

S200 UL 489 Series

eake



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



S200U-K, 240 VAC Branch circuit protection UL 489, CSA 22.2 No. 5



S201U-K



S202U-K



15



S204U-K

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

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

15.2

S200U-Z, 240 VAC Branch circuit protection UL 489, CSA 22.2 No. 5





S201U-Z





S203U-Z



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

Tripping characteristic Z

UL 489
240 VAC
10 kA

10101	
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

Note. This pleaker IUI AU use Of

Low Voltage Products & Systems

Discount schedule CB-17 [BM]



K

S200UP-K, 480Y/277 VAC Branch circuit protection UL 489, CSA 22.2 No. 5



S201UP-K



S202UP-K



S203UP-K



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

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

Discount schedule CB-17 [BM]

Low Voltage Products & Systems

S200UP-Z, 277/480Y/277 VAC Branch circuit protection UL 489, CSA 22.2 No. 5



Ζ



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
	0.5	S201UP-Z0.5			0.5	S203UP-Z0.5	
	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	
4	5	S201UP-Z5	\$ 80	•	5	S203UP-Z5	\$ 285
	6	S201UP-Z6	+	3	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	
	20	S201UP-Z20			20	S203UP-Z20	
	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	
0	5	S202UP-Z5	212	4	5	S204UP-Z5	388
2	6	S202UP-Z6		4	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	S202LIP-725			25	S204UP-725	

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



15

Note: This breaker for AC use only

Discount schedule CB-17 [BM]

Low Voltage Products & Systems ABB Inc. • 888-385-1221 • www.abb-control.com



S201DC, 60 VDC Branch circuit protection UL 489, CSA 22.2 No. 5



S201DC-K



S201DC-Z

60 VDC

Single Pole

S201DC

LOAD

-1

+2

No. of	Rated	Catalog number	List price
poles	current	Catalog humber	List price
	I		
	1	S201DC-K1	
	1.6	S201DC-K1.6	
	2	S201DC-K2	
	3	S201DC-K3	
	4	S201DC-K4	
-	6	S201DC-K6	\$ 36
	8	S201DC-K8	•
	10	S201DC-K10	
	13	S201DC-K13	
	16	S201DC-K16	
	20	S201DC-K20	
	25	S201DC-K25	
	1	S201DC-71	
	16	S201DC-71.6	
	2	S201DC-72	
	3	S201DC-73	
		S201DC-74	38
-	6	S201DC-76	00
	8	S201DC-78	
	10	S201DC-710	
	16	S201DC-Z10	
	20	\$201DC-210	
	20	S201DC-Z20	
	. 20		

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



Note: This breaker for DC use only.

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



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





S2C-H6RU



S2C-S6RU



S2C-DH



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 1260 VAC/DC	S2C-A1U	\$ 89	
For field mounting: right side 110415 VAC	S2C-4211	89	
110250 VDC	020 /120	03	

Possible mounting arrangements of MCB accessories



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

15.7



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



Approximate dimensions in mm

S200U



S200UP



S201DC



Auxiliary contact S2C-H6RU

Auxiliary contact in ON position



Auxiliary contact in OFF position

12 14 I

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





Shunt trip S2C-A...U



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



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

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		6	1	103.2	PS 1/6/16BP	\$ 19
S200UP	80	12	1	208.8	PS 1/12/16BP	30
S201DC		18	1	314.4	PS 1/18/16BP	40
S200U		6	2	103.2	PS 2/6/16BP	22
S200UP	80	12	2	208.8	PS 2/12/16BP	35
S201DC		18	2	314.4	PS 2/18/16BP	50
S200U		6	3	103.2	PS 3/6/16BP	25
S200UP	80	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

SIDES OF MCBS



ORDER TO INCREASE AMPACITY TO 130 AMPS

3 Phase

2 Phase

0.01

0 0 10 0.10.10.10



SZ-BSK

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



Technical data	S200U	S200UP	S201DC		
Specifications:	UL 489, CSA C 22.2	UL 489, CSA C 22.2 No. 5, IEC 60 947-2			
UL File-Number:	E 212323, UL, Curren	t 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	10 kA			
Frequency:	50/6	0 Hz	50/60 Hz		
Degree of protection:	IP	20	IP 20		
Mounting position:	Vertical an	d horizontal	Vertical and horizontal		
Fixing:	35 mm	DIN rail	35 mm DIN rail		
Clamps only for Cu:	18-4 AWG (0.	75 25 mm²)	18-4 AWG (0.75 25 mm ²)		
Service life, mech. and at rated load:	20,000 o	perations	10,000 operations		
Tightening torque:	25 in. Ibs	s (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 mm2)
Tightening torque:	11 in.lbs (1.2 Nm)
Shock resistance acc. to DIN IEC 68-2-6:	5 g, 20 frequency cycles 51505 Hz at 24 VAC/DC, 5 mA auto-reclosing < 10 ms
Mechanical service life:	10,000 operations

Shunt trip		Туре	S2C-A1U	S2C-A2U
Rated voltage	AC DC	V V	12 60 12 60	110 415 110 250
Max. release duration		ms	<10	<10
Min. release voltage	AC DC	V V	7 10	55 80
Consumption on release	AC DC	VA VA	40 200 40 200	55 210 55 110
Coil resistance		Ω	3.7	225
Terminals		AWG/mm ²	186 / 0.75 – 16	186 / 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 $m\Omega$, power loss per pole in W.

Туре	Rated current	Device series D K Z		Device series Z		
	A	mΩ	w	mΩ	w	
	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	
S200U S200UP	6 8 10	67 45 19	2.4 2.9 1.9	104 55 21	3.7 3.5 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



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 thermalmagnetic 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	С
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



S201-B





S203-B





S201-BNA



No. of poles	Rated current	Catalog number	List price	No. of poles	Rated current	Catalog number	List price	
1	6 10 13 16 20 25	S201-B6 S201-B10 S201-B13 S201-B16 S201-B20 S201-B25	\$ 20	3	6 10 13 16 20 25	S203-B6 S203-B10 S203-B13 S203-B16 S203-B20 S203-B25	\$ 77	
	32	S201-B32	25	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	
	6 10	S201-B6NA	38		10	S203-B6NA		
	10	5201-D10NA			10	5203-D IUNA		
1	16	S201-B15NA		3	16	S203-B15NA	96	
	20	S201-B20NA		•	20	S203-B20NA		
+	25	S201-B25NA			+	25	S203-B25NA	
ΝΔ	32	S201-B32NA	45	ΝΙΛ	32	S203-B32NA	100	
INA	40	S201-B40NA	52	INA	40	S203-B40NA	107	
	50	S201-B50NA	57		50	S203-B50NA	114	
	63	S201-B63NA	64		63	S203-B63NA	121	
	6	S202-B6			6	S204-B6		
	10	S202-B10			10	S204-B10		
	13	S202-B13	52		13	S204-B13	105	
	16	S202-B16	52		16	S204-B16	105	
2	20	S202-B20		1	20	S204-B20		
2	25	S202-B25		4	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





Low Voltage Products & Systems ABB Inc. • 888-385-1221 • www.abb-control.com Discount schedule CB-17 [BM]



S200-D, 480Y/277 VAC Supplemental protectors UL 1077, CSA 22.2, No. 235





S202-D



S203-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 1 1.6 2 3 4 6 8 10 13 16 20 25	S201-D0.5 S201-D1 S201-D1.6 S201-D2 S201-D3 S201-D4 S201-D6 S201-D10 S201-D10 S201-D10 S201-D13 S201-D16 S201-D25	\$ 27	3	0.5 1 1.6 2 3 4 6 8 10 13 16 20 25	S203-D0.5 S203-D1 S203-D1.6 S203-D2 S203-D3 S203-D4 S203-D4 S203-D6 S203-D10 S203-D10 S203-D10 S203-D16 S203-D25	\$ 98
	32 40 50 63	S201-D32 S201-D40 S201-D50 S201-D63	29 34 38 50		32 40 50 63	S203-D32 S203-D40 S203-D50 S203-D63	98 105 114 130
1 + NA	0.5 1 1.6 2 3 4 6 8 10 13 16 20 25 32 32	S201-D0.5NA S201-D1NA S201-D1NA S201-D2NA S201-D3NA S201-D4NA S201-D6NA S201-D6NA S201-D10NA S201-D10NA S201-D10NA S201-D16NA S201-D16NA S201-D20NA S201-D25NA S201-D22NA	57	3 + NA	0.5 1 1.6 2 3 4 6 8 10 13 16 20 25 32	S203-D0.5NA S203-D1NA S203-D1NA S203-D2NA S203-D3NA S203-D4NA S203-D4NA S203-D6NA S203-D10NA S203-D10NA S203-D13NA S203-D13NA S203-D10NA S203-D25NA S203-D25NA S203-D25NA	139
	40 50 63	S201-D40NA S201-D50NA S201-D63NA	66 70 77		40 50 63	S203-D40NA S203-D50NA S203-D63NA	139 145 155
2	0.5 1 1.6 2 3 4 6 8 10 13 16 20 25	S202-D0.5 S202-D1 S202-D16 S202-D2 S202-D3 S202-D4 S202-D6 S202-D8 S202-D10 S202-D13 S202-D13 S202-D16 S202-D16 S202-D20 S202-D25	64	4	0.5 1 1.6 2 3 4 6 8 10 13 16 20 25	S204-D0.5 S204-D1 S204-D1 S204-D2 S204-D2 S204-D4 S204-D4 S204-D8 S204-D10 S204-D13 S204-D13 S204-D16 S204-D20 S204-D25	158
	32 40 50 63	S202-D32 S202-D40 S202-D50 S202-D63	70 105 114 130		32 40 50 63	S204-D32 S204-D40 S204-D50 S204-D63	155 168 178 188

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.



15.18

S200-K, 480Y/277 VAC Supplemental protectors UL 1077, CSA 22.2, No. 235



	No. of	Rated	Catalag averation	Listavisa	No. of	Rated	Catalan number	Listavias		
	poles	current	Catalog number	List price	poles	current	Catalog number	List price		
n		0.5	S201-K0.5			0.5	S203-K0.5			
		1.6	S201-K1 S201-K1.6			1.6	S203-K1 S203-K1.6			
1.446		2	S201-K2			2	S203-K2			
		3	S201-K3			3	S203-K3			
1.		4	S201-K4			4	S203-K4			
10		6	S201-K5	A AT		6	S203-K5	* • • •		
E	-	8	S201-K8	\$27		8	S203-K8	\$ 96		
- 1	I	10	S201-K10		2	10	S203-K10			
		15	S201-K15		3	15	S203-K15			
		16	S201-K16			16	S203-K16			
S201-K		20	S201-K20			20	S203-K20			
		30	S201-K25			30	S203-K30			
		32	S201-K32	32		32	S203-K32	107		
		40	S201-K40	36		40	S203-K40 S203-K50	109		
2.1.1		60	S201-K60	45		60	S203-K60	137		
E C		63	S201-K63	50		63	S203-K63	144		
		0.5	S201-K0.5NA			0.5	S203-K0.5NA			
		1.6	S201-K1NA S201-K1.6NA			1.6	S203-K1NA S203-K1.6NA			
6000 K		2	S201-K2NA			2	S203-K2NA			
5202-K		3	S201-K3NA			3	S203-K3NA			
10000		6	S201-K6NA	59	3	6	S203-K6NA	139		
	I	8	S201-K8NA			8	S203-K8NA			
	+	10	S201-K10NA			10	S203-K10NA			
10	NA	13	S201-K13NA S201-K16NA			13	S203-K13NA S203-K16NA			
E/E/m		20	S201-K20NA			20	S203-K20NA			
A DE LE		25	S201-K25NA			25	S203-K25NA	111		
		32 40	S201-K32NA S201-K40NA	62		32	S203-K32NA S203-K40NA	144		
		50	S201-K50NA	77		50	S203-K50NA	169		
S203-K		63	S201-K63NA	88		63	S203-K63NA	178		
		0.5	S202-K0.5 S202-K1			0.5	S204-K0.5 S204-K1			
1 H 1 K 1		1.6	S202-K1.6			1.6	S204-K1.6			
				2	S202-K2			2	S204-K2	
		4	S202-K3 S202-K4			3	S204-K3 S204-K4			
A A A A A A A A A A A A A A A A A A A				5	S202-K5			5	S204-K5	
		6	S202-K6	61		6	S204-K6	132		
		10	S202-K0			10	S204-K10			
a second	2	13	S202-K13		4	13	S204-K13			
		15	S202-K15 S202-K16			15	S204-K15			
S204-K		20	S202-K20			20	S204-K20			
		25	S202-K25			25	S204-K25			
		30	S202-K30 S202-K32	70		30	S204-K30 S204-K32	137		
••		40	S202-K40	73		40	S204-K40	146		
		50	S202-K50	80		50	S204-K50	155		
2.3		63	S202-K60	102		63	S204-K63	171		
	Trippin	g chara	acteristic K				13-1. 1-1-1-1			
	UL 1077									
S201-KNA	480Y/27	VAC						···· · ·		
	0 KA							· :		
and the second second	Inductiv	ve loads					- <u>}- </u> \			
	• K Cu	irve					-11 λ \times			
12 110	 Designation 	gned for	allowing higher in-i	rush			- 1:41 N	11. L		
E HB	curre Exon	ents durir	ig system start up					N		
							: . `			
A Martin	Access	sories 8	technical data					1		
	Access	ories – S	bee page 15.26	15 00				- F		
S203-KNA	rechnic	ai data -	- See page 15.76 -	13.82						
0200-1114	Note: Sv	witchina	neutral is noted by	"NA" in th	е		- 1 I I I I I I I I I I I I I I I I I I	111		
	Cá	atalog nu	mber.					11.11.11.11.11.11.11.11.11.11.11.11.11.		

Discount schedule CB-17 [BM]



S200P-K, 480Y/277 VAC Supplemental protectors UL 1077, CSA 22.2, No. 235





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 0.3 0.5 0.75 1 1.6 2 3 4 6 8 10 13 16 20 25	S201P-K0.2 S201P-K0.3 S201P-K0.5 S201P-K1 S201P-K1 S201P-K4 S201P-K3 S201P-K4 S201P-K4 S201P-K6 S201P-K6 S201P-K10 S201P-K10 S201P-K10 S201P-K10 S201P-K20 S201P-K20 S201P-K25	45 54 64	3	current Catalog number 0.2 \$203P-K0.2 0.3 \$203P-K0.3 0.5 \$203P-K0.5 0.75 \$203P-K1 1 \$203P-K1,6 2 \$203P-K1,6 2 \$203P-K2 3 \$203P-K3 4 \$203P-K4 6 \$203P-K8 10 \$203P-K8 10 \$203P-K10 13 \$203P-K13 16 \$203P-K16 20 \$203P-K25	\$ 146	
	32 40 50 63	S201P-K32 S201P-K40 S201P-K50 S201P-K63			32 40 50 63	S203P-K32 S203P-K40 S203P-K50 S203P-K63	157 180 205
2	0.2 0.3 0.5 0.75 1 1.6 2 3 4 6 8 10 13 16 20 25 32 40	S202P-K0.2 S202P-K0.3 S202P-K0.5 S202P-K0.75 S202P-K1 S202P-K1 S202P-K2 S202P-K3 S202P-K4 S202P-K4 S202P-K6 S202P-K10 S202P-K10 S202P-K10 S202P-K13 S202P-K16 S202P-K20 S202P-K25 S202P-K32 S202P-K32	96 100 107				
	50 63	S202P-K50 S202P-K63	114 130				

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





Ζ



S203P-Z

No. of poles	Rated current	Catalog number	List price	No. of poles	Rated current	Catalog number	List price
poles1	0.5 1 1.6 2 3 4 6 8 10 16 20 25	S201P-Z0.5 S201P-Z1 S201P-Z1.6 S201P-Z2 S201P-Z3 S201P-Z4 S201P-Z4 S201P-Z8 S201P-Z8 S201P-Z10 S201P-Z16 S201P-Z20 S201P-Z25	\$ 54	3	0.5 1 1.6 2 3 4 6 8 10 16 20 25	S203P-Z0.5 S203P-Z1 S203P-Z1.6 S203P-Z2 S203P-Z3 S203P-Z4 S203P-Z4 S203P-Z8 S203P-Z8 S203P-Z10 S203P-Z16 S203P-Z10 S203P-Z20 S203P-Z25	\$ 187
	32 40 50 63	S201P-Z32 S201P-Z40 S201P-Z50 S201P-Z63	57 61 70 80		32 40 50 63	S203P-Z32 S203P-Z40 S203P-Z50 S203P-Z63	192 196 214 228
2	0.5 1 1.6 2 3 4 6 8 10 16 20 25 22	S202P-Z0.5 S202P-Z1 S202P-Z1.6 S202P-Z2 S202P-Z3 S202P-Z4 S202P-Z6 S202P-Z6 S202P-Z70 S202P-Z10 S202P-Z10 S202P-Z16 S202P-Z20 S202P-Z25 S202P-Z25	102				
	32 40 50 63	S202P-Z32 S202P-Z40 S202P-Z50 S202P-Z63	109 114 125 137				

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



S281-KW



S282-KW



15

S283-KW

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

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





15.22

S280UC-K, 500 VDC Supplemental protectors UL 1077, CSA 22.2, No. 235





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

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.



15

15.23



S280UC-Z, 500 VDC Supplemental protectors UL 1077, CSA 22.2, No. 235



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 1 1.6 2 3 4 6 8 10 16 20 25	S281UC-Z0.5 S281UC-Z1 S281UC-Z1.6 S281UC-Z2 S281UC-Z3 S281UC-Z4 S281UC-Z6 S281UC-Z6 S281UC-Z10 S281UC-Z10 S281UC-Z10 S281UC-Z20 S281UC-Z25	\$ 190 190 210 270	3	0.5 1 1.6 2 3 4 6 8 10 16 20 25	S283UC-Z0.5 S283UC-Z1 S283UC-Z1.6 S283UC-Z2 S283UC-Z3 S283UC-Z4 S283UC-Z6 S283UC-Z6 S283UC-Z10 S283UC-Z10 S283UC-Z10 S283UC-Z20 S283UC-Z20 S283UC-Z25	\$ 660
	32 40 50 63	S281UC-Z32 S281UC-Z40 S281UC-Z50 S281UC-Z63			32 40 50 63	S283UC-Z32 S283UC-Z40 S283UC-Z50 S283UC-Z63	680 740 850 950
2	0.5 1 1.6 2 3 4 6 8 10 16 20 25	S282UC-Z0.5 S282UC-Z1 S282UC-Z1 S282UC-Z2 S282UC-Z3 S282UC-Z4 S282UC-Z4 S282UC-Z6 S282UC-Z8 S282UC-Z10 S282UC-Z16 S282UC-Z16 S282UC-Z20 S282UC-Z25 S282UC-Z25	440				

480

560

620

Tripping characteristic Z

40

50

63

S282UC-Z40

S282UC-Z50

S282UC-Z63

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







S291-C



S292-C



S293-C



S294-C

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

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

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) A2-110-415 VAC (110 – 250 VDC)	S2C-A1 S2C-A2	\$ 75 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







S2C-H6R





S2C-UA

Discount schedule CB-17 [BM]

н

S/H

ST

UR

15.26



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



S290-H11



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

S200, S200P



•	-	52.5		ŀ
	Ø	Ø	Ø	ſ
	Ø	Ø	\otimes	

35

 \otimes

 \otimes

 \otimes \otimes



S280UC & S280W





78.75



S290





70







Addition of S2C-A...U



Accessories S200 & S200P UL 1077, CSA 22.2, No. 235





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

2 Phase

For	Amp	Number	Phases	Busbar length	End cap catalog	Catalog	List
use on:	rating	of poles		(mm)	number	number	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	Amp	Number	Phases	Busbar length	End cap catalog	Catalog	List
use on:	rating	of poles		(mm)	number	number	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	Amp	Number	Phases	Busbar length	End cap catalog	Catalog	List
use on:	rating	of poles		(mm)	number	number	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







3 Phase + N

Low Voltage Products & Systems



Accessories S200 & S200P UL 1077, CSA 22.2, No. 235

1 Phase with 1 auxiliary







3 Phase + N

15



SZ-BSK



2 Phase with 1 auxiliary

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

3 Phase with 1 auxiliary

For	Amp	Number	Phases	Busbar length	End cap catalog	Catalog	List
use on:	rating	of poles		(mm)	number	number	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	Amp	Number	Phasas	Busbar length	End cap catalog	Catalog	List
use on:	rating	of poles	Filases	(mm)	number	number	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, VI	DE 0660, 60898, 60947-2	UL 1077, IEC 898		
UL File-Number:	E 76126	6 UL CL			
No. of poles:	1, 2,	3 & 4	1, 2, 3 & 4		
Tripping characteristics:	B,C,D, K & Z	K & Z	С		
Rated current:	0.5-63 A	0.2-63 A	80-125 A		
Rated voltage:	Multi pole: 48	80Y/277 VAC	277Y/480 VAC		
Short circuit capacity:	S200 6kA; S	S200 6kA; S200P 10 kA			
Frequency:	50/6	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 o	perations	10,000 operations		
Tightening torque:	25 in. Ibs	; (2.8 Nm)	35 in. lbs		
Ambient temperature:	– 25°C – 13°F	-25°C13°F / 45°C 113			
Shock resistance:	30 g at least 3 impa of 1	acts, shock duration 1 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 (0.752.5)
Tightening torque:	11 in. lbs (1.2 Nm)
Shock resistance acc. to DIN IEC 68-2-6:	5 g, 20 frequency cycles 51505 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 DC	12 60 V 12 60 V	110 415 V 110 250 V				
Max. release duration		<10 ms	<10 ms				
Min. release voltage	AC DC	7 V 10 V	55 V 80 V				
Consumption on release	AD DC	40 200 VA 40 200 VA	55 210 VA 55 110 VA				
Coil resistance		3.7 Ω	225 Ω				
Terminals		186/0.75 – 16 AWG/mm ²	186/0.75 – 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 DC	12 V	24 V	24 V	48 V	48 V	110 V	110 V	230 V	230 V	400 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									



Internal resistance and power loss

Internal resistance per pole in $m\Omega$, power loss per pole in W

Туре	Rated current	Device ser B, C, D①	ies	Device seri K	ies	Device series Z		
	A	mΩ	w	mΩ	w	mΩ	w	
S200 & S200P	0.5 1 1.6	5500 1440 630	1.4 1.4 1.6	6340 1550 695	1.6 1.6 1.8	10100 2270 1100	2.5 2.3 2.8	
	pe Rated current A 200 & 0.5 1 1.6 2 3 4 6 8 10 13 16 20 25 32 40 50 62	460 150 110	1.8 1.3 1.8	460 165 120	1.9 1.5 2.0	619 202 149	2.5 1.8 2.4	
	6 8 10	55 15 13.3	2.0 1.0 1.3	52 38 12.6	1.9 2.5 1.26	104 53.9 17.5	3.7 3.45 1.7	
	13 16 20	13.3 7.0 6.25	2.3 1.8 2.5	12.6 7.7 6.7	1.26 2.0 2.7	- 10.9 6.0	- 2.8 2.4	
	25 32 40	5.0 3.6 3.0	3.2 3.7 4.8	4.6 3.5 2.8	2.9 3.6 4.5	4.1 2.8 2.5	2.6 2.9 4.1	
	50 63	1.3 1.2	3.25 4.8	1.25 0.7	2.9 5.2	1.8 1.3	4.4 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°)											
	-40/-40	-30/-22	-20/-4	-10/14	0/32	10/50	20/68	30/86	40/104	50/122	60/140	70/158
Amps	0.67 1.33 2.13 2.67 4.0 5.3 8.0 10.7 13.3	0.65 1.29 2.07 2.58 3.9 5.2 7.7 10.3 12.9	0.62 1.25 2.00 2.49 3.7 5.0 7.5 10.0 12.5	0.60 1.20 1.92 2.40 3.6 4.8 7.2 9.6 12.0	0.58 1.15 1.85 2.31 3.5 4.6 6.9 9.2 11.5	0.55 1.11 1.77 2.21 3.3 4.4 6.6 8.8 11.1	0.53 1.05 1.69 2.11 3.2 4.2 6.3 8.4 10.5	0.50 1.00 1.60 2.00 3.0 4.0 6.0 8.0 10.0	0.47 0.94 1.51 1.89 2.8 3.8 5.7 7.5 9.4	0.44 0.88 1.41 1.76 2.6 3.5 5.3 7.1 8.8	0.41 0.82 1.31 1.63 2.4 3.3 4.9 6.5 8.2	0.37 0.75 1.19 1.49 2.2 3.0 4.5 6.0 7.5
	17.3 21.3 26.7 33.3 42.7 53.3	16.8 20.7 25.8 32.3 41.3 51.6	16.2 20.0 24.9 31.2 39.9 49.9	15.6 19.2 24.0 30.0 38.5 48.1	15.0 18.5 23.1 28.9 37.0 46.2	14.4 17.7 22.1 27.6 35.4 44.2	13.7 16.9 21.1 26.4 33.7 42.2	13.0 16.0 20.0 25.0 32.0 40.0	12.3 15.1 18.9 23.6 30.2 37.7	11.5 14.1 17.6 22.0 28.2 35.3	10.6 13.1 16.3 20.4 26.1 32.7	9.7 11.9 14.9 18.6 23.9 29.8
	66.7 84.0 112.6 140.7 175.9	64.5 81.3 107.2 134.0 167.5	62.4 78.6 102.1 127.6 159.5	60.1 75.7 97.2 121.6 151.9	57.7 72.7 92.6 115.8 114.7	55.3 69.6 88.2 110.3 137.8	52.7 66.4 84.0 105.0 131.3	50.0 63.0 80.0 100.0 125.0	47.1 59.4 76.0 95.0 118.8	44.1 55.6 72.2 90.3 112.8	40.8 51.4 68.6 85.7 107.2	37.3 47.0 65.2 81.5 101.8



Technical data S200, S200P & S290

UL 1077, CSA 22.2, No. 235

Tripping characteristic B





Tripping characteristic D



Tripping characteristic K





Tripping characteristic Z



Miniature circuit breaker Application guide

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 a 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.

Current Flow During Operation



All highlighted components are energized during operation

Magnetic trip units (short circuit protection)

Movable Contact

trip unit is comprised of an electromagnet and an armature.

The Magnetic trip unit protects against a short circuit. The magnetic

Armature and Plunger

Magnet Trip Unit

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 breakers contacts during a short circuit is complete in .5 milli-seconds.



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 15 quicker as current increases in magnitude.

Overload protection is applicable to any installation, conductor, or component which can be subjected to low-magnitude but longtime 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.



Circuit breaker construction



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 arch 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 shortcircuit 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 ¼ cycle (4.17ms). ABB's current limiting breakers can interrupt a fault in about ½ 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.



Circuit breaker current limitation



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.







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 down stream 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.



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 down stream 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 down stream.





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

