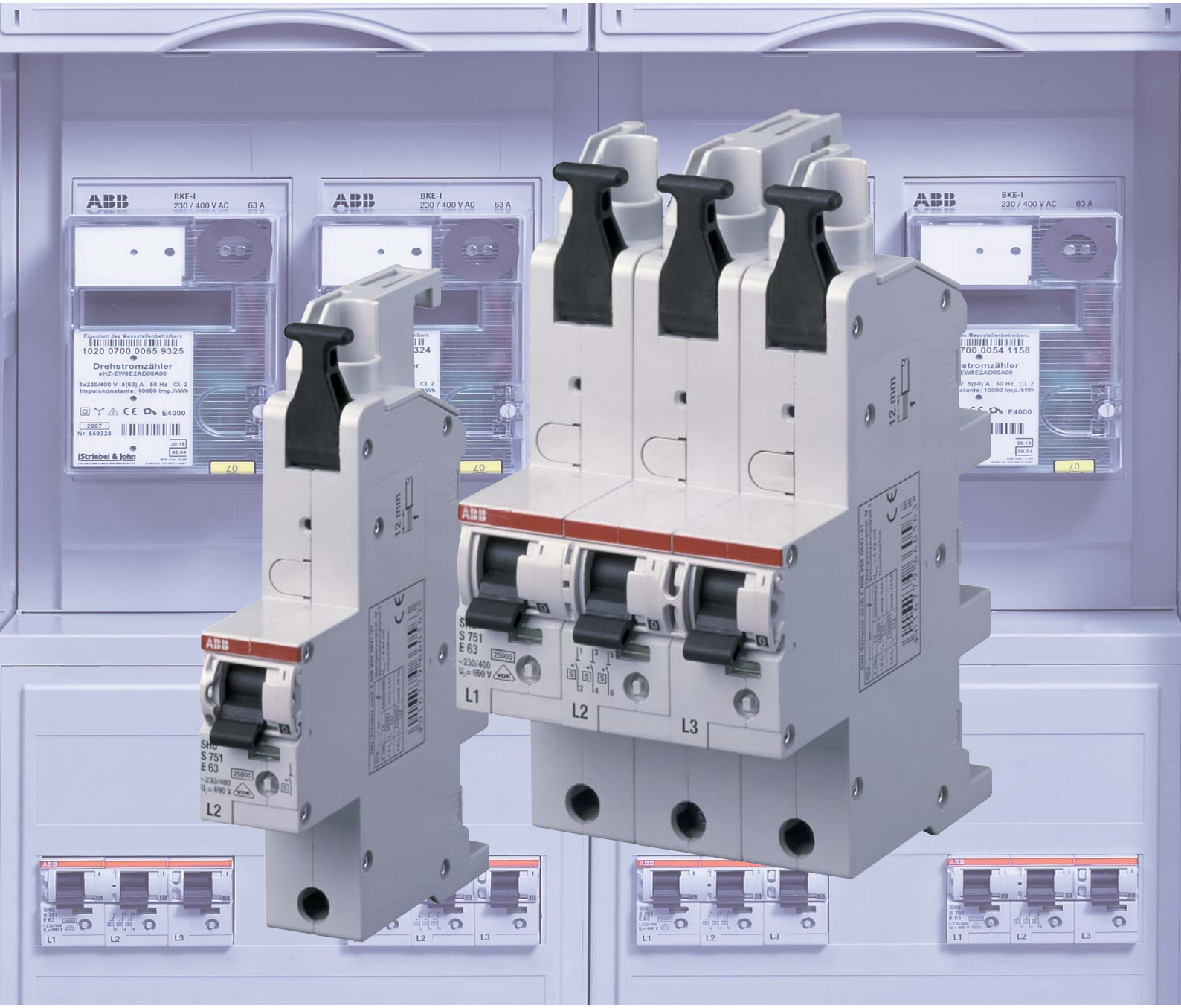
Technical Data

Selective main circuit breakers S 750 series



ABB

When connecting aluminium conductors ($\geq$ 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 Page

The technology of the S 750

The range

Selective main circuit breakers
S 750 series®

- high selectivity
- switching capacity 25 kA
- disconnector abilities
- 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 service safety 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®

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2CDC 021 207 F0007

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

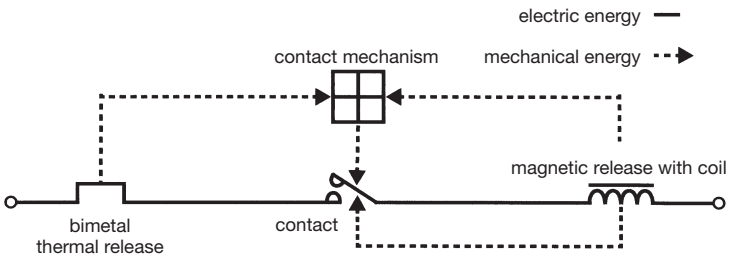
For overload tripping, a thermostatic bimetal is used, as in the case of a standard circuit-breaker. And also as for circuit-breakers, it is necessary to separate main contacts quickly by using a short-circuit “hammer trip” solenoid to ensure effective short-circuit limitation. When the downstream protective device has tripped because of a short circuit, the contact tips reclose again. This occurs without auxiliary voltage 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 makes a special selectivity behaviour possible: **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 over fuse-based technologies.

Operating principle of a circuit-breaker



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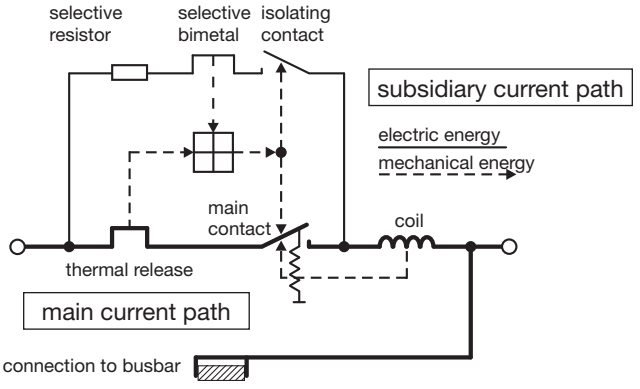
Operating principle of selective main circuit breaker S 750



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Selective main circuit breakers
S 750 series®

Special features of the selective main circuit-breaker S 750

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- 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 021 207 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

2CDC 023 212 F0007

- 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

Selective main circuit breakers
S 750 series®

Technical Data

Standards:	E DIN VDE 0641-21, VDE-REG. No. C511
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 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

Tripping behavior S 750

tripping characteristic	rated current	delayed thermal release			short-time delayed selective tripping device		
		conventional non-tripping current ①	conventional trip. current ①	tripping time	delayed tripping	short-time delayed tripping	tripping time
		I_{Int}	$I_{2\,it}$	t	I_{Itv}	I_{Itk}	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 mΩ in the cold state
power loss per pole in W at rated current

Type	rated current/A	R_i mΩ	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

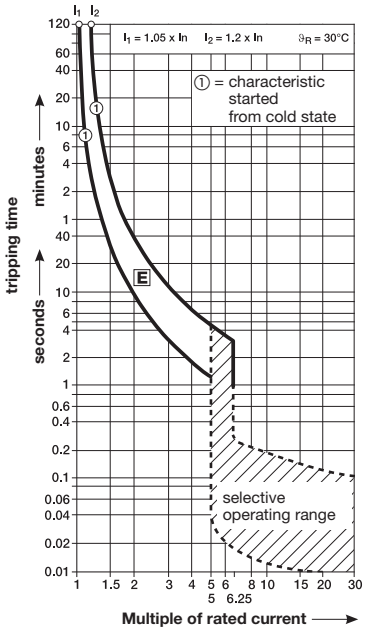
Selective main circuit breakers of the S 750 series are capable of switching off short-circuit currents of up to 25 kA automatically in networks with a rated voltage of 230/400 V.

Back-up protection is necessary only when the prospective short-circuit current may exceed 25 kA prosp. at the installation point.

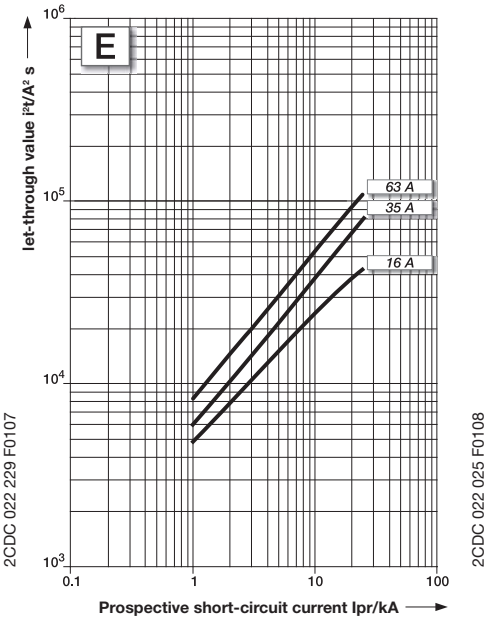
Further information on back-up protection on request.

Characteristics curves

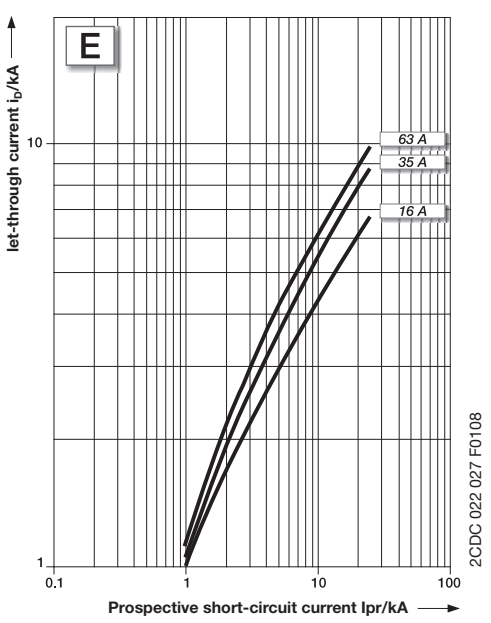
S 750, trip curve



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



S 750, diagram of let-through values i_D



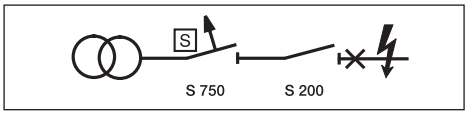
Selective main circuit breakers
S 750 series®

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 final device.

MCBs

Short circuit discrimination in kA



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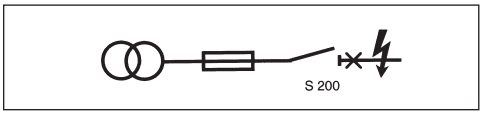

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regarding selective main circuit breaker S 750 E

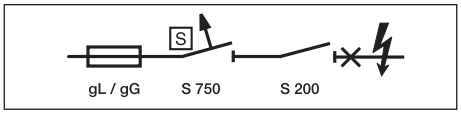
regarding gG-type fuse (DIN VDE 0636; IEC 60269)

series	I_n A	25	35	40	50	63	25	35	50	63
S 200 B, C	≤ 2	>15	>15	>15	>15	>15	4	>15	>15	>15
6000 / 3	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
	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.

Short circuit discrimination in kA

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



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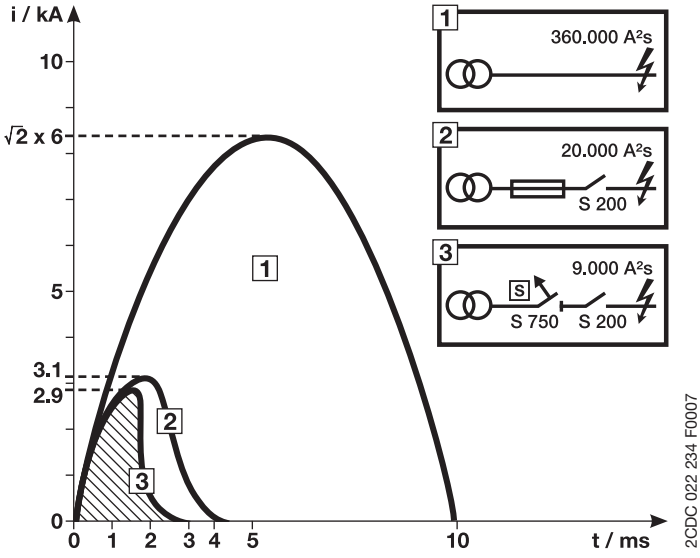
cascade: fuse gL/gG – S 750 E – S 200 B, C

S 750 E	S 200 B, C 6000 3	gG			
		63 A	80 A	100 A	≥ 125 A
35 A	≤ 6 A	10	10	10	10
	8…10 A	7	10	10	10
	13…16 A	6	9	10	10
	20 A	5	8	10	10
40 A	≤ 6 A	10	10	10	10
	8…10 A	6	10	10	10
	13…16 A	6	8	10	10
	20 A	5	7	10	10
	25 A	4.5	7	10	10
50 A	≤ 6 A	10	10	10	10
	8…10 A	6	10	10	10
	13…16 A	6	8	10	10
	20 A	4.5	7	10	10
	25 A	4.5	6	10	10
63 A	≤ 6 A	10	10	10	10
	8…10 A	5	8	10	10
	13…16 A	5	7	10	10
	20 A	4.5	6.5	10	10
	25 A	4	6	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.



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E selective

according to E DIN VDE 0641-21

25 000

VDE
REG.-No. C511

2CDC 021 207 F0007

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

2CDC 021 205 F0007

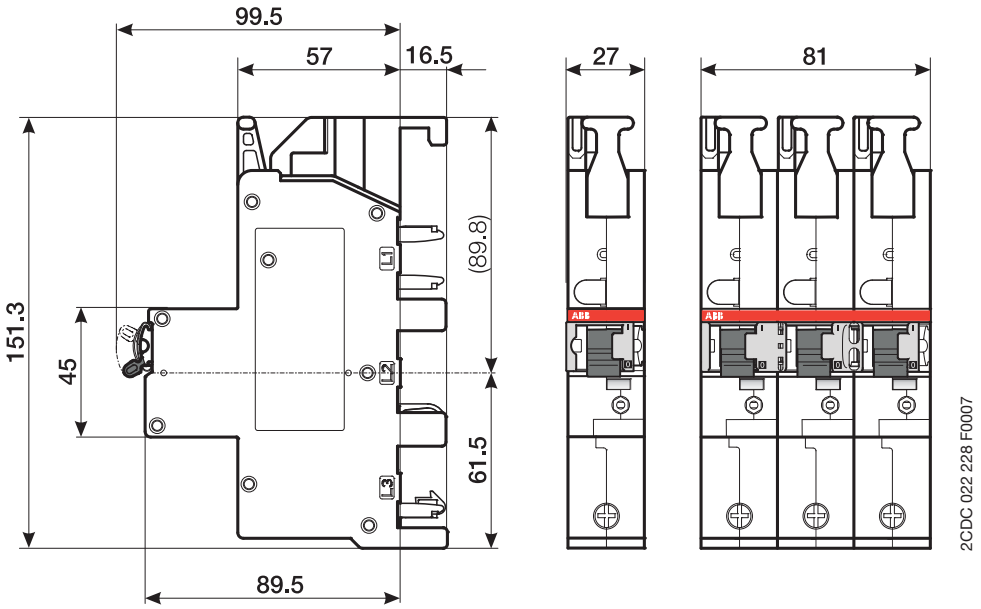
SHU 1 pole to be mounted on 40 mm busbars (4 or 5 pole) each for L1/L2/L3

Selection table

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.
3x1	16	**S 751/3-E16**	2CDS 781 001 R4162	**66052 5**			1.2	1
3x1	20	**S 751/3-E20**	2CDS 781 001 R4202	**66051 8**			1.2	1
3x1	25	**S 751/3-E25**	2CDS 781 001 R4252	**66050 1**			1.2	1
3x1	35	**S 751/3-E35**	2CDS 781 001 R4352	**66049 5**			1.2	1
3x1	40	**S 751/3-E40**	2CDS 781 001 R4402	**66048 8**			1.2	1
3x1	50	**S 751/3-E50**	2CDS 781 001 R4502	**66047 1**			1.2	1
3x1	63	**S 751/3-E63**	2CDS 781 001 R4632	**66046 4**			1.2	1

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.
1	16	**S 751-E16**	2CDS 781 001 R3162	**66060 0**			0.4	3
1	20	**S 751-E20**	2CDS 781 001 R3202	**66059 4**			0.4	3
1	25	**S 751-E25**	2CDS 781 001 R3252	**66058 7**			0.4	3
1	35	**S 751-E35**	2CDS 781 001 R3352	**66056 3**			0.4	3
1	40	**S 751-E40**	2CDS 781 001 R3402	**66055 6**			0.4	3
1	50	**S 751-E50**	2CDS 781 001 R3502	**66054 9**			0.4	3
1	63	**S 751-E63**	2CDS 781 001 R3632	**66053 2**			0.4	3

Dimensions in mm



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

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