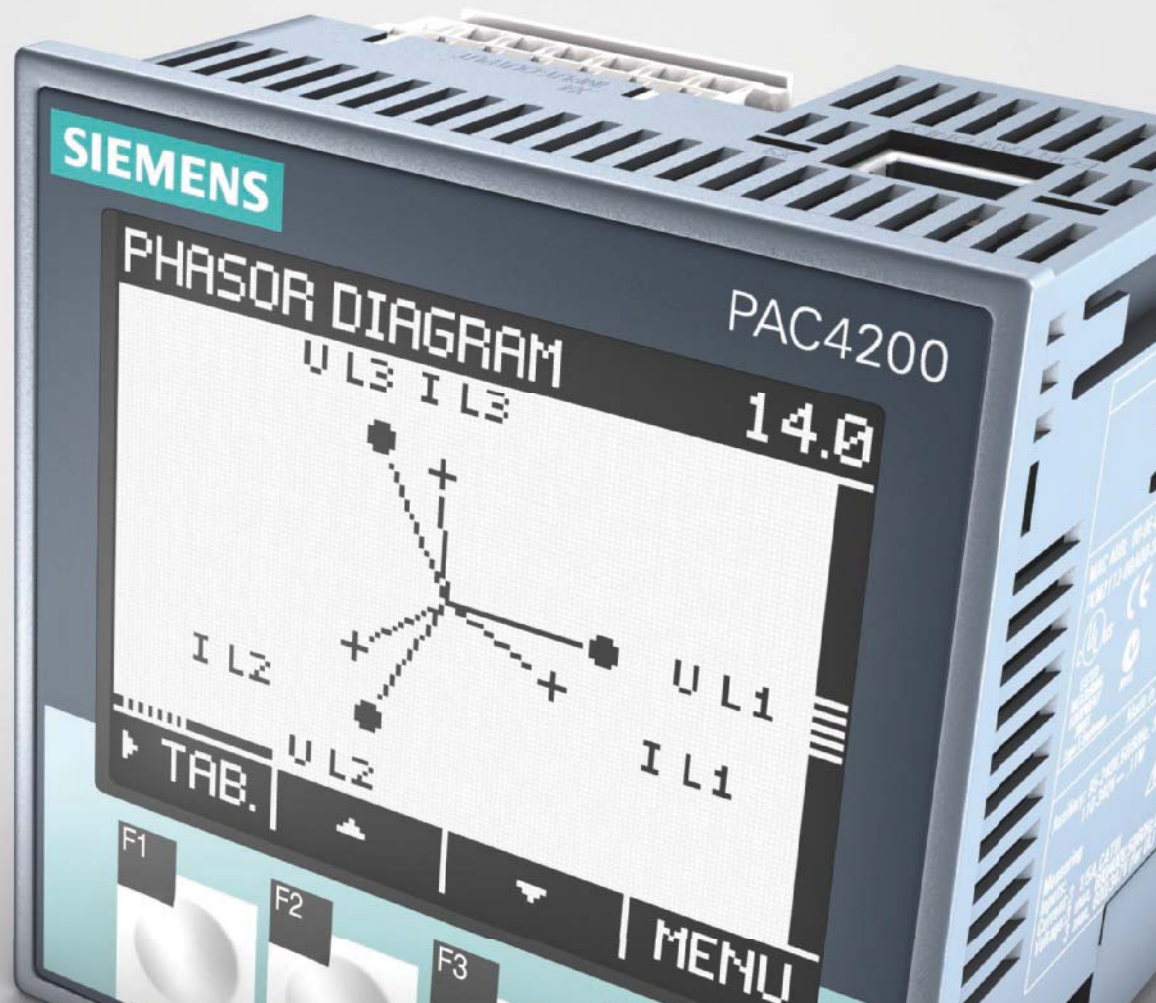


# Low-Voltage Power Distribution and Electrical Installation Technology

Protection, Switching, Measuring and Monitoring Devices

Catalog LV 10.1 · 2012



## SENTRON

Answers for infrastructure.

**SIEMENS**






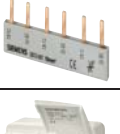





# Residual Current Protective Devices

## Introduction

### Overview

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Devices	Page	Application	Standards	Used in		
				Non-residential buildings	Residential buildings	Industry
	4/4	Personnel, material and fire protection, as well as protection against direct contact. SIGRES with active condensation protection for use in harsh environments. Super resistant and selective versions	IEC/EN 61008	✓	✓	✓
	4/9	SIQUENCE, the technology of universal current-sensitive residual current protective devices	VDE 0664-100 VDE 0664-200 VDE V 0664-110	✓	--	✓
	4/12	Remote controlled mechanisms, auxiliary switches for all residual current operated circuit breakers.  Leakage current measurement device for fault locating and the optimum selection of RCCBs	IEC/EN 62019	✓	--	✓
	4/14	The freely selectable combination of RC units with miniature circuit breakers permits the flexible configuration of RCBO combinations	IEC/EN 61009	✓	--	✓
	4/18	The ideal protection combination for all electrical circuits due to the compact device versions of RCCBs and miniature circuit breakers in a single device	IEC/EN 61009	✓	✓	✓
	4/25	Busbars in 10 mm <sup>2</sup> and 16 mm <sup>2</sup> save space in the distribution board and time during mounting	--	✓	✓	✓
	4/28	For retrofitting in existing installations	VDE 0664	✓	✓	✓
	4/29	Locking devices, covers - everything you need for mounting	--	✓	✓	✓
	Ch. 13	Monitoring of residual currents in electrical plants with indication if a specified limit value is exceeded.  <a href="#">see chapter: "Monitoring devices —&gt; Monitoring devices for electrical values —&gt; Residual current monitor"</a>	IEC 62020 EN 62020	✓	--	✓

**SIGRES**

SIGRES RCCBs were developed for use in harsh ambient conditions, such as swimming baths as protection against chlorine and ozone, in the agricultural sector (ammonia), on building sites and in the chemical industry (nitrogen oxide, sulfur dioxide, solvents), in the food processing industry (hydrogen sulfide) and in unheated rooms (dampness). The patented active condensation protection requires a continuous power supply and bottom infeed if the RCCB is switched off.

When used in ambient conditions in accordance with product standard EN 61008-1, the operation interval for pressing the test button can be extended to 1x a year.

**Super resistant** **K**

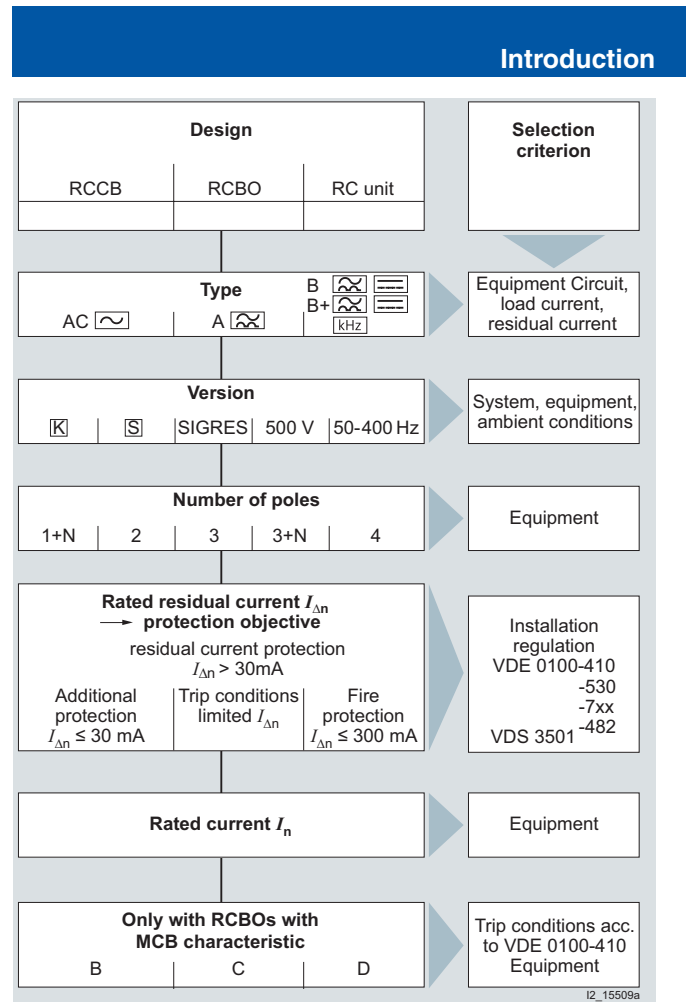
Super resistant (short-time delayed) RCCBs meet the maximum permissible break times for instantaneous devices. However, by implementing a short-time delay they prevent unnecessary trippings, and thus plant faults, when pulse-shaped leakage currents occur - as is the case when capacitors are switched on.

**Selective** **S**

Can be used as upstream group switch for selective tripping contrary to a downstream, instantaneous or super resistant RCCB.

Note:

You will find further information on the subject of residual current protective devices in the technology primer "Residual Current Protective Devices", Order No.: E10003-E38-9T-B3011 and in the Technology Manual at: [www.siemens.com/lowvoltage/manuals](http://www.siemens.com/lowvoltage/manuals)



Selection aid for finding the suitable residual current protective device

# Residual Current Protective Devices

## 5SM3 RCCBs

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### Overview

RCCBs of type A are used in all systems up to 240/415 V AC. They trip in the event of both sinusoidal AC residual currents and pulsating DC residual currents.

RCCBs with a rated residual current of maximum 30 mA are used for personnel, material and fire protection, as well as for protection against direct contact. RCCBs with a rated residual current of 10 mA are primarily used in areas that represent an increased risk for personnel.


Since the introduction of DIN VDE 0100-410, all socket outlet current circuits up to 20 A must also be fitted with residual current protective devices with a rated residual current of max. 30 mA. This also applies to outdoor electrical circuits up to 32 A for the connection of portable equipment.

Devices with a rated residual current of maximum 300 mA are used as preventative fire protection in case of insulation faults. RCCBs with a rated residual current of 100 mA are primarily used inside Europe.

### Benefits

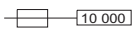
- Instantaneous RCCBs with the N connection on the left-hand side enable simple bus mounting with standard pin busbars with miniature circuit breakers installed on the right-hand side
- Instantaneous RCCBs with the N connection on the right-hand side can be bus-mounted with miniature circuit breakers using a special pin busbar
- Instantaneous devices have a surge current withstand capability with current waveform 8/20  $\mu$ s of over 1 kA, super resistant of over 3 kA and selective of over 5 kA. This ensures safe operation
- SIGRES has an extremely long service life due to patented active condensation protection and the same dimensions for the quick and easy replacement of instantaneous RCCBs already installed
- Super resistant devices increase plant availability, as unnecessary tripping is prevented in systems with short-time glitches
- Selective RCCBs increase plant availability, as in the event of a fault, a staggered tripping time enables the selective tripping of RCCBs connected in series
- Auxiliary switches or remote controlled mechanisms are also available as additional components
- The operating handle and the test button can be locked by means of a handle locking device.

### Technical specifications

			Instantaneous	SIGRES	Super resistant	Selective
<b>Standards</b>			IEC/EN 61008-1 (VDE 0664-10), IEC/EN 61008-2-1 (VDE 0664-11); IEC/EN 61543 (VDE 0664-30)			
<b>Approvals</b>			IEC 61008-1, IEC 61008-2-1; EN 61008-1, EN 61008-2-1			
<b>Surge current withstand capability</b> with current waveform 8/20 $\mu$ s	Acc. to DIN VDE 0432-2	kA	> 1 (type A)		> 3	> 5
<b>Minimum operational voltage for test function operation</b>		V AC	100			
<b>Insulation coordination</b> • Overvoltage category			III			
<b>Pollution degree</b>			2			
<b>Terminal conductor cross-sections</b>						
• For 2 MW	At $I_n = 16$ A, 25 A, 40 A At $I_n = 100$ A, 125 A	mm <sup>2</sup> mm <sup>2</sup>	1.0 ... 16 1.5 ... 50	--	--	--
• For 2.5 MW	At $I_n = 63$ A, 80 A	mm <sup>2</sup>	1.5 ... 25			
• For 4 MW	At $I_n = 25$ A, 40 A, 63 A, 80 A At $I_n = 125$ A	mm <sup>2</sup> mm <sup>2</sup>	1.5 ... 25 2.5 ... 50	--	--	2.5 ... 50
<b>Terminal tightening torque</b>						
• Up to $I_n$ 80 A		Nm	2.5 ... 3.0			
• at $I_n = 100$ A, 125 A		Nm	3.0 ... 3.5	--	--	3.0 ... 3.5
<b>Mains connection</b>			Top or bottom	Bottom	Top or bottom	
<b>Mounting position</b>			Any			
<b>Degree of protection</b>	Acc. to EN 60529 (VDE 0470-1)		IP20, if the distribution board is installed, with connected conductors			
<b>Touch protection</b>	Acc. to EN 50274 (VDE 0660-514)		Finger and back-of-hand safe			
<b>Service life</b>	Test cycle acc. to IEC/EN 61008	Switching cycles	> 10000			
<b>Storage temperature</b>		°C	-40 ... +75			
<b>Ambient temperature</b>		°C	-25 ... +45, marked with 			
<b>Resistance to climate</b>	Acc. to IEC 60068-2-30		28 cycles (55 °C; 95 % rel. air humidity)			
<b>CFC and silicone-free</b>			Yes			

## Selection and ordering data

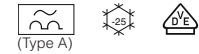


Rated residual current	Rated current	Max. permissible short-circuit series fuse	Mounting width	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*/P. unit	PG	Weight per PU approx.		
$I_{\Delta n}$	$I_n$											
mA	A	A	MW					Unit(s)		kg		
<b>RCCBs, type AC, instantaneous, surge current withstand capability &gt; 1 kA</b>												
1P+N; 125 V ... 230 V AC, 50 ... 60 Hz												
30	25	63	2	B	<b>5SM3 312-0LB</b>		1	1 unit	006	0.246		
	40			B				<b>5SM3 314-0LB</b>	1	1 unit	006	0.250
100	25	63	2	B	<b>5SM3 412-0LB</b>		1	1 unit	006	0.239		
	40			B				<b>5SM3 414-0LB</b>	1	1 unit	006	0.242
4P; 230 ... 400 V AC, 50 ... 60 Hz												
30	25	63	4	B	<b>5SM3 342-0LB</b>		1	1 unit	006	0.494		
	40			A				<b>5SM3 344-0LB</b>	1	1 unit	006	0.494
	63			B				<b>5SM3 346-0LB</b>	1	1 unit	006	0.501
100	25	63	4	B	<b>5SM3 442-0LB</b>		1	1 unit	006	0.475		
	40			B				<b>5SM3 444-0LB</b>	1	1 unit	006	0.474
	63			B				<b>5SM3 446-0LB</b>	1	1 unit	006	0.488
300	25	63	4	C	<b>5SM3 642-0LB</b>		1	1 unit	006	0.459		
	40			B				<b>5SM3 644-0LB</b>	1	1 unit	006	0.466
	63			B				<b>5SM3 646-0LB</b>	1	1 unit	006	0.465
<b>RCCBs, type AC instantaneous</b>												
1P+N, 125 V ... 230 V AC, 50 ... 60 Hz												
30	25	63	2	▶	<b>5SM3 312-0</b>		1	1 unit	006	0.243		
	40			A				<b>5SM3 314-0</b>	1	1 unit	006	0.244
100	25	63	2	B	<b>5SM3 412-0</b>		1	1 unit	006	0.234		
	40			B				<b>5SM3 414-0</b>	1	1 unit	006	0.236
3P+N, 230 ... 400 V AC; 50 ... 60 Hz												
30	25	63	4	A	<b>5SM3 342-0</b>		1	1 unit	006	0.469		
	40			A				<b>5SM3 344-0</b>	1	1 unit	006	0.485
	63			A				<b>5SM3 346-0</b>	1	1 unit	006	0.500
100	25	63	4	B	<b>5SM3 442-0</b>		1	1 unit	006	0.466		
	40			B				<b>5SM3 444-0</b>	1	1 unit	006	0.467
	63			B				<b>5SM3 446-0</b>	1	1 unit	006	0.479
300	25	63	4	A	<b>5SM3 642-0</b>		1	1 unit	006	0.454		
	40			C				<b>5SM3 644-0</b>	1	1 unit	006	0.456
	63			A				<b>5SM3 646-0</b>	1	1 unit	006	0.457
3P+N, 230 ... 400 V AC; 50 ... 60 Hz												
30	125	125	4	C	<b>5SM3 345-0</b>		1	1 unit	006	0.566		
100	125			B	<b>5SM3 445-0</b>		1	1 unit	006	0.541		
300	125			C	<b>5SM3 645-0</b>		1	1 unit	006	0.548		
500	125			B	<b>5SM3 745-0</b>		1	1 unit	006	0.525		

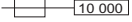




## Residual Current Protective Devices

## 5SM3 RCCBs

## Selection and ordering data










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Rated residual current	Rated current	Max. permissible short-circuit series fuse	Mounting width	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*/P. unit	PG	Weight per PU approx.	
$I_{\Delta n}$ mA	$I_n$ A	 10 000 A	MW							kg	
<b>RCCBs, type A, instantaneous</b>											
1P+N; 125 ... 230 V AC; 50 ... 60 Hz											
N connection, right											
 Up to 40 A	10	16	63	2	A	<b>5SM3 111-6</b>	1	1 unit	007	0.251	
	30	16	63	2	A	<b>5SM3 311-6</b>	1	1 unit	007	0.248	
		25				B	<b>5SM3 312-6</b>	1	1 unit	007	0.248
		40				D	<b>5SM3 314-6</b>	1	1 unit	007	0.247
	63 A and 80 A	63	100	2.5	A	<b>5SM3 316-6</b>	1	1 unit	007	0.328	
		80				B	<b>5SM3 317-6</b>	1	1 unit	007	0.330
		100				B	<b>5SM3 318-6KK</b>	1	1 unit	007	0.272
		125				B	<b>5SM3 315-6KK</b>	1	1 unit	007	0.269
		100	25	63	2	B	<b>5SM3 412-6</b>	1	1 unit	007	0.240
	40					B	<b>5SM3 414-6</b>	1	1 unit	007	0.240
63	100		2.5	B	<b>5SM3 416-6</b>	1	1 unit	007	0.315		
80					B	<b>5SM3 417-6</b>	1	1 unit	007	0.324	
100	125		2	B	<b>5SM3 418-6KK</b>	1	1 unit	007	0.272		
300	125				B	<b>5SM3 415-6KK</b>	1	1 unit	007	0.273	
	25	63	2	A	<b>5SM3 612-6</b>	1	1 unit	007	0.231		
	40				A	<b>5SM3 614-6</b>	1	1 unit	007	0.233	
	63	100	2.5	B	<b>5SM3 616-6</b>	1	1 unit	007	0.299		
	80				B	<b>5SM3 617-6</b>	1	1 unit	007	0.320	
 63 A and 80 A	100	125	2	B	<b>5SM3 618-6KK</b>	1	1 unit	007	0.256		
	125				B	<b>5SM3 615-6KK</b>	1	1 unit	007	0.255	
	N connection, left										
	 100 A and 125 A	10	16	63	2	B	<b>5SM3 111-6KL</b>	1	1 unit	007	0.280
		30	16	63	2	C	<b>5SM3 311-6KL</b>	1	1 unit	007	0.280
25						B	<b>5SM3 312-6KL</b>	1	1 unit	007	0.251
40						B	<b>5SM3 314-6KL</b>	1	1 unit	007	0.249
100		63	100	2.5	C	<b>5SM3 316-6KL</b>	1	1 unit	007	0.327	
		40	63	2	C	<b>5SM3 414-6KL</b>	1	1 unit	007	0.280	
		63	100	2.5	C	<b>5SM3 416-6KL</b>	1	1 unit	007	0.310	
		300	25	63	2	B	<b>5SM3 612-6KL</b>	1	1 unit	007	0.234
			40				B	<b>5SM3 614-6KL</b>	1	1 unit	007
63			100	2.5	B	<b>5SM3 616-6KL</b>	1	1 unit	007	0.313	
<b>3P+N; 230 ... 400 V AC; 50 ... 60 Hz</b>											
N connection, right											
 Up to 80 A	30	25	100	4	D	<b>5SM3 342-6</b>	1	1 unit	007	0.494	
		40				B	<b>5SM3 344-6</b>	1	1 unit	007	0.495
		63				B	<b>5SM3 346-6</b>	1	1 unit	007	0.530
	100	80				A	<b>5SM3 347-6</b>	1	1 unit	007	0.535
		100				B	<b>5SM3 348-6</b>	1	1 unit	007	0.538
		125	125			A	<b>5SM3 345-6</b>	1	1 unit	007	0.564
		40	100	4	A	<b>5SM3 444-6</b>	1	1 unit	007	0.474	
		63				A	<b>5SM3 446-6</b>	1	1 unit	007	0.488
		100				B	<b>5SM3 448-6</b>	1	1 unit	007	0.538
		125	125			B	<b>5SM3 445-6</b>	1	1 unit	007	0.538
300	25	100	4	A	<b>5SM3 642-6</b>	1	1 unit	007	0.457		
	40				B	<b>5SM3 644-6</b>	1	1 unit	007	0.460	
	63				B	<b>5SM3 646-6</b>	1	1 unit	007	0.460	
	80				A	<b>5SM3 647-6</b>	1	1 unit	007	0.462	
	100				B	<b>5SM3 648-6</b>	1	1 unit	007	0.538	
	125	125			A	<b>5SM3 645-6</b>	1	1 unit	007	0.540	
	500	25	100	4	B	<b>5SM3 742-6</b>	1	1 unit	007	0.462	
40					A	<b>5SM3 744-6</b>	1	1 unit	007	0.463	
63					A	<b>5SM3 746-6</b>	1	1 unit	007	0.460	
100					B	<b>5SM3 748-6</b>	1	1 unit	007	0.538	
125		125			A	<b>5SM3 745-6</b>	1	1 unit	007	0.527	

## 5SM3 RCCBs

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Rated residual current	Rated current	Max. permissible short-circuit series fuse	Mounting width	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*/P. unit	PG	Weight per PU approx.						
$I_{\Delta n}$ mA	$I_n$ A	 10 000 A	MW							kg						
<b>RCCBs, type A</b>																
<b>Instantaneous</b>																
3P+N; 230 ... 400 V AC; 50 ... 60 Hz																
N connection, left																
	30	25	100	4	B		1	1 unit	007	0.494						
		40									D	5SM3 344-6KL	1	1 unit	007	0.495
		63									B	5SM3 346-6KL	1	1 unit	007	0.527
		80									B	5SM3 347-6KL	1	1 unit	007	0.532
	300	25	100	4	B		1	1 unit	007	0.458						
		40									B	5SM3 642-6KL	1	1 unit	007	0.463
		63									B	5SM3 644-6KL	1	1 unit	007	0.464
		80									B	5SM3 647-6KL	1	1 unit	007	0.454
	500	63	100	4	A	5SM3 746-6KL	1	1 unit	007	0.460						
	<b>RCCBs, type A</b>															
	<b>Instantaneous, special versions</b>															
	1P+N; 24 ... 125 V AC; 50 ... 60 Hz															
	30	16	63	2	B	5SM3 311-6KK13	1	1 unit	007	0.248						
3P+N; 500 V AC; 50 ... 60 Hz																
	30	25	63	4	B		1	1 unit	007	0.493						
		40									B	5SM3 354-6	1	1 unit	007	0.497
		63									B	5SM3 356-6	1	1 unit	007	0.531
	300	25	63	4	B		1	1 unit	007	0.459						
		40									B	5SM3 652-6	1	1 unit	007	0.461
		63									B	5SM3 654-6	1	1 unit	007	0.464
3P+N; 230 ... 400 V AC; 50 ... 400 Hz																
	30	25	80	4	B		1	1 unit	007	0.515						
		40									B	5SM3 344-6KK03	1	1 unit	007	0.510
<b>RCCBs, type A</b>																
<b>SIGRES instantaneous</b>																
1P+N; 125 ... 230 V AC; 50 ... 60 Hz																
	30	25	63	2	B		1	1 unit	007	0.248						
		40									C	5SM3 314-6KK12	1	1 unit	007	0.251
	30	63	100	2.5	B		1	1 unit	007	0.330						
		80									B	5SM3 317-6KK12	1	1 unit	007	0.331
3P+N; 230 ... 400 V AC; 50 ... 60 Hz																
	30	25	100	4	B		1	1 unit	007	0.495						
		40									B	5SM3 344-6KK12	1	1 unit	007	0.499
		63									B	5SM3 346-6KK12	1	1 unit	007	0.529
		80									B	5SM3 347-6KK12	1	1 unit	007	0.530
	300	40	100	4	B		1	1 unit	007	0.457						
		63									B	5SM3 644-6KK12	1	1 unit	007	0.458



## Residual Current Protective Devices

## 5SM3 RCCBs

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Rated residual current	Rated current	Max. permissible short-circuit series fuse	Mounting width	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*/P. unit	PG	Weight per PU approx.
$I_{\Delta n}$ mA	$I_n$ A	 A	MW							kg
<b>RCCBs, type A</b>										
<b>SIGRES, selective</b> 										
3P+N; 230 ... 400 V AC; 50 ... 60 Hz										
300	63	100	4	B	<b>5SM3 646-8KK12</b>		1	1 unit	007	0.506
										
<b>RCCBs, type A</b>										
<b>Super resistant</b> 										
1P+N; 125 ... 230 V AC; 50 ... 60 Hz										
30	25	63	2	B	<b>5SM3 312-6KK01</b>		1	1 unit	007	0.250
	40			B	<b>5SM3 314-6KK01</b>		1	1 unit	007	0.247
	63	100	2.5	B	<b>5SM3 316-6KK01</b>		1	1 unit	007	0.329
300	63	100	2.5	B	<b>5SM3 616-6KK01</b>		1	1 unit	007	0.314
										
3P+N; 230 ... 400 V AC; 50 ... 60 Hz										
30	25	100	4	B	<b>5SM3 342-6KK01</b>		1	1 unit	007	0.515
	40			B	<b>5SM3 344-6KK01</b>		1	1 unit	007	0.520
	63			B	<b>5SM3 346-6KK01</b>		1	1 unit	007	0.519
300	40	100	4	B	<b>5SM3 644-6KK01</b>		1	1 unit	007	0.492
	63			B	<b>5SM3 646-6KK01</b>		1	1 unit	007	0.490
	80			B	<b>5SM3 647-6KK01</b>		1	1 unit	007	0.498
										
<b>RCCBs, type A</b>										
<b>Selective</b> 										
1P+N; 125 ... 230 V AC; 50 ... 60 Hz										
100	63	100	2.5	B	<b>5SM3 416-8</b>		1	1 unit	007	0.325
300	40	63	2	B	<b>5SM3 614-8</b>		1	1 unit	007	0.248
	63	100	2.5	A	<b>5SM3 616-8</b>		1	1 unit	007	0.314
	80	100		B	<b>5SM3 617-8</b>		1	1 unit	007	0.314
										
3P+N; 230 ... 400 V AC; 50 ... 60 Hz										
N connection, right										
100	40	100	4	B	<b>5SM3 444-8</b>		1	1 unit	007	0.513
	63			B	<b>5SM3 446-8</b>		1	1 unit	007	0.531
300	40	100	4	A	<b>5SM3 644-8</b>		1	1 unit	007	0.507
	63			A	<b>5SM3 646-8</b>		1	1 unit	007	0.505
	100			B	<b>5SM3 648-8</b>		1	1 unit	007	0.538
	125	125		C	<b>5SM3 645-8</b>		1	1 unit	007	0.546
500	125	125	4	B	<b>5SM3 745-8</b>		1	1 unit	007	0.531
1000	63	100	4	A	<b>5SM3 846-8</b>		1	1 unit	007	0.470
N connection, left										
300	63	100	4	B	<b>5SM3 646-8KL</b>		1	1 unit	007	0.513
										

Up to 80 A

**SIQUENCE, 5SM3 and 5SU1 universal current-sensitive RCCBs, type B and type B+**
**Overview**

Frequency converters, medical devices and UPS systems are seeing increasing use in industry. Smooth DC residual currents or currents with low residual ripple may occur in the event of faults on these devices.

Type A residual current protective devices are unable to detect these smooth DC residual currents. Furthermore, such smooth DC residual currents make type A devices increasingly insensitive to AC residual currents and pulsating DC residual currents. If a fault occurs, there is therefore no tripping and the desired protective function is no longer assured.

UC-sensitive residual current protective devices of types B and B+ have an additional transformer which is supplied with a control signal. This enables an evaluation of the change of the transformer's operating range caused by smooth DC residual currents, thus ensuring the desired protective function.

The residual current protective devices of type B are suitable for use in three-phase current systems before input circuits with rectifiers. They are not intended for use in DC systems and in networks with operating frequencies other than 50 Hz or 60 Hz.

The devices in this series are designed as residual current operated circuit breakers (RCCBs) up to 80 A and as residual current circuit breakers with integral overcurrent protection (RCBOs) for 100 A or 125 A in Characteristics C or D.


Type B+ residual current protective devices also offer enhanced, preventative fire protection. In these versions, the tripping value is limited to a maximum of 420 mA up to 20 kHz.

**Benefits**

- Universal current-sensitive residual current protective devices detect not only AC residual currents and pulsating DC residual currents, but also smooth DC residual currents, thus ensuring the desired protective function with all types of residual current.
- With type B, the tripping characteristic is adapted to the increase of leakage currents at higher frequencies in systems with capacitive impedances and results in increased operating safety
- Type B+ versions offer enhanced preventative fire protection and correspond to the prestandards DIN V VDE V 0664-110 and/or DIN V VDE V 0664-210 and VdS Directive 3501
- The RCBO is a compact device for up to 125 A. It provides not only personnel, property and fire protection but also overload and short-circuit protection for cables. Wiring and mounting outlay is reduced as a result
- The RCBOs offer external remote tripping over terminals Y1/Y2. This supports implementation of central OFF circuits.

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**Technical specifications**

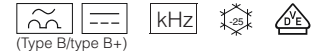
	SIQUENCE, RCCBs type B and type B+ 5SM3		SIQUENCE RCBOs type B and type B+ 5SU1
<b>Standards</b>	IEC/EN 61008-1 (VDE 0664-10); VDE 0664-100; IEC/EN 61543 (VDE 0664-30); IEC 62423		IEC/EN 61009-1 (VDE 0664-20); VDE 0664-200; IEC/EN 61543 (VDE 0664-30); IEC 62423
	And in addition for type B+: DIN V VDE V 0664-110		
<b>Versions</b>	1P+N	3P+N	4P
<b>Tripping characteristic</b>	--	--	C, D
<b>Surge current withstand capability with current waveform 8/20 <math>\mu</math>s acc. to DIN VDE 0432-2</b>			
• Super resistant	kA	> 3	> 3
• Selective	kA	--	> 5
<b>Minimum operational voltage for test function operation</b>	V AC	195	195
<b>Rated voltages <math>U_n</math></b>	V AC	230	400, 480
<b>Rated frequency <math>f_n</math></b>	Hz	50 ... 60	
<b>Rated currents <math>I_n</math></b>	A	16, 25, 40, 63	25, 40, 63, 80, 100, 125
<b>Rated residual currents <math>I_{\Delta n}</math></b>	mA	30, 300	30, 300, 500
<b>Rated breaking capacity</b>			
• $I_m$	A	800	--
• $I_{cn}$	kA	--	10
<b>Insulation coordination</b>		III	
• Overvoltage category		III	
<b>Conductor cross-sections</b>			
• Solid and stranded	mm <sup>2</sup>	1.5 ... 25	6 ... 50
• Finely stranded, with end sleeve	mm <sup>2</sup>	1.5 ... 16	6 ... 35
<b>Terminal tightening torques for all devices</b>	Nm	2.5 ... 3.0	3.0 ... 3.5
<b>Mains connection</b>		Either top or bottom	
<b>Mounting position</b>		any	
<b>Degree of protection according to EN 60529 (VDE 0470-1)</b>		IP20, if the distribution board is installed, with connected conductors	
<b>Touch protection according to EN 50274 (VDE 0660-514)</b>		Finger and back-of-hand safe	
<b>Service life, electrical and mechanical; (test cycle according to regulations)</b>		> 10 000 switching cycles	
<b>Storage temperature</b>	°C	-40 ... +75	
<b>Ambient temperature</b>	°C	-25 ... +45, marked with 	
<b>Resistance to climate acc. to IEC 60068-2-30</b>		28 cycles (55 °C; 95 % rel. air humidity)	
<b>CFC and silicone-free</b>		Yes	

$I^2t$  characteristic curves, see Technology Manual at: [www.siemens.com/lowvoltage/manuals](http://www.siemens.com/lowvoltage/manuals).











# Residual Current Protective Devices

## SIQUENCE, 5SM3 and 5SU1 universal current-sensitive RCCBs, type B and type B+

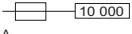







### Selection and ordering data



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	Rated residual current	Rated current	Max. permissible short-circuit series fuse	Mounting width	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*/P. unit	PG	Weight per PU approx.
	$I_{\Delta n}$ mA	$I_n$ A	 10 000 A	MW							kg
<b>SIQUENCE RCCBs, type B super resistant </b>											
	1P+N; 230 V AC; 50 ... 60 Hz										
	30	16	100	4	D	<b>5SM3 321-4</b>		1	1 unit	015	0.590
		25			D	<b>5SM3 322-4</b>		1	1 unit	015	0.590
		40			D	<b>5SM3 324-4</b>		1	1 unit	015	0.588
		63			D	<b>5SM3 326-4</b>		1	1 unit	015	0.591
	300	16	100	4	D	<b>5SM3 621-4</b>		1	1 unit	015	0.600
		25			D	<b>5SM3 622-4</b>		1	1 unit	015	0.600
		40			D	<b>5SM3 624-4</b>		1	1 unit	015	0.591
	63			D	<b>5SM3 626-4</b>		1	1 unit	015	0.586	
	3P+N; 230 ... 400 V AC; 50 ... 60 Hz										
	30	25	100	4	X	<b>5SM3 342-4</b>		1	1 unit	015	0.582
		40			C	<b>5SM3 344-4</b>		1	1 unit	015	0.578
		63			X	<b>5SM3 346-4</b>		1	1 unit	015	0.581
		80			D	<b>5SM3 347-4</b>		1	1 unit	015	0.587
	300	25	100	4	X	<b>5SM3 642-4</b>		1	1 unit	015	0.592
		40			X	<b>5SM3 644-4</b>		1	1 unit	015	0.581
		63			D	<b>5SM3 646-4</b>		1	1 unit	015	0.576
		80			D	<b>5SM3 647-4</b>		1	1 unit	015	0.585
	500	63	100	4	D	<b>5SM3 746-4</b>		1	1 unit	015	0.575
		80			D	<b>5SM3 747-4</b>		1	1 unit	015	0.575
	<b>SIQUENCE RCCBs, type B selective </b>										
	3P+N; 230 ... 400 V AC; 50 ... 60 Hz										
	300	63	100	4	D	<b>5SM3 646-5</b>		1	1 unit	015	0.578
		80			D	<b>5SM3 647-5</b>		1	1 unit	015	0.587
	500	63	100	4	D	<b>5SM3 746-5</b>		1	1 unit	015	0.520
		80			X	<b>5SM3 747-5</b>		1	1 unit	015	0.520
<b>SIQUENCE RCCBs, type B+ super resistant </b>											
	1P+N; 230 V AC; 50 ... 60 Hz										
	30	16	100	4	X	<b>5SM3 321-4KK14</b>		1	1 unit	015	0.587
		25			X	<b>5SM3 322-4KK14</b>		1	1 unit	015	0.600
		40			X	<b>5SM3 324-4KK14</b>		1	1 unit	015	0.600
		63			X	<b>5SM3 326-4KK14</b>		1	1 unit	015	0.600
	300	16	100	4	X	<b>5SM3 621-4KK14</b>		1	1 unit	015	0.600
		25			X	<b>5SM3 622-4KK14</b>		1	1 unit	015	0.600
		40			X	<b>5SM3 624-4KK14</b>		1	1 unit	015	0.600
	63			X	<b>5SM3 626-4KK14</b>		1	1 unit	015	0.600	
<b>SIQUENCE RCCBs, type B+ super resistant </b>											
	3P+N; 230 ... 400 V AC; 50 ... 60 Hz										
	30	25	100	4	X	<b>5SM3 342-4KK14</b>		1	1 unit	015	0.600
		40			X	<b>5SM3 344-4KK14</b>		1	1 unit	015	0.600
		63			X	<b>5SM3 346-4KK14</b>		1	1 unit	015	0.600
		80			X	<b>5SM3 347-4KK14</b>		1	1 unit	015	0.600
	300	25	100	4	X	<b>5SM3 642-4KK14</b>		1	1 unit	015	0.600
		40			X	<b>5SM3 644-4KK14</b>		1	1 unit	015	0.600
		63			X	<b>5SM3 646-4KK14</b>		1	1 unit	015	0.600
	80			X	<b>5SM3 647-4KK14</b>		1	1 unit	015	0.600	

## SIQUENCE, 5SM3 and 5SU1 universal current-sensitive RCCBs, type B and type B+

Rated residual current	Rated current	Max. permissible short-circuit series fuse	Mounting width	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*/P. unit	PG	Weight per PU approx.
$I_{\Delta n}$ mA	$I_n$ A	 A	MW							kg
<b>SIQUENCE RCCBs, type B+ selective [S]</b>										
3P+N; 230 ... 400 V AC; 50 ... 60 Hz										
300	63 80	100	4	X X	<b>5SM3 646-5KK14</b> <b>5SM3 647-5KK14</b>		1 1	1 unit 1 unit	015 015	0.600 0.600
										
<b>SIQUENCE RCBOs, type B super resistant [K], rated breaking capacity 10 kA</b>										
4P; 400 V AC; 50 ... 60 Hz										
Characteristic C										
30	100 125		11	B B	<b>5SU1 374-7AK81</b> <b>5SU1 374-7AK82</b>		1 1	1 unit 1 unit	017 017	2.067 2.053
300	100 125		11	B B	<b>5SU1 674-7AK81</b> <b>5SU1 674-7AK82</b>		1 1	1 unit 1 unit	017 017	2.069 2.088
Characteristic D										
30	100		11	B	<b>5SU1 374-8AK81</b>		1	1 unit	017	2.084
300	100		11	B	<b>5SU1 674-8AK81</b>		1	1 unit	017	2.082
										
4P; 480 V AC; 50 ... 60 Hz										
Characteristic C										
300	100 125		11	C B	<b>5SU1 674-7CK81</b> <b>5SU1 674-7CK82</b>		1 1	1 unit 1 unit	017 017	2.050 2.050
										
<b>SIQUENCE RCBOs, type B selective [S], rated breaking capacity 10 kA</b>										
4P; 400 V AC; 50 ... 60 Hz										
Characteristic C										
300	125		11	B	<b>5SU1 674-7BK82</b>		1	1 unit	017	2.082
Characteristic D										
300	100		11	C	<b>5SU1 674-8BK81</b>		1	1 unit	017	2.078
										
<b>SIQUENCE RCBOs, type B+ super resistant [K], rated breaking capacity 10 kA</b>										
4P; 400 V AC; 50 ... 60 Hz										
Characteristic C										
30	100 125		11	C C	<b>5SU1 374-7DK81</b> <b>5SU1 374-7DK82</b>		1 1	1 unit 1 unit	017 017	2.067 2.053
300	100 125		11	C D	<b>5SU1 674-7DK81</b> <b>5SU1 674-7DK82</b>		1 1	1 unit 1 unit	017 017	2.069 2.088
Characteristic D										
30	100		11	C	<b>5SU1 374-8DK81</b>		1	1 unit	017	2.084
300	100		11	C	<b>5SU1 674-8DK81</b>		1	1 unit	017	2.082
										
4P; 480 V AC; 50 ... 60 Hz										
Characteristic C										
300	100 125		11	C C	<b>5SU1 674-7FK81</b> <b>5SU1 674-7FK82</b>		1 1	1 unit 1 unit	017 017	2.050 2.050
										
<b>SIQUENCE RCBOs, type B+ selective [S], rated breaking capacity 10 kA</b>										
4P; 400 V AC; 50 ... 60 Hz										
Characteristic C										
300	125		11	C	<b>5SU1 674-7EK82</b>		1	1 unit	017	2.082
Characteristic D										
300	100		11	C	<b>5SU1 674-8EK81</b>		1	1 unit	017	2.078
										

# Residual Current Protective Devices

## Additional components

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### Overview

Auxiliary switches (AS) signal the contact position of the RCCB.

Remote controlled mechanisms are used for the remote ON/OFF switching of RCCBs. They also enable local manual switching. A blocking function permits maintenance work. A tripped RCCB must be acknowledged prior to switching back on.

The leakage current measurement device detects the leakage currents - like the circuit breaker - thus providing a direct statement as to the current loading of the RCCB. It is used to measure leakage currents up to 300 mA. This requires a voltmeter with an internal resistance over 1 M $\Omega$ /V and a measuring range for AC voltages of  $U_{\text{eff}} = 1 \text{ mV}$  to 2 V. For the fault-free operation of an RCCB, the measured leakage current should be no greater than 1/3 of the rated residual current.




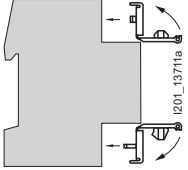


### Benefits

- Using captive brackets, the remote controlled mechanism can be attached (or retrofitted) to the right-hand side of the basic device without the need for tools
- Bus systems, such as *instabus* KNX, AS-Interface bus or PROFIBUS, can be integrated in the communication over binary inputs
- The leakage current measurement device enables the systematic selection of the rated residual current, thus preventing the inadvertent tripping of RCCBs.

### Technical specifications

		Auxiliary switches (AS) 5SW3 30.	Auxiliary switches (AS) 5SW3 330
<b>Standards</b>		IEC/EN 60947-5-1	
<b>Approvals</b>		DIN VDE 0660-200	
<b>Terminals</b>			
• Conductor cross-section	mm <sup>2</sup>	0.75 ... 2.5	
• Tightening torques	Nm	0.6 ... 0.8	
<b>Short-circuit protection</b>		B6 or C6 or gL/gG 6 A fuse	
<b>Min. contact load</b>		50 mA/24 V	
<b>Max. contact load</b>			
• 230 V AC, AC-12	A	6	5
• 230 V AC, AC-14	A	3.6	--
• 220 V DC, DC-12	A	1	0.5

## Selection and ordering data

Version	Mounting width MW	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*/P. unit	PG	Weight per PU approx. kg
<b>Auxiliary switches (AS) for 5SM3 residual current protective devices up to 80 A</b>								
	1 NO + 1 NC	0.5	▶ <b>5SW3 300</b>		1	1/10 units	008	0.050
	2 NC	0.5	C <b>5SW3 301</b>		1	1/10 units	008	0.049
	2 NO	0.5	A <b>5SW3 302</b>		1	1/10 units	008	0.050
<b>Auxiliary switches (AS) for 5SM3 residual current protective devices 100 ... 125 A, 3P+N</b>								
	1 NO + 1 NC	0.5	B <b>5SW3 330</b>		1	1 unit	008	0.041
<b>Remote controlled mechanisms (RC) for 5SM3 RCCBs up to 80 A</b>								
	Rated voltage $U_n = 230$ V AC	3.5	D <b>5ST3 051</b>		1	1 unit	027	0.449
<b>Leakage current measurement devices</b>								
	Rated voltage $U_n = 500$ V AC; 50 ... 60 Hz; 4P Rated residual current $I_{\Delta n} = 0 \dots 300$ mA Rated current $I_n = 63$ A.	4	B <b>5SM1 930-0</b>		1	1 unit	008	0.489
<b>Covers for connection terminals</b>								
	For residual current operated circuit breakers up to 80 A, sealable (2 units in plastic bag)	2	A <b>5SW3 010</b>		1	1/50 units	008	0.008
		2.5	A <b>5SW3 011</b>		1	1/50 units	008	0.008
		4	A <b>5SW3 008</b>		1	1/50 units	008	0.008
<b>Locking devices</b>								
	For RCCBs up to 80 A, sealable and lockable 4.5 mm lock hasp diameter		B <b>5SW3 303</b>		1	10 units	008	0.009
<b>Padlocks</b>								
	For 5SW3 303 locking device		▶ <b>5ST3 802</b>		1	1 unit	027	0.031
	<b>Locking devices with padlock</b> Comprising 5SW3 303 locking device and 5ST3 802 padlock		B <b>5SW3 312</b>		1	1 set	008	0.028