Selective main circuit breakers
S 750 series
Technical Data

Power and productivity
for a better world™

When connecting aluminium conductors (≥ 4 mm^2) ensure that the contact surfaces of the conductors are cleaned, brushed and treated with grease. Re-tighten contact terminals after ca. 6 to 8 weeks.

Standard Terms for Delivery and Sale
For domestic business, the Standard Terms for Delivery of Products and Services of the Electrical Industry (ABB Form 2292) shall apply in connection with the Standard Sales Terms (ABB Form 2327) in their then applicable version. For foreign business, the Standard Terms for Delivery of Products and Services of the Electrical Industry (ABB Form 2293 German-English, or ABB Form 2294 German- French) shall apply in connection with the Standard Sales Terms (ABB-Form 2381 English) in their then applicable version.

Warranty
We assume warranty in accordance with the standard sales and delivery terms. Complaints shall be made in writing within eight days following receipt of the goods.

Technical information and illustrations are not binding and subject to change without notice.

Selective main circuit breakers S 750 series
Content

Selective main circuit breakers S 750 series
The technology

- high selectivity
- switching capacity 25 kA
- disconnector function
- easy handling
- voltage-independent
- high energy limitation
- designed for use by ordinary people

Brief description

Selective main circuit breakers of the S 750 series **fully comply with E DIN VDE 0641-21**. They operate voltage-independent, i.e. their function does not depend on auxilary source (SHU). They are designed for mounting onto 40 mm busbar systems (4- or 5-pole, 5/10 mm x 12 mm).

Independant of current rating of S 750, short circuit discrimination of up to 10,000 A or even higher is available for the downstream circuit-breakers.

The short-circuit capacity of the S 750 is 25 kA (system voltage 230/400 V AC) throughout the entire range of rated current.

Due to its particular current-limiting selectivity features, STOTZ selective main circuit breakers support downstream circuit-breakers in limiting the energy when a short circuit occurs, thus reducing the load on the back-up fuse and the entire electrical installation.

STOTZ selective main circuit breakers are suitable to disconnect and release electric circuits.

STOTZ selective main circuit breakers can be operated by ordinary people. The contact position is indicated clearly and unambiguously by (1) the position of the operating lever, clearly identified by the 0-I positions, and (2) also by a separate position indicator (RED = on, GREEN = off).

Selective main circuit breakers S 750 operate voltage-independent (VI) according to E DIN VDE 0641-21, i.e. they do not need a control circuit to make or break a contact.

STOTZ selective main circuit breakers S 750 are available with

tripping characteristic **E** (E = **Exact**)

They are particularly suitable for the following applications:

– in the meter-mounting board as the main isolating device for the customer
– in main distribution frames or switchgear as selective group or back-up breaker, especially where a high degree of continuity of supply is required, e.g. for “installations for gathering of people”, in “medical locations” and for the supply of safety equipment.

STOTZ selective main circuit breakers fully comply with the requirements of the German utilities directive (Technical Connection Requirements of Network Operators) concerning the mandatory pre-meter isolation and protection functions.

For these applications, selective main circuit breakers:

– ensure load current carrying capability over a large temperature range;
– protect cables in the case of functional overload;
– protect cables in the case of a short circuit;
– clear high short-circuit currents reliable;
– limit the let-through current and let-through energy also in the case of selective short-circuit disconnection by downstream mcb
– provide disconnection and re-connection of installation, also by ordinary people;
– provide selectivity with respect to downstream circuit-breakers and upstream fuses;
– ensure highest availibility of electrical power supply for the customer.

Selective main circuit breakers S 750 series
The technology

Function

STOTZ selective main circuit breakers operate voltage-independent. They do not require auxiliary energy for switching the device on or off or for their protection functions.

A straight forward design ensures the reliable protection function. The functional elements consist of proven electro-mechanical components specifically designed for these requirements.

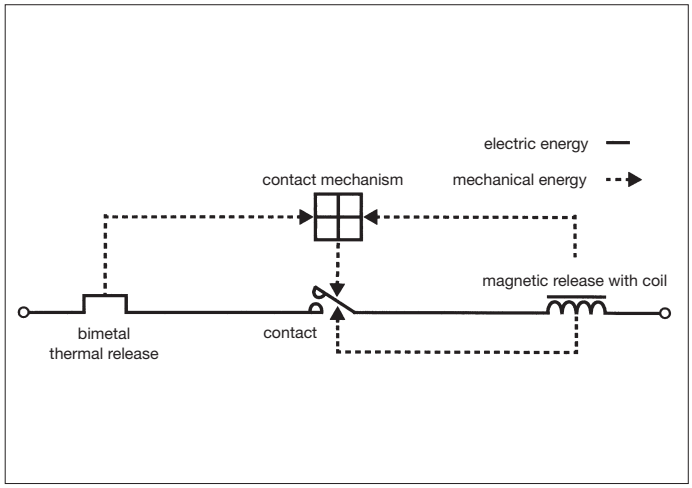
For overload tripping, a thermostatic bimetal is used, as in the case of a standard circuit-breaker.
And also as for circuit-breakers, it is necessary to separate main contacts quickly by using a short-circuit “hammer trip” solenoid to ensure effective short-circuit limitation. When the downstream protective device has tripped because of a short circuit, the contact tips reclose again. This occurs without auxiliary energy through a simple spring-type system.

If a short circuit occurs between the S 750 and the downstream mcb, another bimetal release enables the short-time delay tripping. Both the selective release and the overload release trip the mechanism and ensure that contact tips remain in the open position to comply with isolation requirements.

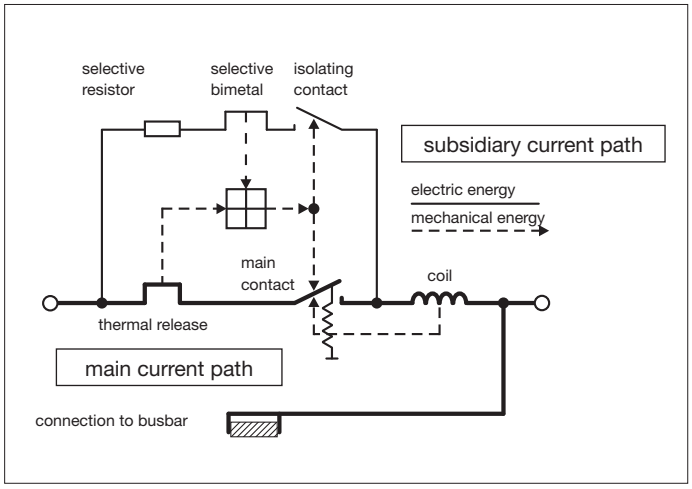
The current is limited and the arc is quenched as in the case of circuit-breakers.

The underlying switching principle enables a special selectivity behaviour: **current-limiting selectivity**. When a short circuit occurs, the S 750 supports the downstream mcb and also limits the energy that has an impact on the installation and – subsequently – on the network of the supplier. The selectivity behaviour of the S 750 offers major advantages compared to fuse-based technologies.

Operating principle of a circuit-breaker



Operating principle of selective main circuit breaker S 750



Selective main circuit breakers S 750 series
The technology

Special features of the selective main circuit-breaker S 750

- High breaking capacity 25 kA at 230/400 V~
- High energy limitation
- Suitable to provide selective overcurrent protection in meter boards and in main distribution frames
- Suitable for isolation of electric circuits

2CDC 023 209 F0007

- Current-limiting selectivity
- Voltage independent function
- High isolation ability:
  U_i = 690 V,
  U_{imp} = 6 kV with a test voltage of 9.8 kV
  Overvoltage category IV,
  Pollution degree 3
- Easy assembly with screwless connection to busbars and cables on the load side
- Input frame terminals for busbar feeding up to 50 mm²/100 A
- Isolation function according to IEC 60364 and IEC 60664
- Additional contact position indicator
  RED = ON / GREEN = OFF
- Lockable and sealable
- Can be operated by ordinary people


2CDC 021 207 F0007

2CDC 023 212 F0007

2CDC 023 210 F0007

2CDC 023 211 F0007

Selective main circuit breakers S 750 series
The technology

Technical Data

Standards	E DIN VDE 0641-21, VDE mark
No. of poles	1-pole (S 751) Triple block, monopolar switching (S 751/3)
Tripping characteristics	E
Rated current I_n	16 ... 63 A
Rated voltage U_n	230/400 V AC
Rated short circuit capacity I_{cn}	25 kA
Frequency	50/60 Hz
Rated insulation voltage U_i	690 V AC
Rated impulse withstand capability U_{imp}	6 kV (at 2000 m)
Electric strength at Power frequency	2 kV (50/60 Hz, 1 min)
Isolating capability	according to IEC 60364 and IEC 60664
Overvoltage category	IV
Pollution degree	3
Test value of surge withstand capability	9.8 kV (1.2/50 µs)
Disconnection function	according to DIN VDE 0100-537
Type of protection according to IEC 60529	IP 40 (with mounted cover)
Mounting position	optional
Fixing	on busbars 40 mm according to DIN 43870 part 2 (4- or 5-pole, 5/10 mm x 12 mm)
Terminals	
top:	Screwless spring terminal for flexible conductors from 2.5 mm^2 to 16 mm^2 with or without connector sleeves, especially for meter supply cables according to DIN 43870-3
bottom:	Cage terminals connecting solid and rigid stranded conductors incl. flexible conductors from 2.5 mm^2 to 50 mm^2, also for the supply of the busbar system (max. 100 A feed current)
Storage temperature	T_{max}: +70 °C, T_{min}: -40 °C
Ambient temperature	T_{max}: +55 °C, T_{min}: -25 °C
Locking and sealing	blocking in ON/OFF position with integrated locking device, additional locking feature with padlock, wire seal, trip tie, Antilux
Position indicator	clear and consistent via operation panel: OFF = O, ON = I via additional indicator: OFF = green, ON = red
Size according to DIN 43880	6, see also dimension drawing
Width	1.5 module
Weight	see order tables

Selective main circuit breakers S 750 series
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Tripping behavior S 750

tripping characteristic	**rated current**	**delayed thermal release**			**short-time delayed selective tripping device**		
		conventional non-tripping current ①	conventional tripping current ①	tripping time	delayed tripping	short-time delayed tripping	tripping time
		I_{nt}	I_t	t	I_{tv}	I_{tk}	t
E according to E DIN VDE 0641-21	16 to 63 A	1.05 x I_n		≥ 2 h	5 x I_n		0.05 s < t < 5 s ($I_n \leq$ 32 A)
							0.05 s < t < 10 s (I_n > 32 A)
			1.2 x I_n	< 2 h		6.25 x I_n	0.01 s < t < 0,3 s

① Reference ambient temperature 30 °C (in the case of higher ambient temperatures, the current values are reduced by ca. 5 % per each 10 K)

Internal resistance and power loss

internal resistance per pole in mh in the cold state
power loss per pole in W at rated current

Type	**rated current/A**	**R_i mh**	**P_{vmax} W**
S 750-E	16	15.3	4.5
	20	11.3	6.0
	25	8.7	6.5
	35	4.5	6.9
	40	3.8	6.4
	50	3.5	8.0
	63	2.3	9.7

Back-up protection

Selective main circuit breakers of the S 750 series are capable of switching off short-circuit currents of up to 25 kA automatically in networks with a rated voltage of 230/400 V.
Back-up protection is necessary only when the prospective short-circuit current may exceed 25 kA prosp. at the installation point. Further information on back-up protection on request.

Selective main circuit breakers S 750 series
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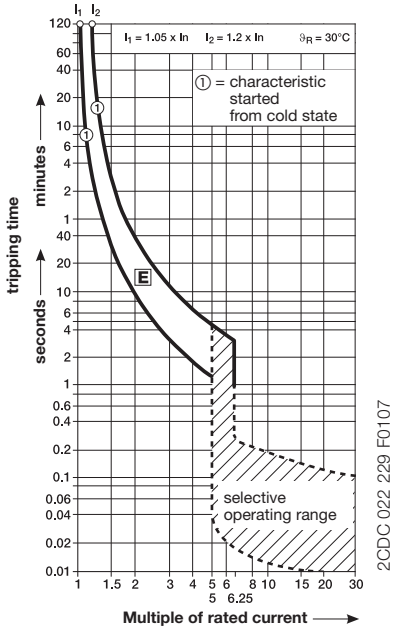
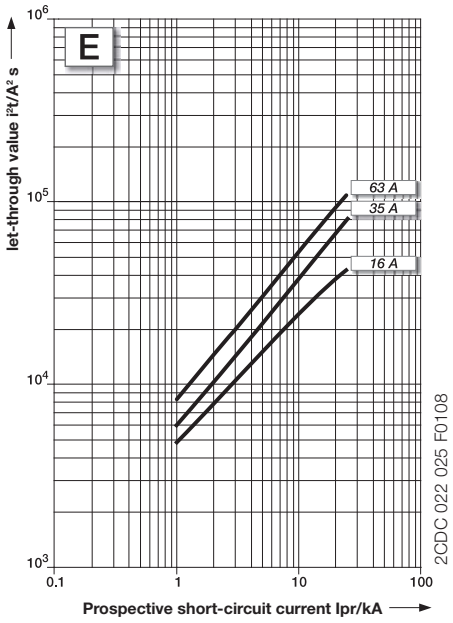
Characteristics curves

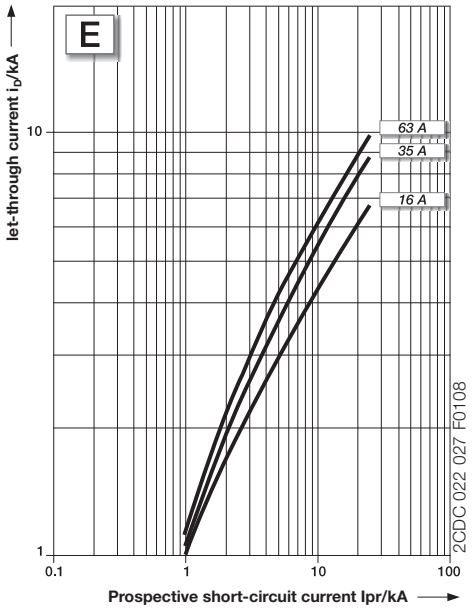
S 750, trip curve



S 750, diagram of let-through values I^2t



S 750, diagram of let-through values i_D



Selective main circuit breakers S 750 series
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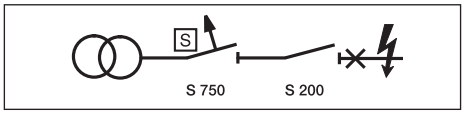
Short circuit discrimination

When ABB miniature circuit-breaker are used in combination with the S 750, higher short-circuit currents can be disconnected than are indicated as permissible rated switching capacity of device. Considering the values given in the table, the S 750 operates selectively with respect to the combination with the final device. If other mcbs are used selectivity for 6 kA and 10 kA devices is available up to the rated switching capacity of the downstream device.

MCBs

Short circuit discrimination in kA



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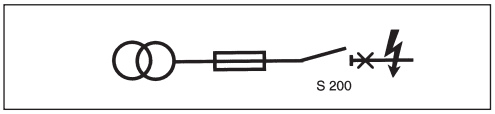
regarding selective main circuit breaker S 750 E



2CDC 022 456 F0003

regarding gG-type fuse
(DIN EN 60269 (VDE 0636); IEC 60269)

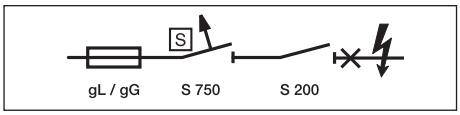
	Supply side		S 750						Protection			
	Char.		E						gG			
Final		I_{cu} [kA]	25									
circuit			I_n [A]	25	35	40	50	63	25	35	50	63
S 200			≤ 2	>15	>15	>15	>15	>15	4	>15	>15	>15
			3	10	10	10	10	10	1.2	4.6	6	6
			4	10	10	10	10	10	0.9	2.8	6	6
			6	10	10	10	10	10	0.8	2	3.3	5.5
			8	10	10	10	10	10	0.7	1.7	2.8	4.5
	B, C	6	10	10	10	10	10	10	0.7	1.5	2.5	3.5
			13	10	10	10	10	10	0.7	1.5	2.5	3.5
			16	10	10	10	10	10		1.3	2	2.9
			20		10	10	10	10			1.8	2.6
			25			10	10	10			1.8	2.6
			32				10	10				2.2
			40					10				

Short circuit discrimination of selective main circuit breaker S 750 with respect to downstream MCB S 200 compared to fuse protection.

Selective main circuit breakers S 750 series
The technology

Short circuit discrimination in kA

The following selectivity criteria apply for combinations of S 750 and ABB mcbs with an upstream fuse.



2CDC 022 224 F0007

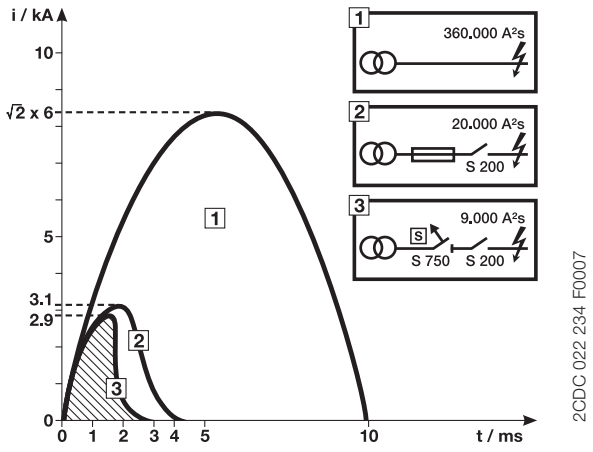
cascade: fuse gL/gG – S 750 E – S 200 B, C

Fuse			Protection 63 A gG				Protection 80 A gG			
Supply side			S 750				S 750			
	Char.		E				gG			
Final		I_{cu} [kA]	25				25			
circuit			I_n [A]	35	40	50	63	35	40	50	63
S 200	B, C	6	≤ 6	10	10	10	10	10	10	10	10
			8…10	7	6	6	5	10	10	10	8
			13…16	6	6	6	5	9	8	8	7
			20	5	5	4.5	4.5	8	7	7	6.5
			25		4.5	4.5	4		7	6	6

Fuse			Protection 100 A gG				Protection ≥ 125 A gG			
Supply side			S 750				S 750			
	Char.		E				gG			
Final		I_{cu} [kA]	25				25			
circuit			I_n [A]	35	40	50	63	35	40	50	63
S 200	B, C	6	≤ 6	10	10	10	10	10	10	10	10
			8…10	10	10	10	10	10	10	10	10
			13…16	10	10	10	10	10	10	10	10
			20	10	10	10	10	10	10	10	10
			25		10	10	10		10	10	10

Energy limitation

S 750 selective main circuit breakers operate in such a way that they support cascaded downstream mcbs when a short circuit occurs. Its energy-limiting features preserve the installation and reduce harmful repercussions on the network of the operator to a minimum.



2CDC 022 234 F0007

Selective main circuit breakers S 750 series
The range

Selection table

E selective

according to E DIN VDE 0641-21

25 000

2CDC 021 207 F0007

SHU triple block monopole switching to be mounted on 40 mm busbars (4- or 5-pole)

2CDC 021 205 F0007

SHU 1-pole to be mounted on 40 mm busbars (4- or 5-pole) each for L1/L2/L3

No. of poles	rated current I_n/A	Order details Type code	Order code	bbn 40 16779 EAN	price 1 piece €	price group	Weight 1 pc. kg	pack. unit pc.
S 751/3 unit 3 x single-pole, busbar connection at L1, L2 and L3								
3x1	16	S 751/3-E16	2CDS 781 001 R4162	66052 5		6	1.2	1
3x1	20	S 751/3-E20	2CDS 781 001 R4202	66051 8		6	1.2	1
3x1	25	S 751/3-E25	2CDS 781 001 R4252	66050 1		6	1.2	1
3x1	35	S 751/3-E35	2CDS 781 001 R4352	66049 5		6	1.2	1
3x1	40	S 751/3-E40	2CDS 781 001 R4402	66048 8		6	1.2	1
3x1	50	S 751/3-E50	2CDS 781 001 R4502	66047 1		6	1.2	1
3x1	63	S 751/3-E63	2CDS 781 001 R4632	66046 4		6	1.2	1
S 751 single-pole, three-phase set, busbar connection at L1, L2, L3								
1	16	S 751-E16	2CDS 781 001 R3162	66392 2*		6	1.2	1 Set
1	20	S 751-E20	2CDS 781 001 R3202	66393 9*		6	1.2	1 Set
1	25	S 751-E25	2CDS 781 001 R3252	66394 6*		6	1.2	1 Set
1	35	S 751-E35	2CDS 781 001 R3352	66396 0*		6	1.2	1 Set
1	40	S 751-E40	2CDS 781 001 R3402	66397 7*		6	1.2	1 Set
1	50	S 751-E50	2CDS 781 001 R3502	66398 4*		6	1.2	1 Set
1	63	S 751-E63	2CDS 781 001 R3632	66399 1*		6	1.2	1 Set
S 751 single-pole, busbar connection at L1								
1	16	S 751-E16 L1	2CDS 781 001 R5162	69807 8			0.4	1
1	20	S 751-E20 L1	2CDS 781 001 R5202	69809 2			0.4	1
1	25	S 751-E25 L1	2CDS 781 001 R5252	69811 5			0.4	1
1	35	S 751-E35 L1	2CDS 781 001 R5352	69813 9			0.4	1
1	40	S 751-E40 L1	2CDS 781 001 R5402	69815 3			0.4	1
1	50	S 751-E50 L1	2CDS 781 001 R5502	69857 3			0.4	1
1	63	S 751-E63 L1	2CDS 781 001 R5632	69859 7			0.4	1
S 751 single-pole, busbar connection at L2								
1	16	S 751-E16 L2	2CDS 781 001 R6162	69862 7			0.4	1
1	20	S 751-E20 L2	2CDS 781 001 R6202	69864 1			0.4	1
1	25	S 751-E25 L2	2CDS 781 001 R6252	69865 8			0.4	1
1	35	S 751-E35 L2	2CDS 781 001 R6352	69867 2			0.4	1
1	40	S 751-E40 L2	2CDS 781 001 R6402	69869 6			0.4	1
1	50	S 751-E50 L2	2CDS 781 001 R6502	69871 9			0.4	1
1	63	S 751-E63 L2	2CDS 781 001 R6632	69873 3			0.4	1
S 751 single-pole, busbar connection at L3								
1	16	S 751-E16 L3	2CDS 781 001 R7162	69875 7			0.4	1
1	20	S 751-E20 L3	2CDS 781 001 R7202	69877 1			0.4	1
1	25	S 751-E25 L3	2CDS 781 001 R7252	69879 5			0.4	1
1	35	S 751-E35 L3	2CDS 781 001 R7352	69881 8			0.4	1
1	40	S 751-E40 L3	2CDS 781 001 R7402	69883 2			0.4	1
1	50	S 751-E50 L3	2CDS 781 001 R7502	69885 6			0.4	1
1	63	S 751-E63 L3	2CDS 781 001 R7632	69887 0			0.4	1

*** EAN of the package unit**

Selective main circuit breakers S 750 series
The range

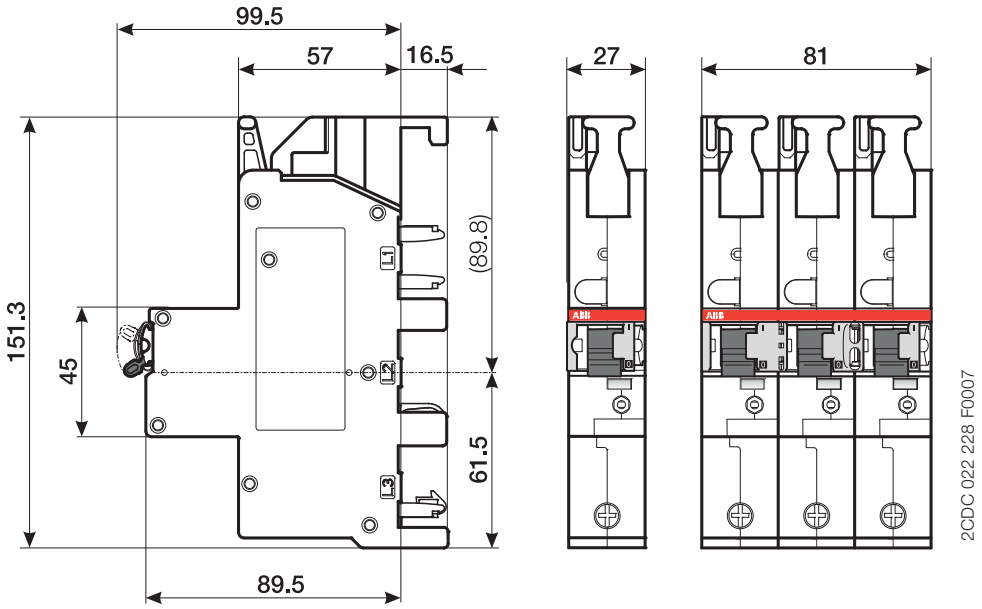
SA 2

SK 0109 B 91

Description	Order details Type code	Order code	bbn 40 16779 EAN	price 1 piece €	price group	Weight 1 pc. kg	pack. unit pc.
Padlock for S 701							
with 2 keys	SA 2	GJF1 101 903 R0002	58770 4		5	0.02	10
identical locking	SA 2i	GJF1 109 999 R0001	96940 1		5	0.02	10

Selective main circuit breakers S 750 series
The range

Dimensions **in mm**



S 751 and S 751/3 S 751 S 751/3

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