W	
	6	S282-K6W			6	S282-K6W	
	8	S282-K8W			8	S282-K8W	
	10	S282-K10W			10	S282-K10W	
	13	S282-K13W			13	S282-K13W	
	16	S282-K16W			16	S282-K16W	
	20	S282-K20W			20	S282-K20W	
	25	S282-K25W			25	S282-K25W	
32	S282-K32W	150	32	S282-K32W	215		
40	S282-K40W	160	40	S282-K40W	240		
50	S282-K50W	170	50	S282-K50W	270		
63	S282-K63W	190	63	S282-K63W	300		

Tripping characteristic K

Ring tongue
compatible



UL 1077
480Y/277 VAC
10 kA

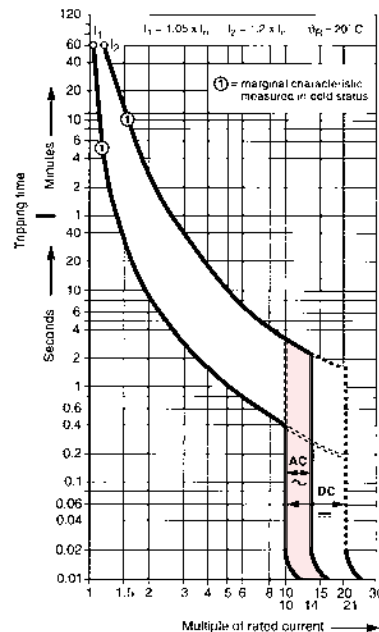
Inductive loads

- K Curve
- Designed for allowing higher in-rush currents during system start up
- Example: motors, transformers

Accessories & technical data

Accessories – See page 15.26

Technical data – See page 15.76 - 15.82



S280UC-K, 500 VDC

Supplemental protectors

UL 1077, CSA 22.2, No. 235

Miniature
circuit breakers

K



S281UC-K



S282UC-K



S283UC-K

No. of poles	Rated current	Catalog number	List price	No. of poles	Rated current	Catalog number	List price
1	0,2	S281UC-K0.2	\$ 115	3	0.2	S283UC-K0.2	\$ 420
	0,3	S281UC-K0.3			0.3	S283UC-K0.3	
	0,5	S281UC-K0.5			0.5	S283UC-K0.5	
	0,75	S281UC-K0.75			0.75	S283UC-K0.75	
	1	S281UC-K1			1	S283UC-K1	
	1,6	S281UC-K1.6			1.6	S283UC-K1.6	
	2	S281UC-K2			2	S283UC-K2	
	3	S281UC-K3			3	S283UC-K3	
	4	S281UC-K4			4	S283UC-K4	
	6	S281UC-K6			6	S283UC-K6	
	8	S281UC-K8			8	S283UC-K8	
	10	S281UC-K10			10	S283UC-K10	
	16	S281UC-K16			16	S283UC-K16	
	20	S281UC-K20			20	S283UC-K20	
	25	S281UC-K25			25	S283UC-K25	
32	S281UC-K32	115	32	S283UC-K32	450		
40	S281UC-K40	150	40	S283UC-K40	500		
50	S281UC-K50	150	50	S283UC-K50	520		
63	S281UC-K63	170	63	S283UC-K63	600		
2	0,2	S282UC-K0.2	270				
	0,3	S282UC-K0.3					
	0,5	S282UC-K0.5					
	0,75	S282UC-K0.75					
	1	S282UC-K1					
	1,6	S282UC-K1.6					
	2	S282UC-K2					
	3	S282UC-K3					
	4	S282UC-K4					
	6	S282UC-K6					
	8	S282UC-K8					
	10	S282UC-K10					
	16	S282UC-K16					
	20	S282UC-K20					
	25	S282UC-K25					
32	S282UC-K32	290					
40	S282UC-K40	300					
50	S282UC-K50	350					
63	S282UC-K63	390					

Tripping characteristic K

UL 1077

250/500 VDC

10 kA

Inductive loads

- K Curve
- Designed for allowing higher in-rush currents during system start up
- Example: motors, transformer

Accessories & technical data

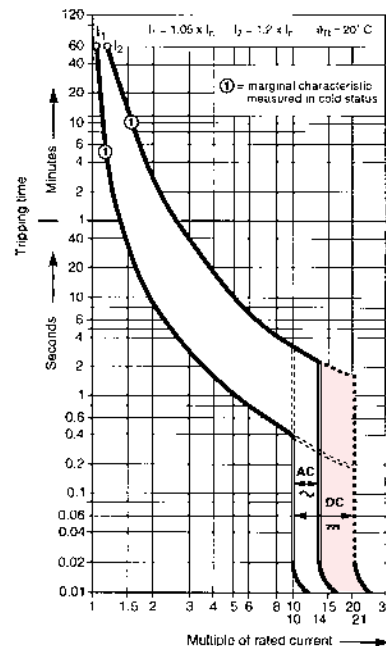
Accessories – See page 15.26

Technical data – See page 15.76 - 15.82

Direct current applications

The S280UC differs from standard miniature circuit breakers in that the UC versions include a permanent magnet which aids in the extinguishing of the arc during medium and high level faults. It is necessary to observe the correct polarity and current direction when connecting the UC breakers. Two examples of correct connection are shown.

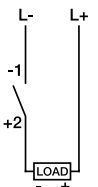
Termination points are marked on all UC type MCBs, points one (1) and four (4) are negative and points two (2) and three (3) are positive.



250 V DC

Single Pole

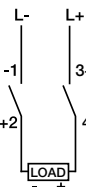
S201DC



500 VDC

Two Pole

S282UC



S280UC-Z, 500 VDC

Supplemental protectors

UL 1077, CSA 22.2, No. 235

Z



S281UC-Z



S282UC-Z



S283UC-Z

No. of poles	Rated current	Catalog number	List price	No. of poles	Rated current	Catalog number	List price
1	0.5	S281UC-Z0.5	\$ 190	3	0.5	S283UC-Z0.5	\$ 660
	1	S281UC-Z1			1	S283UC-Z1	
	1.6	S281UC-Z1.6			1.6	S283UC-Z1.6	
	2	S281UC-Z2			2	S283UC-Z2	
	3	S281UC-Z3			3	S283UC-Z3	
	4	S281UC-Z4			4	S283UC-Z4	
	6	S281UC-Z6			6	S283UC-Z6	
	8	S281UC-Z8			8	S283UC-Z8	
	10	S281UC-Z10			10	S283UC-Z10	
	16	S281UC-Z16			16	S283UC-Z16	
	20	S281UC-Z20			20	S283UC-Z20	
	25	S281UC-Z25			25	S283UC-Z25	
	32	S281UC-Z32			32	S283UC-Z32	
	40	S281UC-Z40			40	S283UC-Z40	
	50	S281UC-Z50			50	S283UC-Z50	
	63	S281UC-Z63			63	S283UC-Z63	
2	0.5	S282UC-Z0.5	440	3	0.5	S283UC-Z0.5	\$ 660
	1	S282UC-Z1			1	S283UC-Z1	
	1.6	S282UC-Z1.6			1.6	S283UC-Z1.6	
	2	S282UC-Z2			2	S283UC-Z2	
	3	S282UC-Z3			3	S283UC-Z3	
	4	S282UC-Z4			4	S283UC-Z4	
	6	S282UC-Z6			6	S283UC-Z6	
	8	S282UC-Z8			8	S283UC-Z8	
	10	S282UC-Z10			10	S283UC-Z10	
	16	S282UC-Z16			16	S283UC-Z16	
	20	S282UC-Z20			20	S283UC-Z20	
	25	S282UC-Z25			25	S283UC-Z25	
	32	S282UC-Z32			32	S283UC-Z32	
	40	S282UC-Z40			40	S283UC-Z40	
	50	S282UC-Z50			50	S283UC-Z50	
	63	S282UC-Z63			63	S283UC-Z63	

Tripping characteristic Z

UL 1077

250/500 VDC

10 kA

Resistive loads

- Z Curve
- Designed to provide maximum protection with a very low short circuit trip setting
- Example: semiconductors

Accessories & technical data

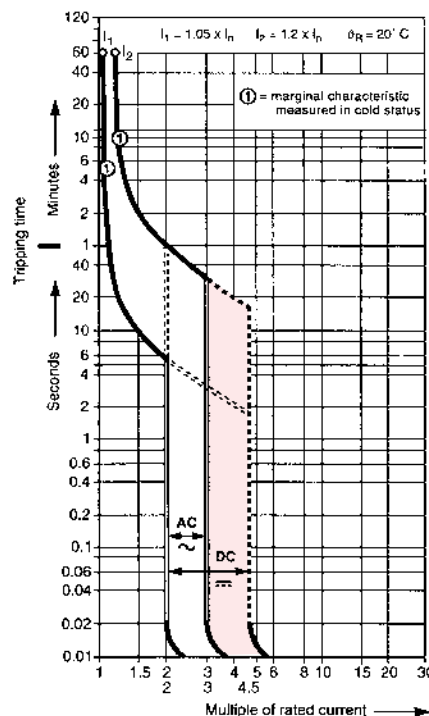
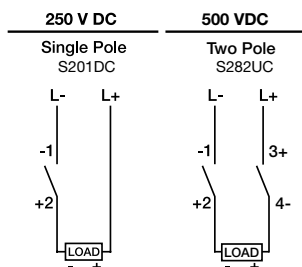
Accessories – See page 15.26

Technical data – See page 15.76 - 15.82

Direct current applications

The S280UC differs from standard miniature circuit breakers in that the UC versions include a permanent magnet which aids in the extinguishing of the arc during medium and high level faults. It is necessary to observe the correct polarity and current direction when connecting the UC breakers. Two examples of correct connection are shown.

Termination points are marked on all UC type MCBs, points one (1) and four (4) are negative and points two (2) and three (3) are positive.



S290

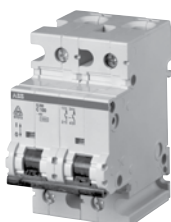
480Y/277 VAC

UL 1077, CSA 22.2, No. 235

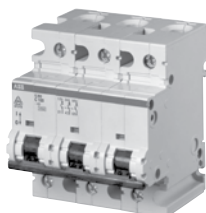
C



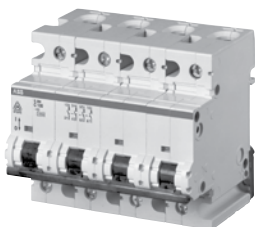
S291-C



S292-C



S293-C



S294-C

No. of poles	Rated current	Catalog number	List price
1	80	S291-C80	\$ 140
	100	S291-C100	168
	125	S291-C125	196
2	80	S292-C80	280
	100	S292-C100	336
	125	S292-C125	392
3	80	S293-C80	420
	100	S293-C100	504
	125	S293-C125	588
4	80	S294-C80	560
	100	S294-C100	672
	125	S294-C125	784

Tripping characteristic C

UL 1077

480Y/277 VAC

5 kA, single pole

14kA, multi pole

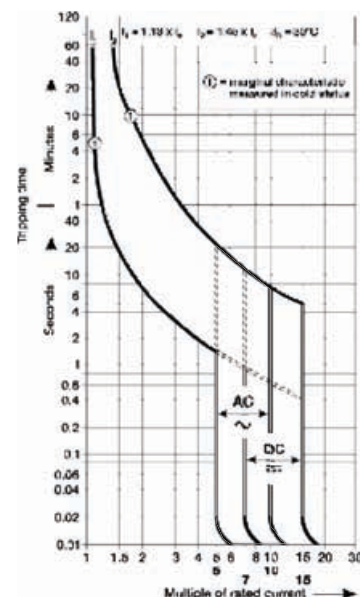
Resistive loads

- C Curve
- Designed for use with medium magnetic start up currents
- Example: lighting, control panels

Accessories & technical data

Accessories – See page 15.27

Technical data – See page 15.76 - 15.82



Accessories

S200 & S200P

UL 1077, CSA 22.2, No. 235



S2C-H6R



S2C-A



S2C-UA

Auxiliary contacts

The auxiliary contacts will signal whether the breaker is in the ON or OFF position.

Description	Catalog number	List price
For field mounting: right side	S2C-H6R	\$ 21

Bell alarm

The bell alarm includes a set of contacts that will only signal when the breaker has tripped. Typically the contacts would be connected to an alarm or bell to signal the operator that an overcurrent trip has occurred. The bell alarm also includes a test button for testing the alarm contacts without opening the breaker.

Description	Catalog number	List price
For field mounting: right side	S2C-S/H6R ①	\$ 48

Shunt trip

For remote tripping of breaker, a shunt trip device can be added to the MCB. The solenoid device opens the breaker after control voltage is applied.

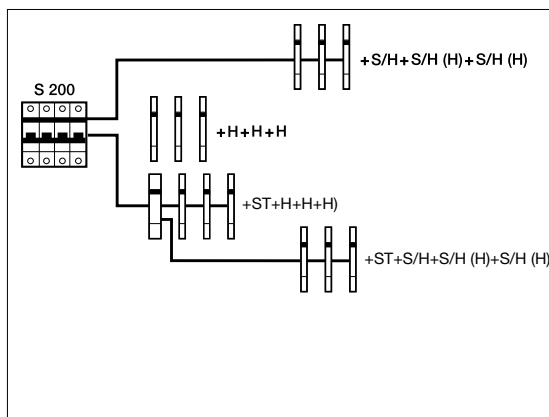
Description	Catalog number	List price
For field mounting: right side		
A1-12-60 VAC (12 – 60 VDC)	S2C-A1	\$ 75
A2-110-415 VAC (110 – 250 VDC)	S2C-A2	70

Undervoltage release

When control voltage drops below approximately 50 % of rated voltage, the UVR opens the breaker. The breaker can not be operated unless proper control voltage is first applied to the UVR coil.

Description	Catalog number	List price
For field mounting: right side		
12 VDC	S2C-UA 12	\$ 216
24 VAC/VDC	S2C-UA 24	216
48 VAC/VDC	S2C-UA 48	216
110 VAC/VDC	S2C-UA 110	216
220 VAC/VDC	S2C-UA 230	216
380 VAC	S2C-UA 400	216

Possible mounting arrangements of MCB accessories



Legend	
Auxiliary contact	H
Bell alarm/Auxiliary contact	S/H
Bell alarm/Auxiliary contact used as auxiliary contact	S/H (H)
Shunt trip	ST
Undervoltage release	UR

① Combination bell alarm/auxiliary contact.

Accessories

S290

UL 1077, CSA 22.2, No. 235

Miniature
circuit breakers



S290-H11

Auxiliary contacts

The auxiliary contacts will signal whether the breaker is in the ON or OFF position.

Description	Catalog number	List price
Auxiliary contact	S290-H11	\$ 72

Bell alarm

The bell alarm includes a set of contacts that will only signal when the breaker has tripped.

Typically the contacts would be connected to an alarm or bell to signal the operator that an overcurrent trip has occurred. The bell alarm also includes a test button for testing the alarm contacts without opening the breaker.

Description	Catalog number	List price
Signal contact	S290-S	\$ 112

Shunt trip

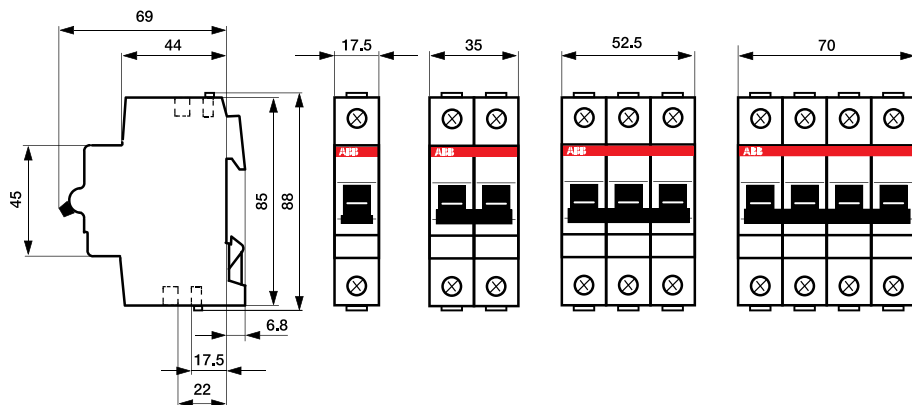
For remote tripping of breaker, a shunt trip device can be added to the MCB. The solenoid device opens the breaker after control voltage is applied.

Description	Catalog number	List price
For field mounting, left side 110V – 415VAC	S290-A1	\$ 43
For field mounting, left side 24 – 48VDC	S290-A2	67

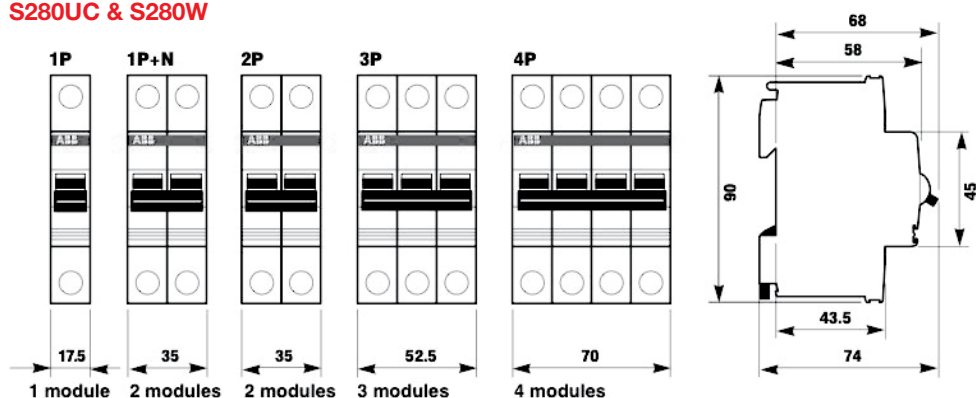
Approximate dimensions

S200, S200P, S280UC, S280W, S290
UL 1077, CSA 22.2, No. 235

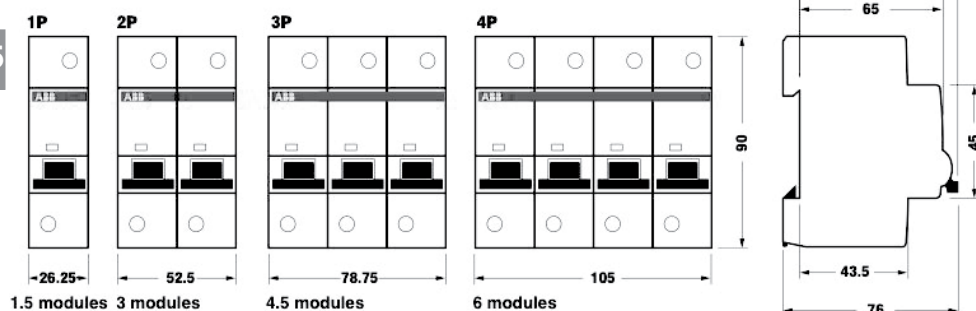
S200, S200P



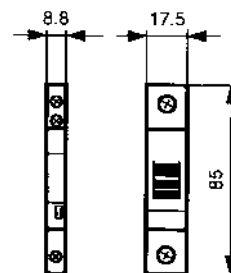
S280UC & S280W



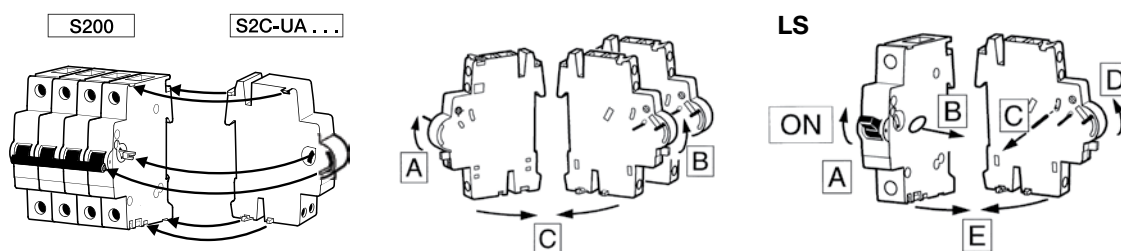
S290



S2C-H6R, S2C-A... S2C



Addition of S2C-A...U

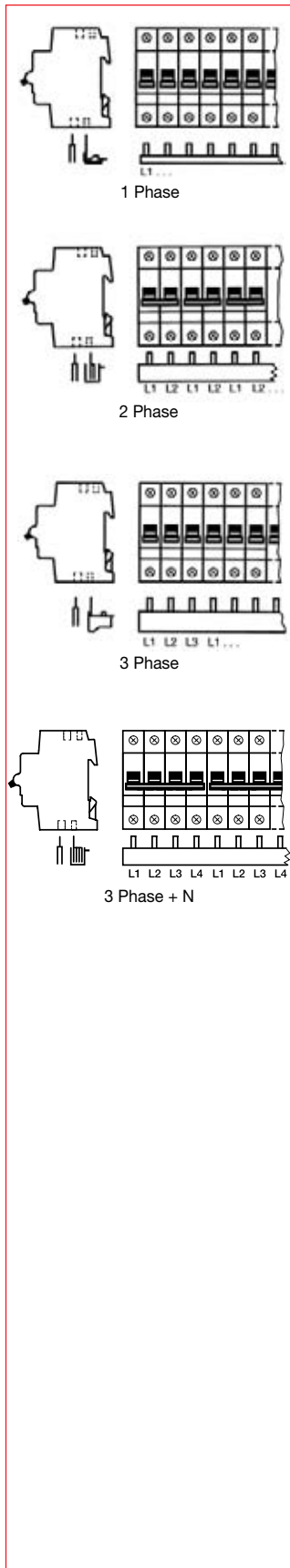


Accessories

S200 & S200P

UL 1077, CSA 22.2, No. 235

Miniature
circuit breakers



1 Phase

For use on:	Amp rating	Number of poles	Phases	Busbar length (mm)	End cap catalog number	Catalog number	List price
S200	63	60	1	986	—	PS1/60	\$ 51
S200 P	80	60	1	986	—	PS1/60/16	51

2 Phase

For use on:	Amp rating	Number of poles	Phases	Busbar length (mm)	End cap catalog number	Catalog number	List price
S200	63	58	2	1035	PS-END	PS2/58SP	\$ 100
S200 P	80	58	2	1035	PS-END	PS2/58/16SP	119

3 Phase

For use on:	Amp rating	Number of poles	Phases	Busbar length (mm)	End cap catalog number	Catalog number	List price
S200	63	60	3	1065	PSB-ENDSP	PS3/60SP	\$ 135
S200 P	80	60	3	1065	PSB-ENDSP	PS3/60/16SP	180

4 Phase

For use on:	Amp rating	Number of poles	Phases	Busbar length (mm)	End cap catalog number	Catalog number	List price
S200	80	60	4	1056	PS-END1	PS4/60/16SP	\$ 210
S200 P	80	60	4	1056	PS-END1	PS4/60/16SP	210

NOTE

ALL BUSBARS MAY BE CENTER FED IN ORDER TO INCREASE AMPACITY UP TO 130 A.

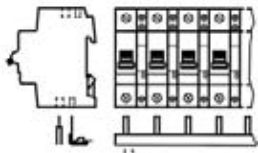
NOTE

BUSBARS MAY BE USED ON LINE OR LOAD SIDE OF MCBS

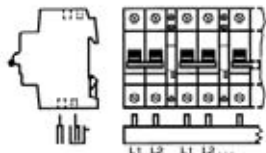
Accessories

S200 & S200P

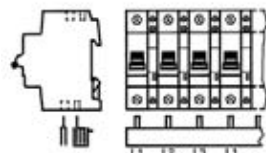
UL 1077, CSA 22.2, No. 235



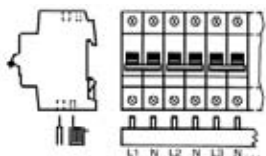
1 Phase + Aux



2 Phase + Aux



3 Phase + Aux



3 Phase + N



SZ-BSK

1 Phase with 1 auxiliary

For use on:	Amp rating	Number of poles	Phases	Busbar length (mm)	End cap catalog number	Catalog number	List price
S200 & S200 P	63	38	1	1044	—	PS1/38H	\$ 45
	80	38	1	1044	—	PS1/38/16H	51

2 Phase with 1 auxiliary

For use on:	Amp rating	Number of poles	Phases	Busbar length (mm)	End cap catalog number	Catalog number	List price
S200 & S200 P	80	48	2	1065	PS-ENDSP	PS2/48/16SP	\$ 168

3 Phase with 1 auxiliary

For use on:	Amp rating	Number of poles	Phases	Busbar length (mm)	End cap catalog number	Catalog number	List price
S200 & S200 P	80	39	3	980	PS-ENDSP	PS3/39/16SP	\$ 127

3 Phase + N, for use with 2 pole-MCBs on 3 phase/4W system

For use on:	Amp rating	Number of poles	Phases	Busbar length (mm)	End cap catalog number	Catalog number	List price
S200 & S200 P	80	58	4	1048	PS-END1SP	PS4/58/16NSP	\$ 255

NOTE

ALL BUSBARS MAY BE CENTER FED IN ORDER TO INCREASE AMPACITY UP TO 130 A.

NOTE

BUSBARS MAY BE USED ON LINE OR LOAD SIDE OF MCBS

Busbar tooth covers

Description	Catalog number	List price
Covers five unused poles of busbar	SZ-BSK	\$ 4

Technical data S200, S200P & S290 UL 1077, CSA 22.2, No. 235

Technical data	S200	S200P	S290
Specifications:	UL 1077, CSA C 22.2, VDE 0660, 60898, 60947-2		UL 1077, IEC 898
UL File-Number:	E 76126 UL CL		
No. of poles:	1, 2, 3 & 4		1, 2, 3 & 4
Tripping characteristics:	B,C,D, K & Z	K & Z	C
Rated current:	0.5-63 A	0.2-63 A	80-125 A
Rated voltage:	Multi pole: 480Y/277 VAC		277Y/480 VAC
Short circuit capacity:	S200 6kA; S200P 10 kA		Single pole 5 kA; Multi-pole 14 kA
Frequency:	50/60 Hz		50/60 Hz
Degree of protection:	IP 20		IP 20
Mounting position:	Vertical, horizontal		Vertical, horizontal
Fixing:	35mm DIN rail		35mm DIN rail
Clamps only for Cu:	18-4 AWG		14-1/0 AWG
Service life, mech. and at rated load:	20,000 operations		10,000 operations
Tightening torque:	25 in. lbs (2.8 Nm)		35 in. lbs
Ambient temperature:	- 25°C ... - 13°F / 70°C ... 158°F		-25°C... -13°F / 45°C... 113
Shock resistance:	30 g at least 3 impacts, shock duration of 11 ms		5g min. of 2 impacts, shock duration of 11 ms

Auxiliary contact S2C-H6R and Signal contact S2C-S6R for S200 and S200P

Rated current:	10
Rated voltage AC / DC:	24
Contact:	1 pole, single throw
Connection capacity mm ²	18 – 14 AWG (0.75...2.5)
Tightening torque:	11 in. lbs (1.2 Nm)
Shock resistance acc. to DIN IEC 68-2-6:	5 g, 20 frequency cycles 5...150...5 Hz at 24 VAC/DC, 5 mA auto-reclosing < 10 ms
Mechanical service life:	10,000 operations

Shunt trip		S2C-A1	S2C-A2
Rated voltage	AC	12 ... 60 V	110 ... 415 V
	DC	12 ... 60 V	110 ... 250 V
Max. release duration		< 10 ms	< 10 ms
Min. release voltage	AC	7 V	55 V
	DC	10 V	80 V
Consumption on release	AD	40 ... 200 VA	55 ... 210 VA
	DC	40 ... 200 VA	55 ... 110 VA
Coil resistance		3.7 Ω	225 Ω
Terminals		18...6/0.75 – 16 AWG/mm ²	18...6/0.75 – 16 AWG/mm ²
Tightening torque		18/2 in.lbs/Nm	18/2 in.lbs/Nm

Undervoltage release		S2C-UA 12 DC	S2C-UA 24 AC	S2C-UA 24 DC	S2C-UA 48 AC	S2C-UA 48 DC	S2C-UA 110 AC	S2C-UA 110 DC	S2C-UA 230 AC	S2C-UA 230 DC	S2C-UA 400 AC
Standards		IEC/EN 60947-1									
Rated voltage	AC		24 V		48 V		110 V		230 V		400 V
	DC	12 V		24 V		48 V		110 V		230 V	
Frequency		50 ... 60 Hz									
Release trip		0.35 UnOVO 0.7 Un V									
Terminals		2 x 16/2 x 1.5 AWG/mm ²									
Consumption		0.2 VA	3.6 VA	2 VA	3.6 VA	2.1 VA	3.5 VA	2.2 VA	3.7 VA	2.3 VA	2.4 VA
Resistance to corrosion		constant atmosphere: 23/83 – 40/93 – 55/20; variable atmosphere: 25/95 – 40/93 °C/RH									
Protection degree		IPXXB/IP2X									
Tightening torque		3.5/0.4 in.lbs/Nm									

Technical data

S200 & S200P

UL 1077, CSA 22.2, No. 235

Miniature
circuit breakers

Internal resistance and power loss

Internal resistance per pole in mΩ, power loss per pole in W

Type	Rated current	Device series B, C, D ^①		Device series K		Device series Z	
		mΩ	W	mΩ	W	mΩ	W
S200 & S200P	0.5	5500	1.4	6340	1.6	10100	2.5
	1	1440	1.4	1550	1.6	2270	2.3
	1.6	630	1.6	695	1.8	1100	2.8
	2	460	1.8	460	1.9	619	2.5
	3	150	1.3	165	1.5	202	1.8
	4	110	1.8	120	2.0	149	2.4
	6	55	2.0	52	1.9	104	3.7
	8	15	1.0	38	2.5	53.9	3.45
	10	13.3	1.3	12.6	1.26	17.5	1.7
	13	13.3	2.3	12.6	1.26	-	-
	16	7.0	1.8	7.7	2.0	10.9	2.8
	20	6.25	2.5	6.7	2.7	6.0	2.4
	25	5.0	3.2	4.6	2.9	4.1	2.6
	32	3.6	3.7	3.5	3.6	2.8	2.9
	40	3.0	4.8	2.8	4.5	2.5	4.1
	50	1.3	3.25	1.25	2.9	1.8	4.4
	63	1.2	4.8	0.7	5.2	1.3	5.2

① Current intensities 0.5 - 4 apply exclusively to C-type trip characteristics

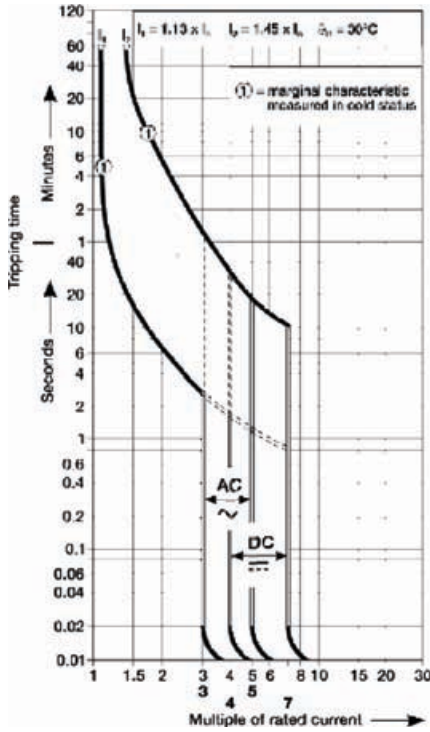
Temperature derating

Max operating current depending on the ambient temperature of a circuit breaker characteristics type B, C and D

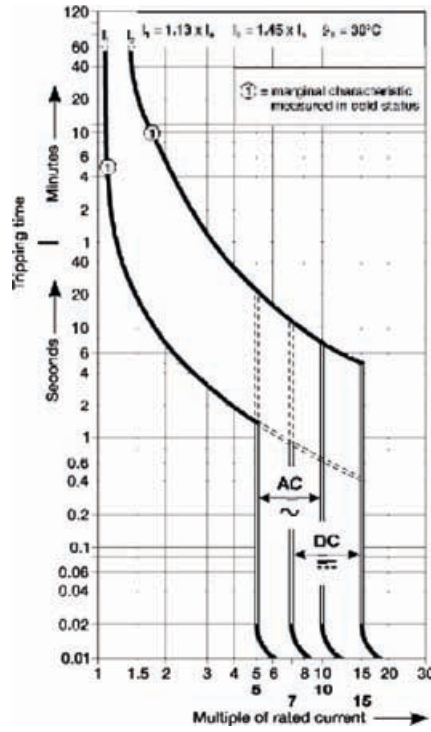
B, C & D	Ambient Temperatures T (C°/F°)											
Amps	-40/-40	-30/-22	-20/-4	-10/14	0/32	10/50	20/68	30/86	40/104	50/122	60/140	70/158
	0.67	0.65	0.62	0.60	0.58	0.55	0.53	0.50	0.47	0.44	0.41	0.37
	1.33	1.29	1.25	1.20	1.15	1.11	1.05	1.00	0.94	0.88	0.82	0.75
	2.13	2.07	2.00	1.92	1.85	1.77	1.69	1.60	1.51	1.41	1.31	1.19
	2.67	2.58	2.49	2.40	2.31	2.21	2.11	2.00	1.89	1.76	1.63	1.49
	4.0	3.9	3.7	3.6	3.5	3.3	3.2	3.0	2.8	2.6	2.4	2.2
	5.3	5.2	5.0	4.8	4.6	4.4	4.2	4.0	3.8	3.5	3.3	3.0
	8.0	7.7	7.5	7.2	6.9	6.6	6.3	6.0	5.7	5.3	4.9	4.5
	10.7	10.3	10.0	9.6	9.2	8.8	8.4	8.0	7.5	7.1	6.5	6.0
	13.3	12.9	12.5	12.0	11.5	11.1	10.5	10.0	9.4	8.8	8.2	7.5
	17.3	16.8	16.2	15.6	15.0	14.4	13.7	13.0	12.3	11.5	10.6	9.7
	21.3	20.7	20.0	19.2	18.5	17.7	16.9	16.0	15.1	14.1	13.1	11.9
	26.7	25.8	24.9	24.0	23.1	22.1	21.1	20.0	18.9	17.6	16.3	14.9
	33.3	32.3	31.2	30.0	28.9	27.6	26.4	25.0	23.6	22.0	20.4	18.6
	42.7	41.3	39.9	38.5	37.0	35.4	33.7	32.0	30.2	28.2	26.1	23.9
	53.3	51.6	49.9	48.1	46.2	44.2	42.2	40.0	37.7	35.3	32.7	29.8
	66.7	64.5	62.4	60.1	57.7	55.3	52.7	50.0	47.1	44.1	40.8	37.3
	84.0	81.3	78.6	75.7	72.7	69.6	66.4	63.0	59.4	55.6	51.4	47.0
	112.6	107.2	102.1	97.2	92.6	88.2	84.0	80.0	76.0	72.2	68.6	65.2
	140.7	134.0	127.6	121.6	115.8	110.3	105.0	100.0	95.0	90.3	85.7	81.5
	175.9	167.5	159.5	151.9	144.7	137.8	131.3	125.0	118.8	112.8	107.2	101.8

Technical data S200, S200P & S290 UL 1077, CSA 22.2, No. 235

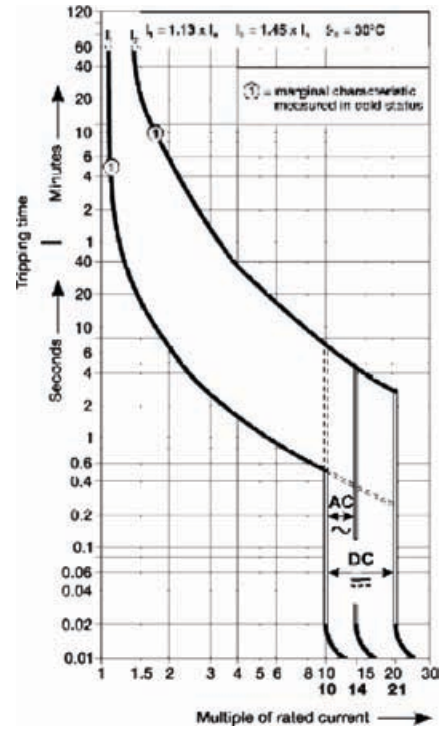
Tripping characteristic B



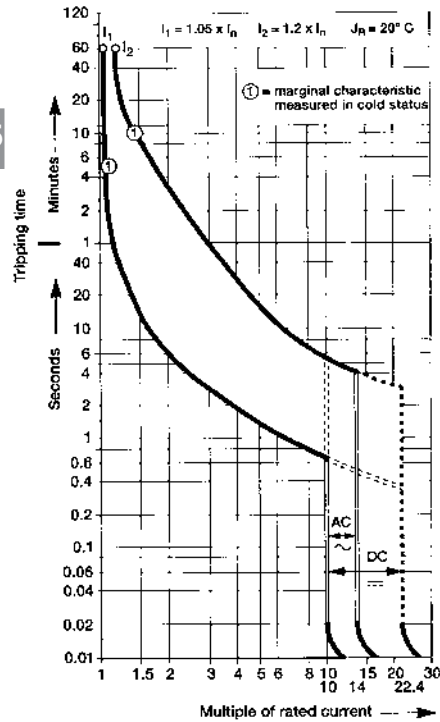
Tripping characteristic C



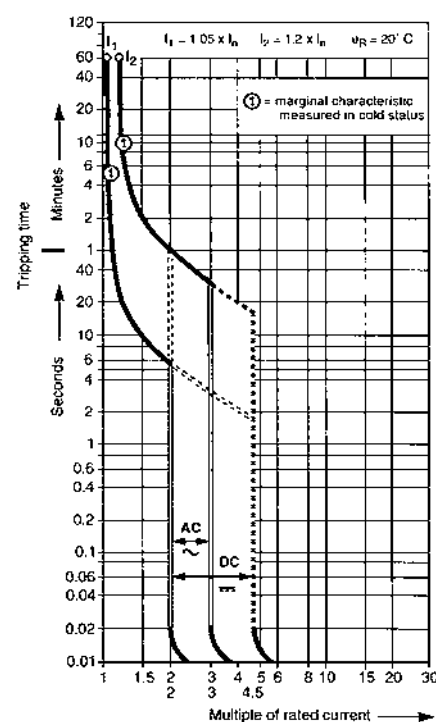
Tripping characteristic D



Tripping characteristic K



Tripping characteristic Z



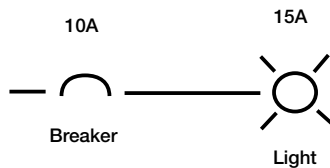
Introduction

The circuit breaker plays an important role in providing over-current protection and a disconnect means in electrical networks. Recent advancements in circuit breaker technology has increased breaker performance and protection.

Overload

A slow and small overcurrent situation that causes the ampacity and temperature of the circuit to gradually increase over time. This type of event is characterized by a slight increase in the load (ampacity) on the circuit and is interrupted by the thermal trip unit of the breaker.

Thermal Example

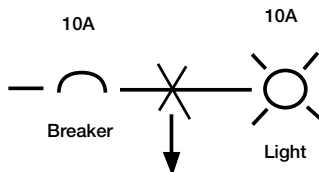


The light draws more than 10 amps for an extended period of time creating a thermal overload.

Short circuit

A rapid and intense overcurrent situation that causes the ampacity of the circuit to increase. This type of event is characterized by a dramatic increase in the load (ampacity) on the circuit and is interrupted by the magnetic trip unit of the breaker.

Magnetic Example

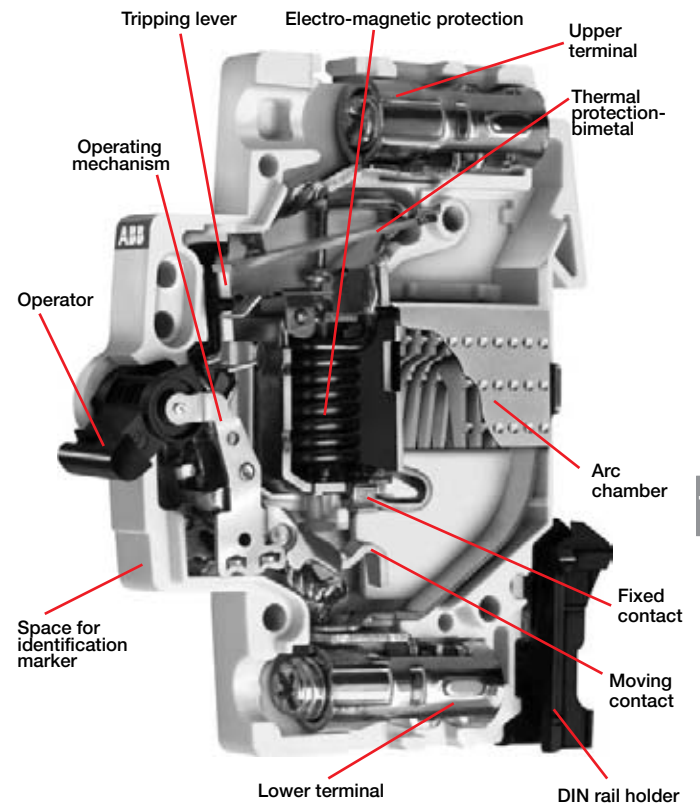


The wire connected between the light and breaker is cut and shorted to ground creating a short circuit.

Breaker definition

A breaker is a device designed to isolate a circuit during an overcurrent event without the use of a fusible element. A breaker is a resettable protective device that protects against two types of overcurrent situations; Overload and Short Circuit.

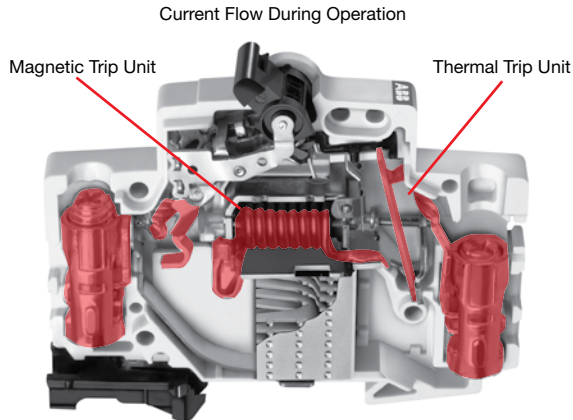
ABB current limiting breaker



Circuit breaker construction

Thermal / Magnetic trip units definition

ABB Current Limiting Breakers use an electromechanical (Thermal / Magnetic) trip unit to open the breaker contacts during an overcurrent event. The thermal trip unit is temperature sensitive and the magnetic trip unit is current sensitive. Both units act independently and mechanically with the breaker's trip mechanism to open the breaker's contacts.



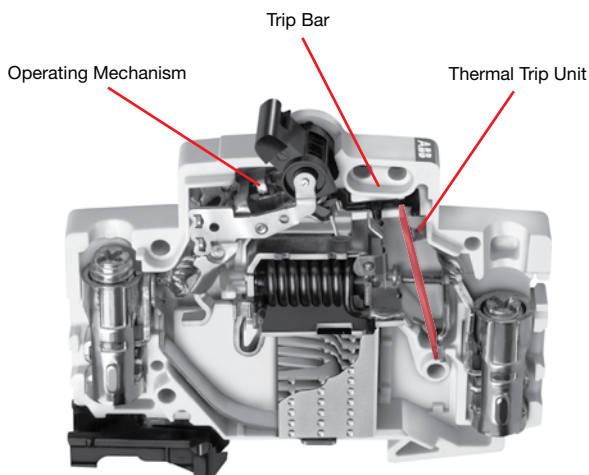
All highlighted components are energized during operation

Overload protection

The thermal trip unit protects against a continuous overload. The thermal unit is comprised of a bimetal element located behind the circuit breaker trip bar and is part of the breaker's current carrying path. When there is an overload, the increased current flow heats the bimetal causing it to bend. As the bimetal bends it pulls the trip bar which opens the breaker's contacts.

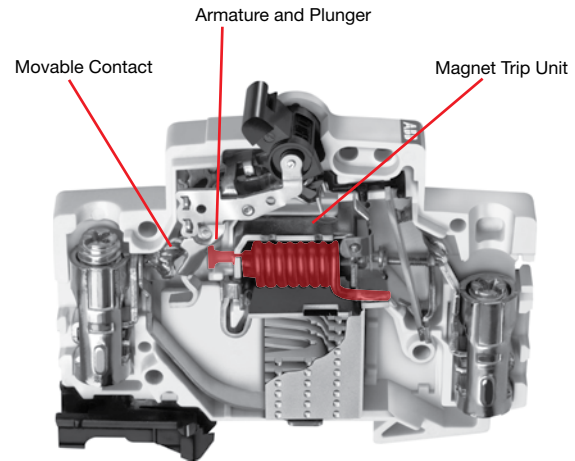
The time required for the bimetal to bend and trip the breaker varies inversely with the current. Because of this, the tripping time becomes quicker as current increases in magnitude.

Overload protection is applicable to any installation, conductor, or component which can be subjected to low-magnitude but long-time over-currents. Low-magnitude, long-time over-currents can be dangerous because they reduce the life of the electrical installation, conductor, and components and if left unchecked could result in fire.



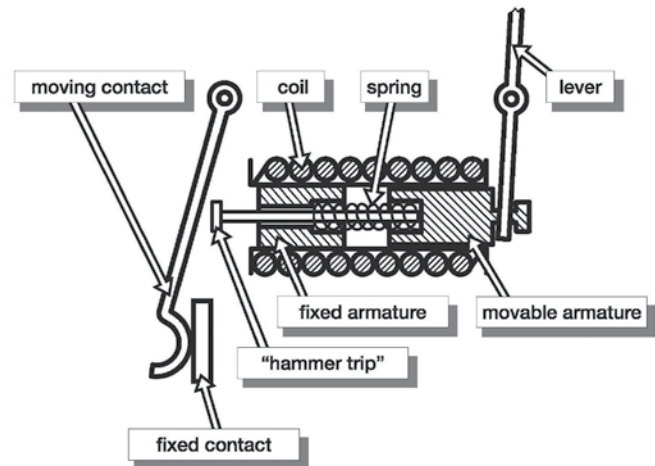
Magnetic trip units (short circuit protection)

The Magnetic trip unit protects against a short circuit. The magnetic trip unit is comprised of an electromagnet and an armature.



Components of a magnetic trip unit

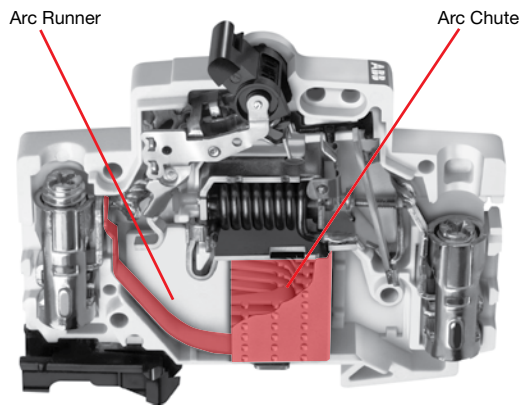
When there is a short circuit, a high magnitude of current passes through the coils creating a magnetic field that attracts the movable armature towards the fixed armature. The hammer trip is pushed against the movable contact and the contacts are opened. The opening of the breaker's contacts during a short circuit is complete in .5 milli-seconds.



Arc runners / Arc chutes

The arc runner and arc chute limit and dissipate the arc energy during the interruption of an overload or short circuit event.

During an overload or short circuit event, the contacts of the breaker separate and an electrical arc is formed between the contacts through air. The arc is moved into the arc chute by "running" the arc down the interior of the breaker along the arc runner. When the arc reaches the arc chute it is broken into small segmented arcs. The segmented arcs split the overall energy level into segments less than 25V. Each 25V segment does not have a high enough energy level to maintain an arc and all energy is naturally dissipated.



Breaker curves

Thermal Trip Unit (region one)

The first sloping region of the breaker curve is a graphical representation of the tripping characteristics of the thermal trip unit. This portion of the curve is sloped due to the nature of the thermal trip unit. The trip unit bends to trip the breaker's trip bar in conjunction with a rise in amperage (temperature) over time. As the current on the circuit increases, the temperature rises, the faster the thermal element will trip.

Example using the curve below: If you had a 10A breaker and the circuit was producing 30 amps of current, the breaker would trip between 2 seconds and 1 minute. In this example you would find the circuit current on the bottom of the graph (Multiples of rated current). The first line is 10 amps (10 amp breaker x a multiple of one), the second line is 20 amps (10 amp breaker x multiple of 2), and the third line is 30 amps (10 amp breaker x multiple of 3). Next you would trace the vertical 30A line up until it intersects the red portion of the breaker thermal curve. If you follow the horizontal lines, on both sides of the red curve, to the left you will see that the breaker can trip as fast as 2 seconds and no slower than 1 minute.

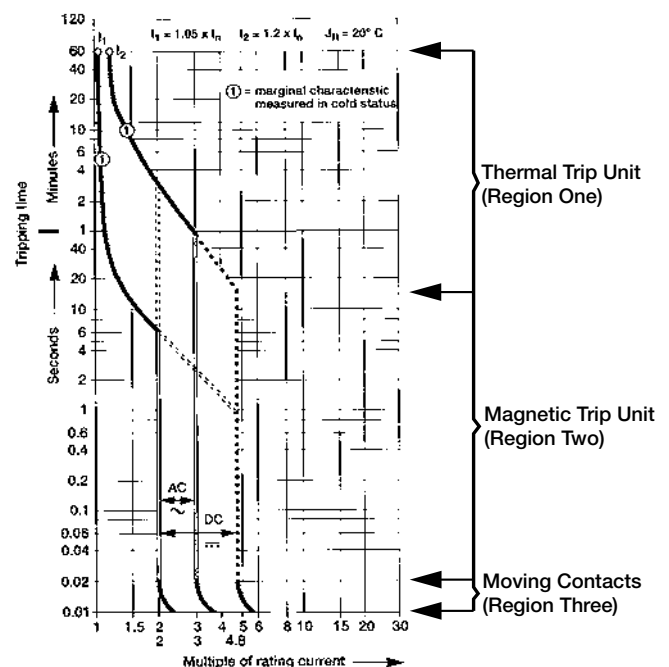
Magnetic Trip Unit (region two)

This region of the breaker curve is the instantaneous trip unit. ABB's miniature circuit breaker's instantaneous trip unit interrupts a short circuit in 2.3 to 2.5 milliseconds. Because of this the curve has no slope and is graphically represented as a vertical straight line.

Example using the curve above: If you had a 10 amp breaker the magnetic trip element would interrupt a short circuit between 10 and 30 amps (10 amp breaker x multiple of 2 and 3) in 2.3 to 2.5 milliseconds.

Breaker Contacts (region three)

This region of the curve is the time required for the contacts of the breaker to begin to separate. The contacts will open in less than .5 milliseconds and is graphically represented by the bottom vertical portion of the curve.



Current limiting definitions

All ABB Miniature Circuit Breakers are UL tested and certified as current limiting protective devices. Current limiting circuit breakers provide a higher level of circuit protection than a typical zero point external breakers.

UL AC 60Hz cycle

UL defines an AC cycle as the potential energy of the wave form traveling from Zero-to-Positive amplitude, Positive-to-Zero amplitude, Zero-to-Negative amplitude, Negative-to-Zero amplitude 60 times in one second. One cycle is completed every 16.6 milliseconds.

UL breaker current limiting

UL defines breaker current limitation as a breaker that interrupts and isolates a fault in less than 1/2 of an AC cycle. 1/2 a cycle is completed in 8.3 milliseconds.

NEC240.2 current limiting

A device that, when interrupting current in its current-limiting range, reduces the current flowing in the faulted circuit to a magnitude substantially less than that obtainable in the same circuit if the device were replaced with a solid conductor having comparable impedance.

IEC 60947-2 current limiting circuit breaker

A circuit breaker with sufficiently short trip time to prevent the short-circuit current from reaching the peak value which would otherwise be reached.

ABB current limiting breakers

ABB current limiting breakers can interrupt and isolate a fault in 1/8 of an AC cycle. The breaker fault interruption is completed in 2.3 to 2.5 milliseconds.

Zero point extinguishing breakers

A typical zero point extinguishing breaker interrupts a fault and does not isolate the energy. The breaker allows an arc to be present between the open contacts until the AC wave form crosses zero. When the wave form crosses zero, the potential energy is zero and the arc (fault) naturally extinguishes. The arc could be present for up to 8.3 milliseconds.

Current limiting breakers and electrical networks

Current Limitation

When a short-circuit condition occurs, the “ideal” current limiting circuit breaker opens before the current waveform can reach its full potential magnitude which occurs at 1/4 cycle (4.17ms). ABB’s current limiting breakers can interrupt a fault in about 1/2 cycle or 2.3ms to 2.5ms.

ABB’s current limiting breakers interrupt a short circuit in less than 1/8 cycle and limit the amount of current that can reach a circuit. Limiting the available current on the circuit provides additional protection against network, breaker, or bus damage and prevents the tripping of upstream breakers (selective coordination).

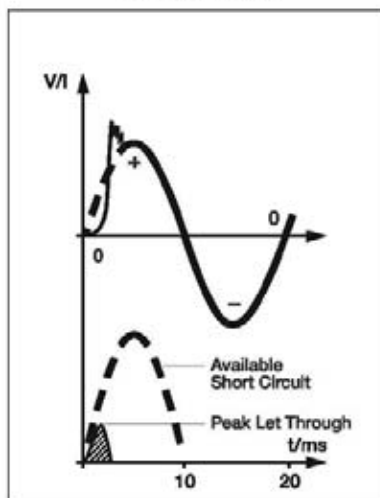
IsqT

The true destructive nature of a short circuit is measured by the time it is available combined with the peak value of the short circuit. The IsqT (Amps Squared over Time) value represents the amount of energy available on a network during a short circuit and is represented by the shaded area on the graph below.

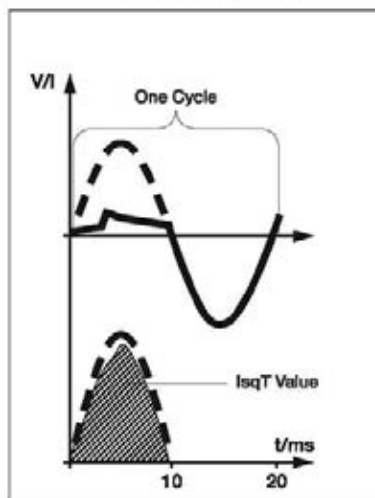
During a short circuit both magnetic forces and thermal energy combine to damage devices on the electrical network. The level of thermal energy and magnetic forces are directly proportional to the square of the current. The magnetic forces vary as a square of the peak current available and the thermal energy varies as a square of the RMS (root mean square) current available. ABB’s current limiting breakers will limit the let-through energy to a fraction (1/100th) of the value which is available from the network. By comparison, a Zero Crossing breaker would let-through approximately 100 times as much destructive energy as the current limiting circuit breaker [(100,000A / 10,000A) squared = 100X].

ABB’s current limiting breakers limit the short circuit current to a relatively small magnitude in a extremely short time, which dramatically limits a short circuit’s destructive energy.

Current Limiting



Zero Point Extinguishing



Current limiting and zero crossing breakers

During the initial stages of a short circuit a breaker's contacts open to interrupt the circuit. After the contacts open an arc forms in the air between the contacts on both the current limiting and zero crossing breaker contacts. What distinguishes a current limiting breaker from a zero crossing breaker is what each breaker does after an arc is formed between the open contacts.

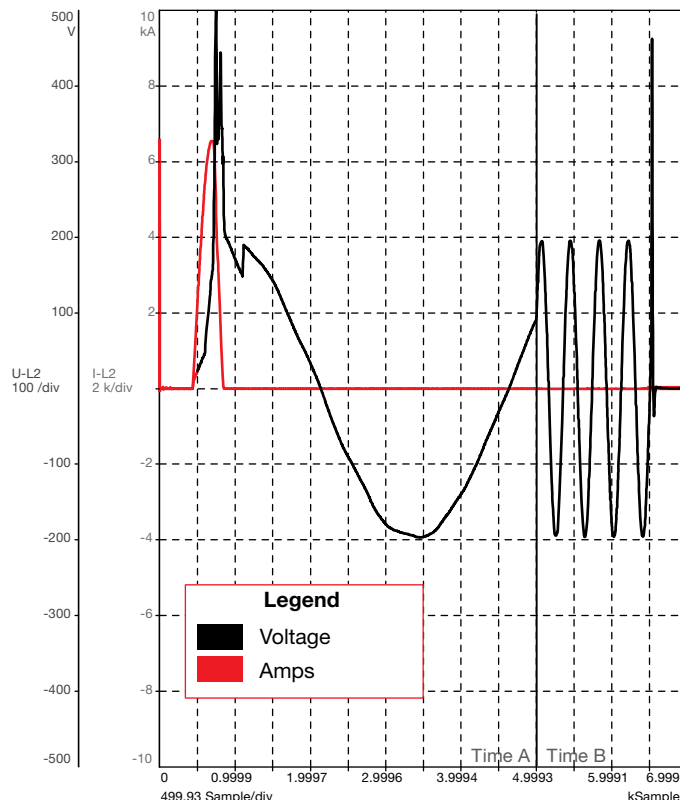
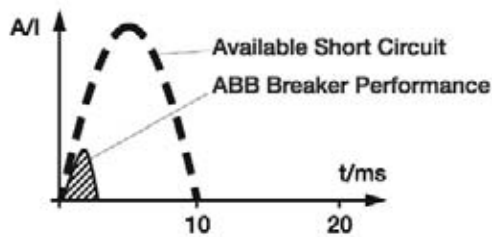
A current limiting breaker "runs" the arc down the breaker arc runner into an arc chute that extinguishes the arc.

A zero crossing breaker does not attempt to extinguish the arc. The breaker is designed to withstand the energy of the arc long enough for the waveform to cross zero. When the wave form crosses zero the potential energy is zero and the arc naturally extinguishes itself.

ABB's current limiting breakers interrupt the arc energy in 2.3ms to 2.5ms (1/8 cycle) and a zero crossing breaker allows the arc to be present for up to 8.3ms (1/2 cycle). A zero crossing breaker will let through 100 times as much energy as an ABB current limiting breaker.

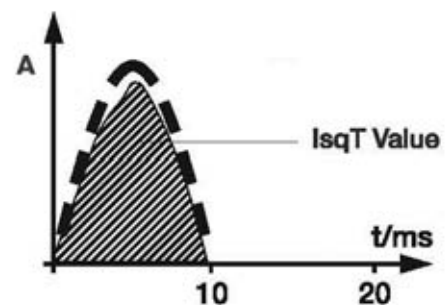
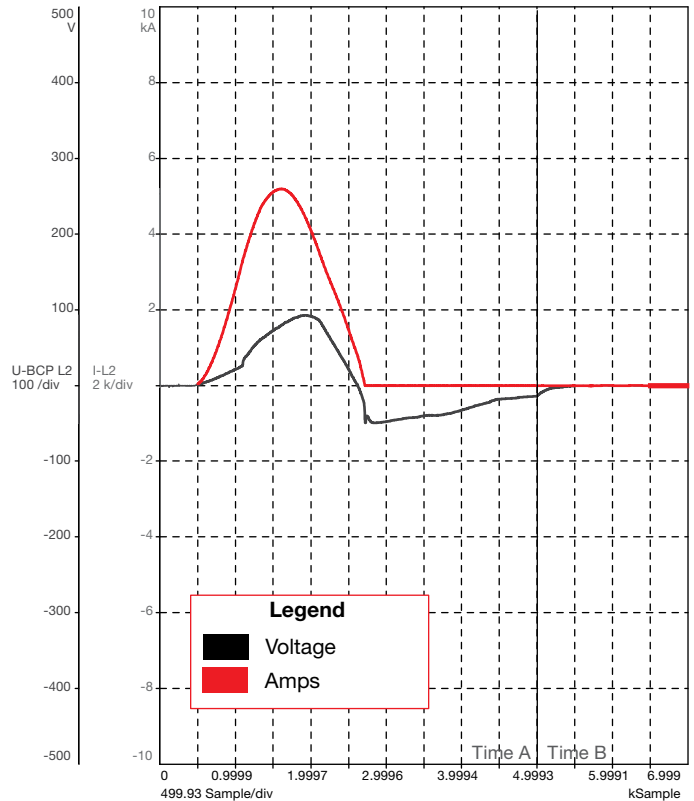
Current limiting example

The lab test report below details a 20A S200 series current limiting breaker interrupting a 28kA fault in 1.7 milliseconds. The total "I Square T" value is 32.0kA.



Zero crossing example

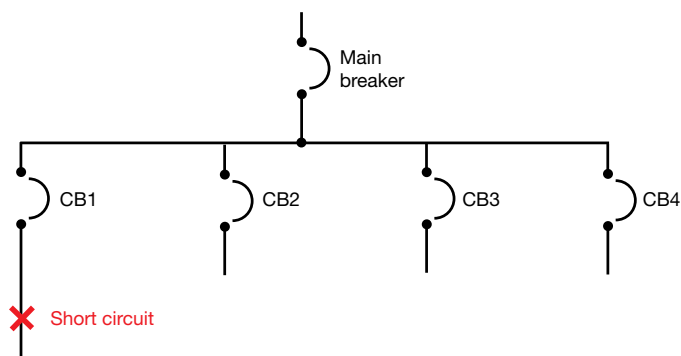
The test report below details a 20A Zero Point Extinguishing breaker interrupting a 9kA fault in 9 milliseconds. The total "I Square T" value is 104.0kA.



Selective coordination and series ratings

IEC 60497-1 selective coordination definition

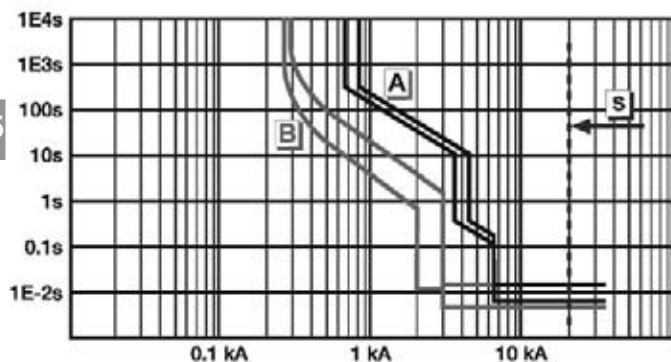
Coordination between the operating characteristics of two or more over-current protection devices, so that when an over-current within established limits occurs, the device designated to operate within those limits trips whereas the other do not trip.



Example of breaker coordination

When an over-current event occurs at the branch breaker level (CB1), and the event is within the operating characteristics of the breaker, then the branch breaker should interrupt the circuit (open) and the main breaker should remain closed and energized. The chart below gives a graphical representation of a downstream branch breaker (B curve) and a main breaker (A curve) with coordination. The separation between the curves allows the branch breaker to react to the fault and the main breaker remain closed and energized.

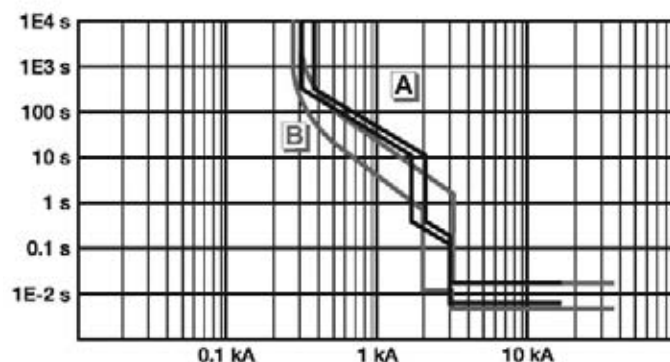
Coordination



Example of no breaker coordination

Selective breaker coordination is not achieved when there is an overload event at the branch breaker level (MCB1) and both the branch breaker and main breaker interrupt the circuit (open). When there is no breaker coordination several circuits lose power that should remain operational during and after the overload event. The chart below gives a graphical representation of a downstream branch breaker (B curve) and a main breaker (A curve) without coordination. There is no separation between the curves. The branch breaker will react to a fault and the main breaker will open and de-energize all circuits downstream.

No Coordination



Problems in coordination occur when the branch breaker allows the "I Square T" value of the short circuit to rise to a level that is in the operating range of the up-stream main breaker. Proper breaker coordination is easier to achieve with the use of current limiting breakers at the branch level.

Selective coordination and current limiting breakers

Recent improvements in ABB circuit breaker technology has pushed the performance of breakers to the same level as fuses. The reaction time and tripping characteristics of current limiting breakers are now on par with fuses. This allows ABB to provide a high level of coordination between branch breakers and the main. A current limiting branch breaker will limit the "I Square T" value well below the level of the operating range of the up-stream main breaker.

ABB's current limiting branch breakers can coordinate between the main breaker up to 35kA.

Selective coordination and zero crossing breakers

Zero crossing breakers do not limit the "I Square T" value. They wait for the wave form to cross zero and allow a high level of let-through energy to pass through the system. The "I Square T" value of a zero crossing breaker is high enough that the main breaker will likely trip during a short circuit. With zero crossing breakers it is extremely difficult to coordinate between branch and main breakers.

A typical zero crossing breaker's coordination level is below 10kA. There are a few manufactures that have achieved coordination between a branch zero crossing breaker and the main by slowing the performance (protection) of the main breaker.

Series ratings –vs- selective coordination

Selective coordination

Selective coordination is achieved when there is a short circuit on a branch circuit breaker, the branch breaker opens and isolates the fault, and the main breaker remains closed. The rating is usually a value above the “stand alone” interrupting rating of the branch breaker and the “stand alone” rating of the main breaker.

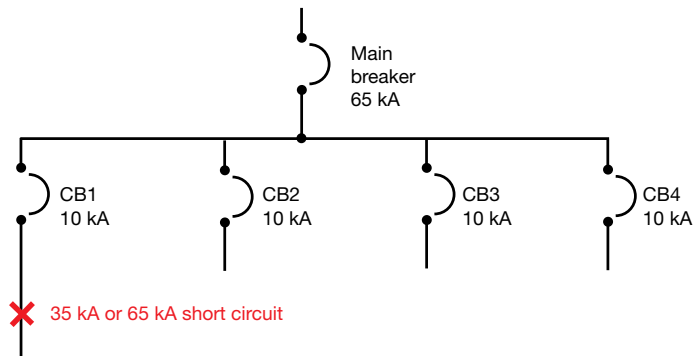
Example:

65kA rated main breaker

10kA rated branch breaker

Coordination between the two breakers up to 35kA

There can be a short circuit on the branch breaker up to 35kA where the branch will open (CB1) and the main breaker will remain closed. Although the branch has a 10kA “stand alone” rating both the breakers work together to limit the available short circuit to allow the branch (CB1) to isolate the fault.



Series ratings

Series ratings are different from coordination ratings. Unlike coordination ratings where the branch opens and the main remains closed, a series rated combination is one where both the branch and main breakers open and work together to isolate the fault.

The series rating combination of two breakers is equal to the “stand alone” interrupting value of the main breaker. This is a result of the main breaker let-through value being lower than the “stand alone” interrupting value of the branch breaker. During a short circuit the main breaker will limit the energy to a level that is below the “stand alone” value of the branch breaker.

Example:

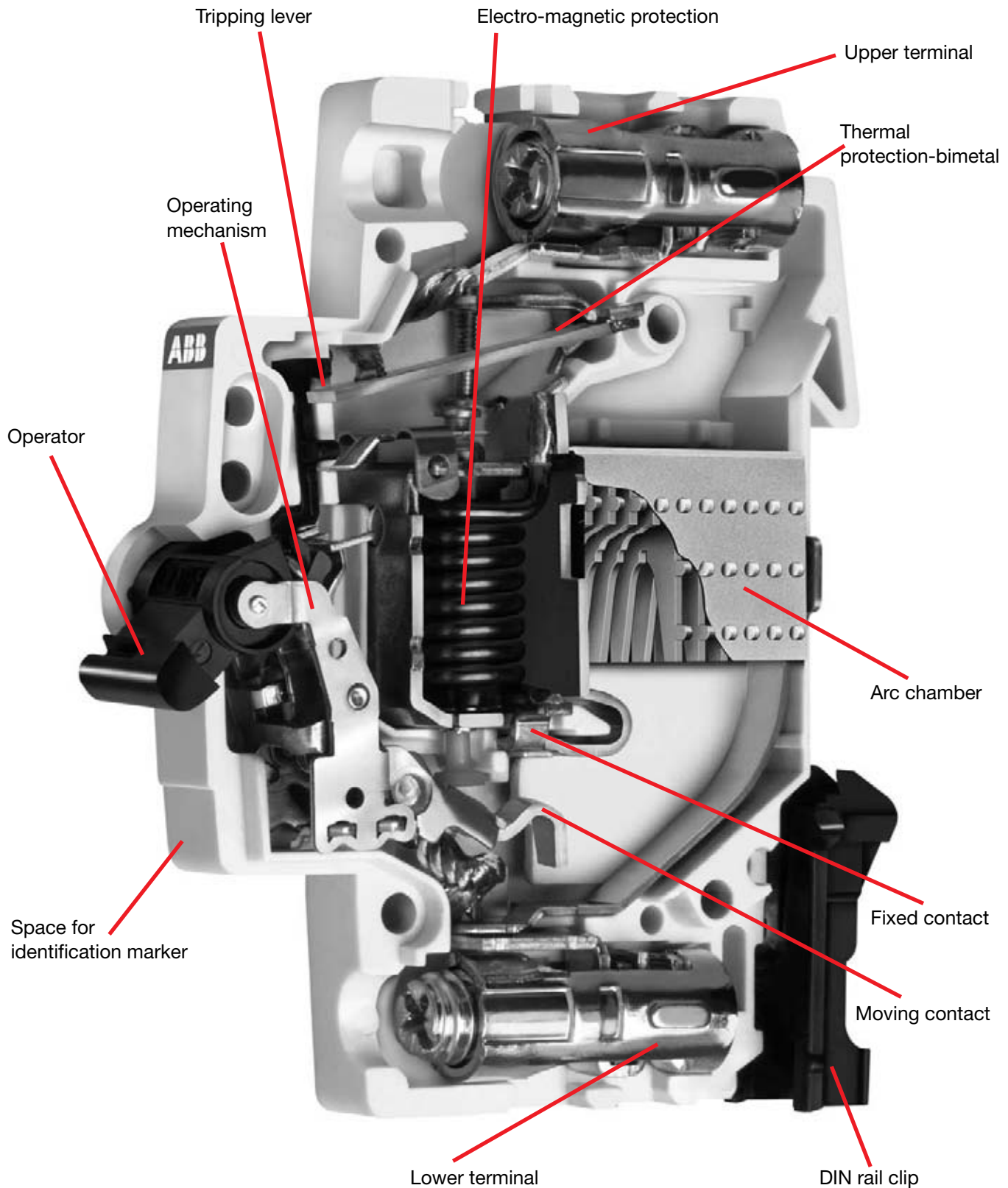
65kA rated main breaker

10kA rated branch breaker

Series combination rating between the two breakers up to 65kA

There can be a short circuit on the branch breaker up to 65kA where the branch will open and the main breaker will open. Although the branch breaker (CB1) has a 10kA “stand alone” rating the main breaker has a let-through value below 10kA. If there is a fault up to 65kA on the network the main breaker will limit the energy to a value less than the rating of the branch breaker (CB1). Both breakers will trip (no coordination) but the network can safely withstand a fault of 65kA.

Miniature circuit breaker cutaway

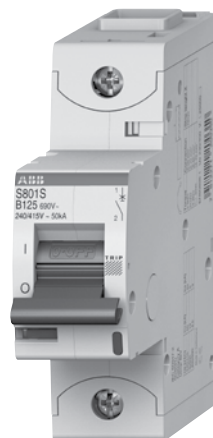


S800 Series High Performance Circuit Breakers



S800

High performance circuit breakers
UL 489 Series



Description

The S800 high performance MCB offers a compact solution to circuit protection. The S800 devices are DIN rail mounted. The S800 is available with application-specific trip characteristics to provide maximum circuit protection.

The breakers offer thermal-magnetic trip protection according to Z and K characteristics.

For the worldwide market, the breakers carry CSA, IEC, CE and many other agency approvals.

Features

- Energy limiting
- Fast breaking time (2.3 – 2.5 ms)
- Wide range of accessories
- DIN rail mounting
- Finger safe terminals
- Multi-function terminals
- Ring tongue compatible
- UL489 File # E312425

S800U

Amperage	10 – 100 A
Voltage	240 VAC
Poles	1, 2, 3, 4 poles
Trip characteristics	Z, K
Interrupting ratings	30kA: UL 489, single pole 50kA: UL 489, multi-pole
Auxiliary contacts	Yes
Bell alarm	Yes
Shunt trip	Yes
Undervoltage release	Yes
Ring tongue	Yes

S800U-K, 240 VAC

Branch circuit protection

UL 489

K



S801U-K



S802U-K



S803U-K



S804U-K

No. of poles	Rated current	Catalog number	List price	No. of poles	Rated current	Catalog number	List price
1	10	S801U-K10	\$ 90	3	10	S803U-K10	\$ 210
	15	S801U-K15			15	S803U-K15	
	20	S801U-K20			20	S803U-K20	
	25	S801U-K25			25	S803U-K25	
	30	S801U-K30			30	S803U-K30	
	40	S801U-K40			40	S803U-K40	
	50	S801U-K50	100		50	S803U-K50	220
	60	S801U-K60	110		60	S803U-K60	230
	70	S801U-K70	120		70	S803U-K70	240
	80	S801U-K80	130		80	S803U-K80	250
90	S801U-K90	140	90	S803U-K90	260		
100	S801U-K100	150	100	S803U-K100	270		
2	10	S802U-K10	160	4	10	S804U-K10	290
	15	S802U-K15			15	S804U-K15	
	20	S802U-K20			20	S804U-K20	
	25	S802U-K25			25	S804U-K25	
	30	S802U-K30			30	S804U-K30	
	40	S802U-K40			40	S804U-K40	
	50	S802U-K50	170		50	S804U-K50	300
	60	S802U-K60	180		60	S804U-K60	310
	70	S802U-K70	190		70	S804U-K70	320
	80	S802U-K80	200		80	S804U-K80	330
90	S802U-K90	210	90	S804U-K90	350		
100	S802U-K100	220	100	S804U-K100	360		

Tripping characteristic K

UL 489

240 VAC

30 kA, single pole

50 kA, multi-pole

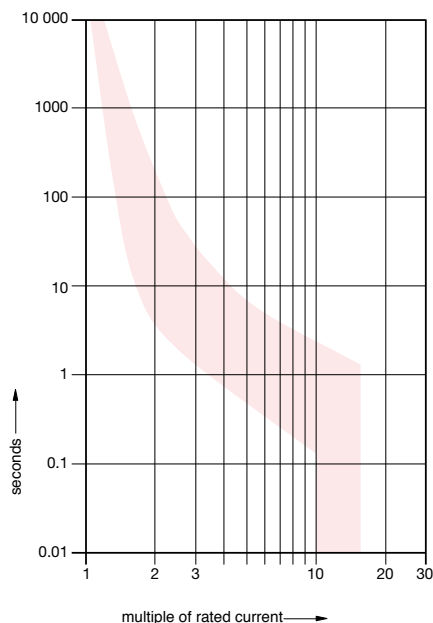
Resistive loads

- K Curve
- Designed for use in cable protection applications
- Example: control circuits, lighting

Accessories & technical data

Accessories – See page 15.52

Technical data – See page 15.76 - 15.82



S800U-Z, 240 VAC

Branch circuit protection

UL 489

S800
Miniature
circuit breakers

Z



S801U-Z



S802U-Z



S803U-Z



S804U-Z

No. of poles	Rated current	Catalog number	List price	No. of poles	Rated current	Catalog number	List price
1	10	S801U-Z10	\$ 115	3	10	S803U-Z10	\$ 260
	15	S801U-Z15			15	S803U-Z15	
	20	S801U-Z20			20	S803U-Z20	
	25	S801U-Z25			25	S803U-Z25	
	30	S801U-Z30			30	S803U-Z30	
	40	S801U-Z40			40	S803U-Z40	
	50	S801U-Z50	125		50	S803U-Z50	290
	60	S801U-Z60	125		60	S803U-Z60	290
	70	S801U-Z70	155		70	S803U-Z70	310
	80	S801U-Z80	155		80	S803U-Z80	310
2	90	S801U-Z90	155	90	S803U-Z90	310	
	100	S801U-Z100	155	100	S803U-Z100	310	
	10	S802U-Z10	195	4	10	S804U-Z10	360
	15	S802U-Z15			15	S804U-Z15	
	20	S802U-Z20			20	S804U-Z20	
	25	S802U-Z25			25	S804U-Z25	
	30	S802U-Z30			30	S804U-Z30	
	40	S802U-Z40			40	S804U-Z40	
	50	S802U-Z50	210		50	S804U-Z50	400
	60	S802U-Z60	210		60	S804U-Z60	400
70	S802U-Z70	220	70		S804U-Z70	400	
80	S802U-Z80	220	80		S804U-Z80	400	
	90	S802U-Z90	220	90	S804U-Z90	400	
	100	S802U-Z100	220	100	S804U-Z100	425	

Tripping characteristic Z

UL 489

240 VAC

30 kA, single pole

50 kA, multi-pole

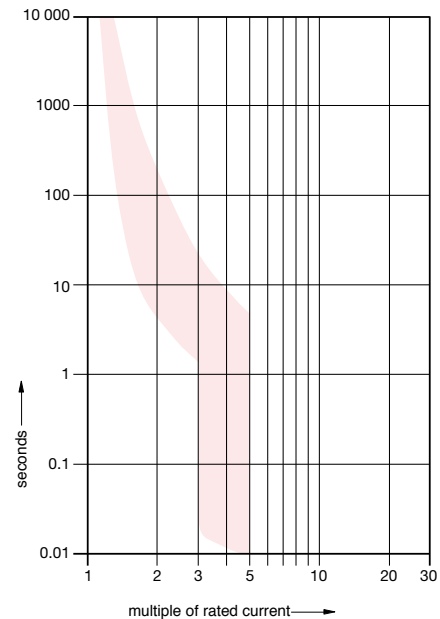
Resistive loads

- Z Curve
- Designed for use in cable protection applications
- Example: control circuits, lighting

Accessories & technical data

Accessories – See page 15.52

Technical data – See page 15.76 - 15.82



S800 Series High Performance Circuit Breakers



S800

High performance circuit breakers
IEC Series



Description

The S800 high performance MCB offers a compact solution to circuit protection. The S800 devices are IEC tested current limiting and DIN rail mounted. The S800 is available with application-specific trip characteristics to provide maximum circuit protection.

The breakers offer thermal-magnetic trip protection according to B, C, D & K characteristics.

For the worldwide market, the breakers carry CSA, IEC, CE and many other agency approvals.

Features

- Current limiting
- Fast breaking time (2.3 – 2.5 ms)
- Wide range of accessories
- DIN rail mounting
- Finger safe terminals
- Multi-function terminals
- Ring tongue compatible

S800S

Amperage	10 – 125 A
Voltage	690 VAC
Poles	1, 2, 3, 4
Trip characteristics	B, C, D, K
Interrupting ratings	50 kA : IEC
Auxiliary contacts	Yes
Bell alarm	Yes
Shunt trip	Yes
Undervoltage release	Yes
Ring tongue	Yes

B



S801U-B



S802U-B



S803U-B



S804U-B

No. of poles	Rated current	Catalog number	List price	No. of poles	Rated current	Catalog number	List price
1	10	S801S-B10	\$ 130	3	10	S803S-B10	\$ 340
	13	S801S-B13			13	S803S-B13	
	16	S801S-B16			16	S803S-B16	
	20	S801S-B20			20	S803S-B20	
	25	S801S-B25			25	S803S-B25	
	32	S801S-B32			32	S803S-B32	
	40	S801S-B40			40	S803S-B40	
	50	S801S-B50			50	S803S-B50	
	63	S801S-B63	180		63	S803S-B63	380
	80	S801S-B80	180		80	S803S-B80	480
100	S801S-B100	180	100	S803S-B100	480		
125	S801S-B125	180	125	S803S-B125	550		
2	10	S802S-B10	260	4	10	S804S-B10	450
	13	S802S-B13			13	S804S-B13	
	16	S802S-B16			16	S804S-B16	
	20	S802S-B20			20	S804S-B20	
	25	S802S-B25			25	S804S-B25	
	32	S802S-B32			32	S804S-B32	
	40	S802S-B40			40	S804S-B40	
	50	S802S-B50			50	S804S-B50	
	63	S802S-B63	310		63	S804S-B63	510
	80	S802S-B80	310		80	S804S-B80	660
	100	S802S-B100	310		100	S804S-B100	660
	125	S802S-B125	380		125	S804S-B125	720

Tripping characteristic B

IEC
690 VAC
50 kA

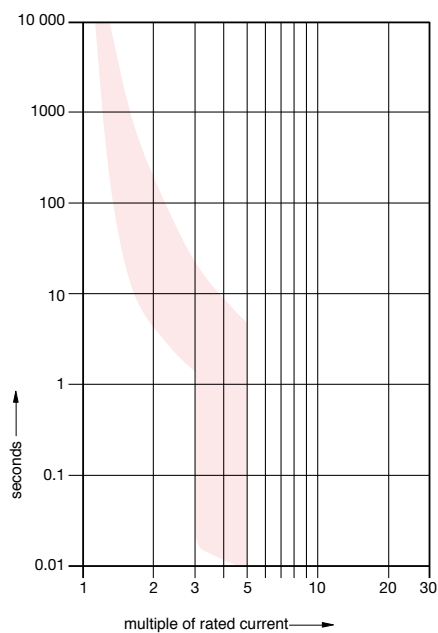
Resistive loads

- B Curve
- Designed for use in cable protection applications
- Example: control circuits, lighting

Accessories & technical data

Accessories – See page 15.52

Technical data – See page 15.76 - 15.82



S800S-C, 690 VAC IEC

S800
Miniature
circuit breakers

C



S801S-C



S802S-C



S803S-C



S804S-C

No. of poles	Rated current	Catalog number	List price	No. of poles	Rated current	Catalog number	List price
1	10	S801S-C10	\$ 130	3	10	S803S-C10	\$ 340
	13	S801S-C13			13	S803S-C13	
	16	S801S-C16			16	S803S-C16	
	20	S801S-C20			20	S803S-C20	
	25	S801S-C25			25	S803S-C25	
	32	S801S-C32			32	S803S-C32	
	40	S801S-C40			40	S803S-C40	
	50	S801S-C50			50	S803S-C50	
	63	S801S-C63	140		63	S803S-C63	380
	80	S801S-C80	180		80	S803S-C80	510
100	S801S-C100	180	100	S803S-C100	510		
125	S801S-C125	180	125	S803S-C125	550		
2	10	S802S-C10	260	4	10	S804S-C10	450
	13	S802S-C13			13	S804S-C13	
	16	S802S-C16			16	S804S-C16	
	20	S802S-C20			20	S804S-C20	
	25	S802S-C25			25	S804S-C25	
	32	S802S-C32			32	S804S-C32	
	40	S802S-C40			40	S804S-C40	
	50	S802S-C50			50	S804S-C50	
	63	S802S-C63	310		63	S804S-C63	510
	80	S802S-C80	340		80	S804S-C80	680
100	S802S-C100	340	100	S804S-C100	680		
125	S802S-C125	390	125	S804S-C125	740		

Tripping characteristic C

IEC
690 VAC
50 kA

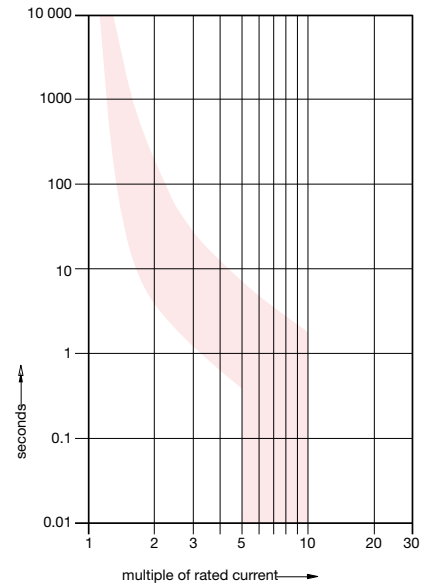
Resistive loads

- C Curve
- Designed for use with medium magnetic start up currents
- Example: lighting, control panels

Accessories & technical data

Accessories – See page 15.52

Technical data – See page 15.76 - 15.82



S800S-D, 690 VAC IEC

D



S801S-D



S802S-D



S803S-D



S804S-D

No. of poles	Rated current	Catalog number	List price	No. of poles	Rated current	Catalog number	List price
1	10	S801S-D10	\$ 138	3	10	S803S-D10	\$ 390
	13	S801S-D13			13	S803S-D13	
	16	S801S-D16			16	S803S-D16	
	20	S801S-D20			20	S803S-D20	
	25	S801S-D25			25	S803S-D25	
	32	S801S-D32			32	S803S-D32	
	40	S801S-D40			40	S803S-D40	
	50	S801S-D50			50	S803S-D50	
	63	S801S-D63	188		63	S803S-D63	450
	80	S801S-D80	188		80	S803S-D80	560
100	S801S-D100	188	100	S803S-D100	560		
125	S801S-D125	188	125	S803S-D125	590		
2	10	S802S-D10	268	4	10	S804S-D10	530
	13	S802S-D13			13	S804S-D13	
	16	S802S-D16			16	S804S-D16	
	20	S802S-D20			20	S804S-D20	
	25	S802S-D25			25	S804S-D25	
	32	S802S-D32			32	S804S-D32	
	40	S802S-D40			40	S804S-D40	
	50	S802S-D50			50	S804S-D50	
	63	S802S-D63	318		63	S804S-D63	580
	80	S802S-D80	390		80	S804S-D80	710
	100	S802S-D100	390		100	S804S-D100	710
	125	S802S-D125	550		125	S804S-D125	770

Tripping characteristic D

IEC

690 VAC

50 kA

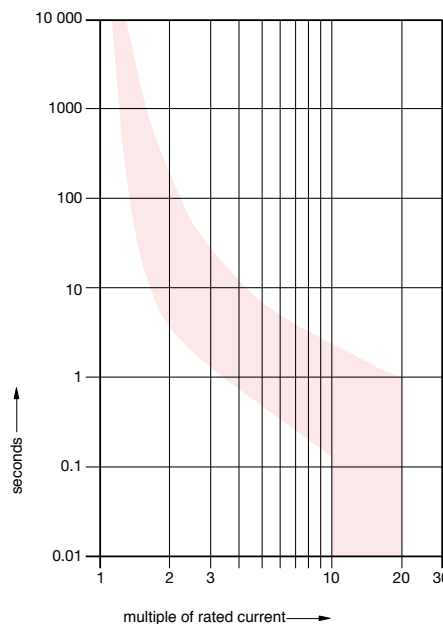
Inductive loads

- D Curve
- Designed for allowing higher in-rush currents during system start up
- Example: motors, transformers

Accessories & technical data

Accessories – See page 15.52

Technical data – See page 15.76 - 15.82



S800S-K, 690 VAC IEC

S800
Miniature
circuit breakers

K



S801S-K



S802S-K



S803S-K



S804S-K

No. of poles	Rated current	Catalog number	List price	No. of poles	Rated current	Catalog number	List price
1	10	S801S-K10	\$ 140	3	10	S803S-K10	\$ 410
	13	S801S-K13			13	S803S-K13	
	16	S801S-K16			16	S803S-K16	
	20	S801S-K20			20	S803S-K20	
	25	S801S-K25			25	S803S-K25	
	32	S801S-K32			32	S803S-K32	
	40	S801S-K40			40	S803S-K40	
	50	S801S-K50			50	S803S-K50	
	63	S801S-K63	160		63	S803S-K63	430
	80	S801S-K80	180		80	S803S-K80	580
100	S801S-K100	180	100	S803S-K100	280		
125	S801S-K125	210	125	S803S-K125	620		
2	10	S802S-K10	280	4	10	S804S-K10	550
	13	S802S-K13			13	S804S-K13	
	16	S802S-K16			16	S804S-K16	
	20	S802S-K20			20	S804S-K20	
	25	S802S-K25			25	S804S-K25	
	32	S802S-K32			32	S804S-K32	
	40	S802S-K40			40	S804S-K40	
	50	S802S-K50			50	S804S-K50	
	63	S802S-K63	310		63	S804S-K63	580
	80	S802S-K80	390		80	S804S-K80	720
100	S802S-K100	390	100	S804S-K100	720		
125	S802S-K125	420	125	S804S-K125	820		

Tripping characteristic K

IEC
690 VAC
50 kA

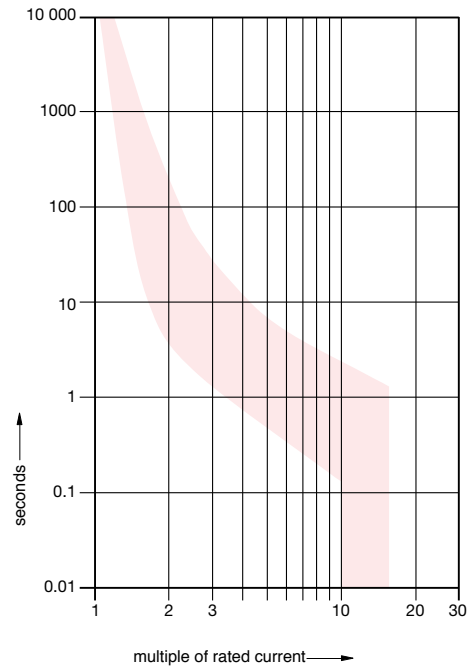
Inductive loads

- K Curve
- Designed for allowing higher in-rush currents during system start up
- Example: motors, transformers

Accessories & technical data

Accessories – See page 15.52

Technical data – See page 15.76 - 15.82



Accessories S800 & S800S



S800-SOR

Shunt trip

For remote tripping of breaker, a shunt trip device can be added to the MCB. The device opens the breaker after control voltage is applied.

Description (for field mounting, left side)	Catalog number	List price
Shunt operation release 24 VAC/DC	S800-SOR24	\$ 105
Shunt operation release 48...130 VAC/DC	S800-SOR130	105
Shunt operation release 110...250 VAC/DC	S800-SOR250	105

Undervoltage release

When control voltage drops below approximately 50 % of rated voltage, the UVR opens the breaker. The breaker can not be operated unless proper control voltage is first applied to the UVR coil.

Description	Catalog number	List price
Under voltage release 24...36 VAC/DC	S800-UVR36	\$ 135
Under voltage release 48...60 VAC/DC	S800-UVR60	135
Under voltage release 110...130 VAC/DC	S800-UVR130	135
Under voltage release 220...250 VAC/DC	S800-UVR250	135



S800-UVR

Auxiliary contacts

The auxiliary contacts will signal whether the breaker is in the ON or OFF position.

Description	Catalog number	List price
Auxiliary contact	S800-AUX	\$ 43

Bell alarm

The bell alarm includes a set of contacts that will only signal when the breaker has tripped. Typically the contacts would be connected to an alarm or bell to signal the operator that an overcurrent trip has occurred. The bell alarm also includes a test button for testing the alarm contacts without opening the breaker.

Description	Catalog number	List price
Bell alarm	S800-AUX/ALT	\$ 52



S800-AUX



S800-AUX/ALT

Accessories S800U & S800S

S800
Miniature
circuit breakers



S800-RT2125



S800-RD



S800-RHE-H



S800-RHE-EM



S800-RHE-S

Ring tongue adaptor

Description	Catalog number	List price
Ring terminal cable connection	S800-RT2125	\$ 12

Rotary operating mechanism

Allows "through the door" operation.

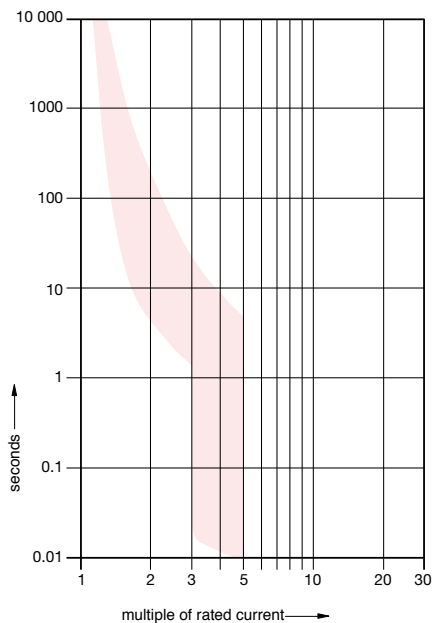
Description	Catalog number	List price
Handle mechanism	S800-RD	\$ 156

Description	Catalog number	List price
Grey rotary handle	S800-RHE-H	\$ 120

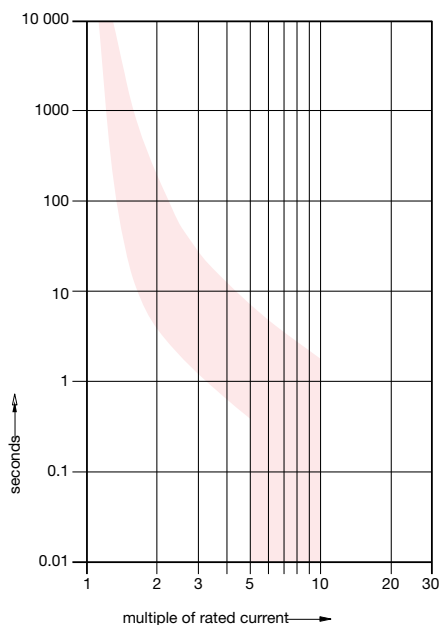
Description	Catalog number	List price
Red rotary handle	S800-RHE-EM	\$ 62

Description	Catalog number	List price
Shaft extension	S800-RHE-S	\$ 56

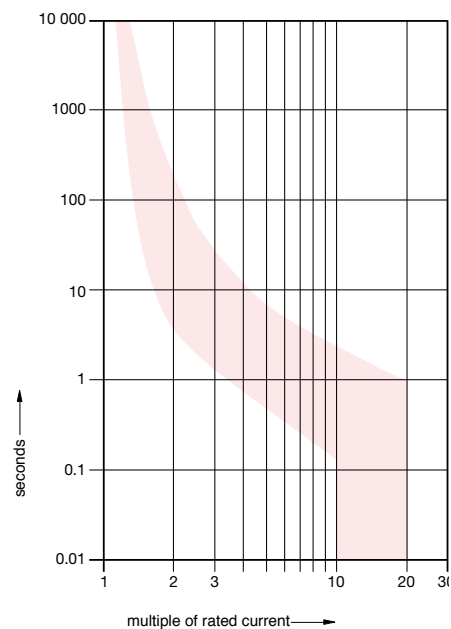
Tripping Characteristic B



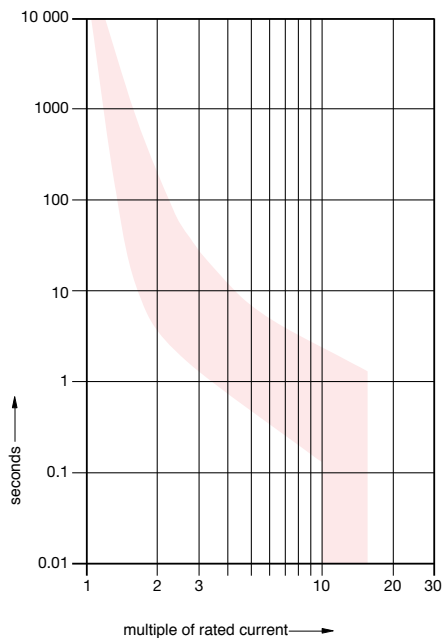
Tripping Characteristic C



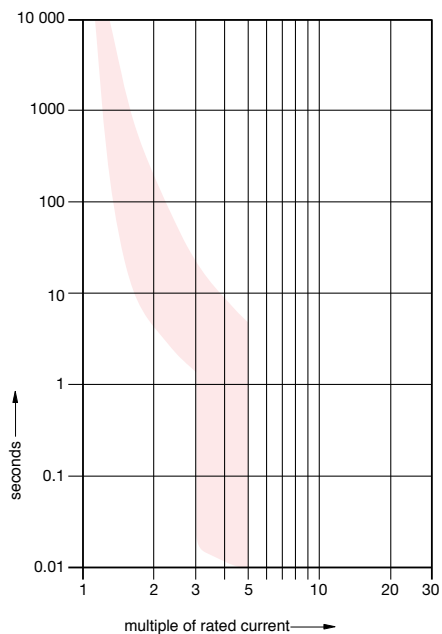
Tripping Characteristic D



Tripping Characteristic K



Tripping Characteristic Z



Technical data

S800S

IEC

S800
Miniature
circuit breakers

Internal resistance and power loss

Internal resistance per pole in mΩ, power loss per pole in W

Type	Rated current A	Device series B C D K mΩ	Power loss B C D K W
S800S	10	15.2	1.5
	13	12.1	2.0
	16	12.1	3.1
	20	8.7	3.5
	25	6.8	4.2
	32	3.1	3.1
	40	2.3	3.7
	50	1.7	4.3
	63	1.6	6.2
	80	1.0	6.4
	100	0.8	8.3
	125	0.6	9.4

Temperature derating

Max. operating current values depending on the ambient temperature for a circuit-breaker in load circuit of type B, C, D, & K characteristics.

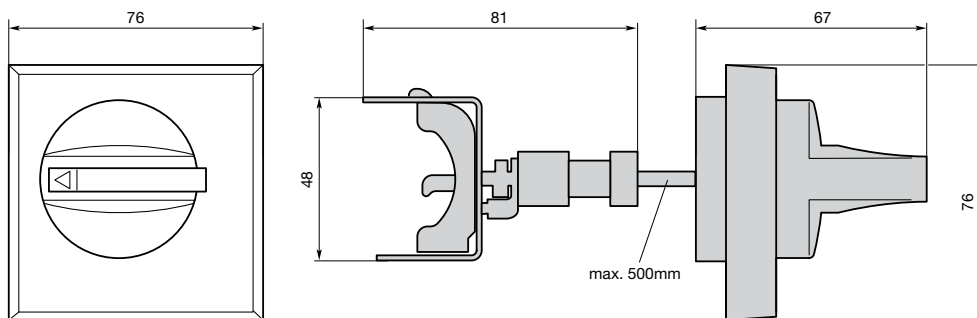
S800S-B, -C, -D	Ambient temperature T (°C/°F)										
In [A]	10/50	15/59	20/68	25/77	30/86	35/95	40/104	45/113	50/122	55/131	60/140
10	11.2	11.0	10.7	10.4	10.0	9.6	9.3	9.0	8.7	8.4	8.0
13	14.6	14.3	13.9	13.5	13.0	12.5	12.1	11.7	11.3	10.9	10.4
16	17.9	17.6	17.1	16.6	16.0	15.4	14.9	14.4	13.9	13.4	12.8
20	22.4	22.0	21.4	20.8	20.0	19.2	18.6	18.0	17.4	16.8	16.0
25	28.0	27.5	26.8	26.0	25.0	24.0	23.3	22.5	21.8	21.0	20.0
32	35.8	35.2	34.2	33.3	32.0	30.7	29.8	28.8	27.8	26.9	25.6
40	44.8	44.0	42.8	41.6	40.0	38.4	37.2	36.0	34.8	33.6	32.0
50	56.0	55.0	53.5	52.0	50.0	48.0	46.5	45.0	43.5	42.0	40.0
63	70.6	69.3	67.4	65.5	63.0	60.5	58.6	56.7	54.8	52.9	50.4
80	89.6	88.0	85.6	83.2	80.0	76.8	74.4	72.0	69.6	67.2	64.0
100	112.0	110.0	107.0	104.0	100.0	96.0	93.0	90.0	87.0	84.0	80.0
125	140.0	137.5	133.8	130.0	125.0	120.0	116.3	112.5	108.8	105.0	100.0

S800S-K	Ambient temperature T (°C/°F)										
In [A]	10/50	15/59	20/68	25/77	30/86	35/95	40/104	45/113	50/122	55/131	60/140
10	11.9	11.6	11.2	11.0	10.7	10.4	10.0	9.6	9.3	9.0	8.7
13	15.6	15.1	14.6	14.3	13.9	13.5	13.0	12.5	12.1	11.7	11.3
16	19.1	18.6	17.9	17.6	17.1	16.6	16.0	15.4	14.9	14.4	13.9
20	23.9	23.2	22.4	22.0	21.4	20.8	20.0	19.2	18.6	18.0	17.4
25	29.9	29.1	28.0	27.5	26.8	26.0	25.0	24.0	23.3	22.5	21.8
32	38.2	37.2	35.8	35.2	34.2	33.3	32.0	30.7	29.8	28.8	27.8
40	47.8	46.5	44.8	44.0	42.8	41.6	40.0	38.4	37.2	36.0	34.8
50	59.7	58.1	56.0	55.0	53.5	52.0	50.0	48.0	46.5	45.0	43.5
63	75.3	73.2	70.6	69.3	67.4	65.5	63.0	60.5	58.6	56.7	54.8
80	95.6	93.0	89.6	88.0	85.6	83.2	80.0	76.8	74.4	72.0	69.6
100	119.5	116.2	112.0	110.0	107.0	104.0	100.0	96.0	93	90.0	87.0
125	149.4	145.3	140.0	137.5	133.8	130.0	125.0	120.0	116.3	112.5	108.8

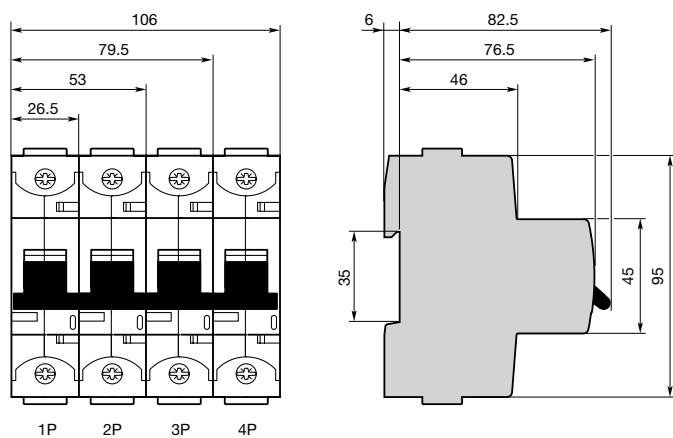
Approximate dimensions S800U & S800S

Dimension drawings in mm

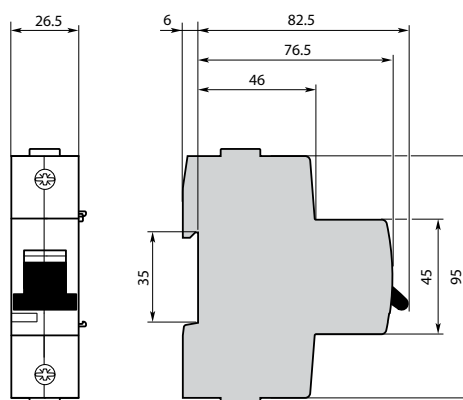
S800-RD & S800-RHE



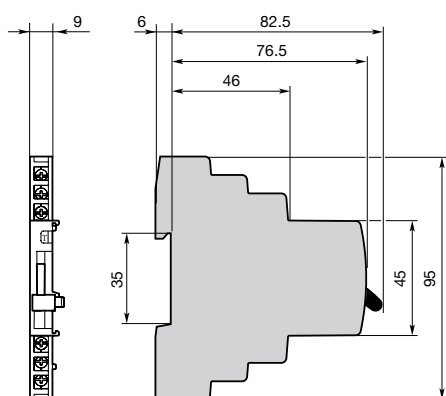
S800S & S800U



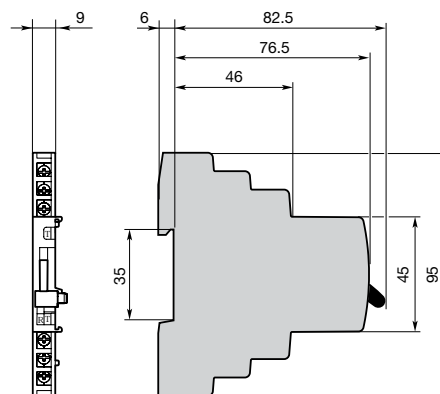
S800-SOR & S800-UVR



S800-AUX



S800-AUX/ALT



Technical data

S800U & S800S

Accessories

S800
Miniature
circuit breakers

Auxiliary contact S800-AUX

	S800-AUX
Usage category	AC15 400/2 A-UL AC15 240/ -UL DC13 250/0.55 A125 V/1.1A-IEC DC13 125 V/1.1A DC13 60 V/2A DC13 24 V/4A
Continuous thermal current I_n	6 A
Rated insulation voltage U_i	690 V
Number of contacts	2
Surge U_{test} (1.2/50µs)	6 kV
Degree of protection	3
Function of contact	Changeover contacts
Connection Cu	1 x 2.5 mm ² 2 x 1.5 mm ²
Tightening torque	1 Nm
Ensured contacts during shake test acc. to IEC 68-2-6	5g, 20 frequency cycle at 24 VAC/DC, 5mA brief interrupt <10 ms
AC/DC supply	any EN 60715
Mounting on DIN top hat rail	EN 60715 IP20
Type of protection	IP20
Permissible ambient temperature for operations	-25...+60 °C; -13 °F... 140 °F
Storage temperature	-40...+70 °C; -40 °F... 158 °F
Mechanical device service life	6000 switching cycles
I_{cu} with S450E	1000 A
Resistance to vibration	IEC 60068-2-27; IEC 60068-2; EN 61373 Cat.1/class B

Undervoltage release S800-UVR

	S800-UVR36	S800-UVR60	S800-UVR130	S800-UVR250
Rated voltage U_e	24...36 VAC/DC	48...60 VAC/DC	110...130 VAC/DC	220...250 VAC/DC
Operating range				
Operating opening	35...70% U_e			
Operating closing	85% U_e			
Rated insulation voltage U_i	690 V			
Coil pull in consumption	1 W, 14 vA	1 W, 25 vA	1 W, 41 vA	1 W, 91 vA
Rated frequency	DC; 50/60 Hz			
Protection degree	3			
Connection Cu	1...35 cable			
Tightening torque	min.3/ max.4 Nm			
AC/DC supply	any			
DIN top hat rail	EN 60715			
Type of protection	IP20 IP40 (only actuation side)			
Permissible ambient temperature of operations	-25...+60 °C; -13 °F... 140 °F			
Storage temperature	-40...+70 °C; -40 °F... 158 °F			
Resistance to vibration	IEC 60068-2-27; IEC 60068-2; EN61373 Cat.1/class B			

Technical data

S800U & S800S

Accessories

Combined auxiliary and bell alarm

Usage category	AC15 400/2A-UL AC15 240/6A-UL DC13 250/0.55A125V/1.1A-IEC DC13 125V/1.1A-IEC DC13 60V/2A DC13 24V/4A
Continuous thermal current I_n	6 A
Rated insulation voltage U_i	690 V
Number of contacts	2 (1x AUX, 1 x AUX/ALT)
Surge U_{test} (1.2/50µs)	6 kV
Degree of protection	3
Function of contact	Changeover contacts
Connection Cu	1 x 2.5 mm ² 2 x 1.5 mm ²
Tightening torque	1 Nm
Ensured contacts during shake test	5g, 20 frequency cycle
acc. to IEC 68-2-6	5...150...5Hz at 24VAC/DC, 5mA brief interrupt <10ms
AC/DC supply	any EN 60715
Mounting on DIN top hat rail	EN 60715
Type of protection	IP20
Permissible ambient temperature for operations	-25 °C... 60 °C; -13 °F... 140 °F
Storage temperature	-40 °C... 70 °C; -40 °F... 150 °F
mech. Device service life	6000 switching cycles
I_{cu} with S450E	1000 A
Resistance to vibration	IEC 60068-2-27; IEC 60068-2; EN 61373 Cat.1/class B

Shunt operation release – S800-SOR

	S800-SOR24	S800-SOR130	S800-SOR250	S800-SOR400
Rated voltage U _e	24 VAC/DC	48...130 VAC/DC	110...250 VAC/DC	220...250
Operating range	70... 110% U _e			
Rated insulation voltage U _i	690 V			
Coil pull in consumption	19.2 W/vA	On request		
Rated frequency	DC; 50/60 Hz			
Degree of protection	3			
Connection Cu	1...35 AWG			
Tightening torque	min.3/ max.4 Nm			
AC/DC supply	any			
DIN top hat rail	EN 60715			
Type of protection	IP20; IP40 (only actuation side)			
Permissible ambient temperature of operations	-25 °C... 60 °C; -13 °F... 140 °F			
Storage temperature	-40 °C... 70 °C; -40 °F... 158 °F			
Resistance to vibration	IEC 60068-2-27; IEC 60068-2; EN61373 Cat.1/class B			

Technical data **Backup** **S800S - S200 @ 230/400 V**

S800
Miniature
circuit breakers

L.	Char.	E.		S800S							
				B, C, D, K							
		I _{cu} [kA]	I _n [A]	50							
				25	32	40	50	63	80	100	125
S200	B	6	6	50	50	50	50	50	50	50	50
			10	50	50	50	50	50	50	50	50
			13	50	50	50	50	50	50	50	50
			16	50	50	50	50	50	50	50	50
			20		50	50	50	50	50	50	50
			25			50	50	50	50	50	50
			32				50	50	50	50	50
			40					50	50	50	50
			50						50	50	50
			63							50	50

L.	Char.	E.		S800S							
				B, C, D, K							
		I _{cu} [kA]	I _n [A]	50							
				25	32	40	50	63	80	100	125
S200	C	6	0.5...6	50	50	50	50	50	50	50	50
			8	50	50	50	50	50	50	50	50
			10	50	50	50	50	50	50	50	50
			13	50	50	50	50	50	50	50	50
			16	50	50	50	50	50	50	50	50
			20		50	50	50	50	50	50	50
			25			50	50	50	50	50	50
			32				50	50	50	50	50
			40					50	50	50	50
			50						50	50	50
			63							50	50

L.	Char.	E.		S800S							
				B, C, D, K							
		I _{cu} [kA]	I _n [A]	50							
				25	32	40	50	63	80	100	125
S200P	B	25	6...16	50	50	50	50	50	50	50	50
			20		50	50	50	50	50	50	50
			25			50	50	50	50	50	50
			32				50	50	50	50	50
		15	40					50	50	50	50
			50						50	50	50
			63							50	50

L.	Char.	E.		S800S							
				B, C, D, K							
		I _{cu} [kA]	I _n [A]	50							
				25	32	40	50	63	80	100	125
S200P	C	25	0.5...16	50	50	50	50	50	50	50	50
			20		50	50	50	50	50	50	50
			25			50	50	50	50	50	50
			32				50	50	50	50	50
		15	40					50	50	50	50
			50						50	50	50
			63							50	50

LEGEND

E. = supply side
L. = load side
Back-up limit values are specified in kA

Technical data

Selectivity

S800S - S200 @ 230/400 V

L.	Char.	E.		S800S							
				B							
		I _{cu} [kA]		50							
		I _n [A]		25	32	40	50	63	80	100	125
S200	B	6	6			0.4	0.5	0.7	1	1.5	2.6
			10				0.4	0.6	0.7	1	1.4
			13					0.5	0.7	0.9	1.3
			16						0.7	0.9	1.3
			20							0.9	1.3
			25							0.9	1.3
			32							0.8	1.1
			40							0.8	1.1
			50								1
			63								0.9

L.	Char.	E.		S800S							
				B							
		I _{cu} [kA]		50							
		I _n [A]		25	32	40	50	63	80	100	125
S200	C	6	0.5	T	T	T	T	T	T	T	T
			1	3.3	T	T	T	T	T	T	T
			1.6	0.6	1.3	T	T	T	T	T	T
			2	0.4	0.7	1.3	T	T	T	T	T
			3		0.4	0.6	0.7	1.1	2.6	T	T
			4		0.4	0.6	0.7	1	1.7	3.1	T
			6			0.4	0.5	0.7	1	1.5	2.6
			8				0.4	0.6	0.7	1	1.4
			10				0.4	0.6	0.7	1	1.4
			13					0.5	0.7	0.9	1.3
			16						0.7	0.9	1.3
			20							0.9	1.3
			25							0.9	1.3
			32							0.8	1.1
			40							0.8	1.1
			50								1
			63								0.9

L.	Char.	E.		S800S							
				B							
		I _{cu} [kA]		50							
		I _n [A]		25	32	40	50	63	80	100	125
S200	D	6	0.5	T	T	T	T	T	T	T	T
			1	0.8	4.5	T	T	T	T	T	T
			1.6	0.5	1	2.3	T	T	T	T	T
			2	0.3	0.5	0.7	2.3	T	T	T	T
			3		0.4	0.5	0.7	1.2	2.5	T	T
			4		0.4	0.4	0.7	1	1.7	3	T
			6				0.6	0.8	1.2	2	3.6
			8					0.7	0.9	1.3	2
			10						0.9	1.3	2
			13							1	1.5
			16								1.5
			20								
			25								
			32								
			40								
			50								
			63								

L.	Char.	E.		S800S							
				B							
		I _{cu} [kA]		50							
		I _n [A]		25	32	40	50	63	80	100	125
S200	K	6	0.5	T	T	T	T	T	T	T	T
			1	0.8	5	T	T	T	T	T	T
			1.6	0.5	1	2.1	T	T	T	T	T
			2	0.3	0.5	0.7	2.1	T	T	T	T
			3		0.4	0.5	0.7	1.2	2.5	T	T
			4		0.4	0.4	0.7	1	1.7	3	T
			6				0.6	0.8	1.2	2	3.6
			8					0.7	0.9	1.3	2
			10						0.9	1.3	2
			13							1	1.5
			16								1.5
			20								
			25								
			32								
			40								
			50								
			63								

LEGEND

E. = supply side
L. = load side
Back-up limit values are specified in kA

Technical data **Selectivity** **S800S - S200 @ 230/400 V**

S800
Miniature
circuit breakers

L.	Char.	E.		S800S							
				C							
		I _{cu} [kA]		50							
S200	B	6	I _n [A]	25	32	40	50	63	80	100	125
			6		0.4	0.5	0.7	0.9	1.4	2.4	4.8
			10		0.3	0.4	0.5	0.7	0.9	1.3	2
			13		0.3	0.4	0.5	0.7	0.9	1.3	1.9
			16		0.3	0.4	0.5	0.7	0.9	1.3	1.9
			20			0.4	0.5	0.7	0.9	1.2	1.8
			25			0.4	0.5	0.7	0.9	1.2	1.8
			32				0.5	0.6	0.8	1	1.4
			40					0.6	0.8	1	1.4
			50						0.7	0.9	1.3
			63							0.9	1.2

L.	Char.	E.		S800S							
				C							
		I _{cu} [kA]		50							
S200	C	6	I _n [A]	25	32	40	50	63	80	100	125
			0.5	T	T	T	T	T	T	T	T
			1	T	T	T	T	T	T	T	T
			1.6	0.6	T	T	T	T	T	T	T
			2	0.5	1	T	T	T	T	T	T
			3	0.3	0.5	0.7	1.2	2.1	T	T	T
			4	0.3	0.4	0.7	1	1.5	2.6	T	T
			6		0.4	0.5	0.7	0.9	1.4	2.4	4.8
			8		0.3	0.4	0.5	0.7	0.9	1.3	2
			10		0.3	0.4	0.5	0.7	0.9	1.3	2
			13		0.3	0.4	0.5	0.7	0.9	1.3	1.9
			16		0.3	0.4	0.5	0.7	0.9	1.3	1.9
			20			0.4	0.5	0.7	0.9	1.2	1.8
			25			0.4	0.5	0.7	0.9	1.2	1.8
			32				0.5	0.6	0.8	1	1.4
			40					0.6	0.8	1	1.4
			50						0.7	0.9	1.3
			63							0.9	1.2

L.	Char.	E.		S800S							
				C							
		I _{cu} [kA]		50							
S200	D	6	I _n [A]	25	32	40	50	63	80	100	125
			0.5	T	T	T	T	T	T	T	T
			1	2.1	T	T	T	T	T	T	T
			1.6	0.8	2.3	T	T	T	T	T	T
			2	0.4	0.7	2.3	T	T	T	T	T
			3	0.3	0.5	0.7	1.2	2.2	T	T	T
			4	0.3	0.4	0.7	1	1.4	2.6	T	T
			6		0.4	0.6	0.8	1.1	1.8	3.2	T
			8			0.5	0.7	0.9	1.2	1.8	2.8
			10				0.7	0.9	1.2	1.8	2.8
			13					0.7	1	1.4	2
			16						1	1.4	2
			20							1	1.4
			25								1.4
			32								
			40								
			50								
			63								

L.	Char.	E.		S800S							
				C							
		I _{cu} [kA]		50							
S200	K	6	I _n [A]	25	32	40	50	63	80	100	125
			0.5	T	T	T	T	T	T	T	T
			1	2.1	T	T	T	T	T	T	T
			1.6	0.8	2.3	T	T	T	T	T	T
			2	0.4	0.7	2.3	T	T	T	T	T
			3	0.3	0.5	0.7	1.2	2.2	T	T	T
			4	0.3	0.4	0.7	1	1.4	2.6	T	T
			6		0.4	0.6	0.8	1.1	1.8	3.2	T
			8			0.5	0.7	0.9	1.2	1.8	2.8
			10				0.7	0.9	1.2	1.8	2.8
			13					0.7	1	1.4	2
			16						1	1.4	2
			20							1	1.4
			25								1.4
			32								
			40								
			50								
			63								

LEGEND

E. = supply side

L. = load side

Back-up limit values are specified in kA

Technical data

Selectivity

S800S - S200 @ 230/400 V

L.	Char.	E.		S800S							
				D							
		I _{cu} [kA]		50							
		I _n [A]	25	32	40	50	63	80	100	125	
S200	B	6	6	0.5	1	1.2	2	2.8	T	T	T
			10	0.4	0.6	0.8	1.1	1.4	2.8	3.9	T
			13	0.4	0.6	0.8	1.1	1.4	2.5	3.3	T
			16		0.6	0.8	1.1	1.4	2.5	3.3	5.6
			20			0.8	1.1	1.3	2.3	3	4.7
			25			0.8	1.1	1.3	2.3	3	4.7
			32				0.9	1.1	1.9	2.4	3.7
			40					1.1	1.9	2.4	3.7
			50						1.5	1.9	2.3
			63							1.7	2.3

L.	Char.	E.		S800S							
				D							
		I _{cu} [kA]		50							
		I _n [A]	25	32	40	50	63	80	100	125	
S200	C	6	0.5	T	T	T	T	T	T	T	T
			1	T	T	T	T	T	T	T	T
			1.6	T	T	T	T	T	T	T	T
			2	T	T	T	T	T	T	T	T
			3	0.7	2.2	4.4	T	T	T	T	T
			4	0.7	1.3	2.2	4.4	T	T	T	T
			6	0.5	1	1.2	2	2.8	T	T	T
			8	0.4	0.6	0.8	1.1	1.4	2.8	3.9	T
			10	0.4	0.6	0.8	1.1	1.4	2.8	3.9	T
			13	0.4	0.6	0.8	1.1	1.4	2.5	3.3	5.6
			16		0.6	0.8	1.1	1.4	2.5	3.3	5.6
			20			0.8	1.1	1.3	2.3	3	4.7
			25			0.8	1.1	1.3	2.3	3	4.7
			32				0.9	1.1	1.9	2.4	3.7
			40					1.1	1.9	2.4	3.7
			50						1.5	1.9	2.3
			63							1.7	2.3

L.	Char.	E.		S800S							
				D							
		I _{cu} [kA]		50							
		I _n [A]	25	32	40	50	63	80	100	125	
S200	D	6	0.5	T	T	T	T	T	T	T	T
			1	T	T	T	T	T	T	T	T
			1.6	T	T	T	T	T	T	T	T
			2	2.3	T	T	T	T	T	T	T
			3	0.7	1.3	4.4	T	T	T	T	T
			4	0.7	1	2.2	4.4	T	T	T	T
			6	0.6	0.8	1.5	2.5	3.6	T	T	T
			8	0.5	0.7	1.1	1.5	2	4	5.5	T
			10	0.5	0.7	1.1	1.5	2	4	5.5	T
			13		0.6	0.9	1.2	1.5	2.6	3.4	5.2
			16			0.9	1.2	1.5	2.6	3.4	5.2
			20				0.9	1.1	1.8	2.2	3.2
			25					1.1	1.8	2.2	3.2
			32						1.7	2	2.9
			40							1.9	2.6
			50								2.2
			63								

L.	Char.	E.		S800S							
				D							
		I _{cu} [kA]		50							
		I _n [A]	25	32	40	50	63	80	100	125	
S200	K	6	0.5	T	T	T	T	T	T	T	T
			1	T	T	T	T	T	T	T	T
			1.6	T	T	T	T	T	T	T	T
			2	2.3	T	T	T	T	T	T	T
			3	0.7	1.3	4.4	T	T	T	T	T
			4	0.7	1	2.2	4.4	T	T	T	T
			6	0.6	0.8	1.5	2.5	3.6	T	T	T
			8	0.5	0.7	1.1	1.5	2	4	5.5	T
			10	0.5	0.7	1.1	1.5	2	4	5.5	T
			13		0.6	0.9	1.2	1.5	2.6	3.4	5.2
			16			0.9	1.2	1.5	2.6	3.4	5.2
			20				0.9	1.1	1.8	2.2	3.2
			25					1.1	1.8	2.2	3.2
			32						1.7	2	2.9
			40							1.9	2.6
			50								2.2
			63								

LEGEND

E. = supply side
L. = load side
Back-up limit values are specified in kA

Technical data

Selectivity

S800S - S200 @ 230/400 V

S800
Miniature
circuit breakers

L.	Char.	E.		S800S							
				B							
		I _{cu} [kA]	I _n [A]	25	32	40	50	63	80	100	125
S200P	B	25	6			0.4	0.5	0.7	1	1.5	2.6
			10				0.4	0.6	0.7	1	1.4
			13					0.5	0.7	0.9	1.3
			16						0.7	0.9	1.3
			20							0.9	1.3
			25							0.9	1.3
		15	32							0.8	1.1
			40							0.8	1.1
			50								1
			63								0.9

L.	Char.	E.		S800S							
				C							
		I _{cu} [kA]	I _n [A]	25	32	40	50	63	80	100	125
S200P	B	25	6			0.4	0.5	0.7	1	1.5	2.6
			10				0.4	0.6	0.7	1	1.4
			13					0.5	0.7	0.9	1.3
			16						0.7	0.9	1.3
			20							0.9	1.3
			25							0.9	1.3
		15	32							0.8	1.1
			40							0.8	1.1
			50								1
			63								0.9

L.	Char.	E.		S800S							
				B							
		I _{cu} [kA]	I _n [A]	25	32	40	50	63	80	100	125
S200P	C	25	0.5	T	T	T	T	T	T	T	T
			1	3.3	T	T	T	T	T	T	T
			1.6	0.6	1.3	T	T	T	T	T	T
			2	0.4	0.7	1.2	T	T	T	T	T
			3			0.6	0.7	1.1	2.6	8.8	T
			4			0.6	0.7	1	1.7	3.1	7
			6			0.4	0.5	0.7	1	1.5	2.6
			8				0.4	0.6	0.7	1	1.4
			10				0.4	0.6	0.7	1	1.4
			13					0.5	0.7	0.9	1.3
			16						0.7	0.9	1.3
			20							0.9	1.3
			25							0.9	1.3
		15	32							0.8	1.1
			40							0.8	1.1
			50								1
			63								0.9

L.	Char.	E.		S800S							
				C							
		I _{cu} [kA]	I _n [A]	25	32	40	50	63	80	100	125
S200P	C	25	0.5	T	T	T	T	T	T	T	T
			1	3.3	T	T	T	T	T	T	T
			1.6	0.6	1.3	T	T	T	T	T	T
			2	0.4	0.7	1.3	T	T	T	T	T
			3			0.4	0.6	0.7	1.1	2.6	8.8
			4			0.4	0.6	0.7	1	1.7	3.1
			6				0.4	0.5	0.7	1	1.5
			8					0.4	0.6	0.7	1
			10					0.4	0.6	0.7	1
			13						0.5	0.7	0.9
			16							0.7	0.9
			20								0.9
			25								0.9
		15	32							0.8	1.1
			40							0.8	1.1
			50								1
			63								0.9

L.	Char.	E.		S800S							
				B							
		I _{cu} [kA]	I _n [A]	25	32	40	50	63	80	100	125
S200P	K	25	0.2	T	T	T	T	T	T	T	T
			0.3	T	T	T	T	T	T	T	T
			0.5	T	T	T	T	T	T	T	T
			0.75	T	T	T	T	T	T	T	T
			1	0.8	5	T	T	T	T	T	T
			1.6	0.5	1	2.3	T	T	T	T	T
			2	0.3	0.5	0.7	2.1	T	T	T	T
			3		0.4	0.5	0.7	1.2	2.5	8.6	T
			4			0.4	0.7	1	1.7	3	7.7
			6				0.6	0.8	1.2	2	3.6
			8					0.7	0.9	1.3	2
			10						0.9	1.3	2
			13							1	1.5
			16								1.5
			20								
			25								
		15	32								
			40								
			50								
			63								

L.	Char.	E.		S800S							
				C							
		I _{cu} [kA]	I _n [A]	25	32	40	50	63	80	100	125
S200P	K	25	0.2	T	T	T	T	T	T	T	T
			0.3	T	T	T	T	T	T	T	T
			0.5	T	T	T	T	T	T	T	T
			0.75	T	T	T	T	T	T	T	T
			1	0.8	5	T	T	T	T	T	T
			1.6	0.5	1	2.3	T	T	T	T	T
			2	0.3	0.5	0.7	2.3	T	T	T	T
			3		0.4	0.5	0.7	1.2	2.5	8.6	T
			4			0.4	0.7	1	1.7	3	7.7
			6				0.6	0.8	1.2	2	3.6
			8					0.7	0.9	1.3	2
			10						0.9	1.3	2
			13							1	1.5
			16								1.5
			20								
			25								
		15	32								
			40								
			50								
			63								

LEGEND

E. = supply side

L. = load side

Back-up limit values are specified in kA

Technical data

Selectivity

S800S - S200P @ 230/400 V

L.	Char.	E.		S800S							
				D							
		I _{cu} [kA]		50							
		I _n [A]		25	32	40	50	63	80	100	125
S200P	B	25	6	0.5	1	1.2	2	2.8	9.9	21.3	T
			10	0.4	0.6	0.8	1.1	1.4	2.8	3.9	7.4
			13	0.4	0.6	0.8	1.1	1.4	2.5	3.3	5.6
			16		0.6	0.8	1.1	1.4	2.5	3.3	5.6
			20			0.8	1.1	1.3	2.3	3	4.7
			25			0.8	1.1	1.3	2.3	3	4.7
		15	32				0.9	1.1	1.9	2.4	3.7
			40					1.1	1.9	2.4	3.7
			50						1.5	1.9	2.3
			63							1.7	2.3

L.	Char.	E.		S800S							
				D							
		I _{cu} [kA]		50							
		I _n [A]		25	32	40	50	63	80	100	125
S200P	C	25	0.5	T	T	T	T	T	T	T	T
			1	T	T	T	T	T	T	T	T
			1.6	T	T	T	T	T	T	T	T
			2	T	T	T	T	T	T	T	T
			3	0.7	2.2	4.4	T	T	T	T	T
			4	0.7	1.3	2.2	4.4	7.7	T	T	T
			6	0.5	1	1.2	2	2.8	9.9	22	T
			8	0.4	0.6	0.8	1.1	1.4	2.8	3.9	7.4
			10	0.4	0.6	0.8	1.1	1.4	2.8	3.9	7.4
			13	0.4	0.6	0.8	1.1	1.4	2.5	3.3	5.6
			16		0.6	0.8	1.1	1.4	2.5	3.3	5.6
			20			0.8	1.1	1.3	2.3	3	4.7
			25			0.8	1.1	1.3	2.3	3	4.7
		15	32				0.9	1.1	1.9	2.4	3.7
			40					1.1	1.9	2.4	3.7
			50						1.5	1.9	2.3
			63							1.7	2.3

L.	Char.	E.		S800S							
				D							
		I _{cu} [kA]		50							
		I _n [A]		25	32	40	50	63	80	100	125
S200P	K	25	0.2	T	T	T	T	T	T	T	T
			0.3	T	T	T	T	T	T	T	T
			0.5	T	T	T	T	T	T	T	T
			0.75	T	T	T	T	T	T	T	T
			1	T	T	T	T	T	T	T	T
			1.6	T	T	T	T	T	T	T	T
		15	2	2.3	T	T	T	T	T	T	T
			3	0.7	1.3	4.4	T	T	T	T	T
			4	0.7	1	2.2	4.4	7.7	T	T	T
			6	0.6	0.8	1.5	2.5	3.6	12.1	24.2	T
			8	0.5	0.7	1.1	1.5	2	4	5.5	9.9
			10	0.5	0.7	1.1	1.5	2	4	5.5	9.9
			13		0.6	0.9	1.2	1.5	2.6	3.4	5.2
			16			0.9	1.2	1.5	2.6	3.4	5.2
			20				0.9	1.1	1.8	2.2	3.2
			25						1.8	2.2	3.2
			32						1.7	2	2.9
			40							1.9	2.6
			50								2.2
			63								

LEGEND

E. = supply side

L. = load side

Back-up limit values are specified in kA

Technical data

Selectivity

S800S - S280 @ 230/400 V

S800
Miniature
circuit breakers

L.	Char.	E.		S800S							
				B, C, D, K							
		I _{cu} [kA]	I _n [A]	50							
S280	B	10	6	50	50	50	50	50	50	50	50
			10	50	50	50	25	20	16	16	16
			13	50	50	50	25	20	16	16	16
		25	16	50	50	50	25	20	16	16	16
			20		50	50	25	20	16	16	16
			25			50	25	20	16	16	16
			32				25	20	16	16	16
		15	40					20	16	16	16
			50						16	16	16
		10	63							16	16

L.	Char.	E.		S800S							
				B, C, D, K							
		I _{cu} [kA]	I _n [A]	50							
S400E	B	6	6	50	50	50	50	50	50	50	50
			10	50	50	50	50	50	50	50	50
			13	50	50	50	50	50	50	50	50
			16	50	50	50	50	50	50	50	50
			20		50	50	50	50	50	50	50
			25			50	50	50	50	50	50
			32				50	50	50	50	50
			40					50	50	50	50
			50						50	50	50
			63							50	50

L.	Char.	E.		S800S							
				B, C, D, K							
		I _{cu} [kA]	I _n [A]	50							
S280	C	10	3	50	50	50	50	50	50	50	50
			4	50	50	50	50	50	50	50	50
			6	50	50	50	50	50	50	50	50
			8	50	50	50	25	20	16	16	16
		25	10	50	50	50	25	20	16	16	16
			13	50	50	50	25	20	16	16	16
			16	50	50	50	25	20	16	16	16
			20		50	50	25	20	16	16	16
			25			50	25	20	16	16	16
			32				25	20	16	16	16
		15	40					20	16	16	16
			50						16	16	16
		10	63							16	16

L.	Char.	E.		S800S							
				B, C, D, K							
		I _{cu} [kA]	I _n [A]	50							
S400E	C	6	0.5...6	50	50	50	50	50	50	50	50
			8	50	50	50	50	50	50	50	50
			10	50	50	50	50	50	50	50	50
			13	50	50	50	50	50	50	50	50
			16	50	50	50	50	50	50	50	50
			20		50	50	50	50	50	50	50
			25			50	50	50	50	50	50
			32				50	50	50	50	50
			40					50	50	50	50
			50						50	50	50
			63							50	50

L.	Char.	E.		S800S							
				B, C, D, K							
		I _{cu} [kA]	I _n [A]	50							
S280	K, Z	10	3	50	50	50	50	50	50	50	50
			4	50	50	50	50	50	50	50	50
			6	50	50	50	50	50	50	50	50
			8	50	50	50	25	20	16	16	16
		25	10	50	50	50	25	20	16	16	16
			13	50	50	50	25	20	16	16	16
			16	50	50	50	25	20	16	16	16
			20		50	50	25	20	16	16	16
			25			50	25	20	16	16	16
		15	32				25	20	16	16	16
			40					20	16	16	16
		10	50						16	16	16
			63							16	16

LEGEND

E. = supply side

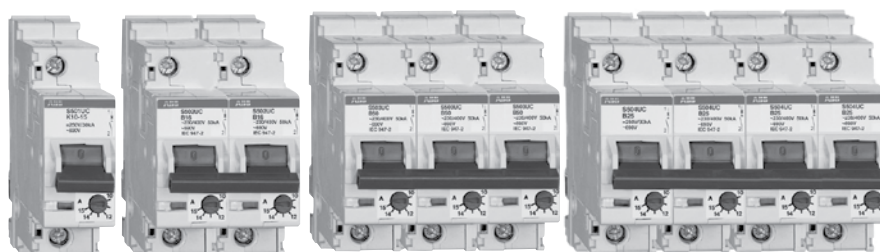
L. = load side

Back-up limit values are specified in kA

S500 Miniature Circuit Breakers



S500 Series
UL 1077



Description

The S500 high performance MCB offers a compact solution to circuit protection. The S500 devices are UL tested current limiting and DIN rail mounted. The S500 is available with application-specific trip characteristics to provide maximum circuit protection.

The breakers offer thermal-magnetic trip protection according to B and K characteristics.

For the worldwide market, the breakers carry CSA, IEC, CE and many other agency approvals.

Features

- High breaking capacity
- Fast breaking time (2.3 - 2.5 ms)
- Adjustable trip unit
- DIN rail mounting
- Finger safe terminals
- Multi-functional terminals
- Wide range of accessories
- UL 1077 recognized 600 VAC and 600 VDC versions
- UL1077 AC adjustable K
- UL1077 DC adjustable B, K
- UL File # E167556
- IEC #E60497-2

	S500	S500UC
Amperage	0.1 – 45 A	0.1 – 63 A
Voltage	UL: 600Y/277 VAC IEC: 690 VAC	UL: 250 VDC per pole (750 VDC for 4P) IEC: 250 VDC per pole (750 VDC for 4P)
Poles	1, 2, 3	1, 2, 3, 4
Trip characteristics	K	B, K
Interrupting ratings	Up to 30 kA: UL 1077 Up to 30 kA: CSA C22.2	30 kA: UL 1077 30 kA: CSA C22.2
Auxiliary contacts	Yes	Yes
Bell alarm	Yes	Yes
Shunt trip	No	No
Undervoltage release	No	No
Bus bar	Yes	Yes

S500-K, UL 600Y/277 VAC / IEC 690 VAC

Supplemental protection

UL 1077, CSA 22.2, IEC

K



S501-K



S502-K



S503-K

No. of poles	Rated current	Catalog number	List price	No. of poles	Rated current	Catalog number	List price
1	0.1 – 0.15	S501-K0.15	\$ 186	3	0.1 – 0.15	S503-K0.15	\$ 518
	0.14 – 0.21	S501-K0.21			0.14 – 0.21	S503-K0.21	
	0.2 – 0.3	S501-K0.3			0.2 – 0.3	S503-K0.3	
	0.28 – 0.42	S501-K0.42			0.28 – 0.42	S503-K0.42	
	0.38 – 0.58	S501-K0.58			0.38 – 0.58	S503-K0.58	
	0.53 – 0.8	S501-K0.8			0.53 – 0.8	S503-K0.8	
	0.73 – 1.1	S501-K1.1			0.73 – 1.1	S503-K1.1	
	1 – 1.5	S501-K1.5			1 – 1.5	S503-K1.5	
	1.4 – 2.1	S501-K2.1			1.4 – 2.1	S503-K2.1	
	2 – 3	S501-K3			2 – 3	S503-K3	
	2.8 – 4.2	S501-K4.2			2.8 – 4.2	S503-K4.2	
	3.8 – 5.8	S501-K5.8			3.8 – 5.8	S503-K5.8	
	5.3 – 8	S501-K8			5.3 – 8	S503-K8	
	7.3 – 11	S501-K11			7.3 – 11	S503-K11	
	10 – 15	S501-K15			10 – 15	S503-K15	
	14 – 20	S501-K20			14 – 20	S503-K20	
	18 – 26	S501-K26			18 – 26	S503-K26	
2	0.1 – 0.15	S502-K0.15	370	3	0.1 – 0.15	S503-K0.15	\$ 518
	0.14 – 0.21	S502-K0.21			0.14 – 0.21	S503-K0.21	
	0.2 – 0.3	S502-K0.3			0.2 – 0.3	S503-K0.3	
	0.28 – 0.42	S502-K0.42			0.28 – 0.42	S503-K0.42	
	0.38 – 0.58	S502-K0.58			0.38 – 0.58	S503-K0.58	
	0.53 – 0.8	S502-K0.8			0.53 – 0.8	S503-K0.8	
	0.73 – 1.1	S502-K1.1			0.73 – 1.1	S503-K1.1	
	1 – 1.5	S502-K1.5			1 – 1.5	S503-K1.5	
	1.4 – 2.1	S502-K2.1			1.4 – 2.1	S503-K2.1	
	2 – 3	S502-K3			2 – 3	S503-K3	
	2.8 – 4.2	S502-K4.2			2.8 – 4.2	S503-K4.2	
	3.8 – 5.8	S502-K5.8			3.8 – 5.8	S503-K5.8	
	5.3 – 8	S502-K8			5.3 – 8	S503-K8	
	7.3 – 11	S502-K11			7.3 – 11	S503-K11	
	10 – 15	S502-K15			10 – 15	S503-K15	
	14 – 20	S502-K20			14 – 20	S503-K20	
	18 – 26	S502-K26			18 – 26	S503-K26	
	23 – 32	S502-K32			23 – 32	S503-K32	
	29 – 37	S502-K37			29 – 37	S503-K37	
	34 – 41	S502-K41			34 – 41	S503-K41	
	38 – 45	S502-K45			38 – 45	S503-K45	

Tripping characteristic K

UL 1077	IEC
600 VAC	690 VAC
Up to 30 kA	Up to 30 kA

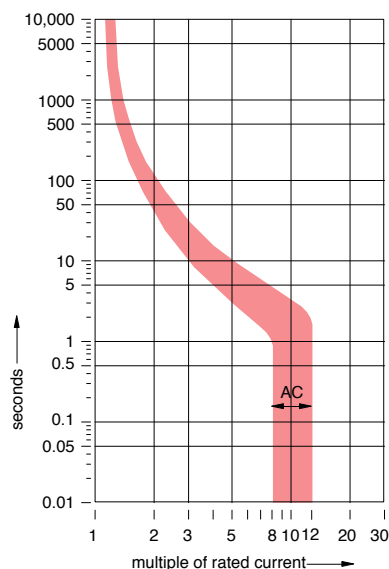
Inductive loads

- K Curve
- Designed for allowing higher in-rush currents during system start up
- Example: motors, transformers

Accessories & technical data

Accessories – See page 71

Technical data – See page 76 - 82



S500UC-B, 250 VDC per pole (750 VDC 4P), UL/IEC Supplemental protectors UL1077, CSA 22.2, IEC

Miniature
circuit breakers

B



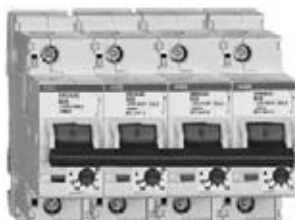
S501UC-B



S502UC-B



S503UC-B



S504UC-B

No. of poles	Rated current	Catalog number	List price	No. of poles	Rated current	Catalog number	List price
1	6	S501UC-B6	\$ 310	3	6	S503UC-B6	\$ 880
	10	S501UC-B10			10	S503UC-B10	
	13	S501UC-B13			13	S503UC-B13	
	16	S501UC-B16			16	S503UC-B16	
	20	S501UC-B20			20	S503UC-B20	
	25	S501UC-B25			25	S503UC-B25	
	32	S501UC-B32			32	S503UC-B32	
	40	S501UC-B40			40	S503UC-B40	
2	50	S501UC-B50	600	4	50	S503UC-B50	1,250
	63	S501UC-B63			63	S503UC-B63	
	6	S502UC-B6			6	S504UC-B6	
	10	S502UC-B10			10	S504UC-B10	
	13	S502UC-B13			13	S504UC-B13	
	16	S502UC-B16			16	S504UC-B16	
	20	S502UC-B20			20	S504UC-B20	
	25	S502UC-B25			25	S504UC-B25	
	32	S502UC-B32			32	S504UC-B32	
	40	S502UC-B40			40	S504UC-B40	
	50	S502UC-B50			50	S504UC-B50	
	63	S502UC-B63			63	S504UC-B63	

Tripping characteristic B

UL 1077	IEC
250 VDC per pole (750 VDC 4P)	250 VDC per pole (750 VDC 4P)
30 kA	30 kA

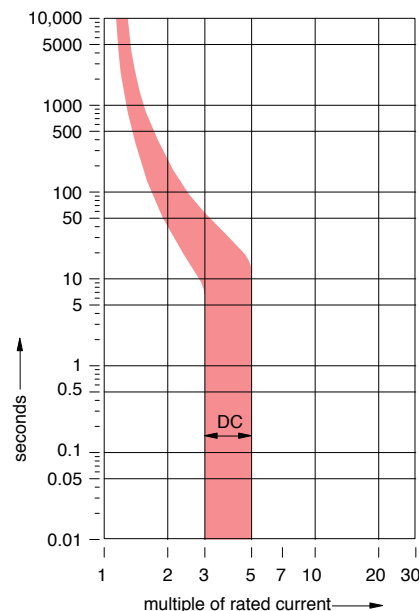
Inductive loads

- B Curve
- Designed for allowing higher in-rush currents during system start up
- Example: motors, transformers

Accessories & technical data

Accessories – See page 71

Technical data – See page 76 - 82



S500UC-K, 250 VDC per pole (750 VDC 4P), UL/IEC

Supplemental protectors

UL1077, CSA 22.2, IEC

K



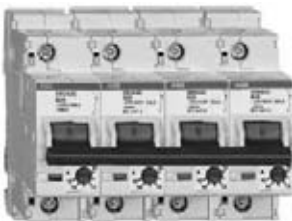
S501UC-K



S502UC-K



S503UC-K



S504UC-K

No. of poles	Rated current	Catalog number	List price	No. of poles	Rated current	Catalog number	List price
1	0.1 – 0.15	S501UC-K0.15	\$ 270	3	0.1 – 0.15	S503UC-K0.15	\$ 760
	0.14 – 0.21	S501UC-K0.21			0.14 – 0.21	S503UC-K0.21	
	0.2 – 0.3	S501UC-K0.3			0.2 – 0.3	S503UC-K0.3	
	0.28 – 0.42	S501UC-K0.42			0.28 – 0.42	S503UC-K0.42	
	0.38 – 0.58	S501UC-K0.58			0.38 – 0.58	S503UC-K0.58	
	0.53 – 0.8	S501UC-K0.8			0.53 – 0.8	S503UC-K0.8	
	0.73 – 1.1	S501UC-K1.1			0.73 – 1.1	S503UC-K1.1	
	1 – 1.5	S501UC-K1.5			1 – 1.5	S503UC-K1.5	
	1.4 – 2.1	S501UC-K2.1			1.4 – 2.1	S503UC-K2.1	
	2 – 3	S501UC-K3			2 – 3	S503UC-K3	
	2.8 – 4.2	S501UC-K4.2			2.8 – 4.2	S503UC-K4.2	
	3.8 – 5.8	S501UC-K5.8			3.8 – 5.8	S503UC-K5.8	
	5.3 – 8	S501UC-K8			5.3 – 8	S503UC-K8	
	7.3 – 11	S501UC-K11			7.3 – 11	S503UC-K11	
	10 – 15	S501UC-K15			10 – 15	S503UC-K15	
	14 – 20	S501UC-K20			14 – 20	S503UC-K20	
	18 – 26	S501UC-K26			18 – 26	S503UC-K26	
	23 – 32	S501UC-K32			23 – 32	S503UC-K32	
	29 – 37	S501UC-K37			29 – 37	S503UC-K37	
	34 – 41	S501UC-K41			34 – 41	S503UC-K41	
	38 – 45	S501UC-K45			38 – 45	S503UC-K45	
2	0.1 – 0.15	S502UC-K0.15	520	4	0.1 – 0.15	S504UC-K0.15	1,070
	0.14 – 0.21	S502UC-K0.21			0.14 – 0.21	S504UC-K0.21	
	0.2 – 0.3	S502UC-K0.3			0.2 – 0.3	S504UC-K0.3	
	0.28 – 0.42	S502UC-K0.42			0.28 – 0.42	S504UC-K0.42	
	0.38 – 0.58	S502UC-K0.58			0.38 – 0.58	S504UC-K0.58	
	0.53 – 0.8	S502UC-K0.8			0.53 – 0.8	S504UC-K0.8	
	0.73 – 1.1	S502UC-K1.1			0.73 – 1.1	S504UC-K1.1	
	1 – 1.5	S502UC-K1.5			1 – 1.5	S504UC-K1.5	
	1.4 – 2.1	S502UC-K2.1			1.4 – 2.1	S504UC-K2.1	
	2 – 3	S502UC-K3			2 – 3	S504UC-K3	
	2.8 – 4.2	S502UC-K4.2			2.8 – 4.2	S504UC-K4.2	
	3.8 – 5.8	S502UC-K5.8			3.8 – 5.8	S504UC-K5.8	
	5.3 – 8	S502UC-K8			5.3 – 8	S504UC-K8	
	7.3 – 11	S502UC-K11			7.3 – 11	S504UC-K11	
	10 – 15	S502UC-K15			10 – 15	S504UC-K15	
	14 – 20	S502UC-K20			14 – 20	S504UC-K20	
	18 – 26	S502UC-K26			18 – 26	S504UC-K26	
	23 – 32	S502UC-K32			23 – 32	S504UC-K32	
	29 – 37	S502UC-K37			29 – 37	S504UC-K37	
	34 – 41	S502UC-K41			34 – 41	S504UC-K41	
	38 – 45	S502UC-K45			38 – 45	S504UC-K45	

Tripping characteristic K

UL 1077	IEC
250 VDC per pole (750 VDC 4P)	250 VDC per pole (750 VDC 4P)
30 kA	30 kA

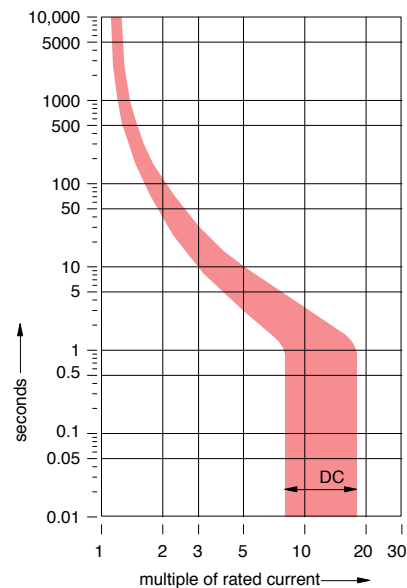
Inductive loads

- K Curve
- Designed for allowing higher in-rush currents during system start up
- Example: motors, transformers

Accessories & technical data

Accessories – See page 71

Technical data – See page 76 - 82



Accessories S500 UL1077

Miniature
circuit breakers



S500-H11

Auxiliary contacts

The auxiliary contacts will signal whether the breaker is in the ON or OFF position.

Description	Catalog number	List price
For field mounting: left side		
1 N.O./1 N.C.	S500-H11	\$ 84
2 N.O.	S500-H20	84
2 N.C.	S500-H02	84

Bell alarm

The bell alarm includes a set of contacts that will only signal when the breaker has tripped.

Typically the contacts would be connected to an alarm or bell to signal the operator that an overcurrent trip has occurred. The bell alarm also includes a test button for testing the alarm contacts without opening the breaker.

Description	Catalog number	List price
For field mounting: left side		
1 N.O./1 N.C.	S500-S11	\$ 92
2 N.O.	S500-S20	92
2 N.C.	S500-S02	92

Handle mechanism

Description	Catalog number	List price
Handle mechanism	S500-RD3	\$ 80

For use with 1-4 pole S500 MCBs and disconnect switch selector handles with 5mm shafts.

Power feed terminal - Accepts into 2/0 AWG

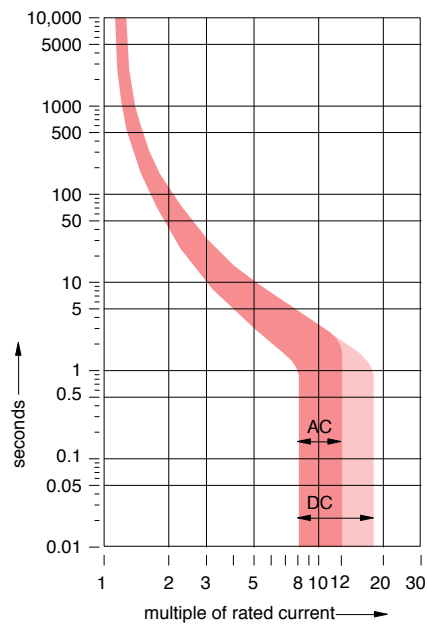
Description	Catalog number	List price
Power feed terminal	S500-K2	\$ 25

Technical data

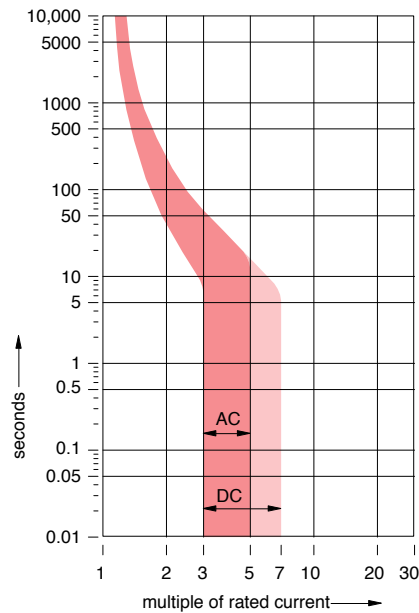
S500-K & S500UC-B, K

Technical data	S500-K	S500UC-B, K
Approvals		
UL	1077	1077
CSA	C22.2 - No. 235	C22.2
Number of poles	1, 2, 3, +N, +NA	1, 2, 3, 4
Tripping characteristic	K	B, K
Rated currents	0.1 to 45 A	B: 6 - 63 A; K: 0.15 - 45 A
Rated voltage	480Y/277 VAC, 600Y/346 VAC	250 VDC per pole (750 VDC 4 pole)
Frequency	50/60 Hz	50/60 Hz
Mounting position	vertical, horizontal	vertical, horizontal
Standard mounting	35mm DIN rail	35mm DIN rail
Clamps only for CU	16 - 4 AWG	16 - 4 AWG
Service life, mechanical at rated load	20,000	20,000
Ambient temperature	40°C... 104°F	40°C... 104°F

Tripping characteristic K



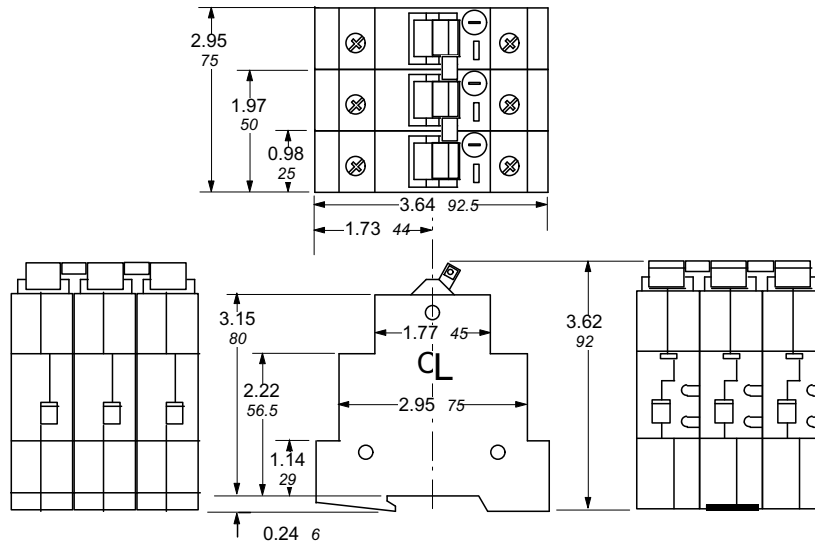
Tripping characteristic B



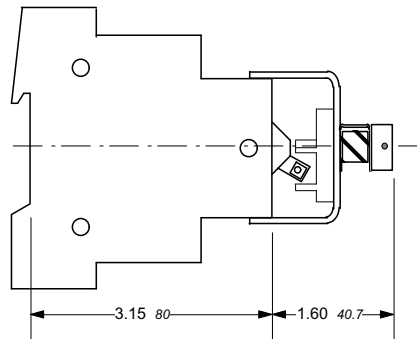
Approximate dimensions S500 & Accessories

Miniature
circuit breakers

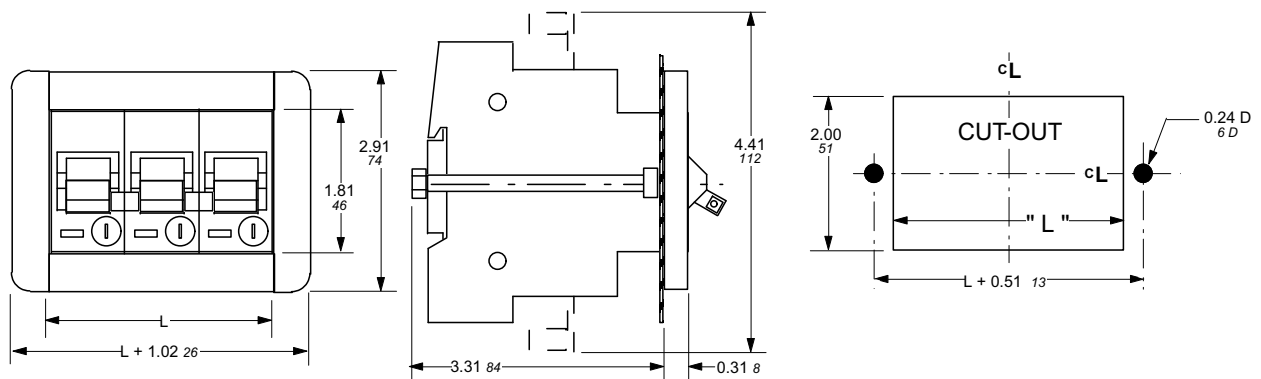
S500



S500-RD3 Handle mechanism



S500 Front mounting kit



Miniature circuit breakers Technical data



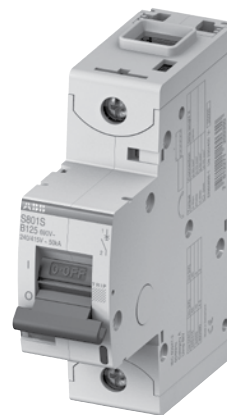
Miniature circuit breakers Technical data



S201UP-K



S201-B



S801U-B



S501-K

S200

UL489

S200U-K	15.76
S200U-Z	15.76
S200UP-K	15.76
S200UP-Z	15.76
S201DC-K	15.77
S201DC-Z	15.77

UL1077

S200-B	15.77
S200-C, D	15.77
S200-K	15.78
S200P-K	15.78
S200P-Z	15.78
S280W-K	15.78
S280UC-K	15.79
S280UC-Z	15.79
S280U-Z	15.79
S290-C	15.79

S800

UL489

S800U-K	15.80
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IEC

S800S-B	15.80
S800S-C	15.80
S800S-D	15.80
S800S-K	15.81

S500

UL1077

S500UC-B, K	15.82
S500-K	15.82

Technical data

S200U-K, S200U-Z, S200UP-K, S200UP-Z

Item	S200U-K	S200U-Z	S200UP-K	S200UP-Z
Approvals:				
UL	489	489	489	489
CSA	C22.2 No. 5	C22.2 No. 5	C22.2 No. 5	C22.2 No. 5
VDE	0660	0660	0660	0660
IEC	898, 60947-2	898, 60947-2	898, 60947-2	898
Number of Poles:	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4
Tripping Characteristic:	K	Z	K	Z
Rated Currents:	0.2 to 63A	0.2 to 63A	0.2 to 25A	0.2 to 25A
Minimum Operating Voltage:	12V	12V	12V	12V
UL/CSA Rated Voltage & Interrupting Capacity:				
Frequency:	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
120VAC	10kA	10kA	10kA	10kA
240 VAC	10kA	10kA	10kA	10kA
277 VAC	—	—	10kA	10kA
277/480 VAC	—	—	10kA	10kA
60VDC	15kA	15kA	15kA	15kA
125VDC	15kA	15kA	15kA	15kA
250VDC	—	—	—	—
500VDC	—	—	—	—
IEC Rated Voltage				
Frequency:	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Rated Voltage				
IEC Single Pole	240/415VAC, 220VDC	240/415VAC, 60VDC	240/415VAC, 220VDC	240/415VAC, 220VDC
IEC Multi-Pole	415VAC, 440VDC	415VAC, 110VDC	415VAC, 440VDC	415VAC, 440VDC
Production Category:	IP20	IP20	IP20	IP20
Depth of Unit Per DIN 43880:	68mm/ 2.68 in.	68mm/ 2.68 in.	68mm/ 2.68 in.	68mm/ 2.68 in.
Mounting Position:	Vertical / horizontal	Vertical / horizontal	Vertical / horizontal	Vertical / horizontal
Standard Mounting:	35mm DIN rail	35mm DIN rail	35mm DIN rail	35mm DIN rail
Main and Shunt Trip Terminals:				
Wire Size	18-4 AWG/.82-21.2mm ²	18-4 AWG/.82-21.2mm ²	18-4 AWG/.82-21.2mm ²	18-4 AWG/.82-21.2mm ²
Torque	17.5 in-lbs. / 1.978 Nm	17.5 in-lbs. / 1.978 Nm	17.5 in-lbs. / 1.978 Nm	17.5 in-lbs. / 1.978 Nm
Tool	# 2 Posidrive	# 2 Posidrive	# 2 Posidrive	# 2 Posidrive
Accessory Terminals				
Wire Size	18-16 AWG/.82-1.3mm ²	18-16 AWG/.82-1.3mm ²	18-16 AWG/.82-1.3mm ²	18-16 AWG/.82-1.3mm ²
Torque	4.5 in-lbs./ .51nm	4.5 in-lbs./ .51nm	4.5 in-lbs./ .51nm	4.5 in-lbs./ .51nm
Tool	# 1 Posidrive	# 1 Posidrive	# 1 Posidrive	# 1 Posidrive
Service Life at Rated Load:	No Load 20,000 operations	No Load 20,000 operations Full Load 10,000 operations	No Load 20,000 operations Full Load 10,000 operations	No Load 20,000 operations Full Load 10,000 operations
Ambient Temperatures:				
Minimum	-25°C... -13°F	-25°C... -13°F	-25°C... -13°F	-25°C... -13°F
Maximum	70°C... 158°F	70°C... 158°F	70°C... 158°F	70°C... 158°F
Storage Temperatures:				
Minimum	-40°C... -40°F	-40°C... -40°F	-40°C... -40°F	-40°C... -40°F
Maximum	70°C... 158°F	70°C... 158°F	70°C... 158°F	70°C... 158°F
Shock Resistance:	30g minimum of 2 impacts, shock duration of 13ms	30g minimum of 2 impacts, shock duration of 13ms	30g minimum of 2 impacts, shock duration of 13ms	30g minimum of 2 impacts, shock duration of 13ms
Vibration Resistance:	5g, 20 cycles, 5 Hz, 150 Hz	5g, 20 cycles, 5 Hz, 150 Hz	5g, 20 cycles, 5 Hz, 150 Hz @ 0.8 ~ 1n	5g, 20 cycles, 5 Hz, 150 Hz @ 0.8 ~ 1n
Disconnecting Neutral Rating:	—	—	—	—

Technical data

S201DC-K, S201DC-Z, S200-B, S200-C,D

MCB
Technical data

Item	S201DC-K	S201DC-Z	S200-B	S200-C, D
Approvals:				
UL	489	489	1077	1077
CSA	—	—	C22.2 No. 235	C22.2 No. 235
VDE	0660	0660	0641, 0660	0660
IEC	—	—	898, 60947-2	898, 60947-2
Number of Poles:	1	1	1,2,3,4, 1+N, 3+N	1,2,3, 1+N, 3+N
Tripping Characteristic:	K	Z	B	C, D
Rated Currents:	1 to 25A	1 to 25A	6 to 63A	0.5 to 63A
Minimum Operating Voltage:	—	—	12V	12V
UL/CSA Rated Voltage & Interrupting Capacity:			Single pole Multi pole	Single pole Multi pole
Frequency:	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
120VAC	—	—	10 kA —	10 kA —
240 VAC	—	—	6 kA 10 kA	6 kA 10 kA
277 VAC	—	—	6 kA —	6 kA —
277/480 VAC	—	—	— 6 kA	— 6 kA
60VDC	10 kA	10 kA	10 kA 10 kA	10 kA 10 kA
125VDC	—	—	10 kA 10 kA	10 kA 10 kA
250VDC	—	—	— —	— —
500VDC	—	—	— —	— —
IEC Rated Voltage				
Frequency:	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Rated Voltage	—	—	240/415 VAC, 60 VDC	240/415 VAC, 60 VDC
IEC Single Pole	—	—	415 VAC, 110 VDC	415 VAC, 110 VDC
IEC Multi-Pole	—	—	—	—
Production Category:	IP20	IP20	IP20	IP20
Depth of Unit Per DIN 43880:	68mm/ 2.68 in.	68mm/ 2.68 in.	68mm/ 2.68 in.	68mm/ 2.68 in.
Mounting Position:	Vertical / horizontal	Vertical / horizontal	Vertical / horizontal	Vertical / horizontal
Standard Mounting:	35mm DIN rail	35mm DIN rail	35mm DIN rail	35mm DIN rail
Main and Shunt Trip Terminals:				
Wire Size	18-4 AWG/.82-21.2 mm ²	18-4 AWG/.82-21.2 mm ²	18-4 AWG/.82-21.2 mm ²	18-4 AWG/.82-21.2 mm ²
Torque	17.5 in.-lbs. / 1.978 Nm	17.5 in.-lbs. / 1.978 Nm	17.5 in.-lbs. / 1.978 Nm	17.5 in.-lbs. / 1.978 Nm
Tool	# 2 Posidrive	# 2 Posidrive	# 2 Posidrive	# 2 Posidrive
Accessory Terminals				
Wire Size	—	—	18-16 AWG/.82-1.3 mm ²	18-16 AWG/.82-1.3 mm ²
Torque	—	—	4.5 in.-lbs./ .51 Nm	4.5 in.-lbs./ .51 Nm
Tool	—	—	# 1 Posidrive	# 1 Posidrive
Service Life at Rated Load:	Full Load 10,000 operations	Full Load 10,000 operations	No Load 20,000 operations Full Load 10,000 operations	No Load 20,000 operations Full Load 10,000 operations
Ambient Temperatures:				
Minimum	-25°C... -13°F	-25°C... -13°F	-25°C... -13°F	-25°C... -13°F
Maximum	70°C... 158°F	70°C... 158°F	70°C... 158°F	70°C... 158°F
Storage Temperatures:				
Minimum	-40°C... -40°F	-40°C... -40°F	-40°C... -40°F	-40°C... -40°F
Maximum	70°C... 158°F	70°C... 158°F	70°C... 158°F	70°C... 158°F
Shock Resistance:	30g minimum of 2 impacts, shock duration of 13 ms	30g minimum of 2 impacts, shock duration of 13 ms	30g minimum of 2 impacts, shock duration of 13 ms	30g minimum of 2 impacts, shock duration of 13 ms
Vibration Resistance:	5g, 20 cycles, 5 Hz, 150 Hz	5g, 20 cycles, 5 Hz, 150 Hz	5g, 20 cycles, 5 Hz, 150 Hz	5g, 20 cycles, 5 Hz, 150 Hz
Disconnecting Neutral Rating:	6 kA switching	6 kA switching	6 kA switching	6 kA switching

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Technical data

S200-K, S200P-K, S200P-Z, S280W-K

Item	S200-K	S200P-K	S200P-Z	S280W-K
Approvals:				
UL	1077	1077	1077	1077
CSA	C22.2 No. 235	—	—	C22.2 No. 235
VDE	0660	0660	0660	0660
IEC	898, 60947-2	898, 60947-2	898, 60947-2	—
Number of Poles:	1,2,3,4, 1+N, 3+N	1,2,3,4, 1+N, 3+N	1,2,3,4	1,2,3
Tripping Characteristic:	K	K	Z	K
Rated Currents:	0.5 to 63A	0.2 to 63A	0.5 to 63A	0.2 to 63A
Minimum Operating Voltage:	12 V	12 V	12 V	12 V
UL/CSA Rated Voltage & Interrupting Capacity:	Single pole Multi pole	Single pole Multi pole	Single pole Multi pole	
Frequency:	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
120VAC	10 kA —	10 kA —	10 kA —	—
240 VAC	6 kA 10 kA	10 kA 10 kA	10 kA 10 kA	—
277 VAC	6 kA —	10 kA —	10 kA —	—
277/480 VAC	— 6 kA	— 10 kA	— —	10 kA
60VDC	10 kA 10 kA	15 kA 15 kA	15 kA 15 kA	—
125VDC	10 kA 10 kA	15 kA 15 kA	15 kA 15 kA	—
250VDC	— —	— —	— —	—
500VDC	— —	— —	— —	—
IEC Rated Voltage				
Frequency:	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Rated Voltage				
IEC Single Pole	240/415 VAC, 60 VDC	240/415 VAC, 60 VDC	240/415 VAC, 220 VDC	—
IEC Multi-Pole	415 VAC, 110 VDC	415 VAC, 110 VDC	415 VAC, 440 VDC	—
Production Category:	IP20	IP20	IP20	IP20
Depth of Unit Per DIN 43880:	68mm/ 2.68 in.	68mm/ 2.68 in.	68mm/ 2.68 in.	68mm/ 2.68 in.
Mounting Position:	Vertical / horizontal	Vertical / horizontal	Vertical / horizontal	Vertical / horizontal
Standard Mounting:	35mm DIN rail	35mm DIN rail	35mm DIN rail	35mm DIN rail
Main and Shunt Trip Terminals:				
Wire Size	18-4 AWG/.82-21.2 mm ²	18-4 AWG/.82-21.2 mm ²	18-4 AWG/.82-21.2 mm ²	18-4 AWG/.82-21.2 mm ²
Torque	17.5 in.-lbs. / 1.978 Nm	17.5 in.-lbs. / 1.978 Nm	17.5 in.-lbs. / 1.978 Nm	17.5 in.-lbs. / 1.978 Nm
Tool	# 2 Posidrive	# 2 Posidrive	# 2 Posidrive	# 2 Posidrive
Accessory Terminals				
Wire Size	18-16 AWG/.82-1.3 mm ²	18-16 AWG/.82-1.3 mm ²	18-16 AWG/.82-1.3 mm ²	18-16 AWG/.82-1.3 mm ²
Torque	4.5 in.-lbs./ .51 Nm	4.5 in.-lbs./ .51 Nm	4.5 in.-lbs./ .51 Nm	4.5 in.-lbs./ .51 Nm
Tool	# 1 Posidrive	# 1 Posidrive	# 1 Posidrive	# 1 Posidrive
Service Life at Rated Load:	No Load 20,000 operations Full Load 10,000 operations	No Load 20,000 operations Full Load 10,000 operations	No Load 20,000 operations Full Load 10,000 operations	No Load 20,000 operations Full Load 10,000 operations
Ambient Temperatures:				
Minimum	-25°C... -13°F	-25°C... -13°F	-25°C... -13°F	-25°C... -13°F
Maximum	70°C... 158°F	70°C... 158°F	70°C... 158°F	55°C... 131°F
Storage Temperatures:				
Minimum	-40°C... -40°F	-40°C... -40°F	-40°C... -40°F	-40°C... -40°F
Maximum	70°C... 158°F	70°C... 158°F	70°C... 158°F	70°C... 158°F
Shock Resistance:	30g minimum of 2 impacts, shock duration of 13 ms	30g minimum of 2 impacts, shock duration of 13 ms	30g minimum of 2 impacts, shock duration of 13 ms	30g minimum of 2 impacts, shock duration of 13 ms
Vibration Resistance:	5g, 20 cycles, 5 Hz, 150 Hz	5g, 20 cycles, 5 Hz, 150 Hz	5g, 20 cycles, 5 Hz, 150 Hz	5g, 20 cycles, 5 Hz, 150 Hz
Disconnecting Neutral Rating:	6 kA switching	—	—	—

Technical data

S280UC-K, S280UC-Z, S280U-Z, S290-C

Item	S280UC-K	S280UC-Z	S290-C
Approvals:			
UL	1077	1077	1077
CSA	22.2, No. 235	22.2, No. 235	22.2, No. 235
VDE	0660	0660	0660
IEC	898, 60947-2	898, 60947-2	60947-2
Number of Poles:	1,2,3	1,2,3	1,2,3,4
Tripping Characteristic:	K	Z	C
Rated Currents:	0.2 to 63A	0.5 to 63A	1 to 25A
Minimum Operating Voltage:	12 V	12 V	—
UL/CSA Rated Voltage & Interrupting Capacity:	Single pole Multi pole	Single pole Multi pole	
Frequency:	50/60 Hz	50/60 Hz	50/60 Hz
120VAC	10 kA 10 kA	10 kA —	—
240 VAC	10 kA 6 kA	10 kA 10 kA	14 kA
277 VAC	10 kA 6 kA	10 kA —	5 kA
277/480 VAC	— 4.5 kA for 0.2-40 A 5 kA for 50-63 A	— 4.5 kA for 0.2-40 A 5 kA for 50-63 A	5 kA
60VDC	10 kA 10 kA	10 kA 10 kA	—
125VDC	10 kA —	10 kA 10 kA	—
250VDC	4.5 kA 4.5 kA	4.5 kA 4.5 kA	—
500VDC	— 4.5 kA	— 4.5 kA	—
IEC Rated Voltage			
Frequency:	50/60 Hz	50/60 Hz	50/60 Hz
Rated Voltage			
IEC Single Pole	240/415VAC, 220VDC	240/415VAC, 220VDC	230/440 VAC, 60 VDC
IEC Multi-Pole	415VAC, 440VDC	415VAC, 440VDC	440 VAC, 110 VDC
Production Category:	IP20	IP20	IP20
Depth of Unit Per DIN 43880:	68mm/ 2.68 in.	68mm/ 2.68 in.	—
Mounting Position:	Vertical / horizontal	Vertical / horizontal	Vertical / horizontal
Standard Mounting:	35mm DIN rail	35mm DIN rail	35mm DIN rail
Main and Shunt Trip Terminals:			
Wire Size	18-4 AWG/.82-21.2 mm ² for 0.2 - 40A 18-2 AWG for 50 A & above 17.5 in.-lbs. / 1.978 Nm # 2 Posidrive	18-4 AWG/.82-21.2 mm ² for 0.5 - 40A 18-2 AWG for 50 A & above 17.5 in.-lbs. / 1.978 Nm # 2 Posidrive	14-1 AWG 35 in.-lbs. # 2 Posidrive
Torque			
Tool			
Accessory Terminals			
Wire Size	18-16 AWG/.82-1.3 mm ²	18-16 AWG/.82-1.3 mm ²	18-16 AWG/.82-1.3 mm ²
Torque	4.5 in.-lbs./ .51 Nm	4.5 in.-lbs./ .51 Nm	4.5 in.-lbs./ .51 Nm
Tool	# 1 Posidrive	# 1 Posidrive	# 2 Posidrive
Service Life at Rated Load:	No Load 20,000 operations Full Load 10,000 operations	No Load 20,000 operations Full Load 10,000 operations	10,000 operations
Ambient Temperatures:			
Minimum	-25°C... -13°F	-25°C... -13°F	-25°C... -13°F
Maximum	70°C... 158°F	70°C... 158°F	45°C... 113°F
Storage Temperatures:			
Minimum	-40°C... -40°F	-40°C... -40°F	-40°C... -40°F
Maximum	70°C... 158°F	70°C... 158°F	70°C... 158°F
Shock Resistance:	30g minimum of 2 impacts, shock duration of 13 ms	30g minimum of 2 impacts, shock duration of 13 ms	30g minimum of 2 impacts, shock duration of 13 ms
Vibration Resistance:	5g, 20 cycles, 5 Hz, 150 Hz	5g, 20 cycles, 5 Hz, 150 Hz	60 ms @ 10-150 Hz
Disconnecting Neutral Rating:	—	—	—

Technical data

S800U-K, Z; S800S-B, S800S-C, S800S-D

Item	S800U-K, Z	S800S-B	S800S-C	S800S-D
Approvals:				
UL	489, E312425	—	—	—
CSA	22.2 No. 5.1	—	—	—
VDE	—	—	—	—
IEC	60947-2	60947-2	60947-2	60947-2
Number of Poles:	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4
Tripping Characteristic:	K	B	C	D
Rated Currents:	10 to 100A	10 to 125A	10 to 125A	10 to 125A
Minimum Operating Voltage:	—	400/690VAC	400/690VAC	400/690VAC
UL/CSA Rated Voltage & Interrupting Capacity:				
Frequency:	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
120VAC	—	—	—	—
240 VAC	50 kA multi, 30 kA single	50 kA multi, 30 kA single; IEC	50 kA multi, 30 kA single; IEC	50 kA multi, 30 kA single; IEC
277 VAC	—	—	—	—
277/480 VAC	—	—	—	—
60VDC	—	—	—	—
125VDC	—	—	—	—
250VDC	—	—	—	—
500VDC	—	—	—	—
IEC Rated Voltage				
Frequency:	—	50/60 Hz	50/60 Hz	50/60 Hz
Rated Voltage	—	690 VAC	690 VAC	690 VAC
IEC Single Pole	—	—	—	—
IEC Multi-Pole	—	—	—	—
Production Category:	IP20	IP20	IP20	IP20
Depth of Unit Per DIN 43880:	—	—	—	—
Mounting Position:	Vertical / horizontal	Vertical / horizontal	Vertical / horizontal	Vertical / horizontal
Standard Mounting:	35mm DIN rail	35mm DIN rail	35mm DIN rail	35mm DIN rail
Main and Shunt Trip Terminals:				
Wire Size	1... 25	1... 25	1... 25	1... 25
Torque	35 in-lbs. / 4 Nm	35 in-lbs. / 4 Nm	35 in-lbs. / 4 Nm	35 in-lbs. / 4 Nm
Tool	—	—	—	—
Accessory Terminals				
Wire Size	1... 35	1... 35	1... 35	1... 35
Torque	35 in-lbs./4 Nm	35 in-lbs./4 Nm	35 in-lbs./4 Nm	35 in-lbs./4 Nm
Tool	—	—	—	—
Service Life at Rated Load:	6,000 operations	6,000 operations	6,000 operations	6,000 operations
Ambient Temperatures:				
Minimum	-25°C... -13°F	-25°C... -13°F	-25°C... -13°F	-25°C... -13°F
Maximum	60°C... 140°F	60°C... 140°F	60°C... 140°F	60°C... 140°F
Storage Temperatures:				
Minimum	-40°C... -40°F	-40°C... -40°F	-40°C... -40°F	-40°C... -40°F
Maximum	70°C... 158°F	70°C... 158°F	70°C... 158°F	70°C... 158°F
Shock Resistance:	—	—	—	—
Vibration Resistance:	—	—	—	—
Disconnecting Neutral Rating:	—	—	—	—

Technical data

S800S-K

MCB
Technical data

Item	S800S-K
Approvals:	
UL	—
CSA	—
VDE	—
IEC	60947-2
Number of Poles:	1,2,3,4
Tripping Characteristic:	K
Rated Currents:	10 to 125A
Minimum Operating Voltage:	400/690 VAC
UL/CSA Rated Voltage & Interrupting Capacity:	
Frequency:	50/60 Hz
120VAC	—
240 VAC	50 kA multi; 30 kA single; IEC
277 VAC	—
277/480 VAC	—
60VDC	—
125VDC	—
250VDC	—
500VDC	—
IEC Rated Voltage	
Frequency:	50/60 Hz
Rated Voltage	
IEC Single Pole	690 VAC
IEC Multi-Pole	—
Production Category:	IP20
Depth of Unit Per DIN 43880:	—
Mounting Position:	Vertical / horizontal
Standard Mounting:	35mm DIN rail
Main and Shunt Trip Terminals:	
Wire Size	1... 25
Torque	35 in-lbs. / 4 Nm
Tool	—
Accessory Terminals	
Wire Size	1... 35
Torque	35 in-lbs./4 Nm
Tool	—
Service Life at Rated Load:	6,000 operations
Ambient Temperatures:	
Minimum	-25°C... -13°F
Maximum	60°C... 140°F
Storage Temperatures:	
Minimum	-40°C... -40°F
Maximum	70°C... 158°F
Shock Resistance:	—
Vibration Resistance:	—
Disconnecting Neutral Rating:	—

Technical data

S500-K, Z; S500UC-B, K

Item	S500-K, Z
Approvals: UL CSA VDE IEC	1077 C22.2 - No. 235 0641/6.78 —
No. of poles:	1,2,3, +N, +NA
Tripping characteristic:	K
Rated currents:	0.1 to 45A
Rated voltage: UL/CSA single pole UL/CSA multi pole IEC single pole	277VAC 600YVAC 690VAC
Rated interrupting capacity: Single pole	0.15-25A – 30KA/240VAC 14KA/277VAC 26-45A – 18KA/240VAC 14KA/277VAC
Multi-pole	0.15-45A – 14KA/480VAC 6KA/600VAC
Frequency:	50/60Hz
Mounting position:	Vertical / horizontal
Standard mounting:	35 _{mm} DIN rail
Terminals:	16-4AWG / 1-25mm ²
Service life at rated load:	20,000 operations
Calibration temperature:	40°C

Item	S500UC-B, K
Approvals: UL CSA VDE	1077 C22.2 0660
No. of poles:	1,2,3, 4
Tripping characteristic:	B, K
Rated currents:	B: 6 to 63A K: 0.15 to 45A
Rated voltage: UL single pole UL multi pole IEC multi pole	277VAC/250VDC 600VAC/600VDC 690VAC/750VDC
Rated interrupting capacity:	B single pole: 6 – 25A 18KA/240VAC 14KA/277VAC 30KA/250VDC 32 – 63A 30KA/240VAC 14KA/277VAC 30KA/250VDC B two-pole: 6 – 63A 14KA/480VAC 6KA/600VAC 30KA/500VDC B three-pole: 6 – 63A 14KA/480VAC 6KA/600VAC 30KA/600VDC K single pole: 0.15 – 25A 30KA/240VAC 14KA/277VAC 30KA/250VDC 32 – 45A 18KA/240VAC 14KA/277VAC 30KA/250VDC K two-pole: 0.15 – 45A 14KA/480VAC 6KA/600VAC 30KA/500VDC K three-pole: 0.5 – 45A 14KA/480VAC 6KA/600VAC 30KA/600VDC
Frequency:	50/60Hz
Mounting position:	Vertical / horizontal
Standard mounting:	35 _{mm} DIN-rail
Terminals:	16-4AWG / 1-25mm ²
Service life at rated load:	20,000 operations

F200 Series Residual Current Devices



Residual current devices F200 Series UL 1053



Description

The F200 Series residual current devices offer a wide range of product for all of your fault protection needs.

A & AC

A large offering for standard instantaneous and selective AC and A types.

All sizes up to 63 mA with sensitivity thresholds up to 1 A are offered in all possible pole configurations.

ABB RCDs carry many marks and approvals for the worldwide market.

Features

RCDs assure protection to equipment against current leakage to earth.

	F200A	F200AC
Type	AC	A
Amperage	16, 25, 40, 63, 80, 100, 125	16, 25, 40, 63, 80, 100, 125
Voltage	480Y/277 VAC	480Y/277 VAC
Sensitivity	0.01-0.03 / 0.1-0.3-0.5	0.01-0.03 / 0.1-0.3-0.5

F200AC

F200 Series

AC Type

AC



F202AC



F204AC

No. of poles	Rated residual current mA	Rated current A	Catalog number	List price
2	10	16	F202AC-16/0.01	\$ 670
		25	F202AC-25/0.03	230
	30	40	F202AC-40/0.03	340
		63	F202AC-63/0.03	470
		80	F202AC-80/0.03	940
		100	F202AC-100/0.03	1050
	100	25	F202AC-25/0.1	300
		40	F202AC-40/0.1	340
		63	F202AC-63/0.1	510
		80	F202AC-80/0.1	840
	300	25	F202AC-25/0.3	280
		40	F202AC-40/0.3	310
		63	F202AC-63/0.3	460
		80	F202AC-80/0.3	630
		100	F202AC-100/0.3	1700
	500	25	F202AC-25/0.5	330
		40	F202AC-40/0.5	460
		63	F202AC-63/0.5	440
		80	F202AC-80/0.5	630
		100	F202AC-100/0.5	750

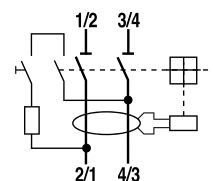
No. of poles	Rated residual current mA	Rated current A	Catalog number	List price
4	30	25	F204AC-25/0.03	\$ 310
		40	F204AC-40/0.03	400
		63	F204AC-63/0.03	540
		80	F204AC-80/0.03	1850
		100	F204AC-100/0.03	2100
		125	F204AC-125/0.03	2300
	100	25	F204AC-25/0.1	310
		40	F204AC-40/0.1	430
		63	F204AC-63/0.1	530
		80	F204AC-80/0.1	1650
		100	F204AC-100/0.1	1900
	300	25	F204AC-25/0.3	290
		40	F204AC-40/0.3	330
		63	F204AC-63/0.3	480
		80	F204AC-80/0.3	1450
		100	F204AC-100/0.3	1450
4	500	125	F204AC-125/0.3	1700
		25	F204AC-25/0.5	350
		40	F204AC-40/0.5	400
		63	F204AC-63/0.5	570
		80	F204AC-80/0.5	1300
	125	100	F204AC-100/0.5	1400
		125	F204AC-125/0.5	1700

Type AC

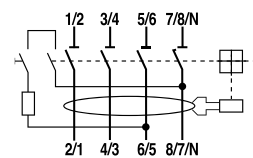
- Suitable for alternating current
- 2 & 4 poles
- 16-125 A range
- Can be used as a main device providing ground fault protection against earth leakage for several MCB branch devices

Technical data

Technical data – See page 15.90



F202AC



F204AC

F200A

F200 Series

A Type

Residual
current devices

A



F202A



F204A

No. of poles	Rated residual current mA	Rated current A	Catalog number	List price
2	10	16	F202A-16/0.01	\$ 450
		25	F202A-25/0.03	390
	30	40	F202A-40/0.03	440
		63	F202A-63/0.03	640
		80	F202A-80/0.03	1500
		100	F202A-100/0.03	2300
	100	25	F202A-25/0.1	400
		40	F202A-40/0.1	450
		63	F202A-63/0.1	620
		80	F202A-80/0.1	1400
		100	F202A-100/0.1	1800
	300	25	F202A-25/0.3	430
		40	F202A-40/0.3	430
		63	F202A-63/0.3	680
		80	F202A-80/0.3	1300
		100	F202A-100/0.3	1500
	500	25	F202A-25/0.5	340
		40	F202A-40/0.5	350
		63	F202A-63/0.5	600
		80	F202A-80/0.5	1300
		100	F202A-100/0.5	1500

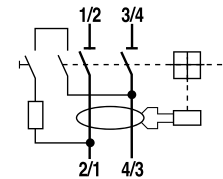
No. of poles	Rated residual current mA	Rated current A	Catalog number	List price
4	30	25	F204A-25/0.03	\$ 400
		40	F204A-40/0.03	460
		63	F204A-63/0.03	680
		80	F204A-80/0.03	1400
		100	F204A-100/0.03	2000
		125	F204A-125/0.03	2200
	100	25	F204A-25/0.1	410
		40	F204A-40/0.1	460
		63	F204A-63/0.1	700
		80	F204A-80/0.1	1200
		100	F204A-100/0.1	1400
		125	F204A-125/0.1	1600
	300	25	F204A-25/0.3	390
		40	F204A-40/0.3	430
		63	F204A-63/0.3	630
		80	F204A-80/0.3	1350
		100	F204A-100/0.3	1700
		125	F204A-125/0.3	1800
	500	25	F204A-25/0.5	390
		40	F204A-40/0.5	530
		63	F204A-63/0.5	1290
		80	F204A-80/0.5	1400
		100	F204A-100/0.5	1600
		125	F204A-125/0.5	1800

Type A

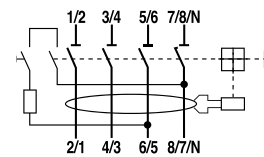
- Suitable for alternating and pulsating DC current
- 2 & 4 poles
- 16-125 A range
- Can be used as a main device providing ground fault protection against earth leakage for several MCB branch devices

Technical data

Technical data – See page 15.90



F202A



F204A

Technical data

Functions and classification criteria

RCDs

Power loss of RCDs

RCCBs F200 series

Rated Current in [A]	Power loss [W]	
	2P	4P
16	1.5	-
25	2.0	4.8
40	4.8	8.4
63	7.2	13.2

Performance in altitude of RCDs

Up to the height of 2000 m, ABB RCDs do not undergo any alterations in their rated performances. Over this height the properties of the atmosphere change in terms of composition, dielectric capacity, cooling capacity and pressure, therefore the performances of the RCDs undergo derating, which can basically be measured in terms of variations in significant parameters, such as the maximum operating voltage and the rated current.

F200

Altitude [m]	2000	3000	4000
Rated service voltage U_e [V]	400	380	380
Rated current in	I_n	$0.96 \times I_n$	$0.93 \times I_n$

Introduction

Residual current devices (RCD) have always played an important role in circuit protection by detecting leakage to ground for equipment in many installations. RCD's are used in unison with a circuit protective device in industrial applications in the United States. The following guide will give an insight to the construction, mechanical operation, and applications of RCD's.

RCD Definitions

Important definitions:

Earth leakage current

Current that flows between line to line or line to earth.

Residual current

The sum of the values of the electric currents in all live conductors

Fault current

Current that flows between line to line or line to earth.

Earth fault

When a conductive path is accidentally induced between a line and the earth

RCD Definition

RCD's provide ground fault protection to equipment by monitoring the leakage of current to ground. An RCD will trip when a ground fault is detected in excess of the trip rating of the device. An RCD is designed to disconnect a circuit whenever it detects that the electrical current is unbalanced between the phase conductor and the neutral conductor. An imbalance may be caused by phase leaking to ground.

Difference between type A and AC

Types of RCD's

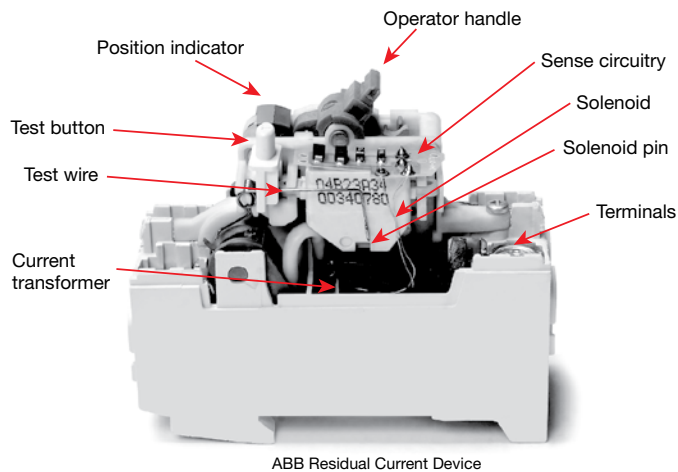
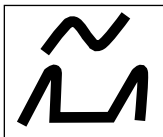
Type AC

Must be used for protection against AC earth leakage current.



Type A

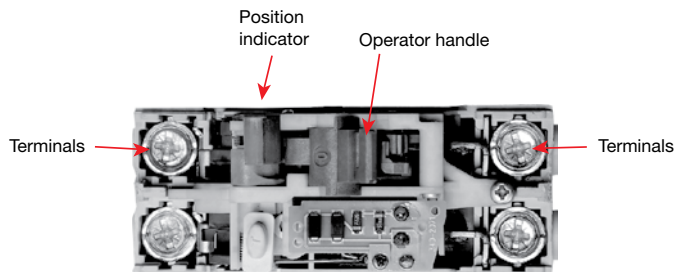
Must be used for protection against AC and pulsating DC (rectified AC) earth leakage current. The type A RCD must be installed in any circuit where the main supply is likely to be rectified. Some examples of applications where this would apply are motor speed controllers (drives) and power tools.



RCD Mechanical operation

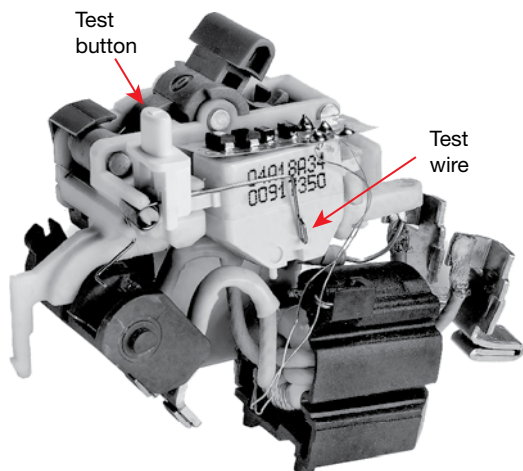
Main Incoming Supply and Terminals

The main incoming and the grounded neutrals are connected to the terminals. The operator handle places the RCD in the on and off position as the position indicator shows.



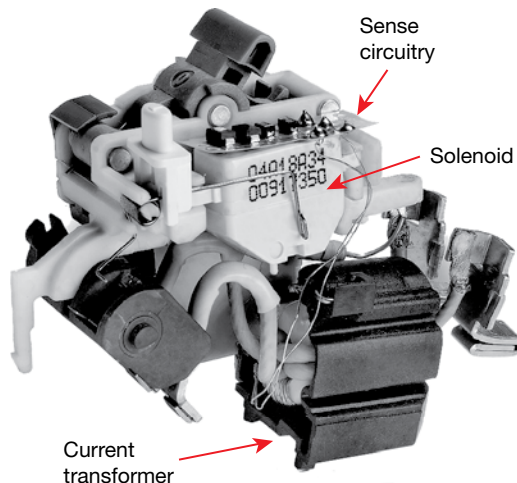
Test button and Test Wire

When the test button is pressed it allows the correct operation of the device to be verified by passing a small current through the test wire. This simulates a leakage to ground by creating an imbalance in the current transformer (CT).



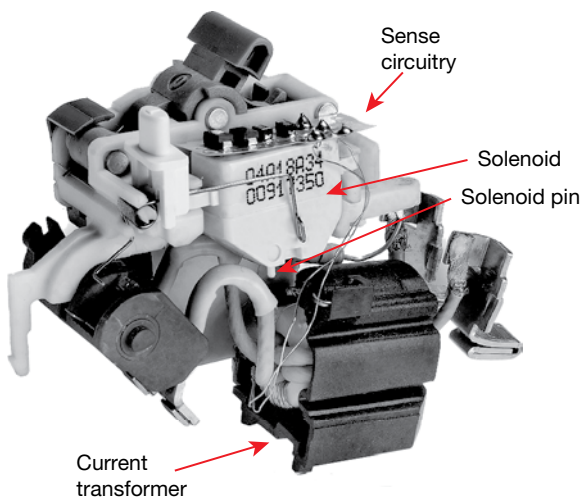
Current Transformer and Sense Circuitry

The current transformer surrounds the neutral and L1 conductors. During normal operation, all of the current being carried through the L1 conductor returns up through the neutral conductor. Therefore the currents in the two conductors are equal and opposite. When a leakage to ground occurs it causes some of the current to take a path to ground and creates an imbalance in the current between the two conductors. This imbalance in current induces a current in the current transformer (CT) which is then picked up by the sense circuitry. The sense circuitry then actuates the solenoid and the contacts are forced apart by a spring, terminating the electricity supply to the device.



Solenoid

Once an imbalance has been detected by the CT, there is voltage induced on the CT. The voltage travels through the connected copper wires to the sense circuitry and the solenoid is actuated. The plunger at the bottom of the solenoid is then pushed out to trip the breaker.

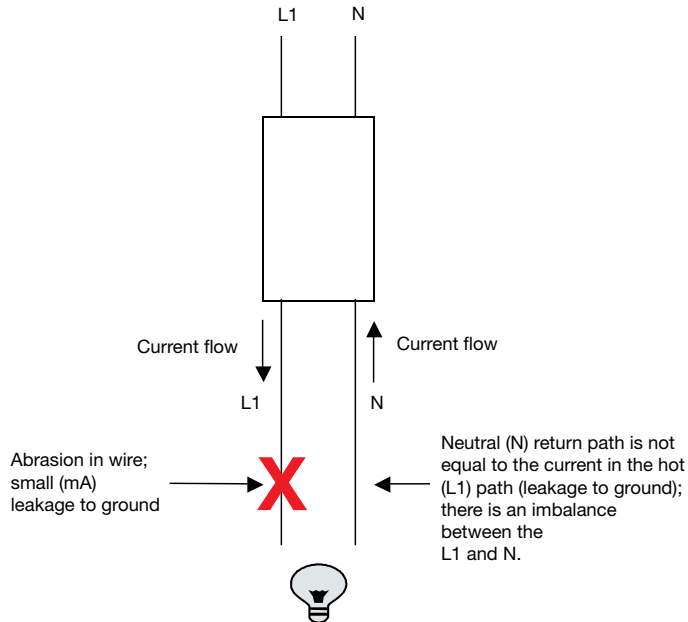


Application manual

Difference between RCD and MCB

Residual
current devices

Example of current leakage to ground



Difference between RCD and MCB

Miniature Circuit Breaker (MCB)

A miniature circuit breaker (MCB) is a device designed to isolate a circuit during an overcurrent event without the use of a fusible element. A breaker is a resettable protective device that protects against two types of overcurrent situations; overload and short circuit.

Residual Current Device (RCD)

A residual current device (RCD) is a device designed to provide protection against voltage leakage to ground. *RCD's are sensitive to a 30-300mA. RCD's are mechanical devices that contain a CT and a solenoid.* RCD's are designed to protect equipment, not wires against overload and short circuit situations. For this reason, an RCD should always be used in conjunction with an MCB in order to provide full protection from overload and leakage to ground.

Ground Fault Interrupter (GFI)

GFI Definition (NEC): A device intended for the protection of personnel that functions to de-energize a circuit or portion thereof within an established period of time when a current to ground exceeds the values established for a Class A device.

A ground fault interrupter (GFI) is a device designed to measure the current between the hot wire and neutral wire. Like the RCD, the GFI will open the closed contacts in order to protect against damage. A GFI is sensitive to 5mA and higher and is designed to protect people, not equipment.

A GFI is an electric device that contains a printed circuit board (PCB). GFI's have a "pigtail" wire at the end that carries a signal to the PCB that tells the contacts to open when a current imbalance is detected between the two conductors.

Technical data

F200AC, F200A

Item	F200AC	F200A
Approvals:		
UL	1053	1053
CSA	-	-
VDE	-	-
IEC	-	-
Number of Poles:	2,4	2,4
Rated Currents:	16,25,40,63,80,100,125	16,25,40,63,80,100,125
Operating Voltage:	480Y/277 VAC	480Y/277 VAC
Production Category:	IP20	IP20
Depth of Unit Per DIN 43880:	68mm/ 2.68 in.	68mm/ 2.68 in.
Mounting Position:	vertical, horizontal	vertical, horizontal
Standard Mounting:	35mm DIN rail	35mm DIN rail
Main and Shunt Trip Terminals:		
Wire Size	18-4 AWG/.82-21.2mm ²	18-4 AWG/.82-21.2mm ²
Torque	17.5 in-lbs./1.978 nm	17.5 in-lbs./1.978 nm
Tool	#2 Posidrive	#2 Posidrive
Accessory Terminals		
Wire Size	18-16 AWG/.82-1.3mm ²	18-16 AWG/.82-1.3mm ²
Torque	4.5 in-lbs./51nm	4.5 in-lbs./51nm
Tool	# 1 Posidrive	# 1 Posidrive
Service Life at Rated Load:	No Load 20,000 operations Full Load 10,000 operations	No Load 20,000 operations Full Load 10,000 operations
Shock Resistance:	30g minimum of 2 impacts, shock duration of 13ms	30g minimum of 2 impacts, shock duration of 13ms
Vibration Resistance:	5g, 20 cycles, 5 Hz, 150 Hz @ 0.8 ~ 1n	5g, 20 cycles, 5 Hz, 150 Hz @ 0.8 ~ 1n

Transient voltage surge suppressors



Transient voltage surge suppressors
TVSS, OVR range



Description

- Compact
- DIN rail mounting
- Broad range
- 1, 2, 3, & 4 pole versions
- Replaceable plug cartridges
- Finger safe
- 15, 40, 65 & 100 kA versions
- Three position visual status indication
- Auxiliary contact for remote signalling
- UL 1449, File # E238957 & E22406

General points on lightning and its risks

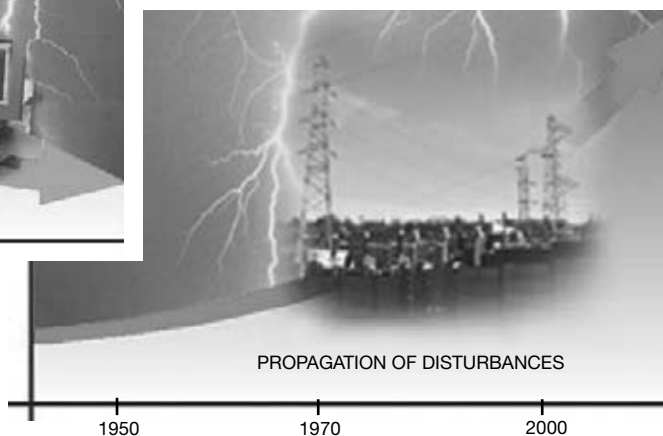
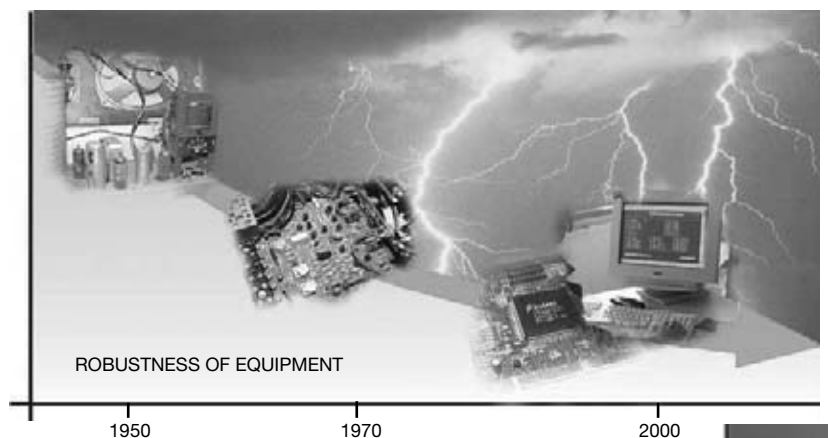
Causes of transient overvoltages

The most serious consequences of lightning are the death of people and farm animals, and the destruction of equipment: telephone lines, transformers connected to the electrical distribution network, electrical meters, household appliances, etc.

At the same time, the growing amount of equipment incorporating very sensitive electronic devices increases the number of incidences linked to lightning.

Within companies, if office automation equipment or machines (in factories) are put out of action, it nearly always leads to operating losses, the cost of which is much more than that of the damaged equipment.

For example, if a bank's computers are no longer operational, it suffers large operating losses. For the general public, the damage is mainly material: computer, household appliances, home cinema, etc.



Causes of transient overvoltages

A transient overvoltage is a voltage peak with a maximum duration of less than one millisecond. There are two possible causes of overvoltages on electrical networks:

- Natural causes (lightning), 20% external
- Other causes due to equipment or switching devices, 80% internal

15 Natural overvoltages on low voltage networks are caused by direct lightning strikes. The high level of energy contained in a direct lightning strike on a lightning conductor or an overhead low voltage line leads to considerable damage of the installation. The overvoltage can be over 20 times the nominal voltage.

Operating or switching overvoltages linked to a network's equipment create overvoltages of a lower level (3 to 5 times the nominal voltage) but occur much more frequently, thus causing premature ageing of the equipment.

Three categories of overvoltage propagate on low voltage networks:

- direct lightning strikes,
- indirect effects of lightning strikes,
- operating or switching overvoltages.



Propagation of overvoltages by electrical networks (power and low current)

General points on lightning and its risks

Causes of transient overvoltages

Overvoltages due to direct lightning strikes

These can take two forms:

- When lightning **strikes a lightning conductor or the roof of a building** which is earthed, the lightning current is dissipated into the ground. The impedance of the ground and the current flowing through it create large difference of potential: this is the overvoltage. This overvoltage then propagates throughout the building via the cables, damaging equipment along the way.
- When lightning **strikes an overhead low voltage line**, the latter conducts high currents which penetrate into the building creating large overvoltages. The damage caused by this type of overvoltage is usually spectacular (e.g. fire in the electrical switchboard causing the destruction of buildings and industrial equipment) and results in explosions.



Direct lightning strike on a lightning conductor or the roof of a building



Direct lightning strike on an overhead line

Overvoltages due to the indirect effects of lightning strikes

The overvoltages previously mentioned are also found when lightning strikes in the vicinity of a building, due to the increase in potential of the ground at the point of impact. The electromagnetic fields created by the lightning current generate inductive and capacitive coupling, leading to other overvoltages.

Within a radius up to several miles, the electromagnetic field caused by lightning in clouds can also create sudden increases in voltage.

Although less spectacular than in the previous case, irreparable damage is also caused to so called sensitive equipment such as fax machines, computer power supplies and safety and communication systems.



Increase in ground potential



Magnetic field

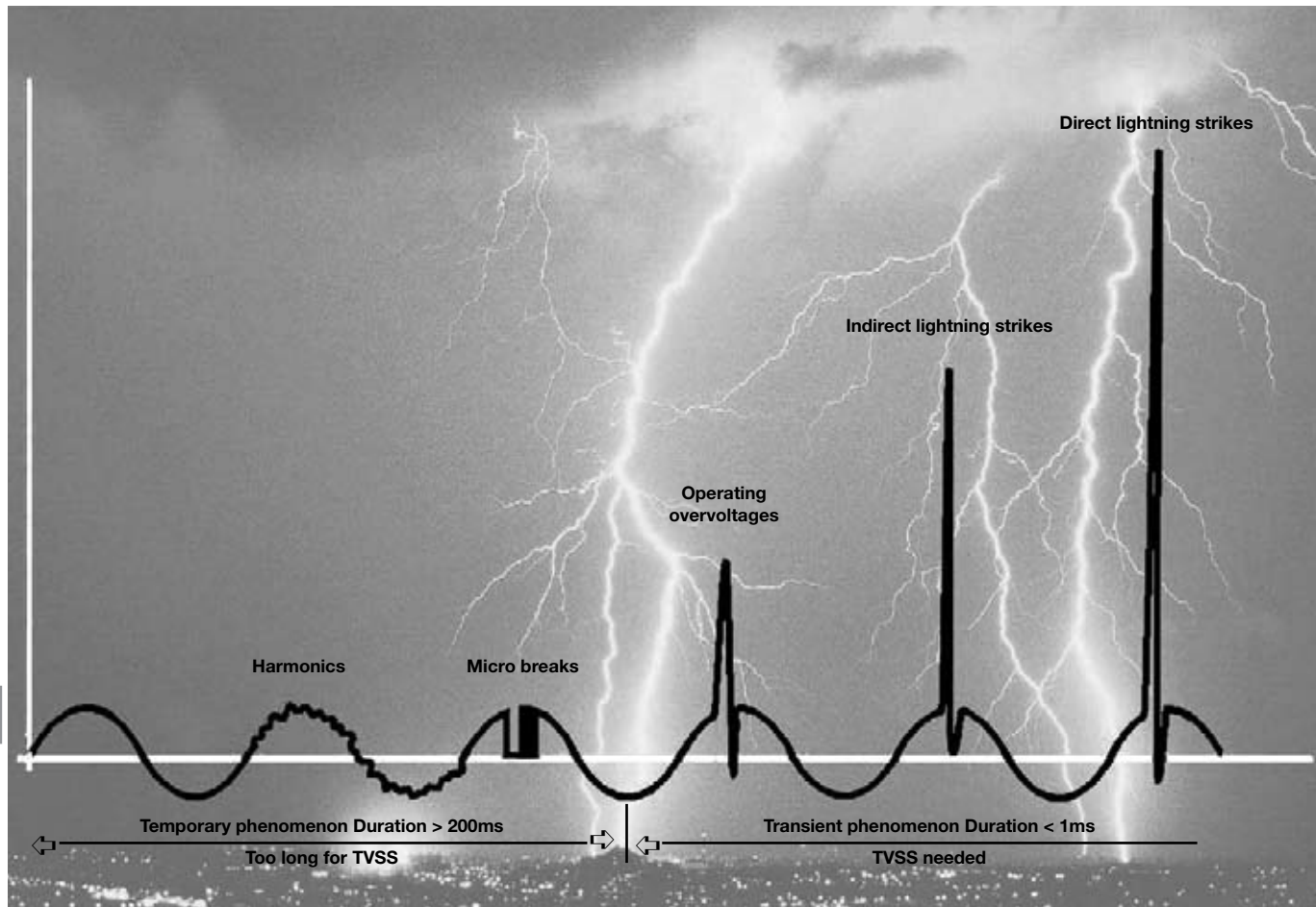


Electrostatic field

Different types of surges

Equipment containing electronic switching components is also likely to generate electrical disturbances comparable to overvoltages. The consequences of which on sensitive equipment, albeit not visible, are no less detrimental: premature aging and unpredictable or fleeting breakdowns.

Operating overvoltages are produced when reactive or capacitive equipment is switched on and off. Furthermore, interrupting factory production, lighting or transformers can generate overvoltages which will themselves cause greater damage to nearby electrical equipment.



Representation of the various disturbances on electrical networks

Different type of power supply disturbances

- Atmospheric discharges
- Industrial interferences
- Switching operations on the power distribution system

Main effects

- Destruction of the equipment
- Premature aging
- Incorrect operations

Main features OVR Range

Transient voltage
surge suppressors

TVSSs protect installations by limiting transient overvoltages and run-off lightning currents for electric and electronic equipment.

They are divided into three families:

- **Type 2 TVSSs** provide protection for equipment against transient overvoltage and they are installed in the Main Switch Board (MSB), or in the Sub-Distribution Board (SDB).

In addition to the standard TVSSs, two options are available: the Safety reserve system and the remote indication (TS), in order to ensure a preventive maintenance of the installation.

ABB TVSS (OVR range) offer the same “plus” advantages of the other System pro M compact devices, in order to get a perfect compatibility with all the modular range of products.

All these TVSS products comply with the international standard IEC 61643-1 and the European standard EN 61643-11.

They also comply with UL 1449 and CSA C22.2.

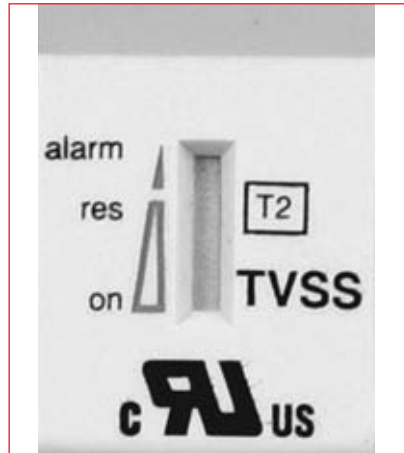
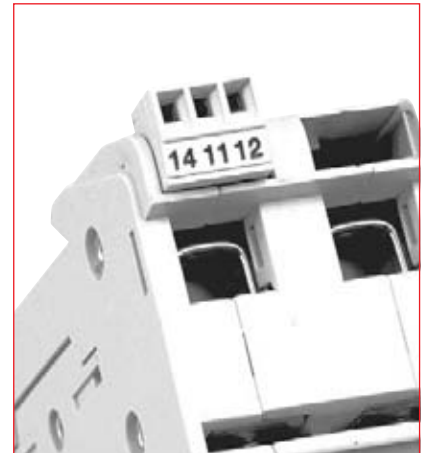
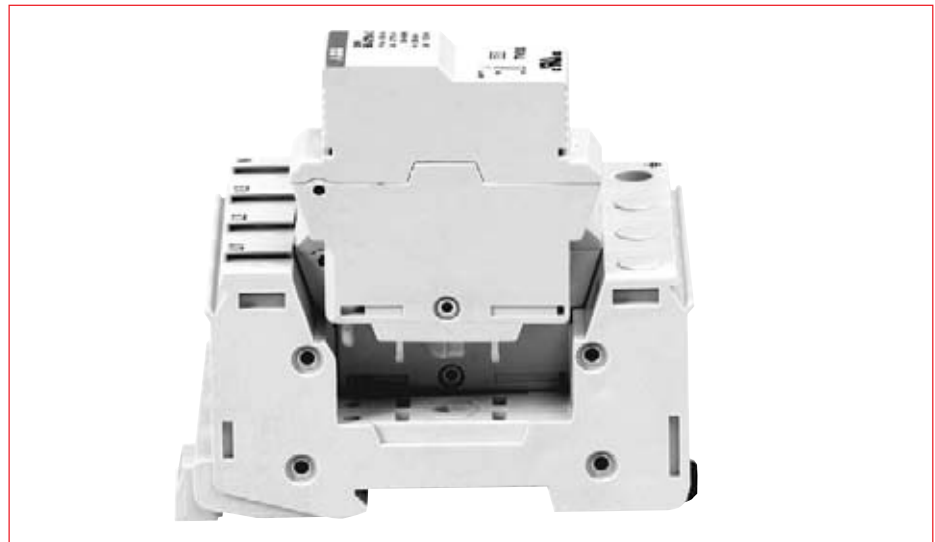


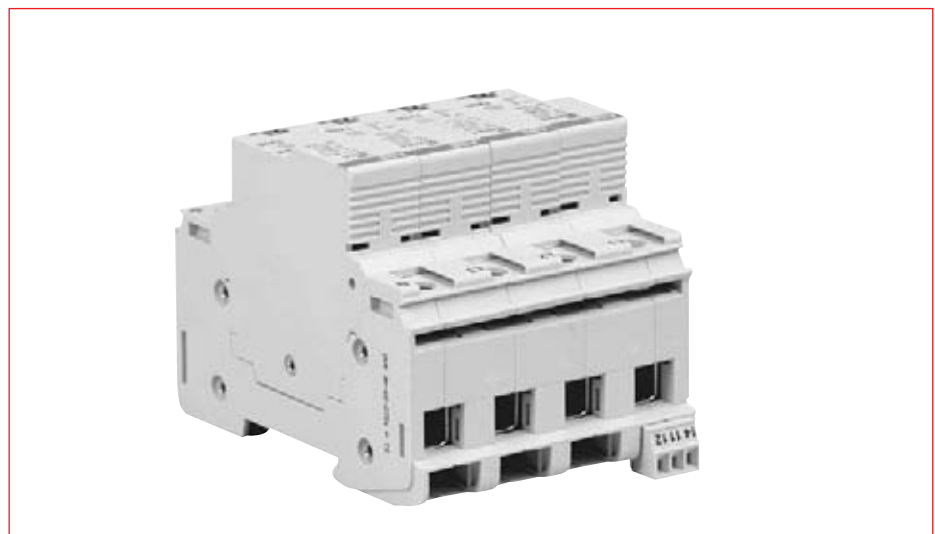
ABB safety reserve system



Contact for alarm connection



Pluggable unit / replacement modules



DIN rail unit, easy installation and wiring

Technical data



Technical Features				Type 2
Electrical features	Standards			IEC 61643-1 / EN 61643-11 / UL1449 / CSA
	Type / test class			T2 / II
	Poles			1P / 1P+N / 3P / 3P+N / 4P
	Types of networks			TNS - TT - TNC - IT / Wye / Delta
	Type of current			A.C.
	Nominal voltage Un			All US network voltages
	Max. cont. operating voltage Uc	(L-N / L-PE / N-PE)	V	150 / 275 / 320 / 440 / 550 / 660
	Voltage protection level Up at In	(L-N / L-PE / N-PE)	V	0.6 / 1.2 / 1.4 / 1.8 / 2.5 / 2.9
	Nominal discharge current In (8/20)		kV	5 / 15 / 20 / 30
	Maximal discharge current Imax (8/20)		kA	15 / 40 / 65 / 100
	Impulse current Iimp (10/350)		kA	/
	Follow current If		kA	None
	Operating current Ic		mA	< 1
	Short circuit withstand Icc		kA	50
	Disconnecter			
	gG - gL fuse		A	16 - 25
	curve C circuit breaker		A	10 - 40
	curve K circuit breaker			
Mechanical features	Stocking temperature		°C	-40 to +80
	Operating temperature		°C	-40 to +80
	Degree of protection			IP 20
	Fire resistance according to UL 94			V2
	Material of Housing			PC grey RAL 7035
	Maximal altitude		m	2000
	Integrated thermal disconnecter			Yes
	State indicator			Yes
	Compatibility with OVR Sign			Yes
	Safety reserve			Option
	TS remote indicator			Option
Installation	Wire range L/N			
	solid wire		mm ²	2.5 ... 25
	stranded wire		mm ²	2.5 ... 16
	Stripping length L/N		mm	12.5
	Tightening torque L/N		Nm	2
	Wire range PE			
	solid wire		mm ²	2.5 ... 25
	stranded wire		mm ²	2.5 ... 16
	Stripping length PE		mm	12.5
	Tightening torque PE		Nm	2
Dimensions and weight	Pole dimensions (H x D x W)		mm	85 x 58 x 17.5
	Pole weight		g	120
Technical Features of the integrated auxiliary contact				
Electrical features	Contact complement			1NO (1 make contact), 1NC (1 normally closed contact)
	Min. load			12V D.C. - 10 mA
	Max. load			250V A.C. - 1A
Installation	Connection cross-section		mm ²	1.5

Single pole OVR Range

Transient voltage
surge suppressors



	Catalog number	kA Rating		Max Voltage		Safety Reserve Dual MOV Option	Auxiliary Contact Option
480VAC Delta	OVR40550	OVR40550	40kA	OVR40550	550V	OVR40660SP OVR40660SPTS OVR65660S	OVR40660PTS OVR40660SPTS
	OVR40660P	OVR40660P	40kA	OVR40660P	660V		
	OVR40660SP	OVR40660SP	40kA	OVR40660SP	660V		
	OVR40660PTS	OVR40660PTS	40kA	OVR40660PTS	660V		
	OVR40660SPTS	OVR40660SPTS	40kA	OVR40660SPTS	660V		
	OVR65660S	OVR65660S	65kA	OVR65660S	660V		
480/277VAC Wye	OVR3N40320P	OVR3N40320P	40kA	OVR3N40320P	320V	OVR3N65320SP OVR3N65320SPTS OVR3N100320SP OVR3N100320SPTS	OVR3N40320PTS OVR3N65320SPTS OVR3N100320SPTS
	OVR3N40320PTS	OVR3N40320PTS	40kA	OVR3N40320PTS	320V		
	OVR3N65320SP	OVR3N65320SP	65kA	OVR3N65320SP	320V		
	OVR3N65320SPTS	OVR3N65320SPTS	65kA	OVR3N65320SPTS	320V		
	OVR3N100320SP	OVR3N100320SP	100kA	OVR3N100320SP	320V		
	OVR3N100320SPTS	OVR3N100320SPTS	100kA	OVR3N100320SPTS	320V		
120/240VAC 120/208VAC	OVR15275	OVR15275	15kA	OVR15275	275V	OVR40275SP OVR40275SPTS OVR65275SP OVR65275SPTS	OVR40275SPTS OVR65275SPTS
	OVR40275SP	OVR40275SP	40kA	OVR40275SP	275V		
	OVR40275SPTS	OVR40275SPTS	40kA	OVR40275SPTS	275V		
	OVR65275SP	OVR65275SP	65kA	OVR65275SP	275V		
	OVR65275SPTS	OVR65275SPTS	65kA	OVR65275SPTS	275V		
120VAC	OVR15150	OVR15150	15kA	OVR15150	150V	OVR40150SP OVR40150SPTS	OVR40150SPTS
	OVR40150	OVR40150	40kA	OVR40150	150V		
	OVR40150SP	OVR40150SP	40kA	OVR40150SP	150V		
	OVR40150SPTS	OVR40150SPTS	40kA	OVR40150SPTS	150V		

Replacement MOV Cartridge

480VAC Delta	OVR40660SC	
480/277VAC Wye	OVR40320SC	40kA
	OVR65320SC	65kA
	OVR65320SC (2ea)	100kA
120/240VAC	OVR40275SC	40kA
120/208VAC	OVR65275SC	65kA
120VAC	OVR40150SC	40kA

Signal protection

4-20mA signal	6V	OVRTC6V
	12V	OVRTC12V
	24V	OVRTC24V
	48V	OVRTC48V

Neutral Protection

OVR65NP

Consult your local sales representative for any other applications.

Catalog number explanation ①

OVR	3N	40	320	S	P	TS
ABB TVSS	Phases	kA Rating	Max Voltage	ABB Dual MOV Option	Pluggable MOV Option	Aux. Contact Option
	1ph = No Notation 3ph + Neutral = 3N	15kA 40kA 65kA 100kA	150V 275V 320V 550V 660V			

Very low voltage transmission lines protection



OVR TC 06 V



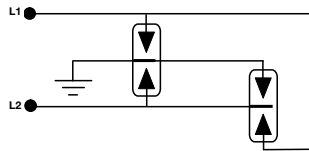
OVR TC 200 FR

Transmission line surge arresters (OVR TC) provide protection against transient overvoltages for equipment connected to telephone lines (digital or analog) & current loops.

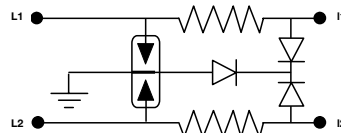
Standards Info:

Modular low current surge arresters comply with IEC 61643-21 / UL 1449.

Schematic diagrams



OVR TC 200 V in parallel

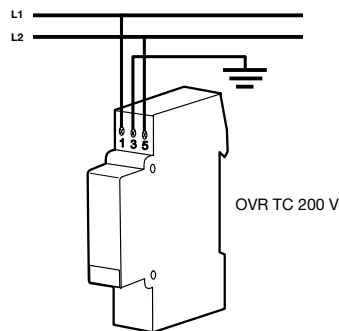


OVR TC / xx V / 200 FR in series

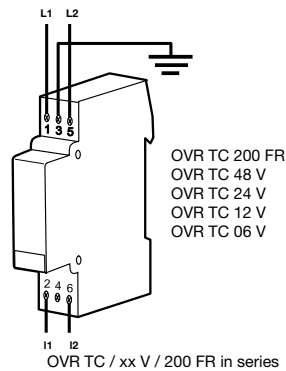
Dimensions

Dimensions (mm)	W	H	D
OVR TC (all models)	17.5	85	63

Connection

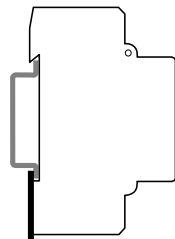


OVR TC 200 V in parallel



OVR TC / xx V / 200 FR in series

Fixing



Simply clips onto DIN rail.

Practical info:

Telecom and dataline protection surge arresters are installed in electrical switchboards or enclosures using DIN rail.

Technical data

Transient voltage
surge suppressors

Electrical characteristics	6 V	12 V	24 V	48 V	200 V	200 V
	OVR TC 06 V	OVR TC 12 V	OVR TC 24 V	OVR TC 48 V	OVR TC 200 V	OVR TC 200 FR
Types of network	Communication	Communication	Communication	Communication	Communication	Communication
Number of pairs	1	1	1	1	1	1
Type of protection	Series	Series	Series	Series	Parallel	Series
Type of current	Low currents	Low currents	Low currents	Low currents	Low currents	Low currents
Nominal voltage: U_n	6 V	12 V	24 V	48 V	200 V	200 V
Max cont operating voltage: U_c	7 V	14 V	27 V	53 V	220 V	220 V
Voltage protection level: U_p at I_n	15 V	20 V	35 V	70 V	700 V	300 V
Nominal discharge current: I_n (8/20)	5 kA	5 kA	5 kA	5 kA	5 kA	5 kA
Maximum discharge current: I_{max} (8/20)	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA
Bandwidth	10 MHz	2 MHz	4 MHz	6 MHz	100 MHz	3 MHz
Operating current: I_c	140 mA	140 mA	140 mA	140 mA	-	140 mA
Degree of protection	IP 203	IP 203	IP 203	IP 203	IP 203	IP 203
50 Hz withstand (15 mn)	10 A	10 A	10 A	10 A	-	10 A
Mechanical characteristics						
L/N connection terminals:						
- solid wire	0.5 ... 2.5 mm ²					
- stranded wire	0.5 ... 2.5 mm ²					
PE connection terminal:						
- solid wire	0.5 ... 2.5 mm ²					
- stranded wire	0.5 ... 2.5 mm ²					
Integrated thermal disconnecter		Yes			No	Yes
End of life indicator		Yes			No	Yes
Compatibility with OVR Sign		Yes			No	Yes
Miscellaneous characteristics						
Storage temperature	-40 °C to +80 °C					
Operating temperature	-40 °C to +80 °C					
Maximum altitude	2000 m					
Case material	PC grey RAL 7032					
Insulating material	UL94 V0 classification					
Reference standard	IEC 61643-21 / UL 1449					
Weight	150 g					

Installation rules

Principles of coordination for TVSS

The first surge arrester does not provide effective protection for the whole installation by itself.
Certain electrical phenomena can double the protection's residual voltage if cable lengths exceed 10m.
Surge arresters must be coordinated when they are installed refer to the tables below.

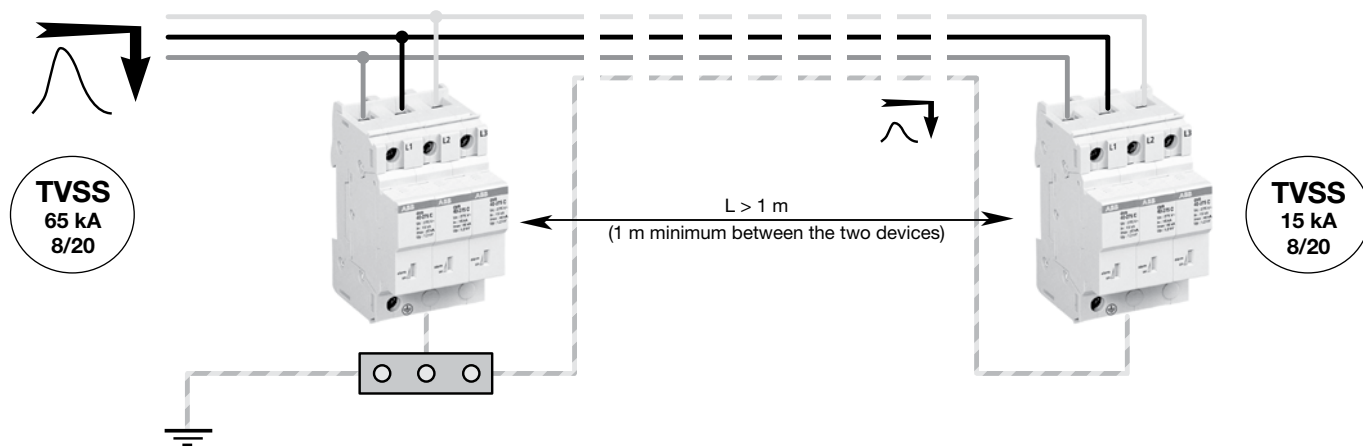
Coordination required if:

The first surge arrester does not reach the protection voltage (U_p) by itself.
The first surge arrester is more than 10m away from the equipment to be protected.

The first surge arrester diverts most of the current to the ground and the remaining surge current is diverted to the ground by the second surge arrester.

The value of this remaining surge current gets lower as the distance between both surge arresters gets longer.
The lower is the current going through the last surge arrester, the lower is the voltage protection level applied to the downstream equipment.

Coordination between Type 2 TVSS units



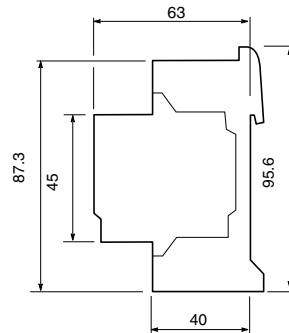
Approximate dimensions

Transient voltage
surge suppressors

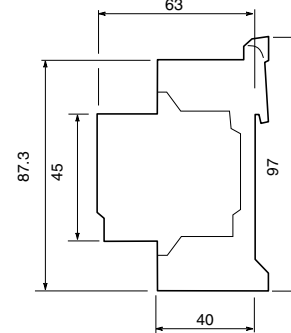


Transient voltage surge suppressor

TVSS without TS



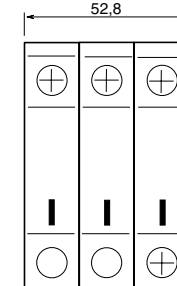
TVSS with TS



1 pole

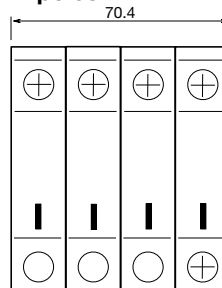


3 poles

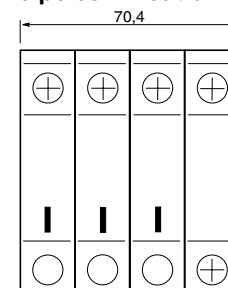


OVR 40 550
OVR 40 660 P
OVR 40 660 P
OVR 15 275
OVR 40 275 SP
OVR 40 275 s P TS
OVR 65 275 SP
OVR 15 150
OVR 40 150
OVR 40 150 SP
OVR 40 150 s P TS

4 poles



3 poles + Neutral



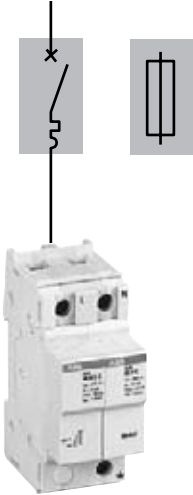
OVR 3N 403 20 P
OVR 3N 403 20 PTS
OVR 3N 653 20 SP
OVR 3N 653 20 SPTS
OVR 3N 100 320 sP
OVR 3N 100 320 SPTS

Technical details

Installation rules for TVSS choice of associated breaking devices (fuse/circuit breaker)

Choice of disconnecter

Surge arresters must be associated with upstream short-circuit protection and residual current protection against indirect contact (usually already present in the installation)

	Function	Application
	Protection against fault currents	The breaking device associated with the surge arrester can be either a circuit breaker or a fuse. Its rating should take into consideration the surge arrester's characteristics and the short-circuit current of the installation.
	Thermal protection	Thermal protection is integrated into the surge arrester.

General points on lightning and its risks

Diagram of an installation protected against lightning and its indirect effects

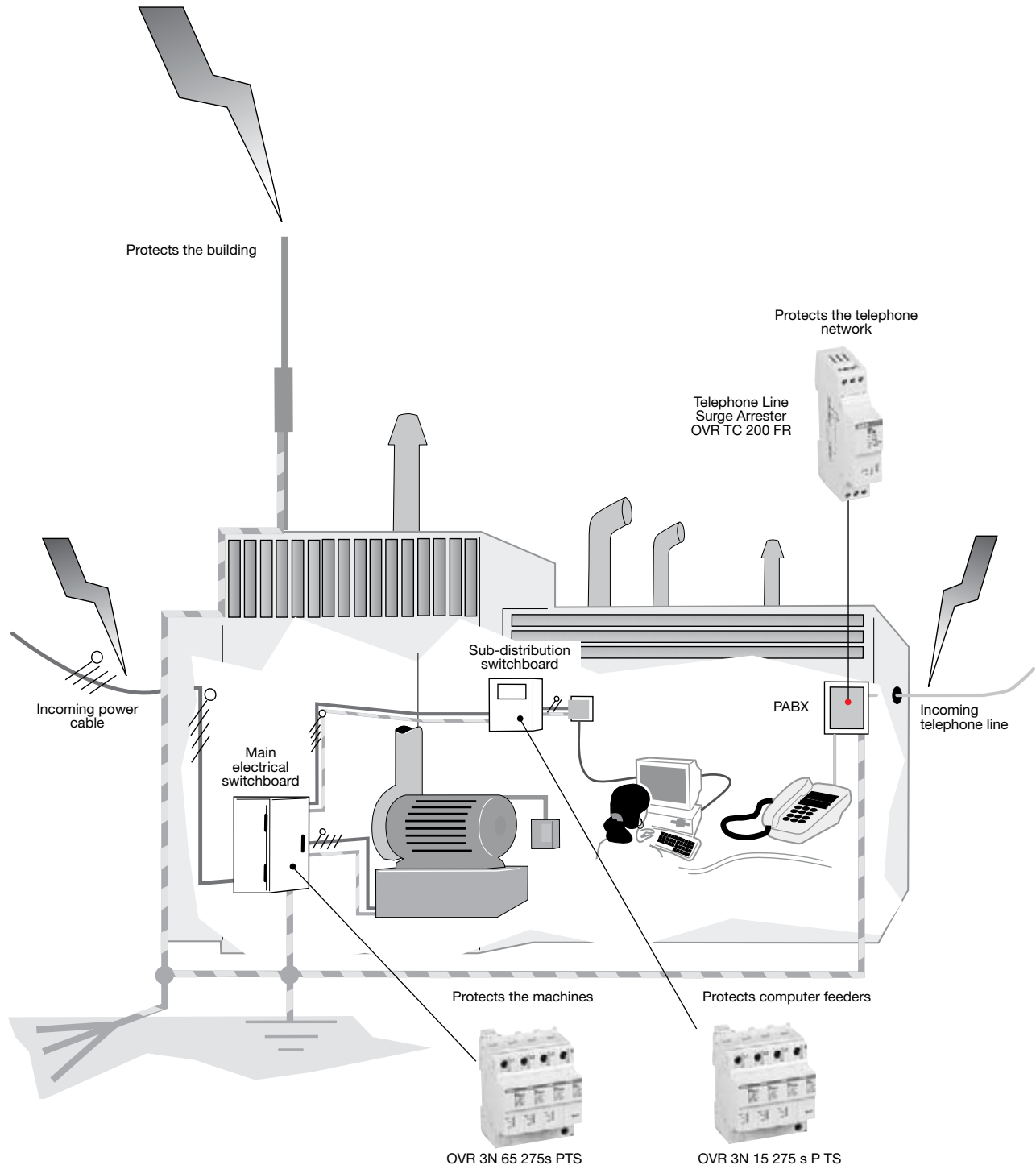
Transient voltage
surge suppressors

The 100KA or 65KA surge arrester (depending on the lightning risk) fitted in the installation's main incoming electrical switchboard, is capable of deviating the energy of a direct lightning strike. This is the first stage of the electrical network's protection.

The behavior of the cables, subjected to a transient signal, limits the effectiveness of a surge arrester to 10 m of cable. It is therefore necessary to use one or more surge arresters in the installation in order to obtain the required level of protection for the equipment.

Here, a 40KA or 15KA surge arrester (depending on the lightning risk) should be used in coordination with the incoming surge arrester. This is the second stage of the protection.

Finally, if there is a risk of overvoltage on the electrical network, this risk also exists for the auxiliary wiring network. The appropriate protection is a surge arrester designed to protect telephone or data transmission lines (**OVR TC**). This is fitted in series on the network.



Surge arrester:

Device designed to limit transient overvoltages and run-off lightning currents. It consists of at least one non-linear component. It must comply with European standard EN 61643-11.

1.2/50 wave:

Standardized overvoltage waveform created on networks and which adds to the network's voltage.

8/20 wave:

Current waveform which passes through equipment when subjected to an overvoltage.

Type 2 surge arrester:

Surge arrester designed to run-off energy caused by an overvoltage comparable to that of an indirect lightning strike or an operating overvoltage. It has successfully passed testing to the standard with the 8/20 wave (class II test).

U_p :

Voltage protection level / Let through voltage

Parameter characterising surge arrester operation by the level of voltage limitation between its terminals and which is selected from the list of preferred values in the standard. This value is greater than the highest value obtained during voltage limitation measurements (at I_n).

I_n :

Nominal discharge current.

Peak current value of an 8/20 waveform (15 times) flowing in the surge arrester. It is used to determine the U_p value of the surge arrester.

I_{max} :

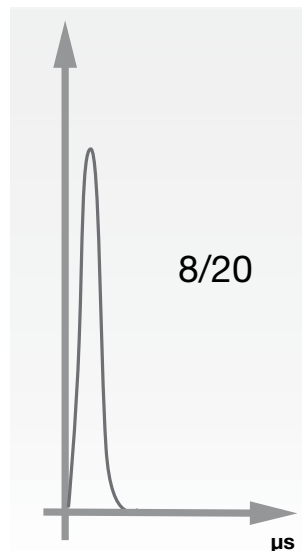
Maximum discharge current for class II testing.

Peak current value of an 8/20 waveform flowing in the surge arrester with an amplitude complying with the class II operating test sequence.

I_{max} is greater than I_n .

U_n :

Nominal AC voltage of the network : nominal voltage between phase and neutral (AC rms value).

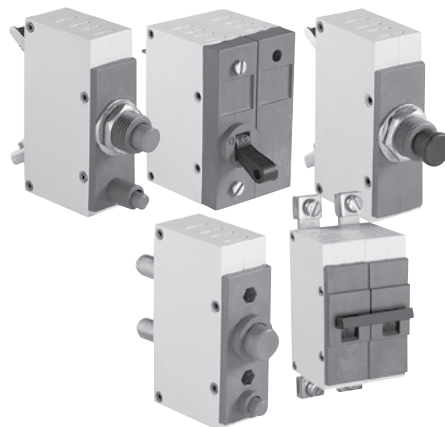


Type 2 Surge Arresters
 I_{max} : current wave

Series GD, GH, GN & GV Circuit breakers



Galaxie circuit breakers GD, GH, GN & GV



Description

Galaxie circuit breakers are door mounted for AC and DC applications. The breakers offer thermal-magnetic and magnetic-only trip protection.

For the worldwide market, the Galaxie breakers carry UL, CSA, IEC, CE and many other agency approvals and certifications.

Features

- Convenient actuators: Switch type, rocker switch & pushbutton
- Various termination mountings
- Tropicalization protection
- 480Y/277 VAC
- UL 1077 Recognized – supplemental protective device. UL File # E75741.

Catalog number explanation

GD, GH, GN & GV Series circuit breakers

Fitted, unpluggable or projecting type



Catalog number explanation

Circuit Breakers

SERIES

- GD** Standard Galaxie AC 240/415 V 50/60 Hz can be used at 48 V DC max.
- GH** High rupturing capacity Galaxie AC 240/415 V 50/60 Hz
- GN** Special Galaxie 100 V DC max.
- GV** Special Galaxie 150 V DC max.
- GA** Severe environment Galaxie (i.e. military use) consult us

VERSIONS

- U** One-pole (1 protected pole)
- B** Two-pole (2 protected poles)
- T** Three-pole (3 protected poles)
- Q** Four-pole (4 protected poles)
- 1+N** Two-pole (1 protected pole + neutral)
- 3+N** Four-pole (3 protected poles + neutral)

RATING (In : Amps)

0.1 - 0.2 - 0.3 - 0.5 - 1 - 1.5 - 2 - 2.5 - 3 - 4 - 5
6 - 8 - 10 - 12 - 13 - 16 - 20 - 25 - 30 - 32
 Heavy duty types : ratings according to NF EN60 898 Other ratings, consult us.

MODELS

- L** Thermal-magnetic - Curve B according to NF EN60 898
- U** Thermal-magnetic - Curve C according to NF EN60 898
- D** Thermal-magnetic - Curve D according to NF EN60 898 Ratings 6 to 32 A
- S** Thermal-magnetic (series GN and GV only) according to NF F 62001
- T** Thermal (except series GH)

FASTENINGS AND OPERATIONS ①

00 - 01 - 02 - 03 - 04 - 05 - 06 - 07 - 08 - 09

TERMINATIONS ①

00 - 01 - 02 - 03 - 07 - 08 - 09 - 33 - 43

OPTIONS

RATING ENGRAVED

- J** On resetting button

METAL THREADED BUSHING

- W** For fastening and operations 6-7-8. Tightening torque : 3 Nm max. (compulsory with option K)

CIRCUIT BREAKER SERIES GD MODEL D ②

- R** With adjustable thermal protection (Not possible with option K)

MECHANICAL IMPACT

- V** 50 g
- E** 100 G

TROPICALIZATION

- T** (Compulsory with option E 100)

THERMAL PROTECTION

- C** Temperature compensated from + 20°C to + 60°C
- K** Temperature compensated from - 40°C to + 85°C series GD, GH and GA (Compulsory with Option W)

AUXILIARY CONTACT FOR POSITION SIGNALLING O/F

- P1** on 1 pole
- P2** on 2 poles
- P3** on 3 poles
- P4** on 4 poles

① See next page

② Series GD, Model D only

EXAMPLE :

1 Circuit breaker Series : Galaxie standard AC - Version : 2 protected poles - Rating : 10 A - Model : magnetic-thermal, curve C - Fastenings and operations : Threaded bushing flush type 2 buttons - Terminations : Screws and back connectors - With Options Auxiliary for position signalling O/F : on 2 poles - Tropicalization has reference **GDB10U0703 P2T**

GD B 10 U 07 03 P2 - T - - - -

Technical data

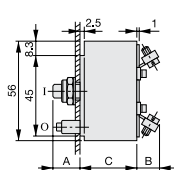
Galaxie
circuit breakers

Characteristics	CE	UL, CSA : For list of certified products : consult us		Circuit breakers NF F62 001 : consult us	
		Series GD	Series GH	Series GN	Series GV
Rated voltage					
1 + neutral version		240 V AC (50/60 Hz)			
One pole version		240/415 V AC (50/60 Hz)	240/415 V AC (50/60 Hz)		
Multipole version		415 V AC (50/60 Hz)	415 V AC (50/60 Hz)		
One pole and two pole version		48 V DC max.		100 V DC max.	150 V DC max.
Interrupting capacity					
According to standard IEC 898		3 000 A	4 500 A (models U and D: rating ≥ 5 A) 4 500 A (model L: rating ≥ 10 A)		
According to standard NF F62 001		1 000 A (48 V DC max.) 10 In cal. < 5 A ; 20 In cal > 5 A		500 A 10 In cal. < 5 A ; 20 In cal > 5 A	1 000 A (48 V DC max.) 10 In cal. < 5 A ; 20 In cal > 5 A
Other characteristics					
Life, number of cycles (On+Off)		4 000	4 000	4 000	4 000
Dielectric withstanding voltage		2 000 V rms	2 000 V rms	2 000 V rms	2 000 V rms
Tripping curves (1) (2)	S	Curve B : 3 In < S < 5 In - Curve C : 5 In < S < 10 In - Curve D : 10 In < S < 20 In < 14 In		Nominal current 0.1 to 2 A : 5 In < S < 10 In - 3 to 32 A : 7 In < S	
Mechanical shock		30 g.	30 g.	30 g.	30 g.
Ambient temperature		-5° C to 40° C	-5° C to 40° C	-25° C to + 70° C	-25° C to + 70° C

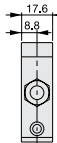
Approximate dimensions

← 00.00 → Millimeters

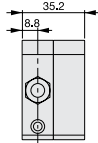
Fastenings and operations N° 00 - 01 - 02 - 03 - 04 - 06 - 07 - 08



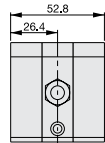
1 Width



2 Widths



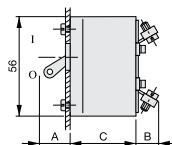
Pole N° 1 Pole N° 2



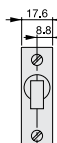
Pole N° 1 Pole N° 2 Pole N° 3

Fastenings / Operations	00	01	02	03	04	05	06	07	08	09
Size A	8	8	8	8	8	17,5	15	15	21	28
Size C	32	32	32	32	32	37	32	32	32	32
Terminations	00	01	02	03	33	43		07	08	09
Size B	15	4	4	12	4	4		4	4	11

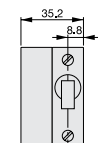
Fastenings and operations N° 05 - 09



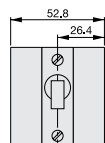
1 Width



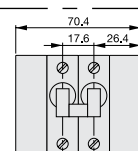
2 Widths



Pole N° 2 Pole N° 1



Pole N° 3 Pole N° 2 Pole N° 1



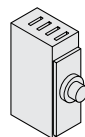
Pole N° 4 Pole N° 3 Pole N° 2 Pole N° 1

Four-pole circuit breaker :
Fastening and operation N° 05 only

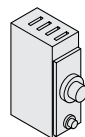
NOTE :
Neutral on pole N° 1
any
Fastenings and operations

Fastenings and operations (3 poles max. except 02 : 2 poles and 05 : 4 poles)

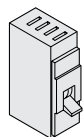
PROJECTION MOUNTING



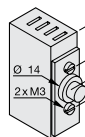
00



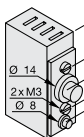
01



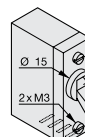
02



03

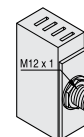


04

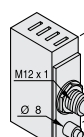


05

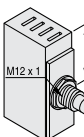
SCREW FLUSH MOUNTING



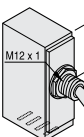
06



07



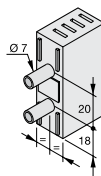
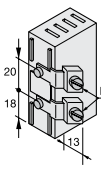
08



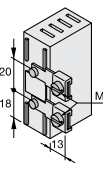
09

Maximum thickness of mounting panel :
6 mm. 6 mm. 6 mm. 6 mm.
Tightening torque :
1,8 Nm max. 1,8 Nm max. 1,8 Nm max. 3 Nm max.

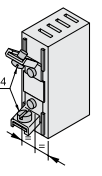
Terminations

16 A max.
Except Fastening 08

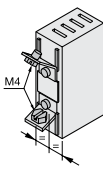
2 poles max.



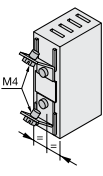
2 poles max.



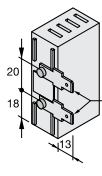
03



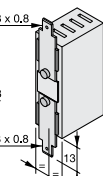
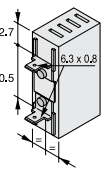
33



240 A max.



07

16 A max.
2 poles max.

16 A max.