

### Function

Cylinder fuse bases belong to the fuse disconnecter product range. They are not suitable for switching loads. These devices are used in cylindrical fuse links with gG operational class, for cable and line protection, and with aM operational class for the protection of motor circuits. The cylindrical fuse bases are available in the standard sizes 8 x 32, 10 x 38, 14 x 51 and 22 x 58. The first value designates the diameter of the fuse link, the second the length; both values are in mm. The devices are available with the following poles for each product range:

- 1-pole
- 1-pole + N
- 2-pole
- 3-pole
- 3-pole + N

The devices are also available with or without signal detector. For the versions with signal detector, a small electronic device with LED is located behind a window in the knob. If the inserted fuse link is tripped and the line is load-free, this is indicated by the LED flashing.

#### New cylinder fuse bases 8 x 32 and 10 x 38

These product series offer the following innovative modifications:

- The devices with 1 + N poles are only available in 1 modular width (MW). This saves 1 MW in mounting space compared to the previous version, i.e. a 50 % reduction in space requirements.

- As well as the 1 + N device, a 3 + N device is also available. No additional modular width is required for this N pole either. Thus offering a 25 % reduction in space requirements.
- The new devices can also accommodate a spare fuse link, which can also help save time and money.
- The new series of cylinder fuse bases with signal detector will be available soon.

#### Mounting

The devices are fastened by snapping onto standard mounting rails. The infeed can be from the top or the bottom. Because the switch disconnectors are fitted with the same anti-slip terminals at the top and the bottom, the devices can also be rail-mounted at the top or bottom.

#### Auxiliary switches

For the cylinder fuse bases in sizes 14 x 51 and 22 x 58 auxiliary switches are available. These are simply clipped onto the base using the factory-fitted brackets.

The auxiliary switches support remote indication of fuse failure. However this assumes that Striker fuse links are used (not currently included in our product range). When the fuse is tripped, a small hammer – the striker – shoots out of the front of the fuse. Over an armature link in the auxiliary switch, the kinetic energy of this hammer is used to switch a mini switch, which then initializes this signal over a floating contact.

### Technical specifications

Fuse bases for cylindrical fuses							
Type		3NW7 3.2	3NW7 3.3	3NW7 0.3	3NW7 0.2	3NW7 1..	3NW7 2..
Size	mm x mm	8 x 32	8 x 32	10 x 38	10 x 38	14 x 51	22 x 58
Standards		IEC 60269-1, -2, -2-1 NF C 60-200, 63-210, 63-211 NBN C 63269-2en-2-1 CEI 32-4, -12					
UL Approval		UL <sup>1)</sup>	available soon		UL <sup>1)</sup>	UL <sup>1)</sup>	available soon
CSA Approval		CSA			CSA	CSA	
Rated voltage $U_n$	V AC	400		690			
Rated voltage acc. to UL/CSA	V AC	400		600			
Rated current $I_n$	A AC	2 ... 20		0.5 ... 32		2 ... 50	8 ... 100
Rated breaking capacity	kA	20		100			
Breaking capacities							
• Utilization categories		AC 20B (switching of resistive loads) DC 20B	AC 20B (switching of resistive loads) DC 20B		AC 20B (switching of resistive loads) DC 20B		
No-voltage changing of fuse links		yes					
Sealable when installed		yes					
Mounting position		any, but preferably vertical					
Mounting depth	mm	66				70	
Degree of protection acc. to IEC 60529		IP20					
Terminals touch-protected to BGV A3 at incoming and outgoing feeder		yes					
Ambient temperatures	°C	-5 ... +40, humidity 90 % at +20					
<b>Terminals</b>							
Terminal		anti-slip terminals					
<b>Conductor cross-sections</b>							
• Rigid	mm <sup>2</sup>	1.5 ... 10				2.5 ... 10	4 ... 10
• Stranded	mm <sup>2</sup>	2.5 ... 16	1.5 ... 10		2.5 ... 16	2.5 ... 25	4 ... 50
• Finely stranded with end sleeve	mm <sup>2</sup>	1.5 ... 10				2.5 ... 16	4 ... 35
Conductor cross-sections acc. to UL/CSA AWG (American wire gauge)		10 ... 18 solid				6 ... 10 solid and stranded	
Tightening torques	Nm	2.0	1.2		2.0		2.5
Hole pitches	MW	1				1.5	2






1) The UL Approval only applies to bases for cylindrical fuses without signal detectors; approval is pending for bases with signal detectors.

# Low-Voltage Fuse Systems

## Cylindrical Fuse Systems

### Bases for cylindrical fuses

#### Selection and ordering data

	$I_n$	For fuse links Size	MW	Order No.	Weight 1 unit approx kg	PS/ P. unit Unit(s)
	A	mm x mm				
<b>without signal detectors</b>						
	1-pole					
	$I^2$	20	8 x 32	1	3NW7 313	0.056 t
		32	10 x 38	1	3NW7 013	0.056 t
		50	14 x 51	1.5	3NW7 111	0.095 t
	$I_1$	100	22 x 58	2	3NW7 211	0.145 t
	1-pole + N					
	$I^2$ N	20	8 x 32	1	3NW7 353	0.069 t
		32	10 x 38	1	3NW7 053	0.069 t
		50	14 x 51	3	3NW7 151	0.215 t
	$I_1$ N	100	22 x 58	4	3NW7 251	0.330 t
	2-pole					
	$I^2$ $I^4$	20	8 x 32	2	3NW7 323	0.118 t
		32	10 x 38	2	3NW7 023	0.118 t
		50	14 x 51	3	3NW7 121	0.195 t
	$I_1$ $I_3$	100	22 x 58	4	3NW7 221	0.300 t
	3-pole					
	$I^2$ $I^4$ $I^6$	20	8 x 32	3	3NW7 333	0.172 t
		32	10 x 38	3	3NW7 033	0.172 t
		50	14 x 51	4.5	3NW7 131	0.295 t
	$I_1$ $I_3$ $I_5$	100	22 x 58	6	3NW7 231	0.691 t
3-pole + N						
$I^2$ $I^4$ $I^6$ N	20	8 x 32	3	3NW7 363	0.185 t	
	32	10 x 38	3	3NW7 063	0.185 t	
	50	14 x 51	6	3NW7 161	0.315 t	
$I_1$ $I_3$ $I_5$ N	100	22 x 58	8	3NW7 261	0.475 t	
<b>with signal detectors</b>						
	1-pole					
	$I^2$	20	8 x 32	1	3NW7 312	0.058 t
		32	10 x 38	1	3NW7 012	0.060 t
		50	14 x 51	1.5	3NW7 112	0.095 t
	$I_1$	100	22 x 58	2	3NW7 212	0.145 t
	1-pole + N					
	$I^2$ N	20	8 x 32	2	3NW7 352	0.120 t
		32	10 x 38	2	3NW7 052	0.167 t
		50	14 x 51	3	3NW7 152	0.215 t
	$I_1$ N	100	22 x 58	4	3NW7 252	0.330 t
	2-pole					
	$I^2$ $I^4$	20	8 x 32	2	3NW7 322	0.112 t
		32	10 x 38	2	3NW7 022	0.162 t
		50	14 x 51	3	3NW7 122	0.195 t
	$I_1$ $I_3$	100	22 x 58	4	3NW7 222	0.300 t
	3-pole					
	$I^2$ $I^4$ $I^6$	20	8 x 32	3	3NW7 332	0.167 t
		32	10 x 38	3	3NW7 032	0.243 t
		50	14 x 51	4.5	3NW7 132	0.295 t
	$I_1$ $I_3$ $I_5$	100	22 x 58	6	3NW7 232	0.480 t
3-pole + N						
$I^2$ $I^4$ $I^6$ N	20	8 x 32	4	3NW7 362	0.227 t	
	32	10 x 38	4	3NW7 062	0.327 t	
	50	14 x 51	6	3NW7 162	0.315 t	
$I_1$ $I_3$ $I_5$ N	100	22 x 58	8	3NW7 262	0.475 t	
<b>Auxiliary switches</b>						
	for indicating disconnection of the fuse link solely for application of Striker fuse links (not currently included in the Siemens product range) for retrofitting with factory-fitted brackets, 0.5 MW Contact: 250 V A.C., 5 A, Minimum contact load: 12 V, 25 mA					
	for fuse bases		14 x 51	0.5	3NW7 901	0.050 t
	for fuse bases		22 x 58		3NW7 902	0.050 t

# Low-Voltage Fuse Systems

## Cylindrical Fuse Systems

Busbars for cylindrical fuses

### Selection and ordering data

Size	Length approx	Conductor crosssection	Load capacity up to	Version	Order No.	Weight 1 unit approx	PS7 P unit
	mm	mm <sup>2</sup>	A			kg	Unit(s)
<p>*Busbars with pins, see page 1</p> <p>The load capacity values are valid for centered infeed</p> <p>Degree of pollution 2</p>							
<b>Busbars, 1-phase</b>							
8 x 32 and 10 x 38	220 1000	16 16	120 120	fully insulated	<b>5ST3 700</b> <b>5ST3 701</b>	0.040 0.190	1/50 1/50
14 x 51	1000	16	120		<b>5SH5 324</b>	0.320	1/50
<b>Busbars, 2-phase</b>							
8 x 32 and 10 x 38	220 1000	16 16	120 120	fully insulated	<b>5ST3 704</b> <b>5ST3 705</b>	0.060 0.290	1/25 1/20
<b>Busbars, 3-phase</b>							
8 x 32 and 10 x 38	220 1000	16 16	120 120		<b>5ST3 708</b> <b>5ST3 710</b>	0.100 0.430	1/25 1/20
14 x 51	1000	16	120		<b>5SH5 323</b>	0.843	1/20
<b>End caps for busbars</b>							
					<b>5ST3 748</b>	0.001	1/10
					<b>5ST3 750</b>	0.001	1/10

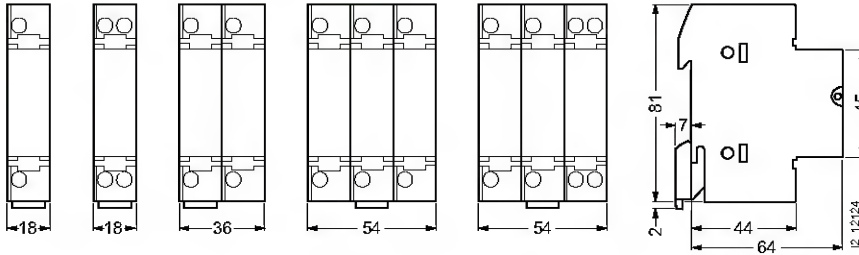
# Low-Voltage Fuse Systems

## Cylindrical Fuse Systems

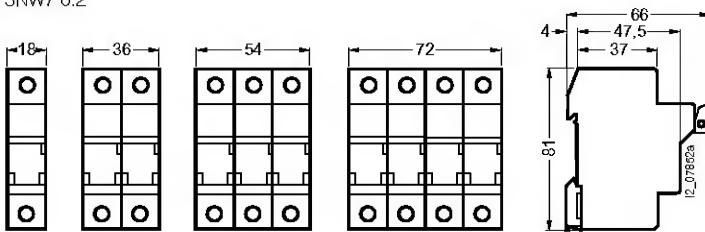
### Bases for cylindrical fuses

#### Dimensional drawings

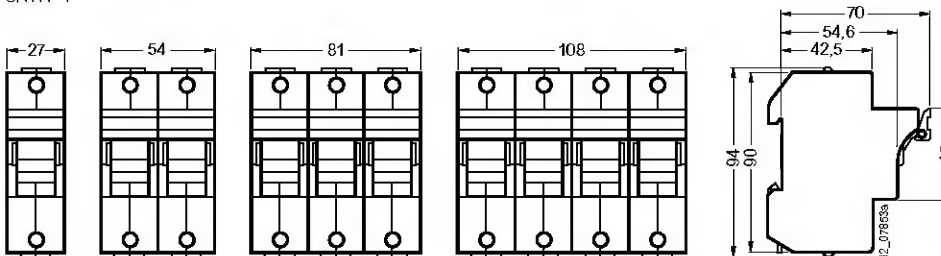
Size 8 mm × 32 mm/without signal detector  
3NW7 3.3  
Size 10 mm × 38 mm/without signal detector  
3NW7 0.3



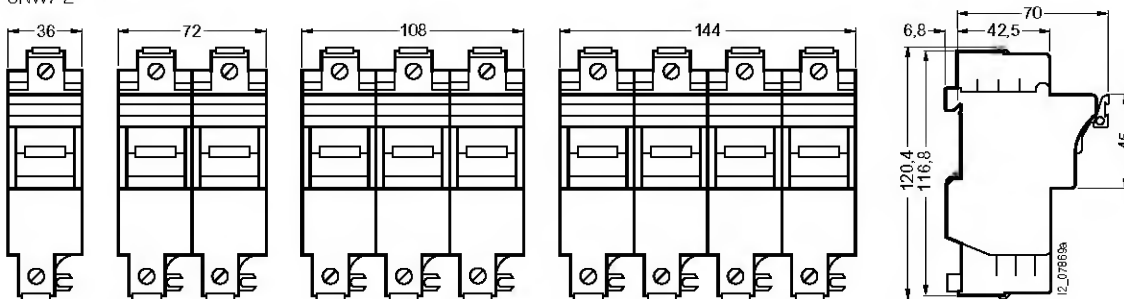
Size 8 mm × 32 mm/with signal detector  
3NW7 3.2  
Size 10 mm × 38 mm/with signal detector  
3NW7 0.2



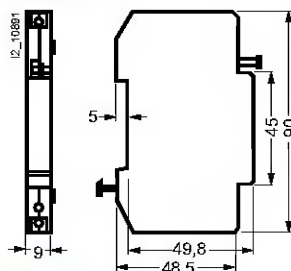
Size 14 mm × 51 mm  
3NW7 1



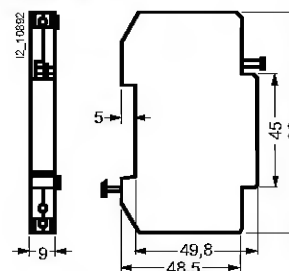
Size 22 mm × 58 mm  
3NW7 2



Auxiliary switches  
3NW7 901



Auxiliary switches  
3NW7 902



# Miniature Circuit-Breakers

## Standard Product Range

NEW

5SJ6 ...-KS, 6 kA

### Benefits

- Quicker and safer connection of load circuits using screwless terminal pairs on the outgoing terminals
- If using flexible conductors, no end sleeve necessary
- Touch-protected to VEG4/BGV A2
- Simple voltage test thanks to test point on side of outgoing terminal
- Complete compatibility with all other 5SJ and 5SY miniature circuit-breakers







### Function

- Double, screwless outgoing terminal for rigid and flexible conductors from 1.5 to 4 mm<sup>2</sup>
- Tool-free disconnection and manual removal

### Application

- $U_n$  230/400 V, 50 to 60 Hz, can be used in systems up to 250/440 V AC, 60 V DC per pole
- Standards: EN 60898, DIN VDE 0641 Part 11, IEC 60898
- Particularly suitable for use in residential buildings

### Selection and ordering data

	$I_n$	MW	Characteristic B Order No.	Characteristic C Order No.	Weight 1 unit approx kg	PS*/ P. unit Unit(s)
A						
 <p><b>1-pole</b></p> 	10	1	5SJ6 110-6KS	5SJ6 110-7KS	0.111	1
	13		5SJ6 113-6KS	5SJ6 113-7KS	0.111	1
	16		5SJ6 116-6KS	5SJ6 116-7KS	0.111	1
	20		5SJ6 120-6KS	5SJ6 120-7KS	0.111	1
 <p><b>1-pole + N</b></p> 	10	2	5SJ6 510-6KS	5SJ6 510-7KS	0.185	1
	13		5SJ6 513-6KS	5SJ6 513-7KS	0.185	1
	16		5SJ6 516-6KS	5SJ6 516-7KS	0.185	1
	20		5SJ6 520-6KS	5SJ6 520-7KS	0.185	1
 <p><b>2-pole</b></p> 	10	2	5SJ6 210-6KS	5SJ6 210-7KS	0.225	1
	13		5SJ6 213-6KS	5SJ6 213-7KS	0.225	1
	16		5SJ6 216-6KS	5SJ6 216-7KS	0.225	1
	20		5SJ6 220-6KS	5SJ6 220-7KS	0.225	1

# Residual Current Protective Devices

## SIQUENCE RCCBs, UC Sensitive

### 5SM3, type B, product overview

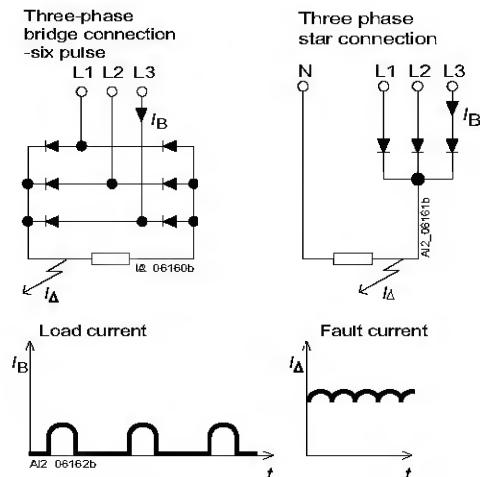
#### Overview

##### DC residual currents

Industrial current-using equipment is increasingly using connection methods where smooth DC residual currents or currents with low residual ripple may occur in the case of faults. This is illustrated in the following diagram of current-using equipment with three-phase rectifier circuits. Such equipment includes frequency converters, medical devices (e.g. x-ray devices and CT systems) and UPS systems.

Pulse-current-sensitive residual current protective devices are not able to detect and switch off such DC residual currents, which also negatively influence their tripping functions.

For this reason, current-using equipment that generates these kind of residual currents in the event of a fault should not be operated with pulse-current-sensitive residual current protective devices connected to the electrical power supply. Protective measures may be e.g. safety isolation; however this can only be achieved using heavy and expensive transformers. Universal current-sensitive residual current protective devices provide a perfect technical and cost-effective solution. This type of residual current protective device (type B) is mentioned also in EN 50178 (DIN VDE 0160) "Equipping power installations with electronic equipment".

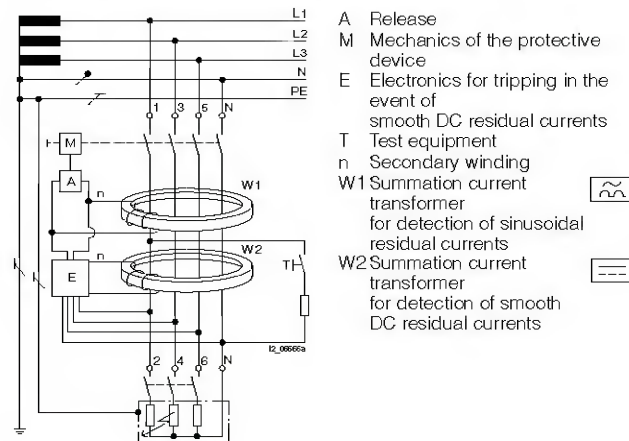


Block diagram with fault location

##### Design

Universal current sensitive protective devices are based on a pulse-current-sensitive circuit-protective device with tripping independent of line voltage, supplemented with an auxiliary unit for the detection of smooth DC residual currents. The diagram below shows the basic setup.

The summation current transformer W1 monitors the electrical system for AC and pulse current-type residual currents, as always. The summation current transformer W2 detects the smooth DC residual currents and, in the event of a fault, relays the tripping command through electronic unit E to release A.



##### Method of operation

In order to provide maximum security of supply, the power supply of the electronic unit is taken from all three phase conductors and the neutral conductor. Furthermore, it is dimensioned so that the electronics still reliably trip even with a voltage reduction of up to 70 % (e.g. between phase conductor and neutral conductor). This ensures tripping for smooth DC residual currents, as long as such residual current waveforms can occur, even in the event of faults in the electrical power supply, e.g. an N-conductor break. This means that the pulse-current-sensitive switch part, which trips regardless of line voltage, will still reliably trigger the tripping operation – even in the highly unlikely event that two phase conductors and the neutral conductor fail – if the remaining intact phase conductor presents a fire hazard due to a ground fault.

The residual current protective devices of type B are suitable for **use in three-phase current systems with 50/60 Hz** before input circuits with rectifiers. They are not intended for use in DC systems and in networks with operating frequencies other than 50/60 Hz. They can be used for the detection and disconnection of residual currents that can occur in three-phase loads with electronic components (rectifiers) in the power supply unit (e.g. frequency converters, computer tomographs).

In addition to the described residual current waveforms (AC residual currents, pulsating and smooth DC residual currents), AC residual currents with a wide range of frequencies may also occur on this type of electronic equipment, such as at the outgoing terminal of a frequency converter.

Requirements for frequencies up to 2 kHz are defined in the device regulations VDE 0664 Part 100 for residual current protective devices of type B.

To date, only limited statements can be made with regard to the risk of ventricular fibrillations (up to 1 kHz) for frequencies higher than 100 Hz. No reliable statements can be made on any further effects and influences on the human organism (thermal, electrolytic). For this reason, protection against direct contact is only possible for frequencies up to 100 Hz. For higher frequencies, protection against indirect contact must be implemented under consideration of the frequency response of the residual current protective device, the maximum permissible touch voltages (e.g. 50 V) and permissible grounding resistance derived from this information.

# Residual Current Protective Devices

## SIQUENCE RCCBs, UC Sensitive

5SM3, type B, product overview

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### Overview

#### Configuration



When configuring and erecting electrical plants, electrical loads that can generate smooth DC residual currents in the event of a fault must be assigned a separate electrical circuit with a universal current sensitive residual current protective device (type B) (see configuration example).

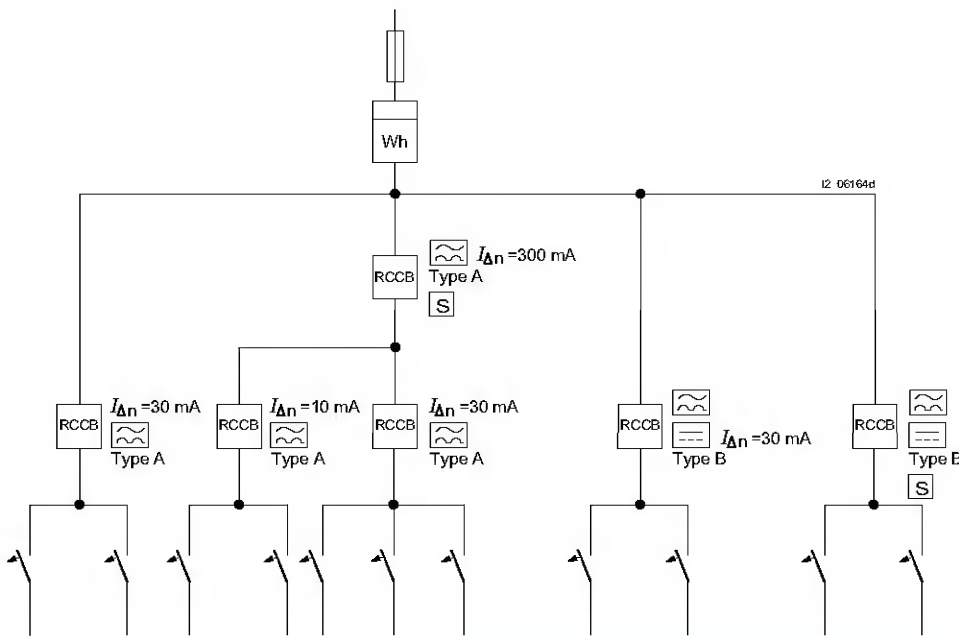
It is not permitted to branch electrical circuit with these types of electrical loads after pulse-current-sensitive residual current protective devices (type A). Loads, which can be the source of smooth DC residual currents in the event of a fault, would restrict the tripping of the pulse-current-sensitive residual current protective devices (type A).

The tripping conditions are defined according to VDE 0664 Part 100 (for residual current protective devices of type B) and are the same as those for type A for AC and pulse residual currents. The tripping values for smooth DC residual currents have been defined in this

product standard, taking into account current compatibility curves according to IEC 60479 for a range between 0.5 to 2.0 times the rated residual current.

The residual current protective devices of type B are suitable for **use in three-phase current systems with 50/60 Hz**. On no account may they be used in direct voltage networks or in systems with changing frequencies or frequencies other than 50/60 Hz (e.g. after frequency converters).

Universal current sensitive residual current protective devices (type B) are marked with the symbol  .



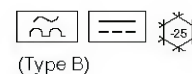
Configuration example with residual current protective devices type A and type B

	Number of poles	Rated current $I_n$ A	Rated residual current $I_{\Delta n}$ mA	MW	Auxiliary circuit switches can be retrofitted	N-connection right
<b>SIQUENCE residual current operated circuit-breakers, type B<sup>1)</sup>, 25 ... 80 A</b>						
<b>[K]</b> short-time delayed, surge current withstand capability > 3 kA	4	25 40 63 80	30, 300	4	• • • •	• • • •
<b>[S]</b> selective, surge current withstand capability > 5 kA	4	63 80	300	4	• •	• •

1)   = type B for AC residual currents, pulsating and smooth DC residual currents.

# Residual Current Protective Devices


## SIQUENCE RCCBs, UC Sensitive

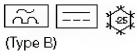


(Type B)

### 5SM3, type B, product overview

#### Technical specifications

<b>Standards</b>	IEC/EN 61008, VDE 0664 Part 10, IEC/EN 61543, VDE 0664 Part 30, VDE 0664 Part 100	
<b>Versions</b>	4-pole	
<b>Rated voltages <math>U_n</math></b>	V AC	230 ... 400
<b>Rated currents <math>I_n</math></b>	A	25, 40, 63, 80
<b>Rated residual currents <math>I_{\Delta n}</math></b>	mA	30, 300
<b>Enclosure</b>	gray molded-plastic (RAL 7035)	
<b>Mounting depth</b>	mm	70
<b>Terminals</b>	Tunnel terminals at both ends with wire protection, lower combined terminal for simultaneous connection of busbars (pin-type) and conductors	
• Conductor cross-section, solid and stranded	mm <sup>2</sup>	1.5 ... 25
• Terminal tightening torque, recommended	Nm	2.5 ... 3.0
<b>Supply connection</b>	either top or bottom	
<b>Mounting position</b>	any	
<b>Mounting technique</b>	can be snapped onto 35 mm standard mounting rails (TH 35 acc. to EN 60715)	
<b>Degree of protection</b>	IP20 acc. to EN 60529 (VDE 0470 Part 1) IP40 if installed in distribution boards IP54 if installed in molded-plastic enclosure	
<b>Protection against contact</b>	Protection against contact with fingers or the back of the hand acc. to EN 50274 (VDE 0660 Part 514)	
<b>Minimum operational voltage for test function operation</b>	V AC	150
<b>Device service life</b>	>10 000 operations (electrical and mechanical; test cycle acc. to regulations)	
<b>Storage temperature</b>	°C	-40 ... +75
<b>Ambient temperature</b>	°C	-5 ... +45, for versions with the symbol  : -25 ... +45
<b>Resistance to climate</b> acc. to IEC 60068-2-30	28 cycles (55 °C; 95 % rel. humidity)	
<b>CFC and silicone-free</b>	yes	



# Residual Current Protective Devices

## SQUENCE RCCBs, UC Sensitive

NEW

5SM3, type B, 25 ... 80 A

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### Benefits

- UC sensitive: for detection of AC residual currents, pulsating and smooth DC residual currents
- Terminals with wire protection can be directly busbar-mounted with devices with terminals in the modular width, e.g. with 5SY miniature circuit-breakers.
- Increased operating safety in systems with capacitive impedances due to adapted tripping characteristic
- An auxiliary circuit switch can be fitted to the right-hand side of the enclosure by the customer
- Operating handle and test button can be locked by means of a handle locking device

### Application

- Systems with equipment in which smooth DC residual currents can also arise (e.g. with B6 bridge circuit on frequency converters and medical equipment)
- Product standards: IEC/EN 61008-1 (VDE 0664, Part 10), VDE 0664 Part 100, IEC/EN 61543 (VDE 0664, Part 30)
- For use in three-phase current systems
- $U_n$  230/400 V, 50 to 60 Hz, can be used in systems up to: 240/415 V AC
- Definition of surge current withstand capability with current waveform 8/20  $\mu$ s according to DIN VDE 0432, Part 2
- **[K]** K-type: short-time delayed tripping in the case of transient leakage currents. High surge current withstand capability >3 kA
- **[S]** S-type: can be used as upstream group switch for selective tripping contrary to a downstream standard RCCB. Very high surge current withstand capability >5 kA

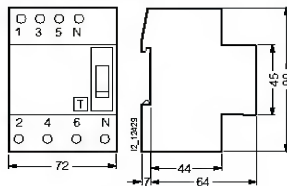
### Selection and ordering data

Circuit diagram	Maximum permissible short-circuit series fuse	Rated residual current	Rated current	MW	Version	Order No.	Weight 1 unit approx.	PS/ P. unit		
		$I_{\Delta n}$ mA	$I_n$ A				kg	Unit(s)		
<b>K short-time delayed; surge current withstand capability &gt; 3 kA</b>										
<p>230 ... 400 V AC; 50 ... 60 Hz; 4-pole</p>		30	25	4	[K]	5SM3 342-4	0.520	1		
		40	40		[K]	5SM3 344-4	0.520	1		
		63	63		[K]	5SM3 346-4	0.520	1		
		80	80		[K]	5SM3 347-4	0.520	1		
		300	25	4	[K]	5SM3 642-4	0.520	1		
			40		[K]	5SM3 644-4	0.520	1		
			63		[K]	5SM3 646-4	0.520	1		
			80		[K]	5SM3 647-4	0.520	1		
		<b>S selective; surge current withstand capability &gt; 5 kA</b>								
		<p>230 ... 400 V AC; 50 ... 60 Hz; 4-pole</p>		300	63	4	[S]	5SM3 646-5	0.520	1
80	80				[S]	5SM3 647-5	0.520	1		

### Dimensional drawings

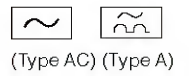
#### Residual current operated circuit-breakers, type B

5SM3 342-4, 5SM3 344-4, 5SM3 346-4, 5SM3 347-4,  
5SM3 642-4, 5SM3 644-4, 5SM3 646-4, 5SM3 647-4,  
5SM3 646-5, 5SM3 647-5



\* You can order this quantity or a multiple thereof.

# Residual Current Protective Devices RCCBs with Integral Overcurrent Protection (RCBOs)

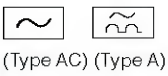


## 5SU1, type AC and type A, product overview

### Overview

	Number of poles	Rated current $I_n$ A	Rated residual current $I_{\Delta n}$ mA	MW	Additional components can be retrofitted
<b>RCBOs, type AC<sup>1)</sup> and type A<sup>2)</sup>, 6 ... 40 A, (1 + N)-pole</b>					
instantaneous tripping, surge current withstand capability >1 kA					
<b>Rated short-circuit capacity 4.5 kA</b> <span style="border: 1px solid black; padding: 2px;">4 500</span>					
• Characteristic B and C <span style="border: 1px solid black; padding: 2px;">3</span>					
	2	6 10 13 16 20 25 32 40	10, 30, 300  30, 300	2	• • • • • • • •
<b>Rated short-circuit capacity 6 kA</b> <span style="border: 1px solid black; padding: 2px;">6 000</span>					
• Characteristic B and C <span style="border: 1px solid black; padding: 2px;">3</span>					
	2	6 8 10 13 16 20 25 32 40	30, 300 30 30, 300  30, 300	2	• • • • • • • • •
<b>Rated short-circuit capacity 10 kA</b> <span style="border: 1px solid black; padding: 2px;">10 000</span>					
• Characteristic B and C <span style="border: 1px solid black; padding: 2px;">3</span>					
	2	6 8 10 13 16 20 25 32 40	10, 30, 300 30 10, 30, 300  30, 300	2	• • • • • • • • •
<b>RCBOs, type AC<sup>1)</sup>, 6 ... 32 A, 2-pole</b>					
instantaneous tripping					
<b>Rated short-circuit capacity 4.5 kA</b> <span style="border: 1px solid black; padding: 2px;">4 500</span>					
• Characteristic B <span style="border: 1px solid black; padding: 2px;">3</span>					
	2	6 10 16 20 25 32	30  30	4	• • • • •

1) = type AC for AC fault currents.  
 2) = type A for AC and pulsating DC residual currents.




# Residual Current Protective Devices RCCBs with Integral Overcurrent Protection (RCBOs)




5SU1, type AC and type A, product overview

4

## Technical specifications

<b>Standards</b>	IEC/EN 61009, VDE 0664 Part 20, IEC/EN 61543, VDE 0664 Part 30	
<b>Versions</b>	2-(1 + N)-pole	
<b>Rated voltages <math>U_n</math></b>	V AC	125 ... 230, 50 ... 60 Hz
<b>Rated currents <math>I_n</math></b>	A	6, 8, 10, 13, 16, 20, 25, 32, 40
<b>Rated residual currents <math>I_{\Delta n}</math></b>	mA	10, 30, 300
<b>Rated short-circuit capacity</b>	kA	4.5, 6, 10
<b>Energy limitation class</b>	[3]	
<b>Enclosure</b>	gray molded-plastic (RAL 7035)	
<b>Mounting depth</b>	mm	70
<b>Terminals</b>	Combined terminals at both sides for a simultaneous connection of busbars (pin-type) and conductors	
<ul style="list-style-type: none"> <li>• Conductor cross-section</li> <li>- solid and stranded</li> <li>- finely stranded with end sleeve</li> <li>• Terminal tightening torque, recommended</li> </ul>	mm <sup>2</sup> mm <sup>2</sup> Nm	0.75 ... 35 0.75 ... 25 2.5 ... 3.0
<b>Supply connection</b>	either top or bottom	
<b>Mounting position</b>	any	
<b>Mounting technique</b>	can be snapped onto 35 mm standard mounting rail (TH 35 acc. to EN 60715)	
<b>Degree of protection</b>	IP20 acc. to DIN EN 60529 (VDE 0470 Part 1) IP40 for installation in distribution boards IP54 for installation in molded-plastic enclosure	
<b>Protection against contact</b>	Protection against contact with fingers or the back of the hand acc. to EN 50274 (VDE 0660 Part 514)	
<b>Minimum operational voltage for test function operation</b>	V AC	100
<b>Device service life</b>	> 10 000 operations (electrical and mechanical; test cycle acc. to regulations)	
<b>Storage temperature</b>	°C	-40 ... +75
<b>Ambient temperature</b>	°C	-5 ... +45, for versions with the symbol  : -25 ... +45
<b>Resistance to climate</b> acc. to IEC 60068-2-30	28 cycles (55 °C; 95 % rel. humidity)	
<b>CFC and silicone-free</b>	yes	

# Residual Current Protective Devices RCCBs with Integral Overcurrent Protection (RCBOs)

4 500  6 000   (Type AC)

5SU1, type AC, 6 ... 40 A, (1 + N)-pole

NEW

## Benefits

- Compact device version for personnel and line protection
- Simplified device co-ordination thanks to unit comprising residual current operated circuit-breaker RCCB and miniature circuit-breaker
- Saves time with wiring
- Maximum plant availability thanks to assignment of a device to a specific electrical circuit
- Excellent current limiting and selectivity characteristics
- Combination terminal for simultaneous connection of pin busbars and feeder cables
- Simple connection of feeder cables due to rear relocation of busbar connection
- Identical terminals at both sides for an optional infeed from the top or the bottom
- Operating handle and test button can be locked by means of a handle locking device
- Customers can retrofit additional components to the miniature circuit-breakers for additional uses

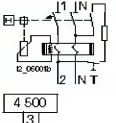
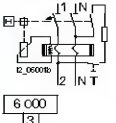
Additional features of the 10 kA version:

- Reach-round protection exceeds requirements according to BGV A3
- No tools required for rail mounting or dismounting
- Separate switching position indicator

## Application

- Personnel and fire protection
  - $I_{\Delta n} \leq 30$  mA, additional protection in the case of direct contact
  - $I_{\Delta n} \leq 300$  mA, preventative fire protection in the case of ground fault currents
- Product standards: IEC/EN 61009-1, IEC 61009-2-1, IEC/EN 61543 (VDE 0664, Part 30)
- $U_n = 230$  V, 50 ... 60 Hz
- Miniature circuit-breaker characteristic B or C
- Definition of surge current withstand capability with current waveform 8/20  $\mu$ s acc. to DIN VDE 0432, Part 2

## Selection and ordering data

Circuit diagram	Rated residual current $I_{\Delta n}$ mA	Rated current $I_n$ A	MW	MCB characteristic B	MCB characteristic C	Weight 1 unit approx. kg	PST/ P unit Unit(s)	
				Order No.	Order No.			
<b>intentional tripping = surge current withstand capability = 1 kA</b>								
<b>230 V AC; 50 ... 60 Hz; 2-(1 + N)-pole</b>								
	10	6	2	5SU1-153-0KK06	5SU1-153-1KK06	0.250	+	
		10		5SU1-153-0KK10	5SU1-153-1KK10	0.250	+	
		13		5SU1-153-0KK13	5SU1-153-1KK13	0.250	+	
		16		5SU1-153-0KK16	5SU1-153-1KK16	0.250	+	
		30	6	2	5SU1-353-0KK06	5SU1-353-1KK06	0.250	+
			10		5SU1-353-0KK10	5SU1-353-1KK10	0.250	+
	13			5SU1-353-0KK13	5SU1-353-1KK13	0.250	+	
	16			5SU1-353-0KK16	5SU1-353-1KK16	0.250	+	
	20		6	2	5SU1-353-0KK20	5SU1-353-1KK20	0.250	+
			25		5SU1-353-0KK25	5SU1-353-1KK25	0.250	+
		32		5SU1-353-0KK32	5SU1-353-1KK32	0.250	+	
		40		5SU1-353-0KK40	5SU1-353-1KK40	0.250	+	
300		6	2	5SU1-653-0KK06	5SU1-653-1KK06	0.250	+	
		10		5SU1-653-0KK10	5SU1-653-1KK10	0.250	+	
	13		5SU1-653-0KK13	5SU1-653-1KK13	0.250	+		
	16		5SU1-653-0KK16	5SU1-653-1KK16	0.250	+		
	20	6	2	5SU1-653-0KK20	5SU1-653-1KK20	0.250	+	
		25		5SU1-653-0KK25	5SU1-653-1KK25	0.250	+	
32			5SU1-653-0KK32	5SU1-653-1KK32	0.250	+		
40			5SU1-653-0KK40	5SU1-653-1KK40	0.250	+		
<b>230 V AC; 50 ... 60 Hz; 2-(1 + N)-pole</b>								
		10	6	2	5SU1-156-0KK06	5SU1-156-1KK06	0.250	1
	10			5SU1-156-0KK10	5SU1-156-1KK10	0.250	1	
	13			5SU1-156-0KK13	5SU1-156-1KK13	0.250	1	
	16			5SU1-156-0KK16	5SU1-156-1KK16	0.250	1	
	30	6	2	5SU1-356-0KK06	5SU1-356-1KK06	0.250	1	
		10		5SU1-356-0KK10	5SU1-356-1KK10	0.250	1	
		13		5SU1-356-0KK13	5SU1-356-1KK13	0.250	1	
		16		5SU1-356-0KK16	5SU1-356-1KK16	0.250	1	
		20		5SU1-356-0KK20	5SU1-356-1KK20	0.250	1	
		25		5SU1-356-0KK25	5SU1-356-1KK25	0.250	1	
		32		5SU1-356-0KK32	5SU1-356-1KK32	0.250	1	
		40		5SU1-356-0KK40	5SU1-356-1KK40	0.250	1	
300	6	2	5SU1-656-0KK06	5SU1-656-1KK06	0.250	1		
	10		5SU1-656-0KK10	5SU1-656-1KK10	0.250	1		
	13		5SU1-656-0KK13	5SU1-656-1KK13	0.250	1		
	16		5SU1-656-0KK16	5SU1-656-1KK16	0.250	1		
	20		5SU1-656-0KK20	5SU1-656-1KK20	0.250	1		
	25		5SU1-656-0KK25	5SU1-656-1KK25	0.250	1		
	32		5SU1-656-0KK32	5SU1-656-1KK32	0.250	1		
	40		5SU1-656-0KK40	5SU1-656-1KK40	0.250	1		

# Residual Current Protective Devices RCCBs with Integral Overcurrent Protection (RCBOs)

NEW

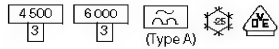
5SU1, type AC, 6 ... 40 A (1 + N)-pole

## Selection and ordering data

Circuit diagram	Rated residual current $I_{\Delta n}$ mA	Rated current $I_n$ A	MVA	MCB characteristic		Weight 1 unit approx kg	PS <sup>7</sup> P unit Unit(s)
				Order No.	Order No.		
<p>230 V AC; 50 ... 60 Hz; 2- (1 + N)-pole</p>	10	6	2	5SU1 154-0KK06	5SU1 154-1KK06	0.250	1
				5SU1 154-0KK10	5SU1 154-1KK10		
				5SU1 154-0KK13	5SU1 154-1KK13		
				5SU1 154-0KK16	5SU1 154-1KK16		
				5SU1 354-0KK06	5SU1 354-1KK06		
				5SU1 354-0KK10	5SU1 354-1KK10		
	30	6	2	5SU1 354-0KK13	5SU1 354-1KK13	0.250	1
				5SU1 354-0KK16	5SU1 354-1KK16		
				5SU1 354-0KK20	5SU1 354-1KK20		
				5SU1 354-0KK25	5SU1 354-1KK25		
				5SU1 354-0KK40	5SU1 354-1KK40		
				5SU1 654-0KK06	5SU1 654-1KK06		
	300	6	2	5SU1 654-0KK10	5SU1 654-1KK10		
				5SU1 654-0KK13	5SU1 654-1KK13		
				5SU1 654-0KK16	5SU1 654-1KK16		
				5SU1 654-0KK20	5SU1 654-1KK20		
				5SU1 654-0KK25	5SU1 654-1KK25		
				5SU1 654-0KK32	5SU1 654-1KK32		
	5SU1 654-0KK40	5SU1 654-1KK40	0.250	1			

4

# Residual Current Protective Devices RCCBs with Integral Overcurrent Protection (RCBOs)



5SU1\_type A 6 ... 40 A (1 + N)-pole

NEW

## Benefits

- Compact device version for personnel and line protection
- Simplified device co-ordination thanks to unit comprising residual current operated circuit-breaker RCCB and miniature circuit-breaker
- Saves time with wiring
- Maximum plant availability thanks to assignment of a device to a specific electrical circuit
- Excellent current limiting and selectivity characteristics
- Combination terminal for simultaneous connection of pin busbars and feeder cables
- Simple connection of feeder cables due to rear relocation of busbar connection
- Identical terminals at both sides for an optional infeed from the top or the bottom
- Operating handle and test button can be locked by means of a handle locking device
- Customers can retrofit additional components to the miniature circuit-breakers for additional uses

Additional features of the 10 kA version:

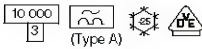
- Reach-round protection exceeds requirements according to BGV A3
- No tools required for rail mounting or dismounting
- Separate switching position indicator

## Application

- Personnel and fire protection
  - $I_{\Delta n} \leq 30$  mA: additional protection in the case of direct contact
  - $I_{\Delta n} \leq 300$  mA: preventative fire protection in the case of ground fault currents
- Cable and line protection against overload and short-circuits
- Product standards: IEC/EN 61009-1 (VDE 0664, Part 20), IEC/EN 61009-2-1 (VDE 0664, Part 21), IEC/EN 61543 (VDE 0664, Part 30)
- $U_n = 230$  V, 50 ... 60 Hz
- Miniature circuit-breaker characteristic B or C
- Definition of surge current withstand capability with current waveform 8/20  $\mu$ s according to DIN VDE 0432, Part 2.

## Selection and ordering data

Circuit diagram	Rated residual current $I_{\Delta n}$ mA	Rated current $I_n$ A	MW	MCB characteristic B Order No.	MCB characteristic C Order No.	Weight 1 unit approx kg	PS*/ P unit Unit(s)	
<b>Instantaneous tripping surge current withstand capability <math>\neq 1</math> kA</b>								
<b>230 V AC; 50 ... 60 Hz; 2-(1 + N)-pole</b>								
	10	6	2	5SU1 153-6KK06	5SU1 153-7KK06	0.250	4	
		10		5SU1 153-6KK10	5SU1 153-7KK10	0.250	4	
		13		5SU1 153-6KK13	5SU1 153-7KK13	0.250	4	
		16		5SU1 153-6KK16	5SU1 153-7KK16	0.250	4	
		6	2	5SU1 353-6KK06	5SU1 353-7KK06	0.250	4	
		10		5SU1 353-6KK10	5SU1 353-7KK10	0.250	4	
	30	13		5SU1 353-6KK13	5SU1 353-7KK13	0.250	4	
		16		5SU1 353-6KK16	5SU1 353-7KK16	0.250	4	
		20		5SU1 353-6KK20	5SU1 353-7KK20	0.250	4	
		25		5SU1 353-6KK25	5SU1 353-7KK25	0.250	4	
		32		5SU1 353-6KK32	5SU1 353-7KK32	0.250	4	
		40		5SU1 353-6KK40	5SU1 353-7KK40	0.250	4	
300	6	2	5SU1 653-6KK06	5SU1 653-7KK06	0.250	4		
	10		5SU1 653-6KK10	5SU1 653-7KK10	0.250	4		
	13		5SU1 653-6KK13	5SU1 653-7KK13	0.250	4		
	16		5SU1 653-6KK16	5SU1 653-7KK16	0.250	4		
	20		5SU1 653-6KK20	5SU1 653-7KK20	0.250	4		
	25		5SU1 653-6KK25	5SU1 653-7KK25	0.250	4		
300	32		5SU1 653-6KK32	5SU1 653-7KK32	0.250	4		
	40		5SU1 653-6KK40	5SU1 653-7KK40	0.250	4		
	<b>230 V AC; 50 ... 60 Hz; 2-(1 + N)-pole</b>							
		30	6	2	5SU1 356-6KK06	5SU1 356-7KK06	0.260	1
			8		---	5SU1 356-7KK08	0.260	1
			10		5SU1 356-6KK10	5SU1 356-7KK10	0.260	1
13				5SU1 356-6KK13	5SU1 356-7KK13	0.260	1	
16				5SU1 356-6KK16	5SU1 356-7KK16	0.260	1	
20				5SU1 356-6KK20	5SU1 356-7KK20	0.260	1	
300		25		5SU1 356-6KK25	5SU1 356-7KK25	0.260	1	
		32		5SU1 356-6KK32	5SU1 356-7KK32	0.260	1	
		40		5SU1 356-6KK40	5SU1 356-7KK40	0.260	1	
		6	2	5SU1 656-6KK06	5SU1 656-7KK06	0.260	1	
		10		5SU1 656-6KK10	5SU1 656-7KK10	0.260	1	
		13		5SU1 656-6KK13	5SU1 656-7KK13	0.260	1	
300	16		5SU1 656-6KK16	5SU1 656-7KK16	0.260	1		
	20		5SU1 656-6KK20	5SU1 656-7KK20	0.260	1		
	25		5SU1 656-6KK25	5SU1 656-7KK25	0.260	1		
	32		5SU1 656-6KK32	5SU1 656-7KK32	0.260	1		
	40		5SU1 656-6KK40	5SU1 656-7KK40	0.260	1		



# Residual Current Protective Devices RCCBs with Integral Overcurrent Protection (RCBOs)

NEW

5SU1, type A, 6 ... 40 A (1 + N)-pole

## Selection and ordering data

Circuit diagram	Rated residual current $I_{\Delta n}$ mA	Rated current $I_n$ A	MW	MCB characteristic B Order No.	MCB characteristic C Order No.	Weight 1 unit approx kg	PS7 P unit Unit(s)	
<p><b>230 V AC; 50 ... 60 Hz; 2-(1 + N)-pole</b></p> <p>surge current withstand capability &gt;1 kA</p>								
	10	6	2	5SU1 154-6KK06	5SU1 154-7KK06	0.260	1	
		10			5SU1 154-6KK10	5SU1 154-7KK10	0.260	1
		13			5SU1 154-6KK13	5SU1 154-7KK13	0.260	1
		16			5SU1 154-6KK16	5SU1 154-7KK16	0.260	1
		30	6	2	5SU1 354-6KK06	5SU1 354-7KK06	0.260	1
		8			-	5SU1 354-7KK08	0.260	1
	10 000 3	30	10		5SU1 354-6KK10	5SU1 354-7KK10	0.260	1
			13		5SU1 354-6KK13	5SU1 354-7KK13	0.260	1
			16		5SU1 354-6KK16	5SU1 354-7KK16	0.260	1
			20		5SU1 354-6KK20	5SU1 354-7KK20	0.260	1
		25		5SU1 354-6KK25	5SU1 354-7KK25	0.260	1	
		32		5SU1 354-6KK32	5SU1 354-7KK32	0.260	1	
		40		5SU1 354-6KK40	5SU1 354-7KK40	0.260	1	
		300	6	2	5SU1 654-6KK06	5SU1 654-7KK06	0.260	1
	10			5SU1 654-6KK10	5SU1 654-7KK10	0.260	1	
	13			5SU1 654-6KK13	5SU1 654-7KK13	0.260	1	
	16			5SU1 654-6KK16	5SU1 654-7KK16	0.260	1	
	20			5SU1 654-6KK20	5SU1 654-7KK20	0.260	1	
	25			5SU1 654-6KK25	5SU1 654-7KK25	0.260	1	
		32		5SU1 654-6KK32	5SU1 654-7KK32	0.260	1	
		40		5SU1 654-6KK40	5SU1 654-7KK40	0.260	1	

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# Residual Current Protective Devices RCCBs with Integral Overcurrent Protection (RCBOs)

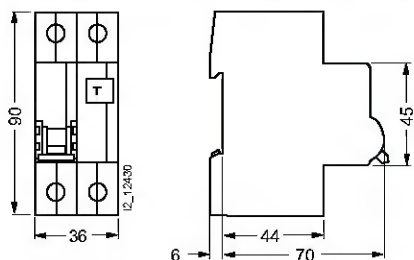
5SU1, type A, 6 ... 40 A, (1 + N)-pole

## Dimensional drawings

### 5SU1 RCCBs with integral overcurrent protection in two modular widths

6 A ... 40 A

5SU1 153-KK..., 5SU1 154-KK..., 5SU1 156-KK...,  
5SU1 353-KK..., 5SU1 354-KK..., 5SU1 356-KK...,  
5SU1 653-KK..., 5SU1 654-KK..., 5SU1 656-KK...



### Overview

	Remote control switches 5TT4 10 5TT4 11 5TT4 12	Blind and series remote control switches 5TT4 13 5TT4 14
Manual operation	•	•
Switching position indication	•	–
Fuse protected against continuous voltage	•	•

### Function

Remote control switches are used to switch lightings by means of several pushbuttons. This makes complex cross/two-way switching unnecessary. With each pushbutton impulse, the remote control switch changes its contact position from OFF to ON, etc. In the event of a power failure, the last switch position is mechanically stored.

#### Pushbutton malfunction

Pushbuttons can jam, which may expose remote control switches to a continuous voltage. All our remote control switches are protected against such malfunction.

#### Central switching functions

Versions with central ON/OFF function allow the central switching of all connected remote control switches. Such central switching can also be actuated using a time switch. All remote control switches are switched to the ON or OFF switching state, regardless of the current switching state.


#### Parallel connection of remote control switches

It is not possible to control more than one remote control switch using just one pushbutton or contact. This would lead to an undefined contact position as there is no synchronization.

### Technical specifications

Data according to EN 60669 (VDE 0632), EN 60669 -2-2 and EN 60669 -2-2/A1			5TT4 101 5TT4 102 5TT4 105	5TT4 103 5TT4 104	5TT4 12...0	5TT4 132-0 5TT4 142-..
<b>Contact types</b>	<b>1 NO</b> <b>2 NOs</b> <b>1 NO 1 NC</b>  <b>3 NOs</b> <b>4 NOs</b> <b>ZEZA</b> <b>shutter/blind series</b>		5TT4 101 5TT4 102 5TT4 105	5TT4 103 5TT4 104	5TT4 12...0	5TT4 132-0 5TT4 142-..
<b>Rated control voltage <math>U_c</math></b>		V AC	see selection table			
<b>Operating range</b>		$\times U_c$	0.8 ... 1.1			
<b>Rated power dissipation <math>P_v</math></b>	magnet coil, only pulse per contact at 16 A	app. VA app. VA	8 1.2	20 1.2	8 1.2	8 1.2
<b>Minimum pulse duration</b>		ms	50			
<b>Contact gap</b>		mm	>1.2			
<b>Rated operational voltage <math>U_e</math></b>	1-pole 2-pole 3-pole 4-pole	V AC V AC V AC V AC	250 400 400 400		– 250 – –	
<b>Protective separation</b>	creepage and clearances magnet coil/contact	mm	>6			
<b>Different phases</b>	magnet coil/contact Magnet coil/terminals for central input		permissible yes		–	
<b>Rated operational current <math>I_e</math></b>	at p.f. = 1	A	16			
<b>Rated impulse withstand voltage <math>U_{imp}</math></b>		kV	>4			
<b>Pushbutton malfunction</b>			yes, safe through design	yes, protection through PTC	yes, safe through design	
• Fuse protected against continuous voltage	magnet coil		100% ON-time	–	100% ON-time	
<b>Minimum contact load</b>		V; mA	10; 100			
<b>Electrical service life</b>	at $I_e$ and $U_e$ or specified lamp load	switching cycles	50 000			
<b>Terminals</b>	± screw (Pozidriv)		1			
<b>Conductor cross-sections</b>	rigid, max. Flexible with sleeve, min.	mm <sup>2</sup> mm <sup>2</sup>	1,5 ... 6 1			
<b>Permissible ambient temperature</b>		°C	-10 ... +40			
<b>Degree of protection</b>	according to EN 60529		IP20			
<b>Resistance to climate</b>	according to DIN 50015 at °C 95% relative humidity		35			
<b>Humidity class</b>	complies with DIN 50016		–		FW 24	

### Selection and ordering data

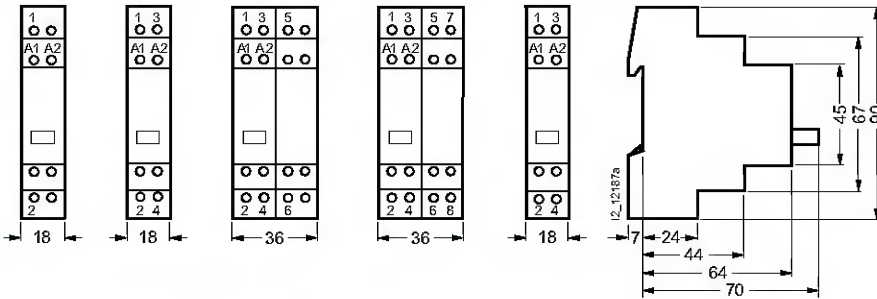
Version	$U_e$	$I_e$	$U_c$	MW	Order No	Weight 1 unit approx. kg	PS/ P unit Unit(s)				
	V AC	A AC	V AC								
<b>Remote control switches</b>											
 5TT4 101-0	<b>1 NO contacts</b>			230	1	5TT4 101-0	0.126	1			
				115					5TT4 101-1	0.120	1
				24					5TT4 101-2	0.121	1
				12	1	5TT4 101-3	0.118	1			
				8					5TT4 101-4	0.124	1
	<b>2 NO contacts</b>			230	1	5TT4 102-0	0.138	1			
				115					5TT4 102-1	0.132	1
				24					5TT4 102-2	0.132	1
				12	1	5TT4 102-3	0.130	1			
				8					5TT4 102-4	0.136	1
	<b>3 NO contacts</b>			230	2	5TT4 103-0	0.200	1			
				24					5TT4 103-2	0.195	1
	<b>4 NO contacts</b>			230	2	5TT4 104-0	0.211	1			
				24					5TT4 104-2	0.206	1
	<b>1 NO contact + 1 NC contact</b>			230	1	5TT4 105-0	0.137	1			
			115	5TT4 105-1					0.132	1	
			24	5TT4 105-2					0.132	1	
			12	5TT4 105-3					0.129	1	
			8	5TT4 105-4					0.135	1	
<b>Remote control switches with central switching</b>											
<b>2 NO contacts</b>			230	1	5TT4 122-0	0.181	1				
<b>3 NO contacts</b>			230					5TT4 123-0	0.194	1	
<b>1 NO contact + 1 NC contact</b>			230	1	5TT4 125-0	0.182	1				
<b>Series remote control switches</b>											
Contact sequence 1 + 2 – 2 – 1 – 0											
<b>2 NO contacts</b>			230	1	5TT4 132-0	0.138	1				
<b>Blind remote control switches</b>											
Contact sequence 1 – 0 – 2 – 0											
<b>2 NO contacts</b>			230	1	5TT4 142-0	0.138	1				
			24					5TT4 142-2	0.132	1	
			12					5TT4 142-3	0.130	1	
<b>Auxiliary switches</b>											
<b>1 CO contact</b>			–	0.5	5TT4 900	0.054	1				
• For small outputs <sup>1)</sup>								5TT4 901	0.054	1	

1) Minimum AC load switched: 1 mA at 5 V / DC, 1 mA at 5 V,  
Maximum AC load switched: 100 mA at 250 V / DC, 100 mA at 30 V.

### Dimensional drawings

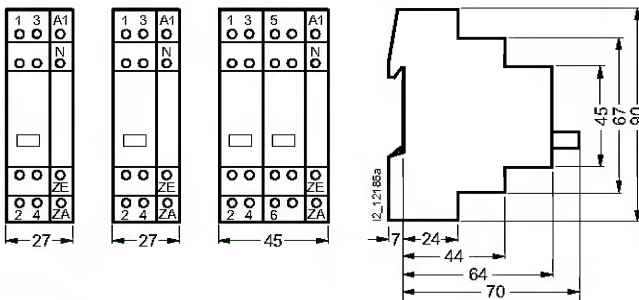
#### 5TT4 1 remote switches

- |            |            |            |            |            |
|------------|------------|------------|------------|------------|
| 5TT4 101-0 | 5TT4 102-0 | 5TT4 103-0 | 5TT4 104-0 | 5TT4 105-0 |
| 5TT4 101-1 | 5TT4 102-1 | 5TT4 103-2 | 5TT4 104-2 | 5TT4 105-1 |
| 5TT4 101-2 | 5TT4 102-2 |            |            | 5TT4 105-2 |
| 5TT4 101-3 | 5TT4 102-3 |            |            | 5TT4 105-3 |
| 5TT4 101-4 | 5TT4 102-4 |            |            | 5TT4 105-4 |



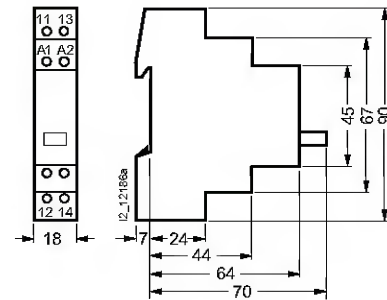
#### 5TT4 12 remote control switches, central ON/OFF

- 5TT4 122-0    5TT4 125-0    5TT4 123-0



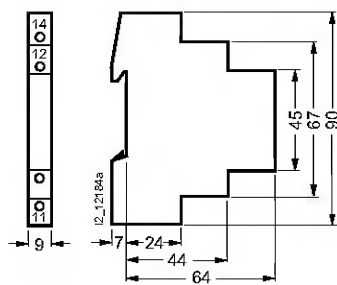
#### 5TT4 142 blind remote control switches and 5TT4 132-0 series remote control switches

- 5TT4 142-0    5TT4 132-0  
5TT4 142-2  
5TT4 142-3



#### 5TT4 90 auxiliary switches

- 5TT4 900  
5TT4 901



# Switching Devices

## 5TT4 1 remote switches

### Schematics

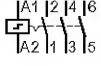
5TT4 101-



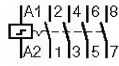
5TT4 102-



5TT4 103-



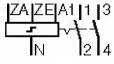
5TT4 104-



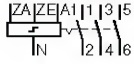
5TT4 105-



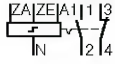
5TT4 122-0



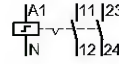
5TT4 123-0



5TT4 125-0



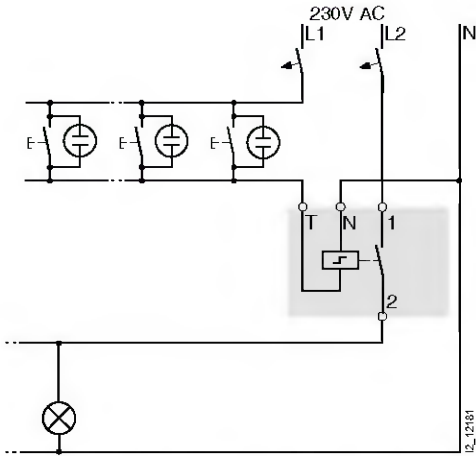
5TT4 142-  
5TT4 132-0



5TT4 90

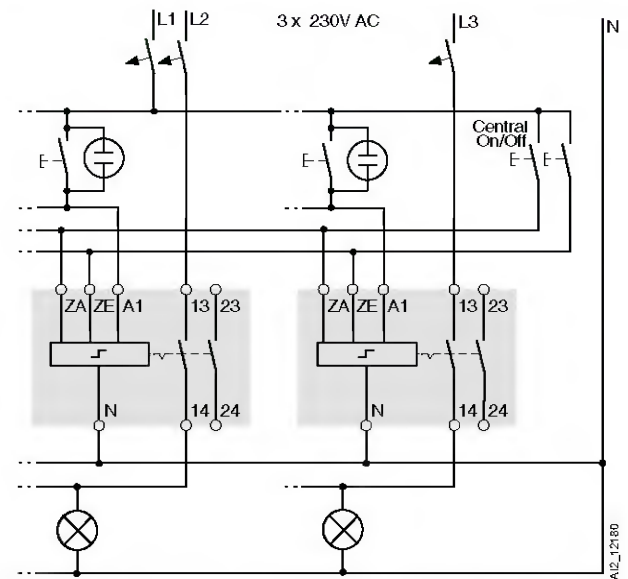


### Switching example: 5TT4 101-0



Single-phase lighting circuit with 230 V AC actuation, e.g. in office buildings

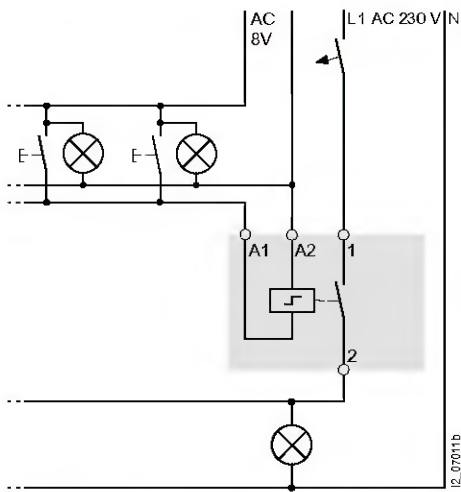
### Switching example: 5TT4 122-0 with central ON/OFF switching



With the 2-pushbutton central "ON" and "OFF" function, all remote control switches can be switched on or off from a central point, e.g. at the start and end of work. A time switch with a one-second pulse can also be used if desired. Once a central on/off switching operation has been executed, the remote control switches can also be switched on and off locally at any time. The phase relation of ZA, ZE and A1 is arbitrary.

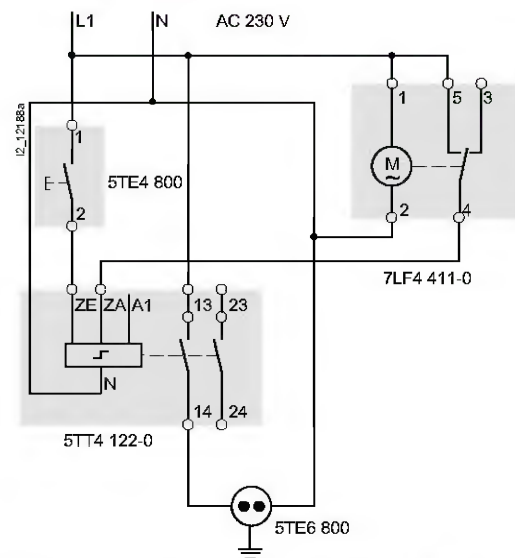
### Schematics

#### Switching example: 5TT4 101-4



Single-phase lighting circuit with safety extra-low voltage 8 V AC, pushbutton and glow lamp.

#### Switching example: 5TT4 122-0 with ON/OFF time switching



Printers and copiers are to be switched on with the pushbutton at the beginning of the working day. At the end of the working day, e.g. 6 p.m. to 10 p.m., an hourly one-second pulse of the time switch switches the outlet off. This ensures that printers and copiers are not "forgotten". If the device is switched on again after 6 p.m., a switch-off is actuated again hourly.

## 5TT4 2 switching relays

### Overview

#### Function

Switching relays are used in control systems as coupling relays, for the electrical or safe isolation of electrical circuits.

#### Protective separation

The magnet coil and the contacts meet the requirements for safety extra-low voltage from the actuating voltage safely through to disconnection.

#### Checking functions using the manual switch

Switching relays have a manual switch that shows the switching position. This switch can be used to manually switch the switching relay, thus allowing system devices and control functions to be checked.


### Technical specifications

According to EN 60669 (VDE 0632), EN 60669 -2-2 and EN 60669 -2-2/A1		5TT4 201-	5TT4 202- 5TT4 204- 5TT4 205- 5TT4 206- 5TT4 207-
<b>Contact types</b>	<b>1 NO</b> <b>2 NOs</b> <b>1 NO 1 NC</b> <b>1 CO</b> <b>2 COs</b> <b>4 NOs</b>	5TT4 201-	5TT4 202- 5TT4 205- 5TT4 206- 5TT4 207- 5TT4 204-
<b>Rated control supply voltage <math>U_c</math></b>		V AC V DC	8, 12, 24, 115 or 230 -
<b>Operating range</b>		$\times U_c$	0.8 ... 1.1
<b>Rated power dissipation <math>P_V</math></b>	per contact	VA	1.1 ... 1.2
<b>Rated frequency</b>	AC versions	Hz	50
<b>Response time/returning time</b>		ms	50
<b>Contact gap</b>		mm	>1.2
<b>Rated operational voltage <math>U_e</math></b>	1-pole	V AC	250
<b>Protective separation</b>	creepage and clearances magnet coil/contact	mm	>6
<b>Different phases</b>	magnet coil/contact		permissible
<b>Rated operational current <math>I_e</math></b>	at p.f. = 1	A	16
<b>Rated impulse withstand voltage <math>U_{imp}</math></b>	magnet coil/contact contact/contact	kV kV	>4 >2.5
<b>Minimum contact load</b>		V; mA	10; 100
<b>Electrical service life</b>	at $I_e$ and $U_e$ or specified lamp load	Switching cycles	50 000
<b>Terminals</b>	$\pm$ screw (Pozidriv)		1
<b>Conductor cross-sections</b>	rigid, max. Flexible with sleeve, min.	mm <sup>2</sup> mm <sup>2</sup>	1.5 ... 6 1
<b>Permissible ambient temperature</b>		°C	-20 ... +45
<b>Safety class</b>	according to EN 60730-1		IP20

NEW

5TT4 2 switching relays

## Selection and ordering data

Version	$U_e$	$I_e$	$U_c$	MW	Order No.	Weight 1 unit approx. kg	PS*/ P unit Unit(s)				
	V AC	A AC	V AC								
<b>Switching relays</b>											
 5TT4 201-0	1 NO contacts	250	16	230	1	5TT4 201-0	0.126	1			
				115					5TT4 201-1	0.120	1
				24							
	2 NO contacts	400	16	230	1	5TT4 201-3	0.118	1			
				115					5TT4 201-4	0.124	1
				24							
	4 NO contacts	400	16	230	2	5TT4 202-1	0.131	1			
				115					5TT4 202-2	0.131	1
				24							
	1 NO contact + 1 NC contact	400	16	230	1	5TT4 202-4	0.135	1			
				115					5TT4 204-0	0.270	1
				24							
1 CO contact	250	16	230	1	5TT4 204-2	0.259	1				
			115					5TT4 204-3	0.254	1	
			24								5TT4 204-4
1 CO contact	400	16	230	1	5TT4 205-0	0.137	1				
			115					5TT4 205-1	0.131	1	
			24								5TT4 205-2
2 CO contact	400	16	230	1	5TT4 205-3	0.129	1				
			115					5TT4 205-4	0.135	1	
			24								5TT4 206-0
1 CO contact	250	16	230	1	5TT4 206-1	0.121	1				
			115					5TT4 206-2	0.122	1	
			24								5TT4 206-3
2 CO contact	400	16	230	1	5TT4 206-4	0.125	1				
			115					5TT4 207-0	0.140	1	
			24								5TT4 207-1
1 CO contact	400	16	230	1	5TT4 207-2	0.135	1				
			115					5TT4 207-3	0.133	1	
			24								5TT4 207-4

7

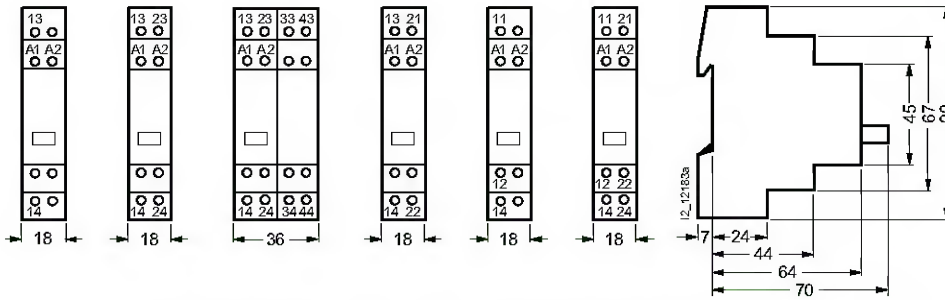
# Switching Devices

## 5TT4 2 switching relays

### Dimensional drawings

#### 5TT4 2 switching relays

5TT4 201-, 5TT4 202-, 5TT4 204-, 5TT4 205-, 5TT4 206-, 5TT4 207-



### Schematics

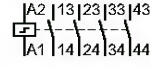
5TT4 201-



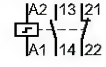
5TT4 202-



5TT4 204-



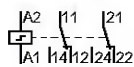
5TT4 205-



5TT4 206-



5TT4 207-  
5TT4 217-



# Timers Time Switches

## 7LF4 4 digital time switches

### Benefits

#### *Digital time switches: Top, Profi and Astro*

Whether you are programming locally using the text-assisted programming, or sitting comfortably in front of your PC, the task is quicker and easier with the digital time switches: Top, Profi and Astro.



#### Everything at a glance

- Clearly arranged display with text-assisted programming

#### Simple operation

- With four programming keys, everything you need is at your fingertips

#### Text-assisted programming

Plain text assistance with the digital time switches: Top, Profi and Astro. Programming digital time switches has never been easier. The digital time switches Top, Profi and Astro take you through the menu step-by-step.

Each entry required is clearly indicated so that you don't even need the operating instructions. And, particularly practical: you can even program the digital time switches without the system voltage being applied. And if you need to change the settings of the digital time switch at the back of a dark control cabinet, the integral background lighting will help you to see the keys and display.

#### Startup

Select the required language. The time, date and daylight savings for Central Europe are already factory-set on delivery. You can get started with the programming straight away.

#### *Digital time switches: Profi and Astro*

The key to greater safety and convenience. The digital time switches Profi and Astro can also be conveniently programmed at your PC using a USB adapter, software and a data key.

The data key makes your task even easier. You can create your switching program for the digital time switches conveniently at your PC in the office and store them on the data key. It couldn't be easier with the supplied software and PC adapter. Your created programs can then be stored, changed, managed and used again and again.

#### Faster programming

The software and PC adapter makes configuring your basic setting and programming even easier. Even complex switching programs can be created at your PC in no time at all. The finished program with all its basic settings is then downloaded onto the data key using the PC adapter. This is then inserted directly into the digital time switch, which automatically switches to the menu item "KEY". Select "READ" and the program data are transmitted directly to the digital time switch.

#### Greater flexibility

Your created programs can then be stored and are simple to change, manage and use again and again. For example, you can use the key to read out a program from the digital time switch and transfer it to PC, where it can be saved and edited. If customers require different programs for a digital time switch, you can simply use more than one data key. It then takes just a matter of seconds to switch programs. And if you create a key with a backup copy, you can offer the fastest possible service if the digital time switch has been manipulated.

#### Useful even without a PC

The data key is also useful without a PC. Even programs created on the digital time switch can be written to the key and transferred to other digital time switches. Even in this case, it always pays to make a backup copy.

#### *Profi digital time switches*

The Profi digital time switches offer more than just reliable switching. Numerous integral and convenient functions mean that the Profi digital time switches are versatile and easy-to-use problem solvers.

#### Vacation program

What about vacations? Should the time switch be switched off or remain permanently on? A simple task: enter a vacation period with start and end date, select the relay position "CONTINUOUSLY ON" or "CONTINUOUSLY OFF" and activate. At the end of the vacation, the digital time switch then automatically returns to normal mode.

#### Random program

The Profi digital time switch can also control presence simulation, which switches on the light(s) each day at a different time. Simply enter the switching time and activate the random program – done! The program will now randomly vary the on and off times each day by ±30 minutes.

#### Operating hours meter

For commercial fields of application in particular, it may be necessary to establish the running time of the switched load, e.g. lighting. Use the integral operating hours meter: it shows the total on-time per channel and the date of the last reset.

#### Contrast

In order to maintain an overview even in bad light conditions and extreme temperatures, the contrast of the display can be adjusted – virtually down to the last detail!

#### Pulse function

The 1-channel time switch can be used as a pulse clock with up to 84 start times and selectable pulse durations of 1 s – 59 s. For example, the break bell of a school can now be controlled using a standard weekly time switch.

#### Program slots

The 1-channel time switch supports entry of up to 56 switching programs, the 2-channel time switch supports up to 28 programs per channel. This means that the Profi time switch is ideally equipped for even the most complex of tasks.

### Benefits

#### Astro digital time switch

##### Astro function

The Astro digital time switch can do so much more: it doesn't just know when the sun rises every day, it also knows when the sun sets. And it goes about its task silently.

It's great strength is the Astro function: for every location and every day in the year, it is programmed with the sunrise and sunset times. The connected lighting is only switched on when it is dark – whether it is winter when the days are shorter or in summer when the days are much longer. The benefits are obvious:

- Cost-savings, because electricity is only used when the lighting is really needed, and because this prolongs the service life of the lighting itself.
- Safety and convenience, because the light is switched on when it is dark.
- Ease-of-use, because the digital time switch doesn't have to be reprogrammed throughout the year.

Even installation couldn't be easier, as the digital time switch works from the distribution board. No further need for laborious cable laying to the lighting. The compact 2-MW series is also ideally suited for subsequent installation or replacement.

##### Dawn/dusk-dependent lighting control made easy

The Astro digital time switch is useful anywhere where dawn/dusk-dependent lighting control is required. Shop windows that need to be lit up for several hours after shop closure, or streets that need to be continually lit during the night, are just a couple of examples. Advertising lighting or menus that need to be illuminated outside restaurants are further areas of application. But the Astro time switch is also ideal for use in private areas, such as housing and garden lighting.

And of course, the Astro digital time switch doesn't just switch at sunrise and sunset, it can also handle complex, combined programs. You always have the choice between astronomically calculated and individually set switching times, which can also be combined.

### Function

#### Digital time switches: Top, Profi and Astro

##### Text assistance

The digital time switches: Top, Profi and Astro take you step-by-step through programming and setting in plain text. Each step is easy to read and understand and the currently active function is signaled by flashing. Integral background display and keylighting makes operation easy even in bad light conditions.

##### Setting the language

The "MENU" pushbutton lets you select a language of your choice. The device is factory-set to English on delivery.

##### Time, date, daylight savings

The digital time switch is factory-set to the current time and current date. The time can be changed using "MENU" + "SET".

##### Reset

Simultaneously pressing all pushbuttons for more than 2 seconds deletes all data. Language, date/time, daylight saving times and switching times are set to the default value.

##### Programming

A program consists of an ON time, an OFF time and assigned ON and OFF days. The switching days must be entered prior to entering the switching times. Preset blocks are available for selection; "MONDAY-SUNDAY", "MONDAY-FRIDAY" or "SATURDAY-SUNDAY" and "INDIVIDUAL". By selecting "INDIVIDUAL" you can choose switching times on any days of your choice. This selection also lets you implement switches at midnight.

#### Digital time switches: Profi and Astro

##### Relay functions

The menu item "MENU" and "FUNCTIONS" lets you change the relay setting. The "AUTO" function is preset, the digital time switch switches according to the programmed times. You can also select the following functions: "CONTINUOUSLY ON", "CONTINUOUSLY OFF" and "EXTRA". If you select "EXTRA", this changes the program-defined switching state. With the next switching command, the programmed switching times take over switching ON and OFF again.

##### Vacation periods

In the vacation program, you need to enter the vacation period with start and end date and then select the program item "ACTIVE" to activate or "PASSIVE" to deactivate the program. If the vacation program is activated, the digital time switch does not carry out any programmed switching commands during the specified period, but is, depending on input, "CONTINUOUSLY OFF" or "CONTINUOUSLY ON" for the duration of the vacation. At the end of the specified vacation period, the digital time switch automatically resumes execution of the switching commands according to the programmed switching times.

##### Basic setting over PC and data key

All the aforementioned basic settings, with the exception of the current time and date, can be created using the BETASoft software and the data key (Order No. 7LF4 490-1) and read into the digital time switch.

##### Setting the contrast

This function lets you adjust the contrast of the display.

##### Operating hours meter

This displays the on-time of the relay and the date of the last reset.

##### Data key

If the time switch is powered, inserting a data key automatically activates the menu item "KEY-READ-WRITE".

- "WRITE": program data are written from the digital time switch to the key. Caution: Any data on the key will be overwritten.
- "READ": program data are read from the key and written to the digital time switch. Any switching programs programmed in the digital time switch will be overwritten.

*Profi time switch:* the digital time switch or data key only supports storage of one clock program, comprising 56 switching programs (1-channel time switch), 2 x 28 switching programs (2-channel time switch), or one pulse program (1-channel time switch) respectively.

*Astro time switch:* the digital time switch or data key supports storage of all programs of the respective digital time switch plus the basic settings. Example: Astro 1-channel maximum 28 programs plus basic settings.

If the data key is inserted when the time switch is not powered, the menu item "KEY-READ-WRITE" is not automatically activated. The "KEY" function must be selected over the menu and it is then possible to select the required function without the supply voltage being connected.

##### PC programming

As well as simple, text-assisted programming directly at the digital time switch, switching programs can also be created at your PC using the software BETASoft and transferred to the digital time switch using the data key. In order to transfer switching programs and settings created on a PC to the data key, you require a read/write device, Order No. 7LF4 940-0. The device is connected to the PC over a USB connector. In addition to this read/write device, delivery includes a CD-ROM with the BETASoft program and the necessary driver.

PC system requirements:

- USB connection
- Windows 98 Second Edition, Windows 2000, Windows ME or Windows XP
- 40 MB free disk space

# Timers

## Time Switches

### 7LF4 4 digital time switches

#### Function

##### **Profi digital time switches**

###### Pulse function (only 1-channel device)

In the pulse function, up to 84 start times and one pulse time can be entered in the digital time switch. The pulse duration can be selected between 1 s and 59 min 59 s.

###### Random function

If the random function is activated, the set switching times are shifted within a range of  $\pm 30$  min.

##### **Astro digital time switches**

###### Location

The daily changing sunrise and sunset times are automatically calculated for the location programmed in the Astro digital time switch. For optimum operation it is therefore essential to enter the respective location. This can be done in two ways: selecting "MENU", "SET" and "ASTRO" will take you to the two selection options: "LOCATION" and "COORDINATES".

- "LOCATION": this menu item lets you select the country and town closest to the location of operation.
- "COORDINATES": alternatively, the coordinates of the location can be entered under this menu item.

You will find data on coordinates and time zones on the time zone card included with every time switch.

###### Offset

Selecting "MENU", "SET", "ASTRO" and "OFFSET" lets you set differential times to the calculated switching times. Entering a differential time offsets the switching time by up to  $\pm 120$  min. against the sunrise and sunset times. The differential time for sunrise and sunset is set separately.

###### 1h-Test

The "1H-TEST" function can be used for switching simulation. If the "1H-TEST" function is activated, the switching outputs are switched for one hour. At the end of that time, the digital time switch automatically resumes execution of the switching commands according to the programmed switching times.

###### PIN code

Input and programming can be disabled using a four-digit "PIN CODE" and enabled again by entering the "PIN CODE". The blocking device can also be canceled by using the "RESET" function. However, this also deletes all settings and programs.

###### Delay time (only 1-channel device)

The 1-channel Astro time switch has a control input with an adjustable delay time. The control input enables an additional switching of the relay, parallel to the switching program. Adjustable delay time 0 min ... 23 h 59 min, the delay time begins as soon as the voltage drops out at the control input.

### Technical specifications

			Mini 7LF4 401	Top 7LF4 411 7LF4 412	Profi 7LF4 421 7LF4 422	Astro 7LF4 431 7LF4 432
<b>Supply</b>						
<b>Rated control supply voltage</b> $U_c$	V AC		230	120, 230	120, 230, 24 AC/DC	230
<b>Operating range</b>	% $U_c$		-15/+10	-15/+10	-15/+10 <sup>1)</sup>	-15/+10
<b>Rated frequency</b>	Hz		50	50/60	50/60 <sup>1)</sup>	50/60
<b>Frequency range</b>	Hz		50/60	50/60	50/60 <sup>1)</sup>	50/60
<b>Rated power dissipation</b> $P_V$	VA		1.5	2		
<b>Channels/contacts</b>						
<b>Switching channels</b>			1	1 or 2		
<b>Rated operational voltage</b> $U_e$	V		250			
<b>Rated operational current</b> $I_e$		at p.f. = 1 at p.f. = 0.6	A A	16 10		
<b>Contacts</b>				CO contact 30 000 000	10 000 000	
• Mechanical operations				80 000	100 000	
• Electrical operations		at p.f. = 1				
<b>Minimum contact loads</b>	$V_i$ mA		12; 100			
<b>Incandescent lamp ratings</b>	A		5	8		
<b>Fluorescent lamps</b>		at 7 $\mu$ F uncorrected	VA VA	-- 1400	60	
<b>Safety</b>						
<b>Different phases</b>		actuator/contact permissible contact/contact		• --	• •	• •
• 2-channel device						
<b>Electrical isolation</b>		creepage and clearances				
• 1-channel device		actuator/contact	mm	4/3	8/6	8/6
• 2-channel device		actuator/contact	mm	4/3	4/3	4/3
		contact/contact	mm	--	4/3	4/3
<b>Rated impulse withstand voltage</b> $U_{imp}$			kV	4		
• EMC: burst acc. to IEC 61000-4-4			kV	> 4.4		
• EMC: surge acc. to IEC 61000-4-5			kV	> 2.0		
• Electrostatic discharge acc. to IEC 61000-4-2			kV	> 8.0		
<b>Power reserve storage</b>				> 100 h	10 a	
• Minimum loading time				48 h	--	
• Battery type				NIMH cell	Li primary cell	
• Service life		at 20 °C at 40 °C	a a	10 5	6 5	
<b>Program storage</b>		non-volatile		--	•	
<b>Overvoltage category</b>		acc. to EN 61010-1		III		
<b>Function</b>						
<b>Minimum switching sequences</b>			min	1		
<b>Make and break cycles</b>			min	1		
<b>Clock error per days</b>		typical	s/day	$\pm 2.5$	$\pm 0.86$	$\pm 0.2$
<b>Control inputs</b>						
• 1-channel device		S terminal		--		•
<b>Memory spaces</b>		programs <sup>2)</sup>		8	56 (2 x 28)	56 (2 x 28)
• 1-channel device		pulse (alternatively) pulse cycle		-- --	84 1 s ... 59 min 59 s	28 (2 x 14) --
<b>Connections</b>						
<b>Terminals</b>		screw (Pozidrive)		PZ1		
<b>Conductor cross-sections of main current paths</b>						
• Rigid, max.			mm <sup>2</sup>	4		
• Rigid, min.			mm <sup>2</sup>	1.5		
• Flexible with sleeve			mm <sup>2</sup>	2.5		
• Flexible without sleeve			mm <sup>2</sup>	4		
<b>Environmental conditions</b>						
<b>Permissible ambient temperature</b>			°C	-10 ... +55	-20 ... +55	
<b>Storage temperature</b>			°C	-20 ... +60		
<b>Resistance to climate</b>		acc. to EN 60068-1		EN 60730-1		
<b>Degree of protection</b>		acc. to EN 60529		IP20		
<b>Safety class</b>		acc. to EN 60730-1		II		

1) For 24-V devices (7LF4 4212 and 4222): tolerance -10/+10 %; frequency range 0 ... 60 Hz.

2) A program consists of an ON time, an OFF time and assigned ON and OFF days or day blocks.

# Timers Time Switches

## 7LF4 4 digital time switches



NEW

### Selection and ordering data

Contact	$U_e$	$I_e$	$U_c$	MW	Order No.	Weight 1 item approx. kg	PS*/ P. unit Unit(s)
	V AC	A	V AC				
<b>Mini digital time switches</b>							
<ul style="list-style-type: none"> <li>• Week program</li> </ul>							
<b>Mini digital time switches, 1 channel</b>							
1 CO contact	250	16	230	1	<b>7LF4 401-0</b>	0.185	1
<b>Top digital time switches</b>							
<ul style="list-style-type: none"> <li>• Week program</li> <li>• With text-assisted programming concept                             <ul style="list-style-type: none"> <li>- Languages: German, English, French, Italian, Spanish</li> </ul> </li> </ul>							
<b>Top digital time switches, 1 channel</b>							
• 66 programs							
1 CO contact	250	16	230	2	<b>7LF4 411-0</b>	0.230	1
1 CO contact	250	16	120	2	<b>7LF4 411-1</b>	0.230	1
<b>Top digital time switches, 2 channels</b>							
• 66 programs (28 per channel)							
2 CO contacts	250	16	230	2	<b>7LF4 412-0</b>	0.230	1
2 CO contacts	250	16	120	2	<b>7LF4 412-1</b>	0.230	1
<b>Profi digital time switches</b>							
<ul style="list-style-type: none"> <li>• Week program</li> <li>• With text-assisted programming concept                             <ul style="list-style-type: none"> <li>- Languages: German, English, French, Italian, Spanish</li> </ul> </li> <li>• Simple creation of programs using a PC, the software BETASoft and data key</li> <li>• Vacation program</li> <li>• Random program</li> <li>• Operating hours meter, counting range: 65535 h</li> </ul>							
<b>Profi digital time switches, 1 channel</b>							
• 66 programs							
• Pulse function, 84 start times							
1 CO contacts	250	16	230	2	<b>7LF4 421-0</b>	0.235	1
1 CO contacts	250	16	120	2	<b>7LF4 421-1</b>	0.235	1
1 CO contacts	250	16	24	2	<b>7LF4 421-2</b>	0.235	1
<b>Profi digital time switches, 2 channels</b>							
• 66 programs (28 per channel)							
2 CO contacts	250	16	230	2	<b>7LF4 422-0</b>	0.270	1
2 CO contacts	250	16	120	2	<b>7LF4 422-1</b>	0.270	1
2 CO contacts	250	16	24	2	<b>7LF4 422-2</b>	0.270	1
<b>Astro digital time switches</b>							
<ul style="list-style-type: none"> <li>• Week program</li> <li>• Astro function</li> <li>• With text-assisted programming concept                             <ul style="list-style-type: none"> <li>- Languages: German, English, French, Italian, Dutch, Spanish</li> </ul> </li> <li>• Simple creation of programs using a PC, the software BETASoft and data key</li> <li>• Vacation program</li> <li>• Th-Test</li> <li>• Input disable over PIN code</li> <li>• Operating hours meter, counting range: 65535 h</li> </ul>							
<b>Astro digital time switches, 1 channel</b>							
• 28 programs							
• With control input, delay time 0 min ... 23 h 59 min							
1 CO contacts	250	16	230	2	<b>7LF4 431-0</b>	0.235	1
<b>Astro digital time switches, 2 channels</b>							
• 28 programs (14 per channel)							
2 CO contacts	250	16	230	2	<b>7LF4 432-0</b>	0.270	1

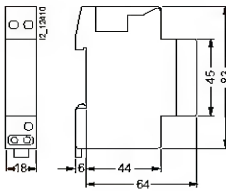


### Selection and ordering data

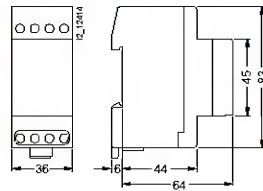
Version	Order No.	Weight 1 item approx kg	PSY P. unit Unit(s)
 <p><b>USB adapter and software</b> for digital time switches, Profi and Astro</p> <ul style="list-style-type: none"> <li>• For the reading and writing of data keys at the PC</li> <li>• Incl. programming software BETAsoft</li> <li>• Incl. a data key, Order No. 7LF4 940-1</li> <li>• Can be connected over USB interface</li> <li>• System requirements                             <ul style="list-style-type: none"> <li>- Windows 2000, Windows ME, Windows XP, or Windows 98 Second Edition</li> <li>- USB connection</li> <li>- 40 MB free disk space</li> </ul> </li> </ul>	<b>7LF4 940-0</b>	0.125	1
 <p><b>Data key</b> for digital time switches, Profi and Astro</p> <ul style="list-style-type: none"> <li>• Programming at the PC (7LF4 940-0 USB adapter and software required)</li> <li>• Read-in of programs to the time switch</li> <li>• Writing programs from the time switch</li> <li>• Transfer of programs                             <ul style="list-style-type: none"> <li>- from PC to time switch and vice versa</li> <li>- from time switch to time switch</li> </ul> </li> </ul>	<b>7LF4 940-1</b>	0.300	1

### Dimensional drawings

7LF4 401



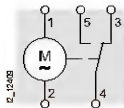
7LF4 41  
7LF4 42  
7LF4 43



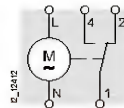
8

### Schematics

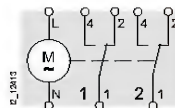
7LF4 401



7LF4 411  
7LF4 421  
7LF4 431



7LF4 412  
7LF4 422  
7LF4 432



# Timers Time Switches

## 7LF5 3 mechanical time switches

### Overview

	Synchronous time switches without power reserve					Quartz-clock time switch with power reserve					
	7LF5 300-1	7LF5 300-5	7LF5 300-6	7LF5 300-7	7LF5 301-0	7LF5 301-1	7LF5 301-4	7LF5 301-5	7LF5 301-6	7LF5 301-7	7LF5 305-0
<b>Display</b>	index disk					index disk					
<b>Switching channels</b>	1					1					
<b>Operating mode</b>	synchronous					quartz					
<b>Automatic daylight savings</b>	--					• • • -- -- --					
<b>Manual switching</b>	•					•					
<b>Modular widths</b>	1	3	3	1	--	1	3	3	3	3	--
<b>Programming</b>											
• Hour program	--	--	--	•	--	--	--	--	--	--	--
• Day program	•	•	--	--	•	•	•	--	•	--	•
• Week program	--	--	•	--	--	--	--	•	--	•	--
<b>Sealable cover</b>	• • • • • • • • • • •										
<b>Manual switching</b>											
• ON/Automatic	•	--	--	•	--	•	--	--	--	--	--
• ON/Automatic/OFF	--	•	•	--	•	--	•	•	•	•	•

### Benefits

#### 7LF5 301-4 and 7LF5 301-5 mechanical time switches

##### Plug & Play technology

Plug & play makes installation of the 7LF5 301-4 und 7LF5 301-5 mechanical time switches fast and simple: unpack, set switching times, connect - done!

Time is money – and with our new Plug & Play mechanical time switches, you automatically save both:

- Time set during commissioning
- Automatic daylight savings
- Time reset after power failure

These tasks can now be left entirely to the 7LF5 301-4 und 7LF5 301-5 mechanical time switches and their precision quartz clock mechanism.

##### Time set automatically during commissioning

The mechanical time switch automatically sets the correct day and time in fast mode during commissioning. It is no longer necessary to set the pointer.

##### Automatic daylight savings

The automatic daylight savings function is just as easy and convenient as commissioning. Thanks to Plug & Play, the 7LF5 301-4 und 7LF5 301-5 mechanical time switches automatically set themselves to the correct time, whereby the programmed switching operations can be processed that much more quickly in fast mode. The changeover data for Central Europe are stored in the internal quartz clock mechanism. An LED indicates the current state.

##### Automatic time reset after faults

A further advantage of Plug & Play technology: as soon as the system voltage is reapplied after a power failure, the correct time is automatically reset with quartz precision. And what do we mean by precision? The internal precision clockwork has an accuracy of  $\pm 1$  min per year.

And as well as the renowned precision and automatic reliability of digital clocks, the 7LF5 301-4 and 7LF5 301-5 mechanical time switches also offer all the convenience of analog technology. The setting and control of switching times and cycles is just as simple and intuitive as for analog time switches.

### Application

Mechanical time switches can be used for all applications of digital time switches, provided that the minimum switching intervals are sufficiently long. The switching control pins can be set without the use of tools.

### Function

#### Synchronous time switches without power reserve

The control gear is driven by a synchronous motor, hence it depends on the power supply frequency. If this frequency is unstable, the devices cannot be used. In the event of a power failure, the time switch will stop.

#### Quartz-clock time switch with power reserve

A quartz electronic circuit supplies the drive with a stabilized frequency so that the time switch is not dependent on the power supply frequency. In the event of a power failure, the time switch continues to operate.

#### 7LF5 301-4 and 7LF5 301-5 mechanical time switches

##### Automatic daylight savings

The time switches are programmed with the switchover data for Central Europe. Switchover is at 02:00 CET or 03:00 CET respectively. The clock sets itself to the correct time in fast mode.

##### Automatic setting during commissioning

When the supply voltage is applied and after a power failure, the clock automatically sets itself to the correct time. As with the daylight saving function, the time is set in fast mode.

##### Manual setting

The pointer should not be manually adjusted if no voltage is applied or in fast mode, as this could subsequently cause the incorrect time to be displayed. It is not possible to externally influence the internal clock mechanism. If the pointer is in the wrong position, this can be corrected manually when the voltage is applied and the automatic setting is finished (LED on or LED flashing).

##### Switching program during fast mode

The set switching programs can be executed considerably faster in fast mode.

##### LED display

- LED off: there is no supply voltage or, if there is, the clock is in automatic setting mode. No current time.
- LED on: automatic setting has ended and the daylight savings function is activated. A time error can be corrected manually.
- LED flashes: automatic daylight saving is irreversibly deactivated, e.g. due to overvoltage damage to the internal electronics. The clock continues operation with quartz-precision without power reserve. The clock can only be manually set or corrected.

### Technical specifications

Data acc. to EN 60730-1, EN 60730-2-7	Synchronous time switches without power reserve					Quartz-clock time switches with power reserve							
	7LF5 300-1	7LF5 300-5	7LF5 300-6	7LF5 300-7	7LF5 301-0	7LF5 301-1	7LF5 301-4	7LF5 301-5	7LF5 301-6	7LF5 301-7	7LF5 305-0		
<b>Operating mode</b>	synchronous					quartz							
<b>Time program</b>	day	day	week	hour	day	day	day	week	day	week	day		
<b>Supply</b>													
<b>Rated control supply voltage <math>U_c</math></b>	V AC	230					230						
<b>Operating range</b>	% $U_c$	-15/+10					-15/+10						
<b>Rated frequency</b>	Hz	50					50						
<b>Frequency range</b>	Hz	50					50/60						
<b>Rated power dissipation <math>P_V</math></b>	W	1				1	0.2	0.2	1	1	1		
<b>Channels/contacts</b>													
<b>Switching channels</b>		1					1						
<b>Rated operational voltage <math>U_e</math></b>	V AC	250					250						
<b>Rated operational current <math>I_e</math></b>	at p.f. = 1	A	16					16					
	at p.f. = 0.6	A	4					4					
<b>Contact</b>		NO contacts	CO contacts	CO contacts	NO contacts	CO contacts	NO contacts	CO contacts					
<ul style="list-style-type: none"> <li>Mechanical operations</li> <li>Electrical operations (at p.f. = 1)</li> </ul>		20 000 000	100 000				20 000 000	100 000					
<b>Minimum contact loads</b>	V; mA	4; 1					4; 1						
<b>Incandescent lamp ratings</b>	A	5					5						
<b>Fluorescent lamps</b>	at 7 $\mu$ A uncorrected	VA	60					60					
		VA	1400					1400					
<b>Safety</b>													
<b>Different phases</b>	actuator/contact permissible	yes					yes						
<b>Electrical isolation</b>	creepage and clearances actuator/contact	mm	8/6					8/6					
<b>Rated impulse withstand voltage <math>U_{imp}</math></b>	actuator/contact	kV	4					4					
• EMC: burst acc. to IEC 61000-4-4		kV	> 4.4					> 4.4					
• EMC: surge acc. to IEC 61000-4-5		kV	> 2.0					> 2.0					
• Electrostatic discharge acc. to IEC 61000-4-2		kV	> 8.0					> 8.0					
<b>Power reserve storage</b>		h	—					100 h	6 a	100 h			
• Minimum loading time		h	—					48	—	48			
• Battery type			—					NiMH	Li primary cell	NiMH			
• Service life	at 20 °C	a	—					6	10	6			
	at 40 °C	a	—					5					
<b>Overvoltage category</b> acc. to EN 61010-1		III					III						
<b>Function</b>													
<b>Minimum switching intervals</b>	min	30	30	240	5	30	30	30	240	30	240	30	
<b>Make and break cycles</b>	min	15	15	120	37.5 s	10	15	15	120	15	120	10	
<b>Switching accuracy</b>	$\pm$ min	5	5	30	0.2	5	5	5	30	5	30	5	
<b>Clock errors</b> per day	s	system-synchronized					$\pm$ 2.5	$\pm$ 60/year			$\pm$ 2.5	$\pm$ 2.5	
<b>Connections</b>													
<b>Terminals</b>	screw (Pozidrive)	PZ 1					PZ 1						
<b>Conductor</b> cross-sections main current paths													
• Rigid, max.	mm <sup>2</sup>	4					4						
• Rigid, min.	mm <sup>2</sup>	1					1						
• Flexible with sleeve	mm <sup>2</sup>	2.5					2.5						
• Flexible without sleeve	mm <sup>2</sup>	4					4						
<b>Environmental conditions</b>													
<b>Permissible ambient temperature</b>	°C	-10 ... +55					-10 ... +55						
<b>Storage temperature</b>	°C	-10 ... +60					-10 ... +60						
<b>Resistance to climate</b>	acc. to EN 60068-1	EN 60 730-1					EN 60 730-1						
<b>Degree of protection</b>	acc. to EN 60529	IP20					IP20						
<b>Safety class</b>	acc. to EN 60730-1	II					II						

# Timers Time Switches

## 7LF5 3 mechanical time switches

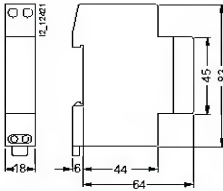
NEW

### Selection and ordering data

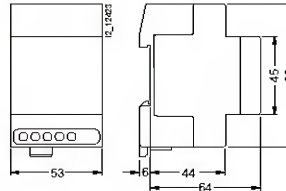
	Contact	$U_e$ V AC	$I_e$ A	$U_c$ V AC	MW	Order No.	Weight 1 item approx. kg	PS*/nP unit Unit(s)	
<b>Synchronous time switches with 11.5° contact position</b>									
	<b>Synchronous time switches</b>								
	• Day disk								
	1 NO contact	250	16	230	1	7LF5 300-1	0.850	1	
	• Hour disk								
	1 NO contact	250	16	230	1	7LF5 300-7	0.850	1	
	<b>Synchronous time switches</b>								
	• Day disk								
	1 CO contact	250	16	230	3	7LF5 300-5	0.155	1	
	• Week disk								
	1 CO contact	250	16	230	3	7LF5 300-6	0.155	1	
	<b>Synchronous time switches for wall mounting</b>								
	• Day disk								
	1 CO contact	250	16	230	—	7LF5 301-0	0.220	1	
	<b>Quartz-clock time switches with 11.5° contact position</b>								
		<b>Quartz-clock time switches</b>							
• Day disk									
1 NO contact		250	16	230	1	7LF5 301-1	0.900	1	
	<b>Quartz-clock time switches</b>								
	Time set automatically during commissioning automatic daylight savings with quartz clock mechanism clock accuracy $\pm 0.2$ s/day power reserve (time buffer in the event of a power failure) 5 years								
	• Day disk								
	1 CO contact	250	16	230	3	7LF5 301-4	0.165	1	
	• Week disk								
	1 CO contact	250	16	230	3	7LF5 301-5	0.165	1	
	<b>Quartz-clock time switches</b>								
	clock accuracy $\pm 2.5$ s/day								
	• Day disk								
	1 CO contact	250	16	230	3	7LF5 301-6	0.165	1	
	• Week disk								
	1 CO contact	250	16	230	3	7LF5 301-7	0.165	1	
	<b>Quartz-clock time switches for wall mounting</b>								
	• Day disk								
	1 CO contact	250	16	230	—	7LF5 305-0	0.230	1	

### Dimensional drawings

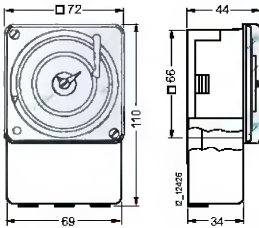
7LF5 300-1  
7LF5 300-7  
7LF5 301-1



7LF5 300-5  
7LF5 300-6  
7LF5 301-4  
7LF5 301-5  
7LF5 301-6  
7LF5 301-7

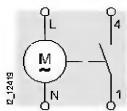


7LF5 301-0  
7LF5 305-0

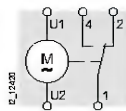


### Schematics

7LF5 300-1  
7LF5 300-7  
7LF5 301-1



7LF5 300-5  
7LF5 300-6  
7LF5 301-0  
7LF5 301-4  
7LF5 301-5  
7LF5 301-6  
7LF5 301-7  
7LF5 305-0



# Power Supply Units

## 5TE6 8 socket outlets

### Overview

Socket outlets for rail mounting according to DIN 50022 have since become the standard in modern switchgear/distribution boards.

The 5TE6 8 socket outlets can be used without covers for 55 mm mounting depth, and with covers for 70 mm mounting depth. The cover can be retrofitted on all devices. The cover can be opened at an angle of 180°.

By pulling on the hinges, the cover stays open, which facilitates plugging in.

To make mounting easier, the touch-protected terminals L, N and PE are located on the side of the socket outlet.

The 5TE6 8 socket outlets are available in the following country versions (in compliance with the pertinent standards):

- For Germany (VDE)
- For Belgium/France (CEE 7)
- For Italy (DEI) and
- For USA (UL)

### Application

- Power supply for maintenance purposes (mounting tools, service devices), when required in distribution boards in buildings and in switchgear. In order to make sure that it is possible to work on the distribution board in the event of a power failure, we recommend that the socket outlet is fed from the incoming supply using a short-circuit current proof cable installation and a separate fuse.
- For connection of plug-in communication devices in communication distribution boards or in private plants for the occasional use of devices with heavy starting and separate fusing.

### Technical specifications

Data acc. to DIN VDE 0620, CEE 7 standard sheet V, CEI 23-50 or UL 498		5TE6 800	5TE6 801	5TE6 802	5TE6 803	5TE6 804
<b>Manufacture acc. to</b>		•	•	—	—	—
• DIN VDE 0620-1		—	—	•	—	—
• CEI 23-50		—	—	—	•	—
• CEE 7 standard sheet V		—	—	—	—	•
• UL 498		—	—	—	—	•
<b>Rated operational voltage <math>U_e</math></b>	V AC	250				125
<b>Rated voltage <math>U_B</math></b>	A AC	16				15
<b>Terminals</b>	± screw (Pozidriv)	1				
<b>Conductor cross-sections</b>	rigid flexible with sleeve	max. mm <sup>2</sup> min. mm <sup>2</sup>	1.5 ... 6 0.5			
<b>Permissible ambient temperature</b>		°C	-10 ... +50			
<b>Degree of protection</b>	acc. to EN 60529	IP20				
<b>Mounting position</b>		without cover: any, with cover: vertical only				

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### Selection and ordering data

	$U_e$ V AC	$I_e$ A	Conductor cross-section mm <sup>2</sup>	MW	Order No.	Weight 1 unit approx. kg	PS* P unit Unit(s)	
	<b>VDE Socket outlets acc. to DIN VDE 0620-1</b>							
• Without cover	250	16	6	2.5	<b>5TE6 800</b>	0.102	1	
	<b>VDE Socket outlets acc. to DIN VDE 0620-1</b>							
• With hinged lid	250	16	6	2.5	<b>5TE6 801</b>	0.109	1	
	<b>Socket outlets acc. to CEI 23-50</b>							
• With hinged lid	250	16	6	2.5	<b>5TE6 802</b>	0.111	1	
	<b>Socket outlets acc. to CEE 7 Standard sheet V</b>							
• Without cover, with grounding pin	250	16	6	2.5	<b>5TE6 803</b>	0.104	1	
	<b>Socket outlets UL 498</b>							
• Without cover	125	15	6	2.5	<b>5TE6 804</b>	0.099	1	
	<b>Hinged lids for 5TE6 80 socket outlets.</b>				2.5	<b>5TE9 120</b>	0.018	1

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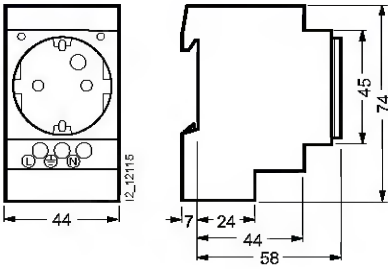
\* You can order this quantity or a multiple thereof.

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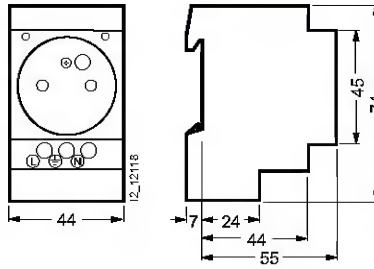
## 5TE6 8 socket outlets

### Dimensional drawings

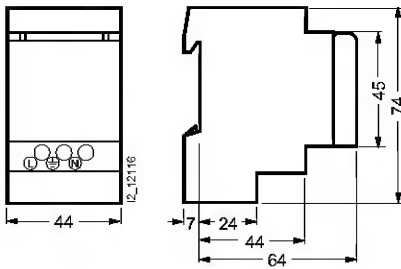
5TE6 800



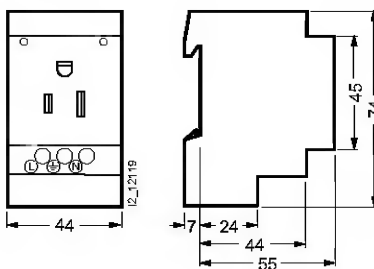
5TE6 803



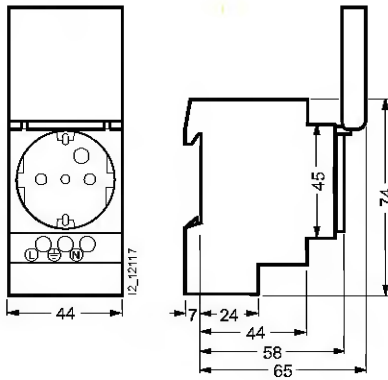
5TE6 801



5TE6 804



5TE6 802



5TE9 120

