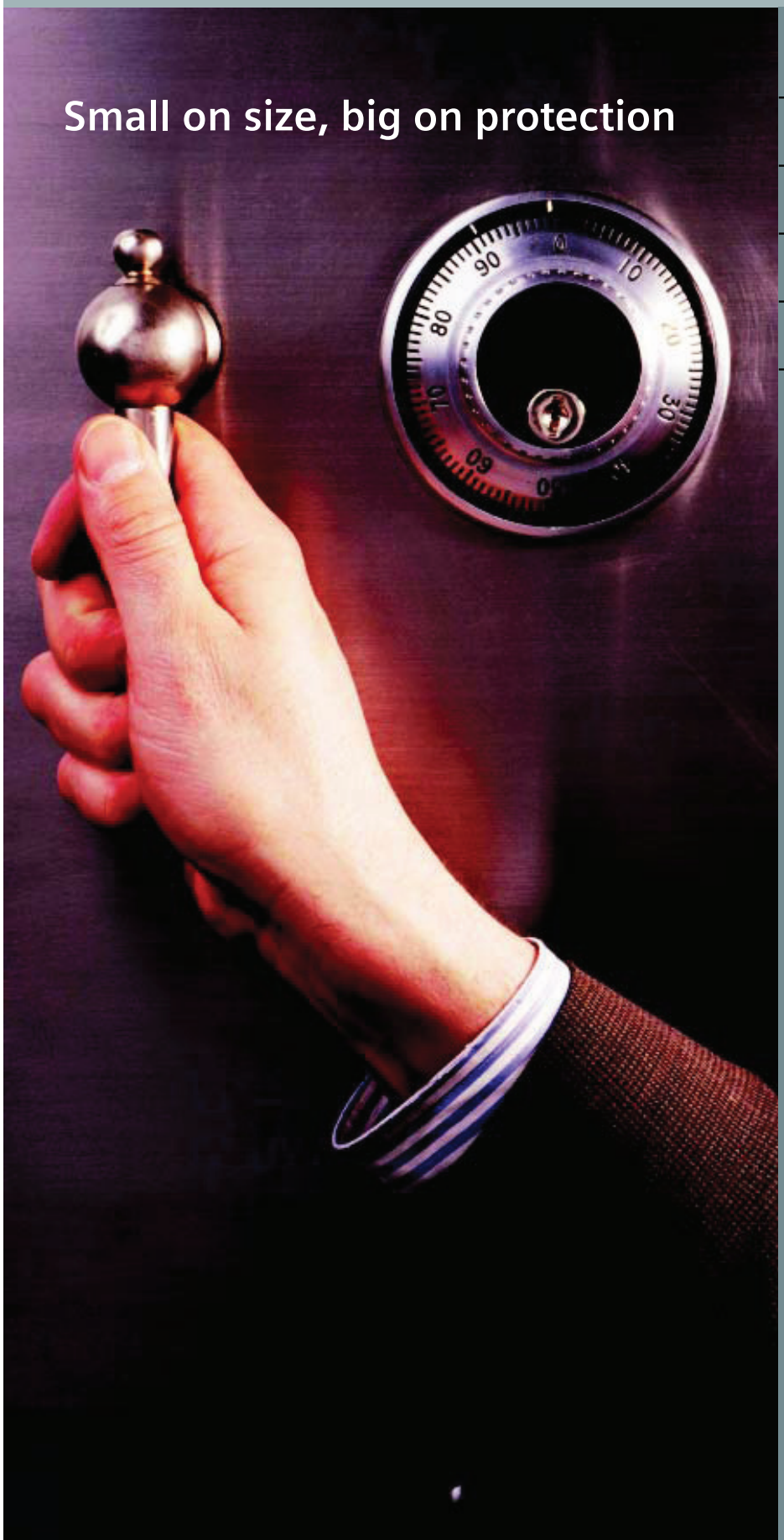
Betagard Miniature Circuit Breakers & Betagard DC Circuit Breakers

1



Miniature Circuit Breakers (MCBs) : Type 5SX4

General

Betagard 5SX4 range of MCBs have rated breaking capacity of 10kA. They comply to the latest national and international standards, with current ratings from 0.5A to 63A.

For applications in industry and in system and plant engineering, add-on accessories are available, such as auxiliary contacts (AC), fault-signal contacts (FC) and shunt trips (ST).

Short circuit operation

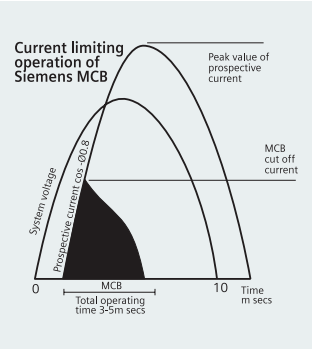
At high values of overcurrent (i.e. short circuit current) a plunger in the solenoid is moved with sufficient force to physically separate the contacts. The greater the short circuit current, the greater the force with which the plunger is moved and faster the circuit is disconnected. A secondary action will ensure that the circuit breaker mechanism is tripped and prevents the contacts from reclosing. It is the rapid speed with which the contacts are forced apart coupled with other features of MCBs, which provides the Current limiting capability and safe interruption up to 10,000A.

The rapid speed at which the contacts are parted prevents the fault current from reaching its prospective value. The arc drawn between the contacts is moved by magnetic forces into the multiple plate arc chamber where the arc is split, rapidly cooled and extinguished. The total operating time of the MCB is between 3 to 5 milliseconds. The energy let through (I^2t) of the device is kept to a minimum thus offering a very high degree of protection.

Current limiting class 3

5SX4 type MCBs significantly limit the let-through current (when a fault occurs) due to the ultra – fast contact separation and the quick quenching of the emergency arc in the chamber. Thus, generally, they fall below the permissible limiting I^2t values of the energy limiting class 3, specified in DIN VDE 0641 Part II by 50%. This guarantees excellent discrimination with the upstream protective devices and reduces the thermal stress on the downstream connected equipments.

Chart indicates the let through energy values of 10kA, 16A MCB according to EN 60898.



This MCB (16Amps) will allow only 50% of 84,000 (A^2S) let-through energy thereby reducing thermal stress to bare minimum value on the downstream equipment.

As these MCBs meet the requirements of current limiting class 3, according to EN 60898 without difficulty, they are therefore marked with symbol 10000 / 3

Standards

According to IS 8828 (1996), IEC 60898 (1995), VDE 0641/ 6.78.

Features at a glance

- Current limiting class 3 type breakers.
- "C" / "D" tripping characteristics.
- Service life : Average 20,000 operations at rated load.
- Suitable for AC and DC circuits.
- Wide range of Add on accessories.
- Trip Free mechanism.
- Better selectivity.
- Finger Touch Proof Terminals, provide installation safety.
- Totally safe and dependable - computer calibrated testing.
- Recessed ON – OFF lever ensuring no accidental operation.
- Combined terminals allow busbar and feeder cable to be simultaneously connected.
- ON-OFF Lever sealable in ON and OFF position.
- Can be mounted in any position.

Rated Current	Current Limiting Class according to EN 60898		
	1	2	3
16 A	Permissible let-through I^2t (A^2S)		
	No limit	2,90,000	84,000

Rated Breaking Capacity :

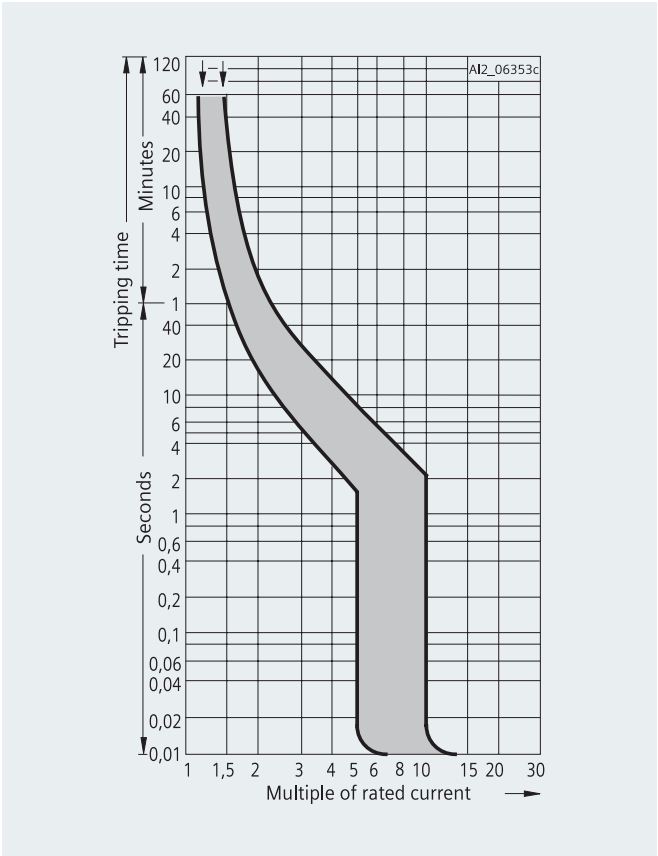
		As per IEC 60898 / IS 8828	As per IEC 60947-2			As per UL 489
Rated Current In (A)		1P, 2P, 3P, 4P 230V AC, 415V Icn (kA)	1P 230V AC Icn (kA)	2P, 3P, 4P 230V AC, Icn (kA)	1P, 2P, 3P, 4P 415 AC, Icn (kA)	1P, 2P, 3P, 4P 415 AC, Icn (kA)
5SX4	0.5 - 6	10	50	50	50	50
	10 - 20	10	25	30	25	50
	25 - 32	10	20	25	20	50
	40 - 63	10	10	15	10	–

'C' Characteristics

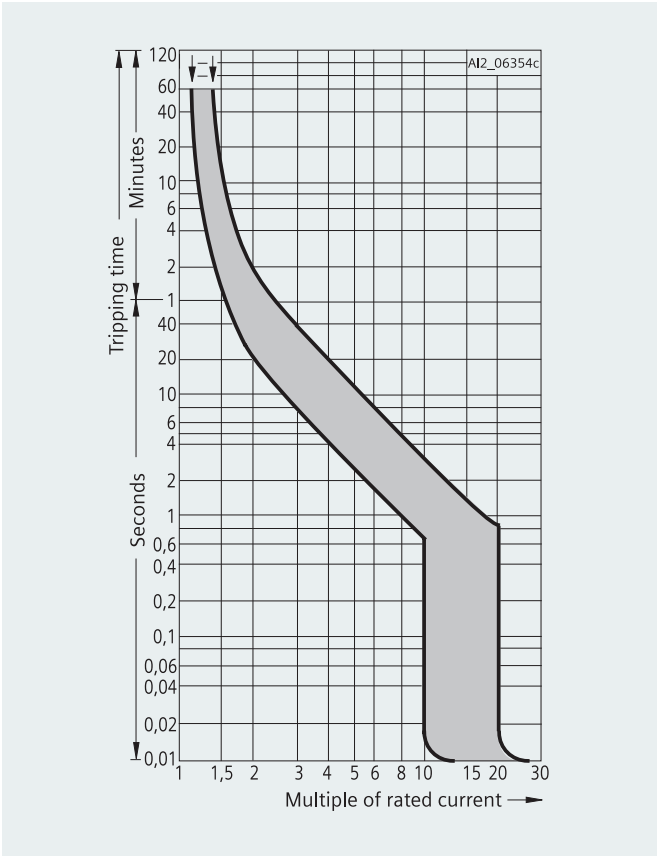
'C' characteristics MCBs are used for protection of electrical circuits in general and are most widely used because of its suitability for practically all electrical circuits, cable and line protection. They are capable of supplying the majority of inductive and capacitive loads including most motor and fluorescent lighting loads.

This characteristic allows applying loads having high peak currents without requiring the MCB to be oversized. In fact, thanks to this characteristic, it is possible to apply loads with peak currents up to 5 times *I*n, (rated current) and can hence be used to best advantage for handling higher inrush currents e.g. lamps, motors, etc. Under 'C' characteristics, the magnetic operating limits (for short-circuit operations) are between 5 and 10 times the rated current (*I*n) of MCB. For example the instantaneous mechanism of a 10A MCB will operate between 50A and 100A in an overcurrent situation. The thermal operating limits (for overload operation) are between 1.13 and 1.45 of the rated current (*I*n) of the MCB.

Number	1	2 ... 3	4 ... 6	> 7
Correction factor K	1.00	0.90	0.88	0.85



Tripping Characteristics : C



Tripping Characteristics : D

Overview

Effect of Higher Operating Voltages

Betagard MCB is designed to operate at 240/415V, 50Hz. However the device can operate at 480V, 50Hz with a reduction in breaking capacity of 50%.

DC Operation

Single pole MCBs can be used up to 60V DC and double pole up to 110V DC.

However, they should not be used below 18V DC. Though the thermal operation is delayed but this is negligible. The instantaneous tripping characteristic must be increased by 40% (e.g. a Type 'C' MCB has a magnetic tripping characteristic between 5 and 10 times the rated current. This magnetic tripping characteristic would therefore become between 7 and 14 times the rated current.

Frequency Variation

MCBs may be used up to their normal voltage rating on 400Hz supplies; however the magnetic tripping characteristic must be increased by 30% (e.g. Type 'C' MCB with magnetic characteristics between 5 and 10 times the rated current would become between 6.5 and 13 times rated current.

Effect of temperature on tripping characteristics :

Betagard MCBs are designed to meet the requirements of IS 8828 / IEC 60898 for tripping performance at ambient temperature 30°C. At other operating temperature the overload tripping band is modified by approximately 5% per 10° kelvin temperature difference, which increases for lower and decreases for higher temperatures than 30°C.

"D" Characteristics

D characteristics MCBs are used for protection of electrical circuits involving significant inrush currents like solenoid valves, capacitor banks, transformers, etc.

The main use of D characteristics MCBs is to ensure correct sizing of the device wherein high inrush currents are prevailing.

This characteristics allows to use in a high in rush current circuits without requiring the MCB to be over sized.

D characteristics MCB shall take the in rush current with peak up to 10 times In, (Rated current) and can be used best advantage for handling much higher in rush circuits eg: Switching solenoids/capacitor banks/transformers etc.

Under D characteristics, the magnetic operating limits (for short circuit operations) are between 10 to 20 times the rated current of MCB.

For example the instantaneous mechanism of 10A MCB will operate between 100A and 200A in an over current situation.

Selectivity of miniature circuit-breakers/fuses

Generally, distribution networks are configured as radial networks. An overcurrent device must be provided at each reduction of the conductor cross section. This results in a cascade graded according to the rated current, which should, where possible, provide selectivity.

Selectivity means, that in the event of a fault, only the protective device in the vicinity of the fault trips. Thus, parallel current paths can continue to provide the necessary power.

For MCBs with upstream fuses, the selectivity limit essentially depends on the current limits and tripping characteristics of the MCB as well as on the pre-arcing I^2t value of the fuse. Therefore, MCBs with different characteristics and rated breaking capacities also have different selectivity limits. The subsequent tables show the currents up to which selectivity is provided between MCBs and upstream fuses according to DIN VDE 0636 Part 21. The values specified in kA are limit values which have been determined under unfavourable test conditions. In practice, better values can be obtained, depending on the type of the upstream fuse.

In the event of a short circuit, when using the 5SX4, MCBs and fuses according to DIN VDE 0636 Part 21, Selectivity is provided up to the indicated values in kA.

Miniature Circuit Breakers (MCBs) : Type 5SP4

General

Siemens Betagard range of MCBs type 5SP4 offer high short circuit breaking capacity equal to 10kA as per IEC 60898 / IS 8828. These MCBs have excellent current limiting and selectivity characteristics. MCBs are available with C as well D tripping characteristics with current range of 80A - 125A and 80A - 100A respectively.

Features at a glance

- Current limiting class 3 MCBs
- Finger touch proof terminals (FTPT)
- Trip free mechanism
- Suitable for AC/DC circuits
- DIN rail and screw mounting possible
- Accessories like auxiliary contact, shunt trip, undervoltage release, fault signal contact

Applications

- Mainly as an incomer MCB in residential, industrial and commercial applications
- C characteristics MCBs suitable for general line protection especially with higher starting current lamps, motors etc.
- D characteristics MCBs suitable for high inrush current applications line transformers generating significant pulses, solenoid valves etc.

Betagard DC Circuit Breakers : Type 5SX5, 5SJ5

In alternating current circuits, arc quenching is assisted by the fact that current passes through zero, and that the current can only continue to flow if the arc is re-stuck across the open contacts during the following half wave. Direct current does not provide such assistance. In this case, a high arc voltage must be developed in order to stop the flow of the DC current.

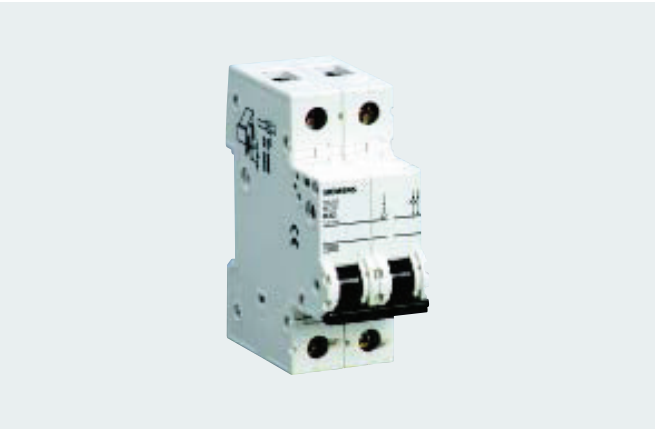
Therefore, the DC switching capacity depends on the arc quenching method employed by the switching device, on the network voltage & on the inductive reactance of the circuit.

In order to address DC network protection, Siemens offers 5SX5 / 5SJ5 series DC circuit breakers from 0.5A to 63A in Single pole & Double pole version.

When using DC CBs in DC networks, care must be taken to ensure the contact polarity of the connections.

In trains fed by a DC voltages (metros & railways) there is a wide range of L/R (Time Constants) values and over current levels. Consequently such special application requires fully enclosed operations.

For such application 5SX5 / 5SJ5 is the right choice for load up to 63 Amps to ensure people safety



Features

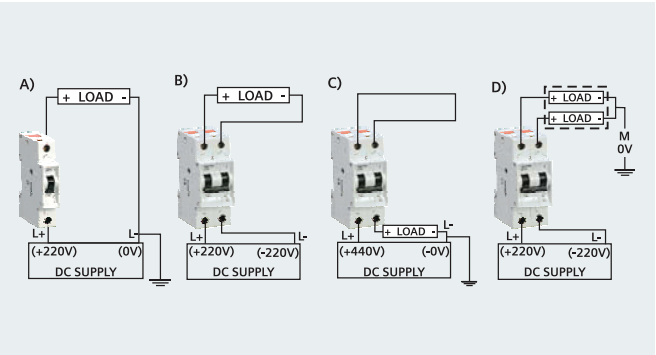
- Compact in size and hence reduction in panel size.
- Total recessed dial avoids accidental switching due to human negligence.
- Suitable for breaking capacity up to 10 kA
- Accessories like Aux block, fault signal contacts can be retro fitted at site.
- Finger touch proof (FTPT) ensures total safety for operator.

CBs for DC and AC/DC Applications

In DC networks up to 110 V , existing 5SX4 MCBs are suitable for single-pole and double-pole application.

For higher voltages, the versions 5SX5/5SJ5 are required. Contrary to the other product range, the arcing chamber area of 5SX5 / 5SJ5 is equipped with an additional permanent magnet to support the positive quenching of the arc.

For this reason, the polarity of the DC circuit breaker is clearly marked and must be observed when connecting the cables and conductors.



Technical data

Technical Data – 5SX4 MCBs

Standards			IS 60898 Part I : 2002
Series			5SX4 / 5SJ4
Tripping characteristics			'C' / 'D'
No. of poles			SP, DP, TP, FP
Rated voltage	Volts		240 / 415 V AC, 50/60 Hz
			SP – 60V DC, DP – 110V DC
Current Range	Amps		0.5 – 63
Operational voltage	min. AC/DC V		24
	max. DC V/Pole		60
	max. AC V		440
Rated Breaking Capacity			
acc. to IS 8828 / IEC 60898, DIN VDE 0641	AC	kA	10
Insulation coordination			
Rated insulation voltage			250/440 V AC
Degree of pollution for overvoltage category III			2
Mounting			on a 35 mm mounting rail (EN 50 022)
Conductor cross sections			
Solid and stranded, max.			
Upper terminal	mm^2		16
Lower terminal	mm^2		25
Finely stranded with end sleeves, max.			
Upper terminal	mm^2		16
Lower terminal	mm^2		25
Terminal tightening torque			
(power driver setting)	Nm		2.5 - 3
Supply connection			As required, top or bottom.
Mounting position			As required in any position.
Endurance			On an average 20,000 operations at rated load
Ambient temperature	°C		-25 to +45, occasionally +55 max. 95% humidity, Storage temperature : -40 to +75
Resistance to climate			According to IEC 68-2-30, 6 cycles
Resistance to vibration	m/s^2		60 at 10 to 150 Hz according to IEC 68-2-6

Technical Data – 5SP4 MCBs

Standards	IS 60898 Part I : 2002	
Series	5SP4	
Tripping characteristics	C	D
Current range	80A, 100A and 125A	80A and 100A
Rated voltage	240/415V AC and 60V DC/pole	
Operational voltage (max)	250/440V AC and 60V DC/pole	
Poles	SP, DP, TP, FP	
Rated breaking capacity	AC 10kA (as per IS 8828 / IEC 60898)	
	AC 20kA* (as per IS 13947 / IEC 60947)	
Depth	70mm	
Terminal tightening torque	3 to 3.5Nm	
Conductor cross sections		
Solid and stranded	0.75 – 50mm^2	
Fine stranded with end sleeves	0.75 – 35mm^2	
Supply connection	As required, top or bottom Polarity to be observed for DC applications	
Ambient temperature	-25°C to +45°C occasionally +55°C, max. 95% humidity, storage temp. -40°C to +75°C	
Service life	Average 20,000 operation at rated load	

* 15kA for 80A, 100A in 'D' characteristics

Tripping characteristics

Tripping characteristic	Thermal releases Test currents:			Electromagnetic releases Test currents:		
	limiting no-damage current I_1	minimum no-damage current I_2	tripping time $I_n > 63$ A	hold I_4	latest tripping instant I_5	tripping time t
C	1.13 x I_n	1.45 x I_n	> 2 h < 2 h	5 x I_n	10 x I_n	≥ 0.1 s < 0.1 s
D	1.13 x I_n	1.45 x I_n	> 2 h < 2 h	10 x I_n	20 x I_n	≥ 0.1 s < 0.1 s

Technical data

Technical Data – 5SX5, 5SJ5 DCCBs

Series	5SX5, 5SJ5
Current Range	0.5 ... 63 A
Rated voltage	220 V DC, 1P and 440 V DC, 2P
Poles	1P, 2P
Rated breaking capacity	10 kA (as per IS 60947 / IEC 60947)
Terminal lighting torque	3 to 3.5 Nm
Conductor cross-sections	
Solid and stranded	0.75 - 50 mm^2
Fine stranded with end sleeves	0.75 - 35 mm^2
Supply connection	Polarity to be observed (Refer connection diagram)
Ambient temperature	-25°C to +45°C occasionally +55°C, max. 95% humidity, storage temp. -40°C to +75°C

Betagard Miniature Circuit Breakers - 5SX4, 10kA with C characteristics

IS 60898

CM/L No. 2255548

Un: 240/415V, 50...60Hz can be used in systems upto 60Vdc, 1P and 110Vdc, 2P
Breaking capacity: 10kA as per IS 60898 part I : 2002; Icu=15kA as per IS 60947-2 upto 32A
With ISI marking: CM/L No. 2255548

		Rated current I_n (A)	MW#	Reference No.	Std. Pkg. (Nos.)
	**1-pole**	0.5	1	**5SX41057RC**	**1/20**
		1		**5SX41017RC**	**1/20**
		2		**5SX41027RC**	**1/20**
		4		**5SX41047RC**	**1/20**
		6		■ **5SX41067RC**	**1/20**
		10		■ **5SX41107RC**	**1/20**
		16		■ **5SX41167RC**	**1/20**
		20		■ **5SX41207RC**	**1/20**
		25		■ **5SX41257RC**	**1/20**
		32		■ **5SX41327RC**	**1/20**
		40		**5SX41407RC**	**1/20**
		50		**5SX41507RC**	**1/20**
		63		**5SX41637RC**	**1/20**
	**2-pole**	0.5	2	**5SX42057RC**	**1/10**
		1		**5SX42017RC**	**1/10**
		2		**5SX42027RC**	**1/10**
		4		**5SX42047RC**	**1/10**
		6		**5SX42067RC**	**1/10**
		10		**5SX42107RC**	**1/10**
		16		**5SX42167RC**	**1/10**
		20		**5SX42207RC**	**1/10**
		25		**5SX42257RC**	**1/10**
		32		■ **5SX42327RC**	**1/10**
		40		**5SX42407RC**	**1/10**
		50		**5SX42507RC**	**1/10**
		63		■ **5SX42637RC**	**1/10**
	**3-pole**	0.5	3	**5SX43057RC**	**1/10**
		1		**5SX43017RC**	**1/10**
		2		**5SX43027RC**	**1/10**
		4		**5SX43047RC**	**1/10**
		6		**5SX43067RC**	**1/10**
		10		**5SX43107RC**	**1/10**
		16		**5SX43167RC**	**1/10**
		20		**5SX43207RC**	**1/10**
		25		**5SX43257RC**	**1/10**
		32		■ **5SX43327RC**	**1/10**
		40		■ **5SX43407RC**	**1/10**
		50		**5SX43507RC**	**1/10**
		63		■ **5SX43637RC**	**1/10**
	**4-pole**	0.5	4	**5SX44057RC**	**1/10**
		1		**5SX44017RC**	**1/10**
		2		**5SX44027RC**	**1/10**
		4		**5SX44047RC**	**1/10**
		6		**5SX44067RC**	**1/10**
		10		**5SX44107RC**	**1/10**
		16		**5SX44167RC**	**1/10**
		20		**5SX44207RC**	**1/10**
		25		**5SX44257RC**	**1/10**
		32		■ **5SX44327RC**	**1/10**
		40		■ **5SX44407RC**	**1/10**
		50		**5SX44507RC**	**1/10**
		63		**5SX44637RC**	**1/10**

Note: ■ Stock Items • # 1MW (Module Width) = 18mm

Selection & ordering data

Betagard Miniature Circuit Breakers - 5SX4/5SJ4, 10kA with D characteristics

IS 60898
CM/L No. 2255548

Un: 240/415V, 50...60Hz can be used in systems upto 60Vdc, 1P and 110Vdc, 2P
Standards: IS 60898, IEC 60898
Breaking capacity: 10kA as per IS 60898 part I : 2002
With ISI marking: CM/L No. 2255548

		Rated current I_n (A)	MW#	Reference No.	Std. Pkg. (Nos.)
	1-pole	0.5	1	5SX41058RC	1/20
		1		5SX41018RC	1/20
		2		5SX41028RC	1/20
		4		5SX41048RC	1/20
		6		■ 5SX41068RC	1/20
		10		■ 5SX41108RC	1/20
		16		■ 5SX41168RC	1/20
		20		5SX41208RC	1/20
		25		5SX41258RC	1/20
		32		5SX41328RC	1/20
		40		5SJ41408RC	1/20
		50		5SJ41508RC	1/20
		63		5SJ41638RC	1/20
	2-pole	0.5	2	5SX42058RC	1/10
		1		5SX42018RC	1/10
		2		5SX42028RC	1/10
		4		5SX42048RC	1/10
		6		5SX42068RC	1/10
		10		5SX42108RC	1/10
		16		5SX42168RC	1/10
		20		5SX42208RC	1/10
		25		5SX42258RC	1/10
		32		■ 5SX42328RC	1/10
		40		5SJ42408RC	1/10
		50		5SJ42508RC	1/10
		63		■ 5SJ42638RC	1/10
	3-pole	0.5	3	5SX43058RC	1/10
		1		5SX43018RC	1/10
		2		5SX43028RC	1/10
		4		5SX43048RC	1/10
		6		5SX43068RC	1/10
		10		5SX43108RC	1/10
		16		5SX43168RC	1/10
		20		5SX43208RC	1/10
		25		5SX43258RC	1/10
		32		■ 5SX43328RC	1/10
		40		■ 5SJ43408RC	1/10
		50		5SJ43508RC	1/10
		63		■ 5SJ43638RC	1/10
	4 pole	0.5	4	5SX44058RC	1/10
		1		5SX44018RC	1/10
		2		5SX44028RC	1/10
		4		5SX44048RC	1/10
		6		5SX44068RC	1/10
		10		5SX44108RC	1/10
		16		5SX44168RC	1/10
		20		5SX44208RC	1/10
		25		5SX44258RC	1/10
		32		■ 5SX44328RC	1/10
		40		■ 5SJ44408RC	1/10
		50		5SJ44508RC	1/10
		63		■ 5SJ44638RC	1/10

Note:
■ Stock Items
1MW (Module Width) = 18mm

Betagard Miniature Circuit Breakers, LS125 - 5SP4, 10kA MCBs with C/D characteristics

IS 60898
CM/L No. 2255548

Un: 240/415V, 50...60Hz can be used in systems upto 60Vdc, 1P and 110Vdc, 2P
Standards: IS 60898, IEC 60898
Breaking capacity: 10kA as per IS 60898; Icu=20kA as per IS 60947-2
With ISI marking : CM/L No. 2255548

C characteristic

		Rated current I_n (A)	MW#	Reference No.	Std. Pkg. (Nos.)
	1-pole	80 100 125	1.5	5SP41807RC 5SP41917RC 5SP41927RC	1/10 1/10 1/10
	2-pole	80 100 125	3	■ 5SP42807RC ■ 5SP42917RC 5SP42927RC	1/5 1/5 1/5
	3-pole	80 100 125	4.5	5SP43807RC ■ 5SP43917RC ■ 5SP43927RC	1 1 1
	4-pole	80 100 125	6	5SP44807RC ■ 5SP44917RC ■ 5SP44927RC	1 1 1

D characteristic

	1-pole	80 100	1.5	5SP41808RC 5SP41918RC	1/10 1/10
	2-pole	80 100	3	5SP42808RC 5SP42918RC	1/5 1/5
	3-pole	80 100	4.5	5SP43808RC 5SP43918RC	1 1
	4-pole	80 100	6	5SP44808RC 5SP44918RC	1 1

Note:
■ Stock Items
1MW (Module Width) = 18mm

Selection & ordering data

Betagard DC Circuit Breakers - 5SX5/5SJ5, 10kA DC Circuit Breakers

Un: 220Vdc/1P & 440Vdc/2P
Standards: IS 13947-2, IEC 60947-2
Breaking capacity: 10kA as per IS 13947-2

		Rated current I_n (A)	MW#	Reference No.	Std. Pkg. (Nos.)
	1-pole	0.5	1	5SX51057RC	1/20
		1		5SX51017RC	1/20
		2		5SX51027RC	1/20
		4		5SX51047RC	1/20
		6		5SX51067RC	1/20
		10		5SX51107RC	1/20
		16		5SX51167RC	1/20
		20		5SX51207RC	1/20
		25		5SX51257RC	1/20
		32		5SX51327RC	1/20
		40		5SJ51407RC	1/20
		50		5SJ51507RC	1/20
		63		5SJ51637RC	1/20
	2-pole	0.5	2	5SX52057RC	1/10
		1		5SX52017RC	1/10
		2		5SX52027RC	1/10
		4		5SX52047RC	1/10
		6		5SX52067RC	1/10
		10		5SX52107RC	1/10
		16		5SX52167RC	1/10
		20		5SX52207RC	1/10
		25		5SX52257RC	1/10
		32		5SX52327RC	1/10
		40		5SJ52407RC	1/10
		50		5SJ52507RC	1/10
		63		5SJ52637RC	1/10

Note:
1MW (Module Width) = 18mm

Betagard MCBs 5SX4 & DC circuit breakers 5SX5

For applications in industry and in system and plant engineering, add-on accessories are available, such as auxiliary contacts (AC), fault-signal contacts (FC), shunt trips (ST). ST is mounted left of MCB. AC/FC are mounted on right side. These modules can be used as inputs/outputs to a PLC, building-automation system etc. for signalling and control.

Auxiliary contacts (AC)

Each block consists of two electrically independent contacts (separated electrical circuits); one of these contacts is normally open and the other normally closed. The mechanically stable position of the contacts does not change unless the circuit-breaker is manually actuated or is tripped due to an overload or a short circuit. The terminals are characterised by a degree of protection IP 2X; they allow connecting conductors with a maximum cross-section of 2.5 mm² and are delivered with combined slotted and podzidrive head screws.

Fault signal contacts (FC)

The fault signal contact block has a structure and dimensions identical to those of the auxiliary contact block (AC). The fault signal contact block remotely indicates the tripping of device due to an overload or a short-circuit. The block's contact remain in position when the circuit-breaker's handle is manually actuated.

Shunt trip (ST)

The shunt trip coil allows the circuit breaker to be remotely tripped. The coil and circuit breaker are coupled together not only by using the control handle, but also with the internal trigger.

Auxiliary contact (AC)

AC	Type Ref (5SX4)	Type Ref (5SJ4)
1NO+1NC	5SX9100	5ST3010
2NO	5SX9101	–

Applications : Remotely indicating the switching condition of the MCB ON/OFF

- Can be subsequently mounted to the MCB.
- Mounted using factory installed clips.
- Max. contact load :
  6A, 230 V AC, AC-15
  1 A, 220 V DC, DC-13
- Cable size upto
  1 x 2.5 sq mm to be used.

Fault signal contact

FC	Type Ref (5SX4)	Type Ref (5SJ4)
1NO+1NC	5SX9200	5ST3020

Applications : Remotely indicating the tripping condition of the MCB

- Can be subsequently mounted to the MCB.
- Mounted using factory installed clips.
- Max. contact load :
  6A, 230 V AC, AC-15
  1 A, 220 V DC, DC-13
- Cable size upto
  1 x 2.5 sq mm to be used.

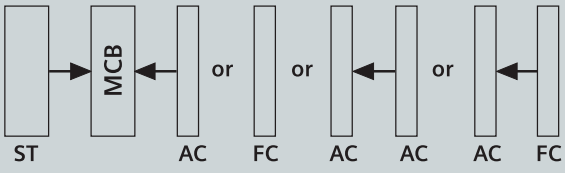
Shunt trip (ST)

Shunt Release	Type Ref (5SX4)	Type Ref (5SJ4)
110...415VAC	5SX9300	5ST3030
24...48VDC	–	5ST3031

Applications : Remotely tripping the MCB. 100% switch-on duration.

- Mounted using attached screws.
- Can be used for voltages 110 to 415 V AC, Short-circuit protection using MCB.

Maximum possible configurations for accessories



Additional components

Auxiliary circuit switch/fault signal contact for 5SJ and 5SP4

Benefits

- Can be retrofitted individually
  (for mounting concept, refer to page 2/7)
- Can be connected to *instabus* KNX *EIB* and AS-Interface bus over binary inputs

Application

Indication of the miniature circuit-breaker's switching state:

– AS: ON/OFF

– FC: tripped

Design

- Min contact load: 50 mA, 24 V

Selection and ordering data

	Version		MW	Order No.	Weights 1 item kg	PS*/ P unit Items
	Auxiliary circuit switches (AS)					
	 for small output	1 NO + 1NC	0.5	**5ST3 010**	0.050	10
	**Fault signal contacts (FC)** 	1NO + 1 NC	0.5	**5ST3 020**	0.050	10

Remote controlled mechanism (RC)

Function / Applications:

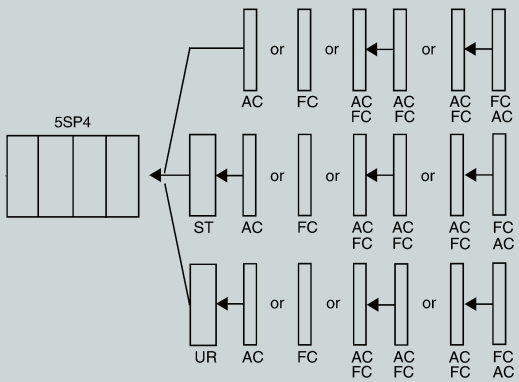
- ON/OFF remote control switch of MCB
- Remote switching ON is possible following acknowledgment of fault occurrence
- Manual switching on-site possible
- Remote display of switching status of remote controlled mechanism and MCB

Rated voltage U_n	MW#	Type ref. no.
230V AC	3.5	**5ST3 050**

Mounting concept (possible configurations)

Mounting concept

Using this mounting concept, all additional 5ST3 components can be combined with miniature circuit-breaker of 5SP4 series:



1 Module Width (MW) = 18mm

Shunt trip/undervoltage release for 5SJ and 5SP4

Benefits

Shunt release

- Can be retrofitted individually (for mounting concept, refer to page 2/7)
- Suitable for voltages: 110 to 415 V AC, 110 V AC
  24 to 48 V AC/DC
- Can be connected to *instabus* KNX *EIB* and AS-Interface bus through binary outputs

Undervoltage releases

- Can be retrofitted individually (for mounting concept, refer to page 2/7)
- Suitable for voltages: 230 V AC
  110 V DC
  24 V DC
- Can be connected to *instabus* KNX *EIB* and AS-Interface bus through binary outputs

Application

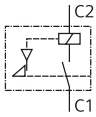
Shunt release

- Remove tripping of the miniature circuit-breaker

Undervoltage releases

- Applicable as remote trip in an EMERGENCY-OFF loop
- Ensures disconnection of the control circuit acc. to EN 60204
- In cases of interrupted or insufficient voltage, the undervoltage release trips the miniature circuit-breaker or prevents it from switching on.

Selection and ordering data

		Rated voltage U_n	MW	Order No.	Weight 1 item kg	PS*/ P unit Items
	Shunt trips (ST)					
		110 ... 415 V AC	1	**5ST3 030**	0.098	1/5
		24 ... 48 V AC/DC	1	**5ST3 031**	0.098	1/5
	Undervoltage releases (UR)					
		230 V AC	1	**5ST3 043**	0.115	1/5
		24 V DC		**5ST3 045**	0.115	1/5

Rotary Handle Assembly for MCB s (ROH)

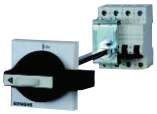
Benefits

- 5SJ, 5SY, 5SL, 5SP and 5TE8 series of MCBs/ Isolators can be fitted with Betagard Rotary Handle Assembly (ROH) for installation in Switchgear Cubicles and Distribution Panels
- The ROH gives operating uniformity and improves the aesthetics of the panel.
- The ROH can be padlocked in OFF position with the help of suitable padlocks thereby ensuring complete safety to operating personal during maintenance.
- Door interlock and defeat facility is available as a standard feature.

Applications

- Panel Boards / Switch Boards

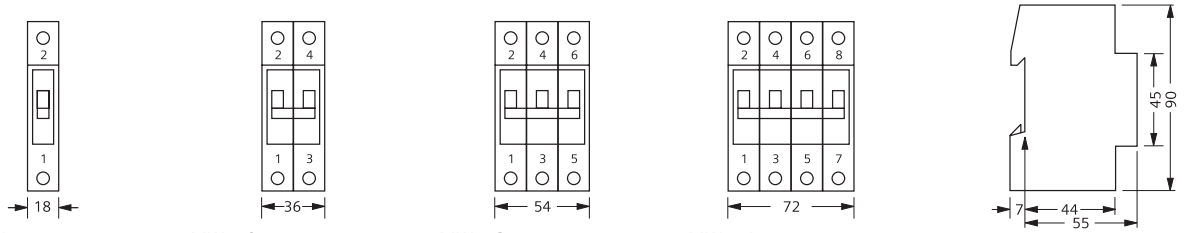
Technical Details:

	Product	Order No	Weight 1 item Kg	PS*/ P unit Items
	Rotary Handle Assembly for MCB	**5ST38140RC**	0.584	1

Dimensions

Betagard MCBs 5SX4 & DC circuit breakers 5SX5

SP DP TP FP

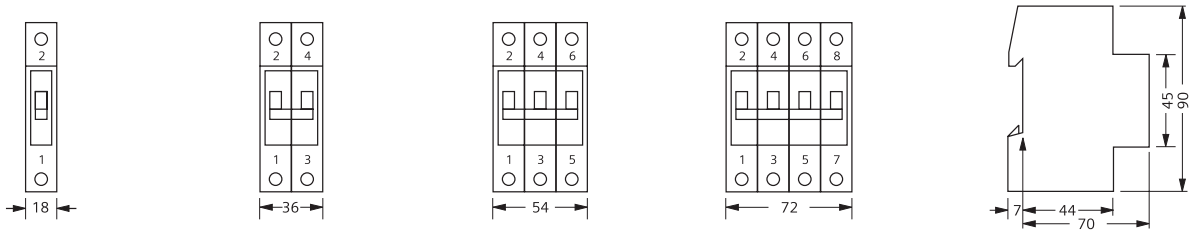


MW = 1 MW = 2 MW = 3 MW = 4

1MW = 18mm

Betagard MCBs 5SJ4 & DC circuit breakers 5SJ5

SP DP TP FP

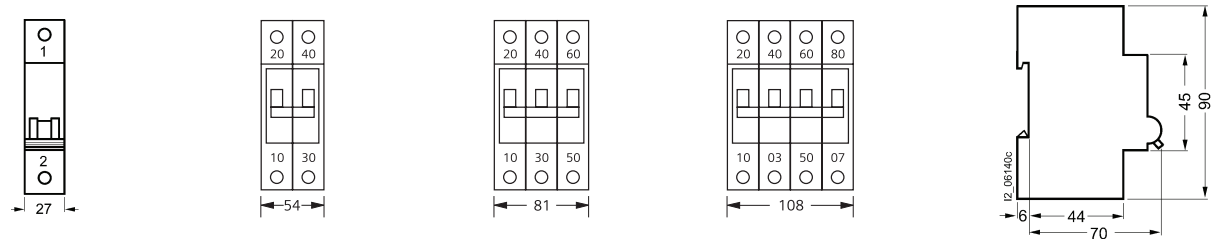


MW = 1 MW = 2 MW = 3 MW = 4

1MW = 18mm

Betagard MCBs 5SP4

SP DP TP FP



MW = 1 MW = 2 MW = 3 MW = 4

1MW = 18mm

All dimensions in mm