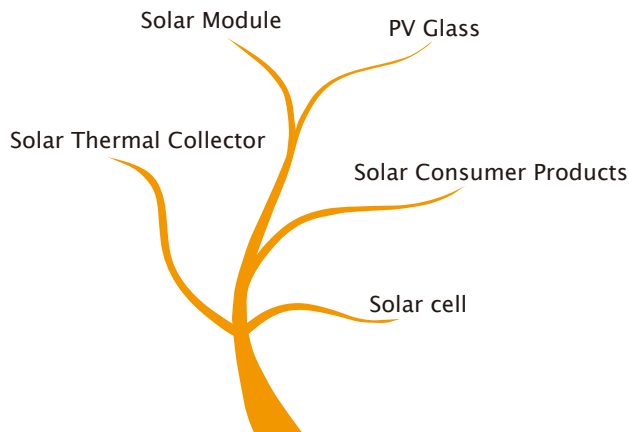


TPS107S-160W-POLY 160W Poly Crystalline Solar Module



Not Your Average Solar Provider

Our Products Categories



Professional Solar Provider Since 1992

Key Feature

- Plus power tolerance: +3%
- Independent research anti-reflective and self-cleaning glass surface reduces power loss from dirt and dust
- Excellent performance under low light environments, create better kWh/kW ratio and produce average 2-3% more electricity

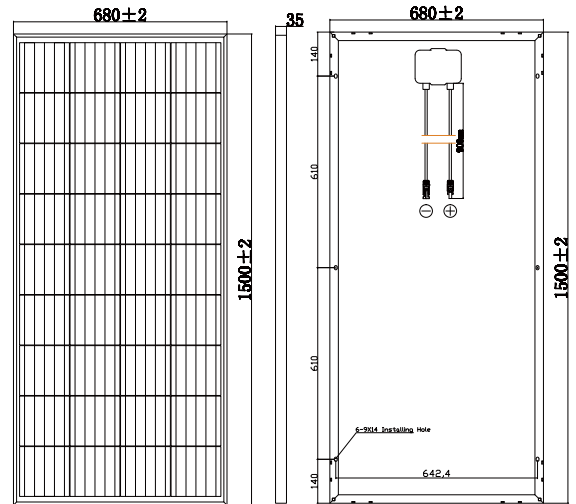
Best Quality

- Junction box and bypass diodes guarantee the modules free of overheating and “hot spot effect”
- 100% EL double-inspection ensures modules are defects free

Certification



Electrical Characteristics



MECHANICAL SPECIFICATION

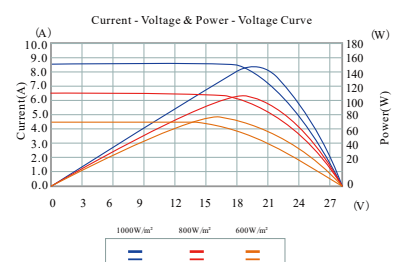
Cell Type	Poly crystalline 158.75*158.75mm
Number of cells	36pcs
Dimensions	680x1500x35mm
Front Glass	3.2mm Low iron tempered glass
Frame	Anodized aluminum alloy
Connector	MC4 PLUG
Output Cables	Length 0.9m

PERFORMANCE AT STANDARD TEST CONDITION (STC:1000W/m²,25°C,AM1.5)

Module Series	TPS107S-160W-POLY
Maximum Power at STC(Pmax)	160W (+/-5%)
Short Circuit Current(Isc)	9.05A
Open Circuit Voltage(Voc)	22.68V
Maximum Power Current(Imp)	8.39A
Maximum Power Voltage(Vmp)	19.08V

ABSOLUTE MAXIMUM LIMITS

Parameters	Unit	Rating
Operation temperature	°C	-40 to +85
Storage temperature	°C	-40 to +85



NOTE:READ SAFETY AND INSTALLATION INSTRUCTIONS OR CONTACT THE TECHNICAL SERVICE FOR FURTHER INFORMATION BEFORE USING THE PRODUCT.
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Specification

Code:460-6145

Nominal Voltage	12V	
Nominal Capacity(10HR)	250.0AH	
Dimensions	Length	522±3mm (20.55 inches)
	Width	268±3mm (10.55 inches)
	Container Height	220±3mm (8.66 inches)
	Total Height (with Terminal)	226±3mm (8.90 inches)
Approx Weight	Approx 72.5 kg (160.0lbs)	
Terminal	T11	
Container Material	ABS	
Rated Capacity	260.0 AH/13.0A	(20hr , 1.80V/cell,25°C/77°F)
	250.0 AH/25.0A	(10hr, 1.80V/cell,25°C/77°F)
	215.0 AH/43.0A	(5hr, 1.75V/cell,25°C/77°F)
	195.3 AH/65.1A	(3hr, 1.75V/cell,25°C/77°F)
	152.5 AH/152.5A	(1hr, 1.60V/cell,25°C/77°F)
Max. Discharge Current	2500A (5s)	
Internal Resistance	Approx 2.5mΩ	
Operating Temp.Range	Discharge	-15~50°C (5~122°F)
	Charge	0~40°C (32~104°F)
	Storage	-15~40°C (5~104°F)
Nominal Operating Temp. Range	25±3°C (77±5°F)	
Cycle Use	Initial Charging Current less than 75.0A.Voltage	
	14.4V~15.0V at 25°C(77°F)Temp. Coefficient -30mV/°C	
Standby Use	No limit on Initial Charging Current Voltage	
	13.5V~13.8V at 25°C(77°F)Temp. Coefficient -20mV/°C	
Capacity affected by Temperature	40°C (104°F)	103%
	25°C (77°F)	100%
	0°C (32°F)	86%
Self Discharge	CT series batteries may be stored for up to 6 months at 25°C(77°F) and then a freshening charge is required. For higher temperatures the time interval will be shorter.	



Applications

- ◆ Emergency backup power supply
- ◆ Emergency light
- ◆ Railway signal
- ◆ Aircraft signal
- ◆ Alarm and security system
- ◆ Electronic apparatus and equipment
- ◆ Communication power supply
- ◆ DC power supply
- ◆ Auto control system



Constant Current Discharge (Amperes) at 25 °C (77°F)

F.V/Time	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	336.4	286.1	239.3	190.2	143.9	117.9	75.1	59.4	48.5	39.1	34.0	27.6	23.6	12.9
1.80V/cell	429.8	345.7	282.9	224.4	167.4	132.0	81.9	63.9	51.8	42.0	36.5	29.3	25.0	13.0
1.75V/cell	472.3	377.6	304.3	233.0	173.7	138.1	85.0	65.1	52.9	43.0	37.5	29.8	25.3	13.1
1.70V/cell	/	403.1	319.8	242.5	180.7	142.5	88.4	66.9	54.3	44.2	38.3	30.2	25.5	13.4
1.65V/cell	/	428.6	339.7	255.8	185.2	147.3	90.8	69.7	56.2	45.4	39.1	30.7	26.0	13.5
1.60V/cell	/	458.4	361.9	270.1	193.0	152.5	93.9	71.9	58.0	46.9	40.0	31.0	26.3	13.6

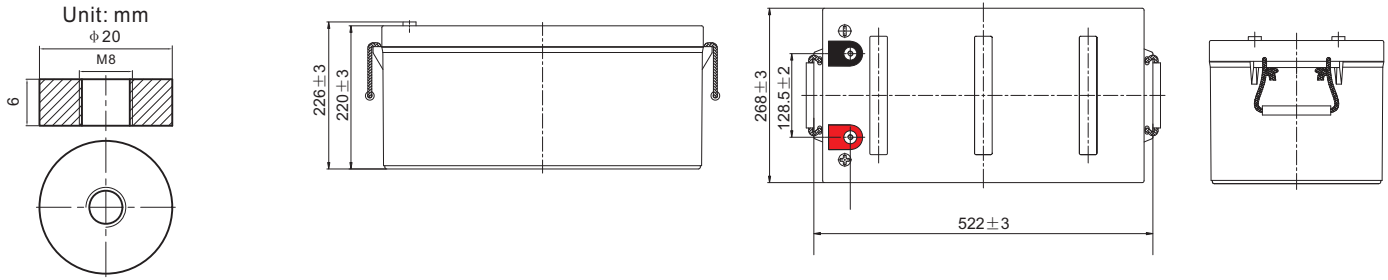
Constant Power Discharge (Watts/cell) at 25 °C (77°F)

F.V/Time	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	621.4	533.8	451.0	362.5	276.7	227.3	145.8	115.7	94.8	76.6	66.9	54.5	46.7	25.5
1.80V/cell	784.6	636.3	525.3	421.2	319.3	253.3	158.0	123.8	100.7	81.9	71.5	57.7	49.4	25.7
1.75V/cell	848.3	686.5	559.7	433.6	328.2	263.8	163.3	125.6	102.6	83.8	73.2	58.5	49.8	25.9
1.70V/cell	/	722.7	583.8	448.8	340.0	271.2	169.4	128.9	105.1	85.7	74.6	59.3	50.3	26.4
1.65V/cell	/	762.6	615.6	469.6	345.4	278.3	173.2	133.7	108.3	87.8	76.0	60.1	51.2	26.7
1.60V/cell	/	802.1	648.6	492.3	358.0	286.7	178.1	137.2	111.3	90.4	77.4	60.5	51.7	26.8

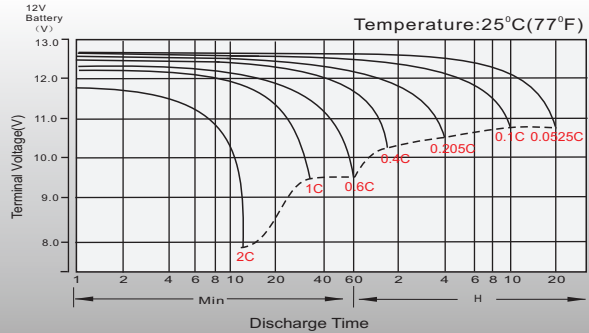
Specifications subject to change without notice.

Dimensions

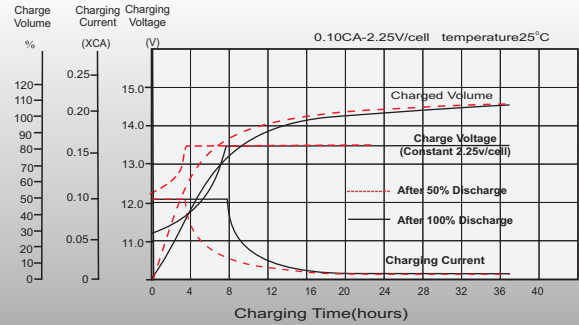
T11 Terminal



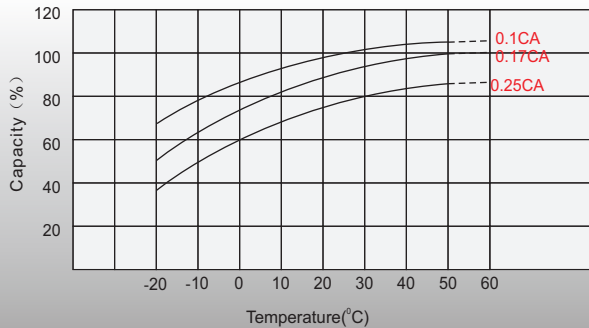
Discharge Characteristics



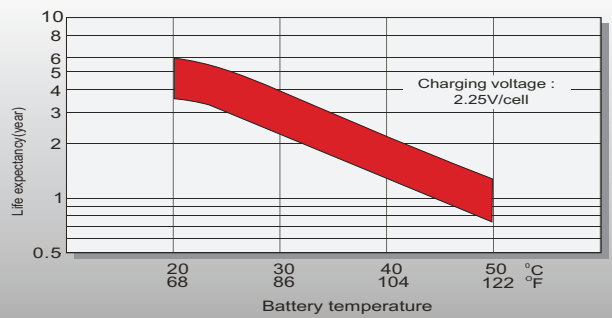
Float Charging Characteristics



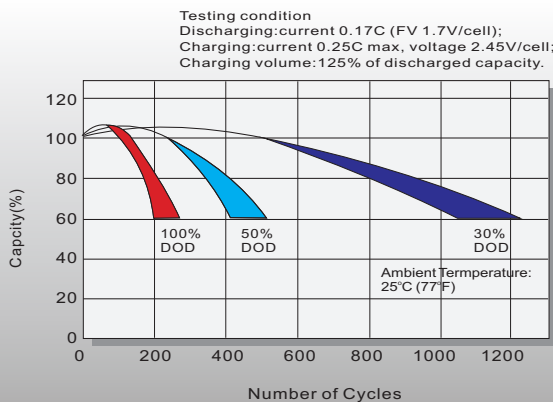
Temperature Effects in Relation to Battery Capacity



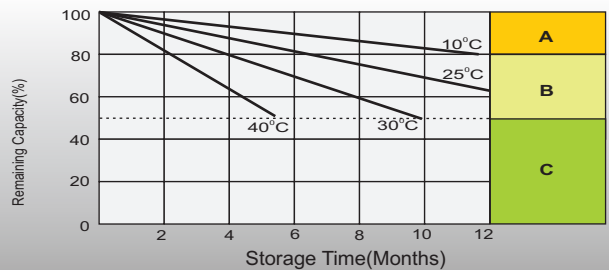
Effect of Temperature on Long Term Float Life



Cycle Life in Relation to Depth of Discharge



Self Discharge Characteristics



- A** No supplementary charge required
(Carry out supplementary charge before use if 100% capacity is required.)
- B** Supplementary charge required before use. Optional charging way as below:
1. Charged for above 3 days at limited current 0.25CA and constant voltage 2.25V/cell.
2. Charged for above 20 hours at limited current 0.25CA and constant voltage 2.45V/cell.
3. Charged for 8-10 hours at limited current 0.05CA.
- C** Supplementary charge may often fail to recover the capacity.
The battery should never be left standing till this is reached.

Sales Office

Finland and Baltic countries

Celltech Oy
Höyläämötie 11 A, 00380 Helsinki, Finland
TEL: +358 (0) 207 999 640
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www.celltech.fi

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Celltech A/S
Lejrvej 25, 3500 Værløse, Denmark
TEL: +45 7025 2201
E-mail: info@celltech.dk
www.celltech.dk

Norway

Staubo Elektro-Maskin AS
Bjoernerudveien 12 C, 1266 Oslo, Norway
TEL: +47 22 75 35 00
E-Mail: post@staubo.no
www.staubo.no

KÄYTTÖOHJE

TURVALLISUUS

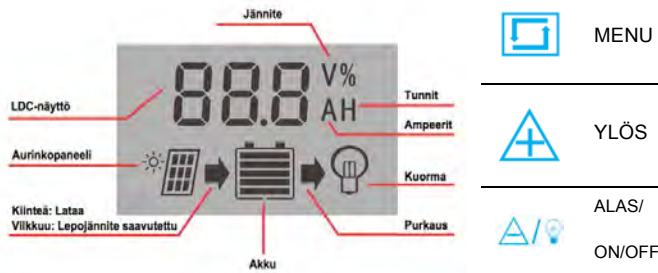
- Varmista että akun jännite on riittävän korkea** jotta säädin tunnistaa akun tyyppin ennen ensimmäistä asennusta.
 - Akun kaapeleiden tulee olla mahdollisimman lyhyet häviöiden minimoimiseksi.
 - Säädin soveltuu ainoastaan normaaleille liijyakuille.
- Säädin ei sovellu NiMH, Litium- tai vastaaville akkutyypeille.**
- Varaussäädin soveltuu ainoastaan aurinkopaneeli käyttöön.

Älä kytke varaussäätimeen muun tyyppisiä jännitelähteitä.

OMINAISUUDET

- Sisäänrakennettu mikrosäädin-piiri.
- Suuri LCD-näyttö, täysin säädettävät parametrit
- Täysi 4-asteinen latauksensäätö.
- Sisäänrakennettu ylikuormitus-, oikosulku- ja avoimen piirin suojaus, sekä väärän napaisuuden suojaus
- Kaksois-Mosfet väärän napaisuuden suojaus, matala lämmöntuotto.

LCD-NÄYTTÖ / PAINIKKEET



MENU: Valikossa liikkuminen, parametriarvon asetus pitkään painamalla.

YLÖS: Parametrin arvon lisääminen.

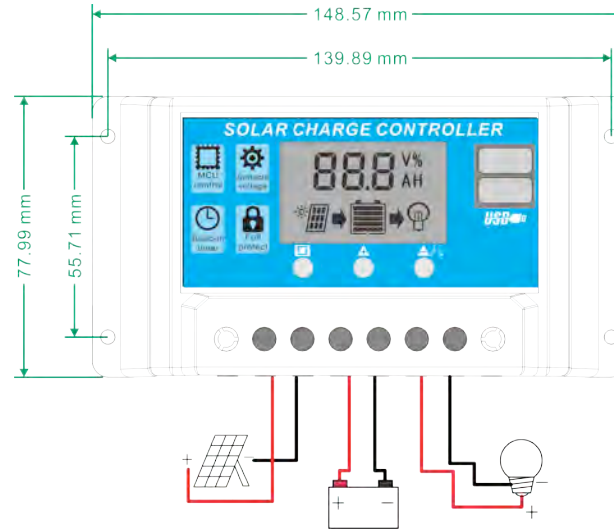
ALAS: Parametrin arvon laskeminen.

JÄRJESTELMÄN KYTKENTÄ

- Kytke akku varaussäätimeen - Plus ja miinus.
- Kytke aurinkopaneeli varaussäätimeen - Plus ja miinus.
- Kytke käytettävä sähkölaite varaussäätimeen - Plus ja miinus.

Asennuksen purku tapahtuu käänteisessä järjestyksessä!

Väärä kytkentäjärjestys voi vaurioittaa varaussäädintä.



NÄYTTÖ / ASETUKSET

Valikon selaaminen

Selaa valikoita MENU-painiketta painamalla

Parametrien asetus

Valikoissa 2-5, paina pitkään MENU-painiketta aktivoitaksesi parametrin asetustilan, aseta uusi arvo [YLÖS] ja [ALAS] painikkeilla, ja poistu asetustilasta painamalla pitkään MENU-painiketta. Tallenna uusi arvo painamalla pitkään [ALAS] painiketta.

- Perusnäyttö
- Lepojännite
- Kuorman uudelleenkytkentäraja
- Purkauksen katkaisuraja
- Toimintatila
- Accun tyyppi

Huom:

- Virransyötön manuaalinen ON/OFF-katkaisu tehdään [ALAS] painikkeella.
- Toimintatila voi olla jokin seuraavista
[24H] Virransyöttö aktiivisena ympäri vuorokauden.
[1-23H] Virransyötön katkaisu asetetun ajan kuluttua auringonlaskun jälkeen
[0H] Auringonnoususta auringonlaskuun

VIANMÄÄRITYS

Tilanne	Mahdollinen syy	Ratkaisu
Lataus-ikonia ei näy näytössä vaikka aurinko paistaa	Aurinkopaneeli kytkemättä tai väärin kytketty	Tarkasta paneelin kytkentä
Lataus-ikonia ei näy näytössä	Väärä toimintatila Akun alhainen varaus	Tarkasta asetus Lataa akku
Lataus-ikoni vilkkuu hitaasti	Ylikuormitus	Vähennä kuormitusta
Lataus-ikoni vilkkuu hitaasti	Oikosulkusuojaus	Tarkasta kytkennät
Virta katkenut kokonaan	Akku tyhjä/ väärä napaisuus	Tarkasta akku/ kytkennät

TEKNISET TIEDOT

MALLI	KLD1210	KLD1220	KLD1230	KLD4820	KLD4830
Akun jännite	12V/24V auto			48V	
Latausvirta	10A	20A	30A	20A	30A
Purkausvirta	10A	20A	30A	20A	30A
Maks. tulo paneelilta	<50V			<80V	
Akun tyyppi	B01 Suljettu		B02 Geeli		B03 Avoin
Tasaus	14.4V		14.2V		14.6V
Lepojännite	13.7V (Oletus, säädettävissä)				
Purkauksen katkaisuraja	10.7V (Oletus, säädettävissä)				
Purkauksen kytkentäraja	12.6V (Oletus, säädettävissä)				
USB-lähtö	5V/3A				
Virrankulutus	<10mA				
Käyttölämpötila	-35°C ~ +60°C				
Koko/ Paino	150*78*35mm /150g				

* Punaisella merkityt jännitteet X2, X4 = 24V /48V järjestelmässä.

* Tuotteen tietoja voidaan muuttaa ilman erillistä ilmoitusta.

System pro M compact® Miniature Circuit Breaker S 200/S 200 M



2GDC0021023S0012



2GDC0021038S0012

The miniature circuit breakers of the System pro M compact® series S 200 and S 200 M provide state-of-the-art safety and comfort. They stand out due to their high performance and the wide range of accessories and approvals.

Features

- Clear contact position indication in red/green (“real CPI”)
- Unique, patented twin terminal with captive screws and an increased opening for cables up to max. 35 mm², finger-proof (IP20)
- Busbar slot in the back for best visibility during installation
- High performance at an increased rated voltage for marine and industrial applications: 10 kA/15 kA at $U_n = 440$ V AC acc. to IEC/EN 60947-2
- Individual product identification code
- Approved acc. to IEC/EN 60898-1, IEC/EN 60947-2 and UL 1077/CSA 22.2 No. 235 for global use

Miniature Circuit Breaker S 200/S 200 M

Technical data

	S 200	S 200 M
General Data		
Standards	IEC/EN 60898-1, IEC/EN 60947-2 UL 1077	IEC/EN 60898-1, IEC/EN 60947-2 UL 1077, CSA 22.2 No. 235
Poles	1P, 2P, 3P, 4P, 1P+N, 3P+N	
Tripping Characteristics	B, C, D, K, Z	
Rated current I_n	0.5 up to 63 A	
Rated frequency	50/60 Hz	
Rated insulation voltage U_i	250 V AC (phase to ground), 500 V AC (phase to phase)	
Overvoltage Category	III	
Pollution Degree	3	
IEC/EN 60898-1		
Rated operational voltage U_n	1P: 230/400 V AC; 1P+N: 230 V AC; 2P, 3P, 4P: 400 V AC; 3P+N: 400 V AC	
Max. power frequency recovery voltage U_{max}	1P: 253 V AC; 1P+N: 253 V AC; 2P, 3P, 4P: 440 V AC; 3P+N: 440 V AC; 1P: 72 V DC; 2P: 125 V DC	
Min. operating voltage	12 V AC, 12 V DC	
Rated short-circuit capacity I_{cn}	6 kA	10 kA
Energy limiting class (B, C up to 40 A)	3	
Rated impulse withstand voltage U_{imp} (1.2/50 μ s)	4 kV (test voltage 6.2 kV at sea level, 5 kV at 2,000 m)	
Dielectric test voltage	2.0 kV (50/60 Hz, 1 min)	
Reference temperature for tripping characteristics	B, C, D: 30 °C	
Electrical endurance	$I_n < 32$ A: 20,000 ops. (AC), 1,000 ops. (DC); one cycle 2 s - ON, 13 s - OFF $I_n \geq 32$ A: 10,000 ops. (AC), 1,000 ops. (DC); one cycle 2 s - ON, 28 s - OFF	
IEC/EN 60947-2		
Rated operational voltage U_e	1P: 230 V AC; 1P+N: 230 V AC; 2P, 3P, 4P: 440 V AC; 3P+N: 440 V AC	
Max. power frequency recovery voltage U_{max}	1P: 253 V AC; 1P+N: 253 V AC; 2P, 3P, 4P: 462 V AC; 3P+N: 462 V AC; 1P: 72 V DC; 2P: 125 V DC	
Min. operating voltage	12 V AC, 12 V DC	
Rated ultimate short-circuit breaking capacity I_{cu}	10 kA	15 kA
Rated service short-circuit breaking capacity I_{cs}	7.5 kA	≤ 40 A: 11.25 kA 50, 63 A: 7.5 kA
Rated impulse withstand voltage U_{imp} (1.2/50 μ s)	4 kV (test voltage 6.2 kV at sea level, 5 kV at 2,000 m)	
Dielectric test voltage	2.0 kV (50/60 Hz, 1 min)	
Reference temperature for tripping characteristics	B, C, D: 55 °C; K, Z: 20 °C	
Electrical endurance	$I_n < 32$ A: 20,000 ops. (AC), 1,000 ops. (DC); one cycle 2 s - ON, 13 s - OFF $I_n \geq 32$ A: 10,000 ops. (AC), 1,000 ops. (DC); one cycle 2 s - ON, 28 s - OFF	
UL/CSA		
Rated voltage	1P: 277 V AC, 60 V DC 2...4P: 480 Y/277 V AC, 110 V DC	1P: 277 V AC, 60 V DC 2...4P: 480 Y/277 V AC, 125 V DC
Rated interrupting capacity	6 kA (AC), 10 kA (DC)	
Application	Suppl. prot. for general use. Application Codes: TC2, OLO, SC: U1	
Reference temperature for tripping characteristic	B, C, D, K, Z: 25 °C	
Electrical endurance	6,000 ops. (AC), 6,000 ops. (DC); one cycle 1 s - ON, 9 s - OFF	
Mechanical data		
Housing	Insulation group II, RAL 7035	Insulation group I, RAL 7035
Toggle	Insulation group II, black, sealable	
Contact position indication	Marking on toggle (I ON/OFF), Real CPI (red ON/green OFF)	
Protection degree acc. to EN 60529	IP20 ¹⁾ , IP40 in enclosure with cover	
Mechanical endurance	20,000 ops.	
Shock resistance acc. to IEC/EN 60068-2-27	25 g, 2 shocks, 13 ms	
Vibration resistance acc. to IEC/EN 60068-2-6	5 g, 20 cycles at 5...150...5 Hz with load 0.8 I_n	
Environmental conditions acc. to IEC/EN 60068-2-30	28 cycles with 55 °C/90-96 % and 25 °C/95-100 %	
Ambient temperature	-25 ... +55 °C	
Storage temperature	-40 ... +70 °C	

¹⁾ Also fulfilling the requirements acc. to the protection degree IPXXB

Miniature Circuit Breaker S 200/S 200 M

Technical data and tripping characteristics

	S 200	S 200 M
Installation		
Terminal	Failsafe bi-directional cylinder-lift terminal	
Cross-section of conductors (top/bottom)	solid, stranded: 35 mm ² / 35 mm ² flexible: 25 mm ² / 25 mm ²	
Cross-section of busbars (top/bottom)	14 – 4 AWG ¹⁾ 10 mm ² / 10 mm ² 14 – 8 AWG ²⁾	
Torque	2.8 Nm 18 in.-lbs.	
Screwdriver	No. 2 Pozidrive	
Mounting	On DIN rail 35 mm acc. to EN 60715 by fast clip	
Mounting position	any	
Supply	optional	
Dimensions and weight		
Mounting dimensions acc. to DIN 43880	Mounting dimension 1	
Pole dimensions (H x D x W)	88 x 69 x 17.5	
Pole weight	approx. 115 g	
Combination with auxiliary elements		
Auxiliary contact	Yes	
Signal/auxiliary contact	Yes	
Shunt trip	Yes	
Undervoltage release	Yes	
Motor Operating Device	Yes	

¹⁾ AWG 18 – 4 acc. to UL 486A – 486B ²⁾ AWG 18 – 8 acc. to UL 486A – 486B

Tripping characteristics

Acc. to	Tripping characteristics	Rated current I_n	Thermal release ³⁾		Tripping time	Electromagnetic release ⁴⁾	
			Currents: conventional non-tripping current I_1	conventional tripping current I_2		Range of instantaneous tripping	Tripping time
IEC/EN 60898-1	B	6 to 63 A	$1.13 \cdot I_n$	$1.45 \cdot I_n$	> 1 h < 1 h ⁵⁾	$3 \cdot I_n$ $5 \cdot I_n$	0.1 ... 45 s ($I_n \leq 32$ A)/0.1 ... 90 s ($I_n > 32$ A) < 0.1 s
	C	0.5 to 63 A	$1.13 \cdot I_n$	$1.45 \cdot I_n$	> 1 h < 1 h ⁵⁾	$5 \cdot I_n$ $10 \cdot I_n$	0.1 ... 15 s ($I_n \leq 32$ A)/0.1 ... 30 s ($I_n > 32$ A) < 0.1 s
	D	0.5 to 63 A	$1.13 \cdot I_n$	$1.45 \cdot I_n$	> 1 h < 1 h ⁵⁾	$10 \cdot I_n$ $20 \cdot I_n$	0.1 ... 4 s ($I_n \leq 32$ A)/0.1 ... 8 s ($I_n > 32$ A) < 0.1 s
IEC/EN 60947-2	K	0.5 to 63 A	$1.05 \cdot I_n$	$1.2 \cdot I_n$	> 1 h < 1 h ⁵⁾	$10 \cdot I_n$ $14 \cdot I_n$	> 0.2 s < 0.2 s
	Z	0.5 to 63 A	$1.05 \cdot I_n$	$1.2 \cdot I_n$	> 1 h < 1 h ⁵⁾	$2 \cdot I_n$ $3 \cdot I_n$	> 0.2 s < 0.2 s

³⁾ The thermal releases are calibrated to a nominal reference ambient temperature; for B, C, D the reference value is 30 °C, for K and Z the reference value is 20 °C. In the case of higher ambient temperatures, the current values fall by approx. 6 % for each 10 K temperature rise.

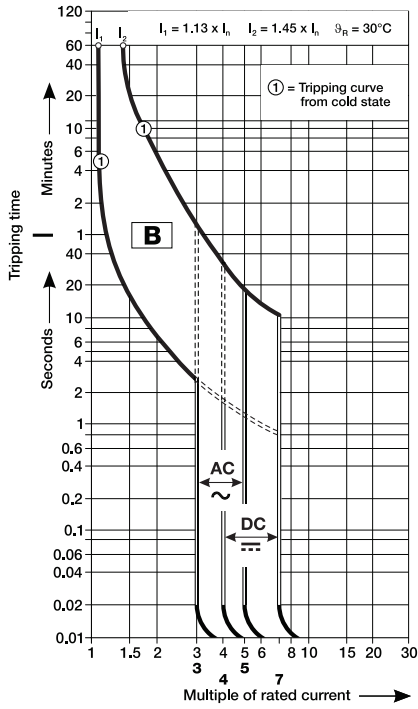
⁴⁾ The indicated tripping values of electromagnetic tripping devices apply to a frequency of 50/60 Hz. The thermal release operates independent of frequency.

⁵⁾ As from operating temperature (after $I_1 > 1$ h)

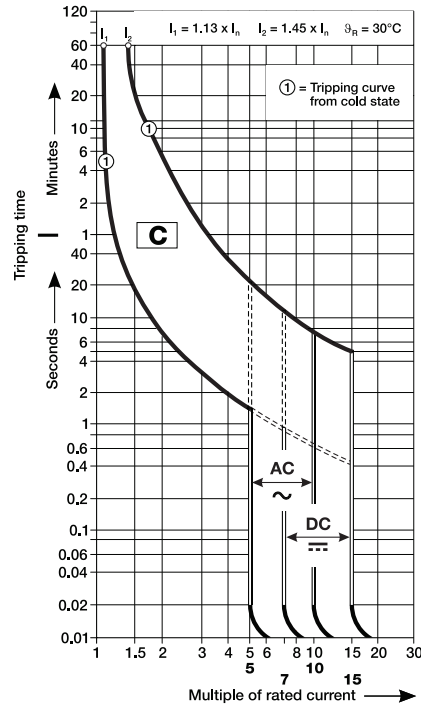
Miniature Circuit Breaker S 200/S 200 M

Tripping characteristics

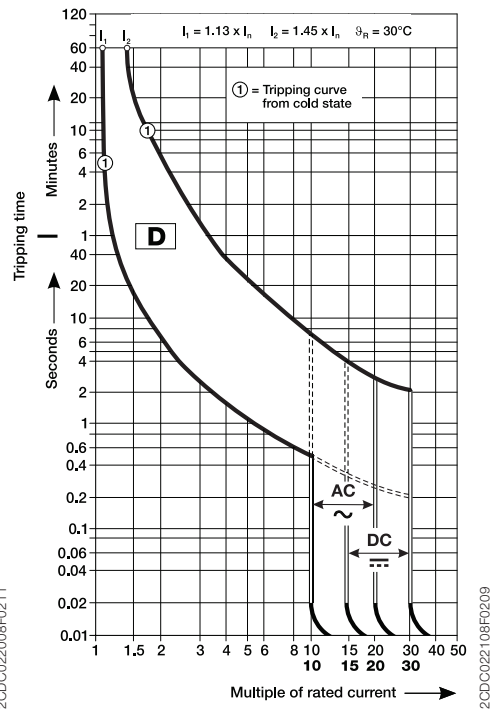
B characteristic



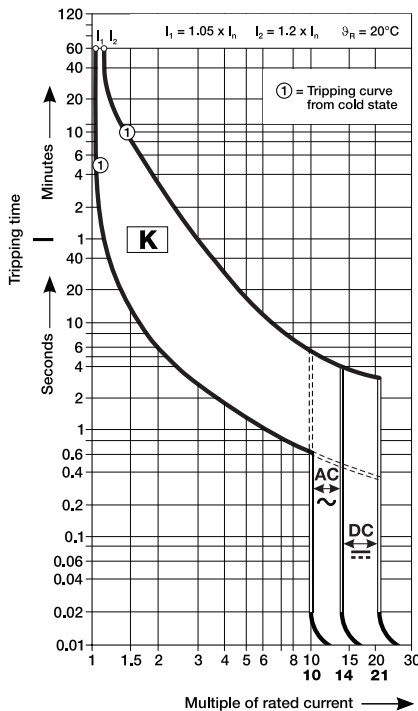
C characteristic



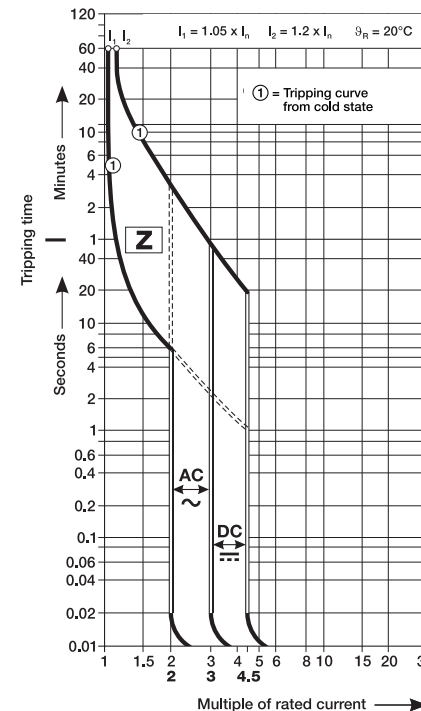
D characteristic



K characteristic



Z characteristic



Miniature Circuit Breaker S 200/S 200 M

Derating

Deviating ambient temperature

For installations of miniature circuit breakers at other temperatures than the reference value derating factors have to be considered.

The rated value of the current of a miniature circuit breaker refers to a reference ambient temperature of 30 °C for circuit

breakers with the characteristics B, C and D and 20 °C for circuit breakers with the characteristics K and Z. The following table contains the derating of the load capability at ambient temperatures from -40 °C to 70 °C for the characteristics B, C, D, K and Z.

Tripping characteristics	Rated current I_n A	Maximum operating current at ambient temperature T											
		A	- 40 °C	- 30 °C	- 20 °C	- 10 °C	0 °C	10 °C	20 °C	30 °C	40 °C	50 °C	60 °C
B, C, D	0.5	0.67	0.65	0.62	0.60	0.58	0.55	0.53	0.50	0.47	0.44	0.41	0.37
	1.0	1.33	1.29	1.25	1.20	1.15	1.11	1.05	1.00	0.94	0.88	0.82	0.75
	1.6	2.13	2.07	2.00	1.92	1.85	1.77	1.69	1.60	1.51	1.41	1.31	1.19
	2.0	2.67	2.58	2.49	2.40	2.31	2.21	2.11	2.00	1.89	1.76	1.63	1.49
	3.0	4.0	3.9	3.7	3.6	3.5	3.3	3.2	3.0	2.8	2.6	2.4	2.2
	4.0	5.3	5.2	5.0	4.8	4.6	4.4	4.2	4.0	3.8	3.5	3.3	3.0
	6.0	8.0	7.7	7.5	7.2	6.9	6.6	6.3	6.0	5.7	5.3	4.9	4.5
	8.0	10.7	10.3	10.0	9.6	9.2	8.8	8.4	8.0	7.5	7.1	6.5	6.0
	10.0	13.3	12.9	12.5	12.0	11.5	11.1	10.5	10.0	9.4	8.8	8.2	7.5
	13.0	17.3	16.8	16.2	15.6	15.0	14.4	13.7	13.0	12.3	11.5	10.6	9.7
	16.0	21.3	20.7	20.0	19.2	18.5	17.7	16.9	16.0	15.1	14.1	13.1	11.9
	20.0	26.7	25.8	24.9	24.0	23.1	22.1	21.1	20.0	18.9	17.6	16.3	14.9
	25.0	33.3	32.3	31.2	30.0	28.9	27.6	26.4	25.0	23.6	22.0	20.4	18.6
	32.0	42.7	41.3	39.9	38.5	37.0	35.4	33.7	32.0	30.2	28.2	26.1	23.9
	40.0	53.3	51.6	49.9	48.1	46.2	44.2	42.2	40.0	37.7	35.3	32.7	29.8
50.0	66.7	64.5	62.4	60.1	57.7	55.3	52.7	50.0	47.1	44.1	40.8	37.3	
63.0	84.0	81.3	78.6	75.7	72.7	69.6	66.4	63.0	59.4	55.6	51.4	47.0	
K, Z	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	

Influence of adjacent devices

If several miniature circuit breakers are installed directly side by side with high load on all poles, a correction factor has to be applied to the rated current (see table). If distance pieces are used, the factor is not to be considered.

No. of adjacent devices	Factor F
1	1
2, 3	0.9
4, 5	0.8
≥ 6	0.75

Example

Installation of 8 adjacent miniature circuit breakers S201-C16 at 40 °C ambient temperature

Rated current $I_n = 16$ A

Max. operating current at 40 °C = 15,1 A (see table above)

Factor F = 0.75 (see left table)

$I_n = 15.1 \text{ A} \times 0.75 = 11.33 \text{ A}$

Result: The operating current can only add up to max. 11.33 A

Miniature Circuit Breaker S 200/S 200 M

Internal resistance and power loss

Internal resistance and power loss per pole

Rated current I_n A	Tripping characteristic							
	B, C ¹⁾		D		K		Z	
	Internal resistance R_i mΩ	Power loss P_v W	Internal resistance R_i mΩ	Power loss P_v W	Internal resistance R_i mΩ	Power loss P_v W	Internal resistance R_i mΩ	Power loss P_v W
0.5	5500	1.4	4300	1.1	4300	1.1	8100	2.4
1.0	1440	1.4	1250	1.25	1250	1.25	2100	2.3
1.6	630	1.6	600	1.5	600	1.5	1000	2.8
2.0	460	1.8	410	1.6	410	1.65	619	2.5
3.0	150	1.3	130	1.2	130	1.2	235	2.4
4.0	110	1.8	105	1.7	105	1.7	149	2.4
6.0	55	2.0	52	1.9	52	1.9	75	3.2
8.0	23	1.5	24	1.5	24	1.5	27	2.0
10.0	19	2.1	16	1.6	13.5	1.4	24	2.7
13.0	14	2.3	14	2.2	13.5	1.4	—	—
16.0	8.5	2.5	8.5	2.5	7.7	2.0	10.9	2.8
20.0	6.25	2.5	6.1	2.3	6.7	2.7	6.0	2.4
25.0	5.0	3.2	4.3	3.1	4.6	2.9	4.5	3.3
32.0	3.6	3.7	3.5	3.6	3.5	3.6	3.5	3.6
40.0	3.0	4.8	2.2	4.2	2.2	4.2	2.5	4.1
50.0	1.3	3.25	1.25	2.9	1.25	3.1	1.5	4.1
63.0	1.2	4.8	1.2	4.8	1.0	4.4	1.3	5.2

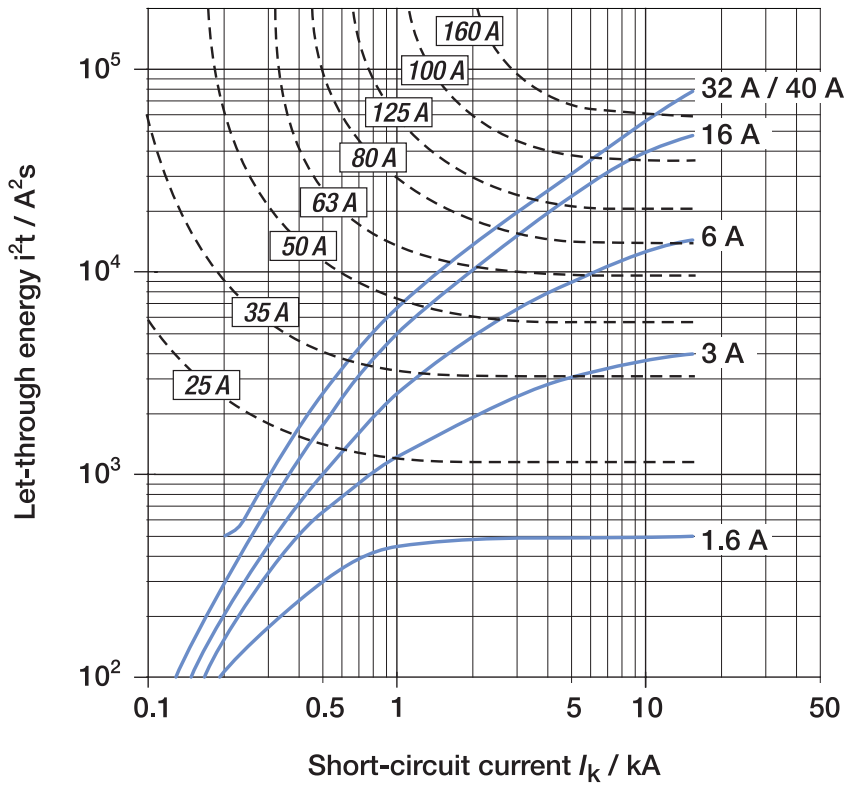
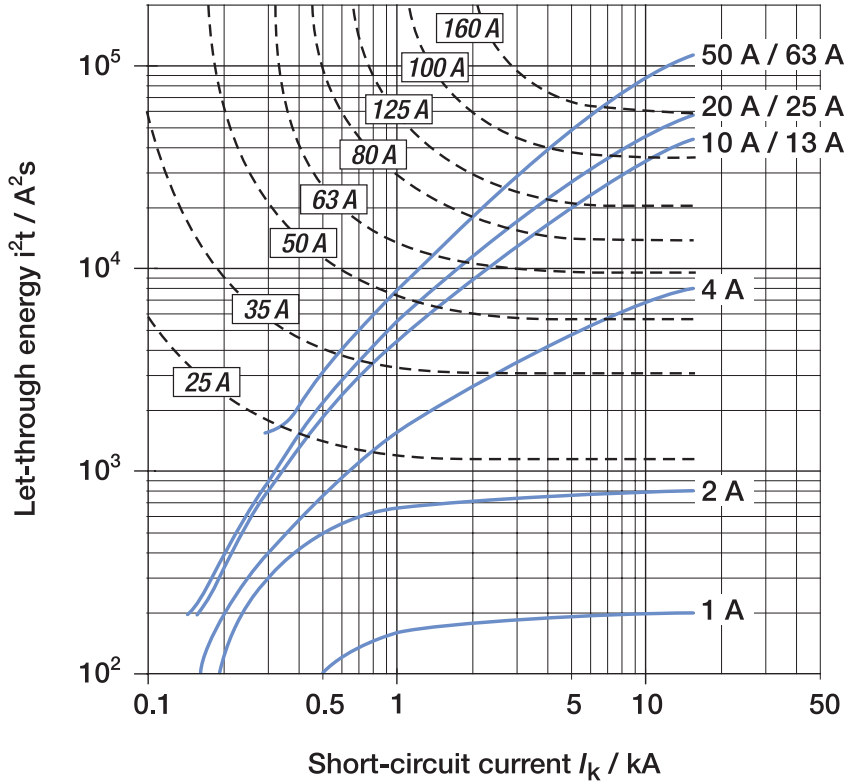
¹⁾ Current ratings 0.5 – 4 A, 8 A apply to C characteristic only

Internal resistances are subject to application-specific and environment-specific conditions and are therefore to be considered as typical values.

Miniature Circuit Breaker S 200/S 200 M

Let-through energy I^2t

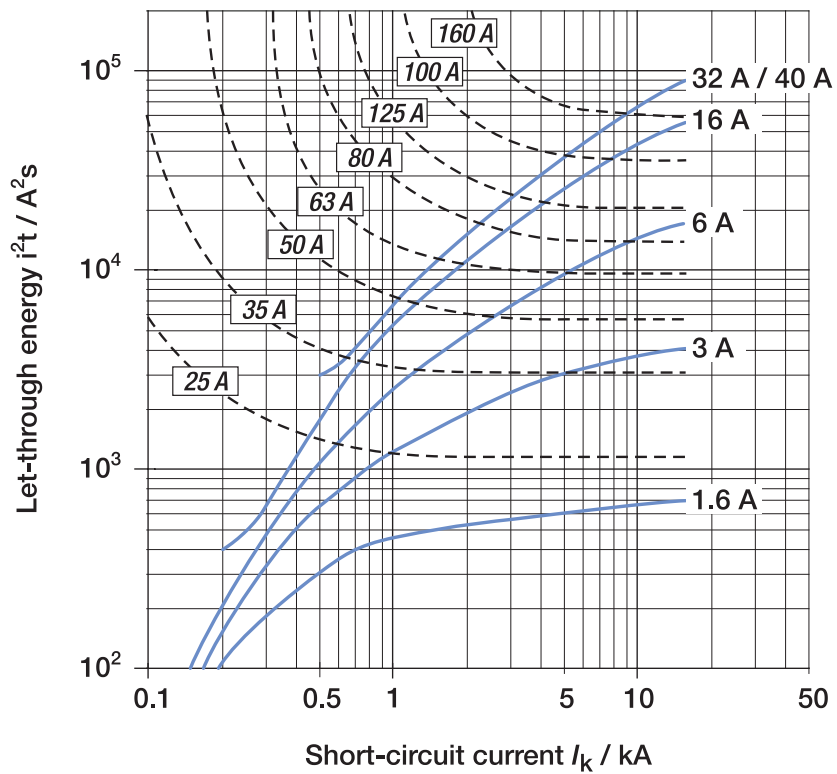
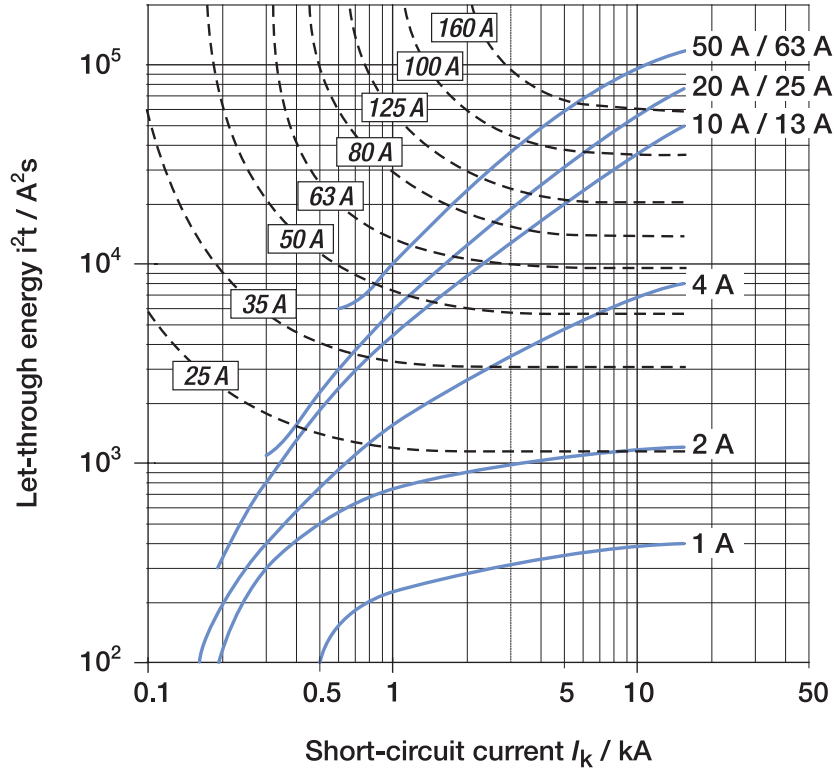
Characteristics B, C - 230/400 V let-through energy



Miniature Circuit Breaker S 200/S 200 M

Let-through energy I^2t

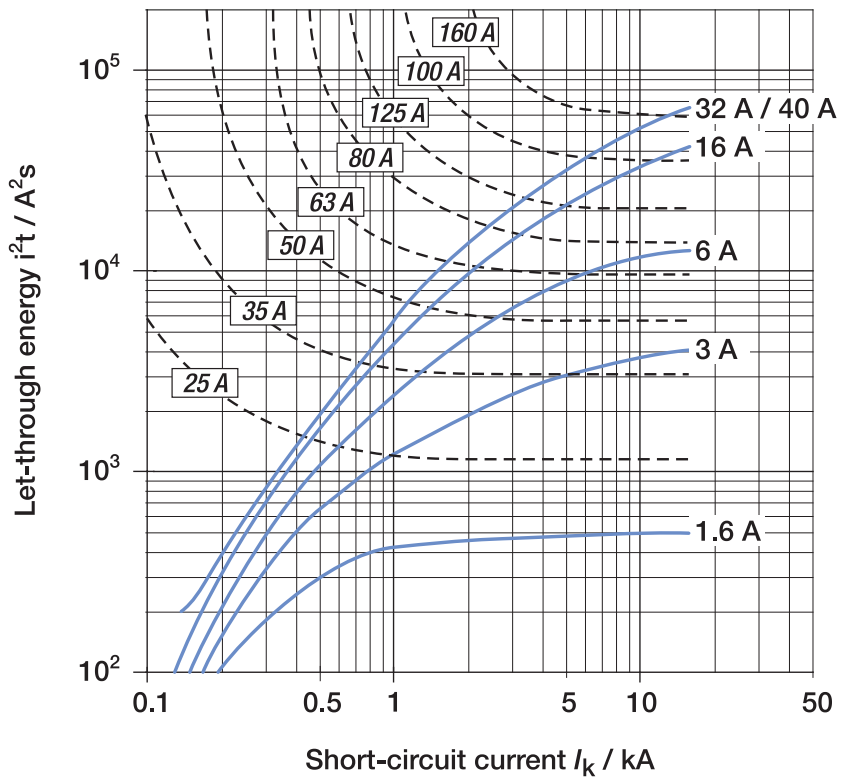
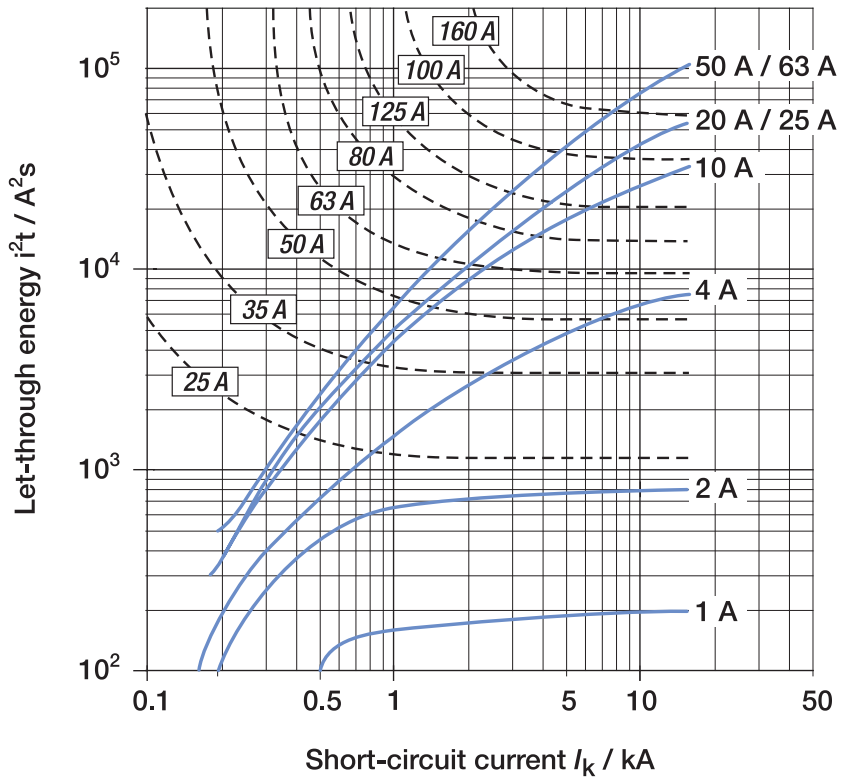
Characteristics D, K - 230/400 V let-through energy



Miniature Circuit Breaker S 200/S 200 M

Let-through energy I^2t

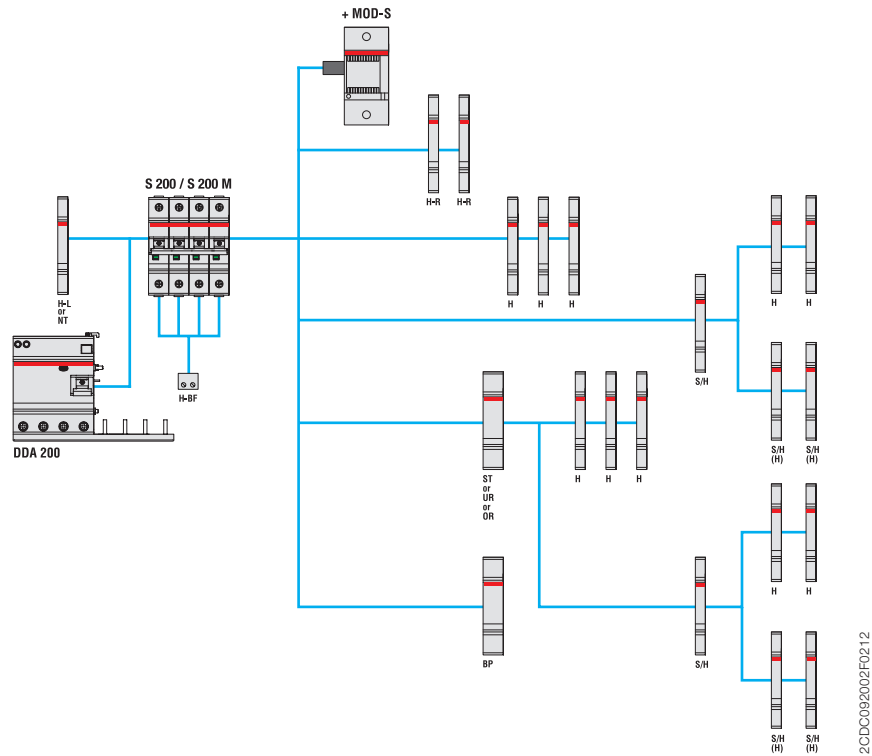
Characteristic Z - 230/400 V let-through energy



Miniature Circuit Breaker S 200/S 200 M

Accessories and dimensional drawing

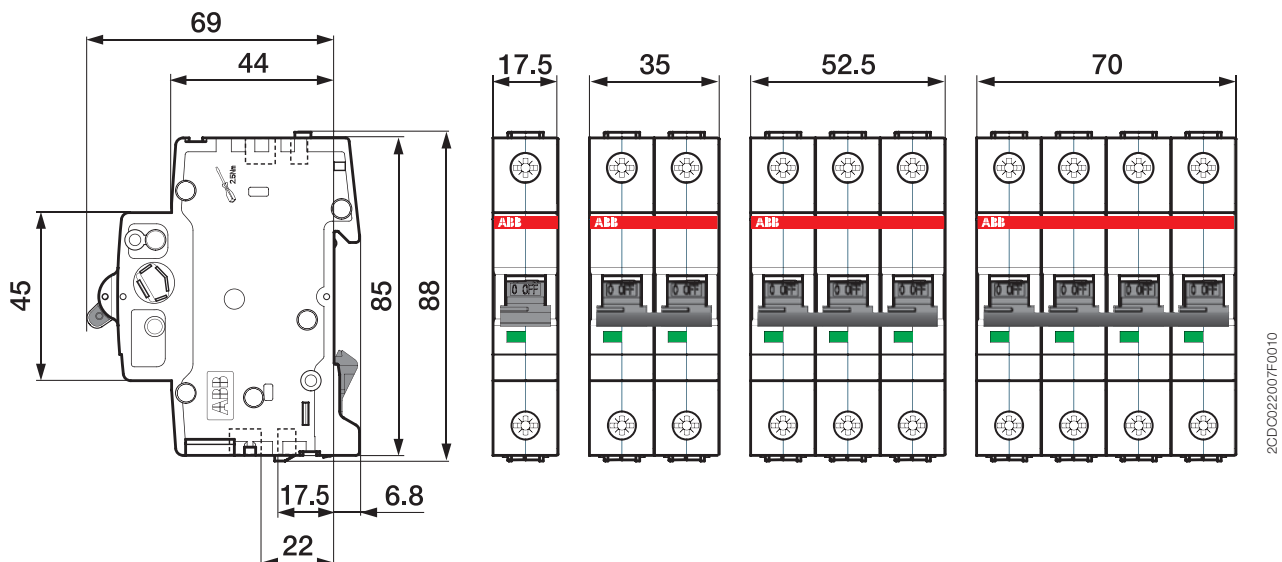
Accessory overview



H	Auxiliary contact (change-over contact)	S2C-H6R	H-L	Auxiliary contact	S2C-H...L
H-R	Auxiliary contact	S2C-H6-...R	H-BF	Auxiliary contact for bottom fitting (1 per pole)	S2C-H01 S2C-H10
S/H	Signal/Auxiliary contact	S2C-S/H6R	BP	Mechanical tripping device	S2C-BP
S/H (H)	Signal/Auxiliary contact used as auxiliary contact	S2C-S/H6R	NT	Neutral disconnecter	S2C-Nt
ST	Shunt trip	S2C-A...	MOD-S ¹⁾	Motor operating device	S2C-CM
UR	Undervoltage release	S2C-UA	DDA 200	RCD-block	DDA 20...
OR	Overvoltage release	S2C-OVP			
























¹⁾ In case of using S 200/S 200 M coupled with DDA 200, MOD-S does not operate in case of earth-leakage fault.

Dimensional drawing







Miniature Circuit Breaker S 200/S 200 M Approvals

Country approvals

Approval mark	Description	Country
	RCM	Australia
	ÖVE	Austria
	CEBEC	Belgium
	CSA	Canada (S 200 M only)
	CCC	China
	EZU	Czech Republic
	DEMKO	Denmark
	FIMKO	Finland
	NF	France
	VDE	Germany
	IMQ	Italy
	SIRIM	Malaysia
	KEMA	Netherlands
	NEMKO	Norway
	BBJ	Poland
	CERTIF	Portugal
	GOST	Russia
	GOST Fire	
	HDB	Singapore
	SIQ	Slovenia
	AENOR	Spain
	SEMKO	Sweden
	S+	Switzerland
	UL1077	USA

Ship approvals

Approval mark	Description	Country
	BV	France
	GL	Germany
	RINA	Italy
	ABS	USA

Not all approvals are printed on the MCBs.

The indicated approvals generally cover all available approvals worldwide. To verify the approval status in your country please get in touch with your ABB contact person.

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