



Well-monitored – well-protected

Monitoring devices perform numerous functions to protect people and machinery: At dusk, they switch on automatically, control the temperature or signal the location where a fuse has tripped.

They also ensure reliable switchover to emergency power supply, monitor the emergency lighting, ensure overload-free operation of motors and neutral monitoring for breakage and overvoltages.

Monitoring devices can do even more, e.g., underload monitoring of asynchronous motors in no-load operation.

Monitoring Devices



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A multitude of additional information ...

Information + ordering

All the important things at a glance

For information about monitoring devices, please visit our website www.siemens.com/lowvoltage

Your product in detail

The relevant tender specifications can be found at www.siemens.com/lowvoltage/tenderspecifications

Use our conversion tool for quick and easy conversion to Siemens products www.siemens.com/conversion-tool

Everything you need for your order

Refer to the Industry Mall for an overview of your products

- Monitoring devices sie.ag/2m3no4A

Direct forwarding to the individual products in the Industry Mall by clicking on the article number in the catalog or entering this web address incl. article number www.siemens.com/product?Article No.



The fast track to the experts

Contact persons in your region

We offer a comprehensive portfolio of services. You can find your local contacts at www.siemens.com/lowvoltage/components/contact

You will find further information on services at www.siemens.com/service-catalog

Competent expert advice on technical questions with a wide range of demand-optimized services for all our products and systems.

Assistance with technical queries is provided at www.siemens.com/support-request

... can be found in our online services

Commissioning + operation

Your product in detail

The Siemens Industry Online Support (SIOS) provides detailed technical information

www.siemens.com/lowvoltage/product-support

- Operating instructions
- Characteristic curves
- Certificates

Comprehensive mobile support via the Siemens Industry Online Support app available for download from the [App Store](#) and [Play Store](#)

You will find further information at

www.siemens.com/support-app

Provision of 3D data (step and u3d data formats)

- Siemens Industry Mall
www.siemens.com/lowvoltage/mall
- Image database
www.siemens.com/lowvoltage/picturedb

Engineering data for CAD or CAE systems are available in the CAX Download Manager at www.siemens.com/cax

Manuals

Manuals are available for downloading in Siemens Industry Online Support (SIOS) at

www.siemens.com/lowvoltage/manuals

- Configuration Manual
– Monitoring devices ([45316099](#))

Technical overview – Monitoring devices



The fast way to get you to our online services

This page provides you with comprehensive information and links on monitoring devices

www.siemens.com/lowvoltage/product-support ([109769086](#))

System overview

Monitoring devices for electrical values



5SV8 residual current monitor



5SV8 modular residual current device



5TT3 and 5TT6 relay



5TT3 monitors

Accessories



Summation current transformer



Holders for DIN rails



Magnetic field centering sleeves

Monitoring devices for plants and equipment



5TT5 EMERGENCY STOP modules



5TT3 relay



7LQ2 twilight switches

Accessories






Immersion electrodes

Note:

You will find a detailed range of accessories with the basic units.

5SV8 residual current monitors

Type A and type AC

Mounting width	RCM analog		RCM digital	
	2 MW	3 MW	3 MW	3 MW
				
Response time Δt	1 channel		4 channels	
	0.5 s	5SV8000-6KK	—	—
10 s, INS, SEL ¹⁾	—	5SV8001-6KK	5SV8200-6KK	

Further technical specifications

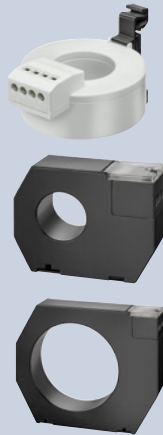
Further technical specifications		5SV8000-6KK	5SV8001-6KK	5SV8200-6KK
Standards				
Standards		EN 62020, IEC 62020		
Approvals		–	UL	
Supply				
Rated operational voltage U_e		230 V AC		
Frequency		50/60 Hz		
Rated residual current $I_{\Delta n}$	Type A	0.03 ... 3 A		5 ... 30 A
	Type AC	>3 A		
Response time Δt		0.02 ... 5 s	0.02 ... 10 s, INS, SEL ¹⁾	
Relay contacts				
Relay contacts		1× alarm	1× pre-alarm, 1× alarm	1× pre-alarm, 4× alarm
Rated voltage		230 V AC		
Rated current		6 A		
Summation current transformer				
Diameter		20 ... 210 mm		
Equipment				
Maximum cable length RCM/CT		10 m (shielded cable)		
Conductor cross-section		1.5 mm²		
Test/reset		Yes/Yes		
External tripping operation/external reset		–/Yes	Yes/Yes	
Safety				
Degree of protection	Contacts	IP20		
	Front	IP41		
Ambient conditions				
Operating temperature		–10 ... +50 °C		

¹⁾ INS: Instantaneous,
SEL: Selective

Accessories

Summation current transformers

- Including holder for DIN rail or wall mounting
- Standard @



Mounting options	Lowest measurable residual current $I_{\Delta n \min}$	Rated current I_n	Maximum current ²⁾ I_{\max}	Internal diameter	Article No.
DIN rail	30 mA	≤40 A	240 A	20 mm	5SV8700-0KK
		≤63 A	380 A	30 mm	5SV8701-0KK
Wall mounting, DIN rail ¹⁾	30 mA	≤80 A	480 A	35 mm	5SV8702-0KK
		≤200 A	1200 A	70 mm	5SV8703-0KK
Wall mounting	100 mA	≤250 A	1500 A	105 mm	5SV8704-0KK
	300 mA	≤500 A	3000 A	140 mm	5SV8705-0KK
		≤600 A	3600 A	210 mm	5SV8706-0KK

Holders for DIN rails



- Suitable for summation current transformers with internal diameter of 20 mm, 30 mm, 35 mm, 70 mm
- Cannot be used together with magnetic field centering sleeves

Article No.
5SV8900-1KK

Magnetic field centering sleeves



Internal diameter	Article No.
35 mm	5SV8902-1KK
70 mm	5SV8903-1KK
105 mm	5SV8904-1KK
140 mm	5SV8905-1KK
210 mm	5SV8906-1KK

¹⁾ The holder for DIN rails is additionally required for mounting onto the DIN rail.

²⁾ Short-time starting current, up to 2 s

5SV8 modular residual current device

Type A

Mounting width

MRCD

3 MW



Rated operational voltage U_e	Rated residual current $I_{\Delta n}$ Type A	Response time Δt	
230 V AC	0.03 ... 3 A	0.02 ... 10 s, INS, SEL ¹⁾	5SV8101-6KK

Further technical specifications

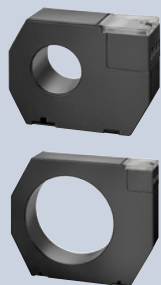
Standards		
Standards		EN 60947-2 (Annex M), IEC 60947-2 (Annex M)
Approvals		–
Supply		
Rated operational voltage U_e		230 V AC from a 1-phase auxiliary voltage source (also externally)
Frequency		50/60 Hz
Rated residual current $I_{\Delta n}$	Type A	0.03 ... 3 A (default setting: 30 mA)
	Type AC	–
Response time Δt	$I_{\Delta n} = 30 \text{ mA}$	INS instantaneous
	$I_{\Delta n} > 30 \text{ mA}$	INS – SEL – 0.06 ... 10 s ¹⁾ (default setting: INS)
Relay contacts		
Relay contacts		1× alarm, 1x tripping operation
Rated voltage		230 V AC
Rated current		6 A
Summation current transformer		
Diameter		35 ... 210 mm
Equipment		
Maximum cable length RCM/CT		10 m (shielded cable)
Conductor cross-section		0.125 ... 2.08 mm ²
Test/reset		Yes/Yes
External tripping operation/external reset		Yes/Yes
Safety		
Degree of protection	Contacts	IP20
	Front	IP41
Ambient conditions		
Operating temperature		–10 ... +50 °C

¹⁾ INS: Instantaneous,
SEL: Selective

Accessories

Summation current transformers

- Including holder for wall mounting
- Standard ☉



Mounting options	Lowest measurable residual current $I_{\Delta n \min}$	Rated current I_n	Maximum current ²⁾ I_{\max}	Internal diameter	Article No.
Wall mounting, DIN rail ¹⁾	30 mA	≤80 A	480 A	35 mm	5SV8702-0KK
	30 mA	≤200 A	1200 A	70 mm	5SV8703-0KK
Wall mounting	100 mA	≤250 A	1500 A	105 mm	5SV8704-0KK
	300 mA	≤500 A	3000 A	140 mm	5SV8705-0KK
		≤600 A	3600 A	210 mm	5SV8706-0KK

Holders for DIN rails



- Suitable for summation current transformers with internal diameter of 20 mm, 30 mm, 35 mm, 70 mm
- Cannot be used together with magnetic field centering sleeves

Article No.
5SV8900-1KK

Magnetic field centering sleeves

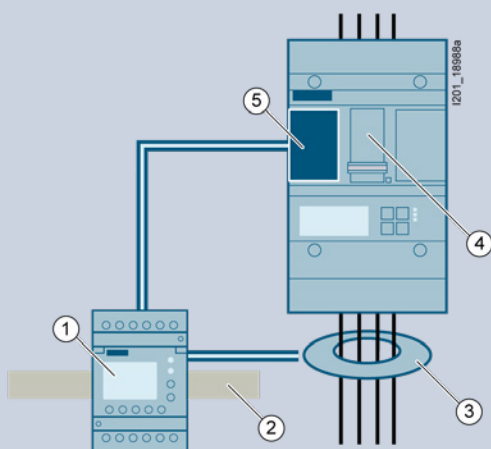


Internal diameter	Article No.
35 mm	5SV8902-1KK
70 mm	5SV8903-1KK
105 mm	5SV8904-1KK
140 mm	5SV8905-1KK
210 mm	5SV8906-1KK

¹⁾ The holder for DIN rails is additionally required for mounting onto the DIN rail.

²⁾ Short-time starting current, up to 2 s

Tested combination options



5SV8101-6KK/- (tested combinations)

① Modular residual current device

5SV8101-6KK

② DIN rail

EN 60715 – TH35 – 7.5 35 – 15

③ Summation current transformers

Magnetic field centering sleeves

Ø 35 mm	5SV8702-0KK	5SV8902-1KK
Ø 70 mm	5SV8703-0KK	5SV8903-1KK
Ø 105 mm	5SV8704-0KK	5SV8904-1KK
Ø 140 mm	5SV8705-0KK	5SV8905-1KK
Ø 210 mm	5SV8706-0KK	5SV8906-1KK

④ Molded case circuit breakers

⑤ Trip element

3VL17...	3VL9400-1UP00
3VL27...	
3VL37...	
3VL47...	
3VA10...	3VA9908-0BB11
3VA11...	3VA9908-0BB20
3VA20...	3VA9908-0BB24
3VA21...	3VA9908-0BB25
3VA22...	
3VA12...	3VA9908-0BB11
3VA23...	3VA9908-0BB20
3VA24...	3VA9908-0BB24

5SV8 modular residual current device

Type B

Mounting width **MRCD digital**
2 MW



Rated operational voltage U_e	Rated residual current $I_{\Delta n}$ Type B	Response time Δt	
230 V AC	0.03 ... 1 A	0 ... 10 s	5SV8101-4KK
24 V DC	0.03 ... 1 A	0 ... 10 s	5SV8111-4KK

Further technical specifications


5SV8101-4KK

5SV8111-4KK

Standards		
Standards		EN 60947-2 (Annex M), IEC 60947-2 (Annex M)
Supply		
Supply voltage U_s		230 V AC (70 ... 300 V AC)24 V DC (9.6 ... 94 V DC)
Frequency		50/60 Hz–
Power consumption		<6.5 VA
Relay contacts		
Relay contacts		1× alarm, 1× tripping operation
Rated voltage		250 V AC
Rated current		5 A
External summation current transformer		
Internal diameter		35 ... 210 mm (5SV8701-2KK, 5SV8701-2KP, 5SV8702-2KK, 5SV8702-2KP, 5SV8703-2KK, 5SV8704-2KK)
Rated voltage	(Summation current transformers)	690 V
Response characteristic	Acc. to IEC 60947-2 (M)	Type B
Rated frequency		0 ... 2 kHz
Response residual current	$I_{\Delta n1}$ (AL1 alarm)	50 ... 100% of $I_{\Delta n2}$ (factory setting: 50%)
	$I_{\Delta n2}$ (TP2 tripping)	30 mA ... 1 A (factory setting: 30 mA)
Response delay	t_{on1} (alarm)	0 ... 10 s (factory setting: 1 s)
	t_{on2} (tripping)	0 ... 10 s (factory setting: 0 s)
Equipment		
Maximum cable length MRCD/converter		10 m (6 × 0.75 mm²)
Password		Off/0 ... 999 (factory setting: 0)
Safety		
Degree of protection	Components (IEC 60529)	IP30
	Terminals (IEC 60529)	IP20
EMC		IEC 60947-2 (M)
Overvoltage category		III
Pollution degree		3
Mechanical data		
Width		36 mm (2 MW)
Depth		64 mm
Height		85 mm
Weight		150 g
Mounting		DIN rail
Enclosure material		Polycarbonate
Electrical connection		Screw terminals
Conductor cross-section	Rigid	0.2 ... 4 mm²
	Flexible, with end sleeve	0.2 ... 2.5 mm² (AWG 24 ... 12)
Stripped length		8 ... 9 mm
Tightening torque		0.5 ... 0.6 Nm
Ambient conditions		
Operating temperature		–25 ... + 55 °C

Accessories

Summation current transformers

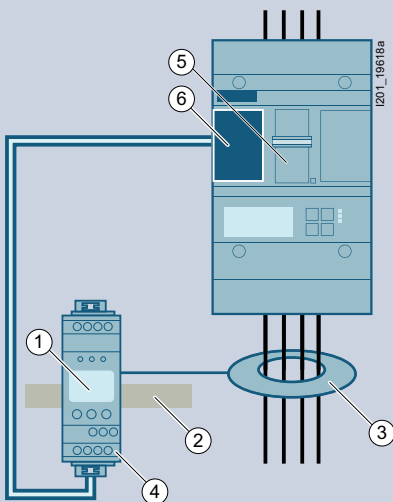
	Lowest measurable residual current $I_{\Delta n \text{ min}}$	Rated current I_n	Maximum current ¹⁾ I_{max}	Internal diameter	Version	Article No.
	10 mA	≤80 A	500 A	35 mm	Standard	5SV8701-2KK
					With shield	5SV8701-2KP
		≤160 A	1000 A	60 mm	Standard	5SV8702-2KK
					With shield	5SV8702-2KP
	100 mA	≤330 A	2000 A	120 mm	Standard	5SV8703-2KK
	300 mA	≤630 A	3800 A	210 mm	Standard	5SV8704-2KK

Holders for DIN rails

	Suitable for summation current transformers	Article No.
	5SV8701-2KK, 5SV8701-2KP	5SV8900-2KK
	5SV8702-2KK, 5SV8702-2KP	5SV8900-3KK

¹⁾ Short-time starting current, up to 2 s

Tested combination options



5SV8101-4KK/5SV8111-4KK (tested combinations)

① Modular residual current device

5SV8101-4KK/5SV8111-4KK

② DIN rail

EN 60715 – TH35 – 7,5 35 – 15

③ Summation current transformers

Ø 35 mm 5SV8701-2KK/5SV8701-2KP

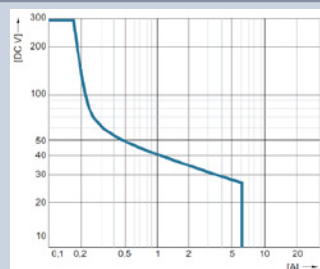
Ø 60 mm 5SV8702-2KK/5SV8702-2KP

Ø 120 mm 5SV8703-2KK

Ø 210 mm 5SV8704-2KK

④ Relay contacts

DC:



AC: max. 230 V, 5A

⑤ Molded case circuit breakers

3VA1...

3VA20...

3VA21...

3VA22...

3VA23...

3VA24...

⑥ Trip element

3VA9908-0BB11

3VA9908-0BB24




3VA9908-0BB25

3VA9908-0BB11

3VA9908-0BB25

5TT3 undervoltage relays

Without response delay

	For the monitoring of		
	1, 2 or 3 phases against N	3 phases against N	
Contacts	1 CO	2 CO	2 CO
Mounting width	1 MW	2 MW	2 MW
			

Rated operational voltage U_e	Rated operational current I_e	Switching thresholds	Hysteresis			
Not adjustable						
230 V AC	4 A	$0.7 \text{ and } 0.9 \times U_c$	–	5TT3400	5TT3402	5TT3404
		$0.85 \text{ and } 0.95 \times U_c$	–	5TT3401	–	5TT3405
Adjustable						
230 V AC	4 A	$0.7 \dots 0.95 \times U_c$	5%	–	–	5TT3406
		$0.9 \dots 0.95 \times U_c$	–	–	5TT3403	–

Further technical specifications

Standards			
Standards		IEC 60255, DIN VDE 0435-110, DIN VDE 0435-303	
Supply			
Rated control circuit voltage U_c		230/400 V AC	
Primary operating range (overload capability)		$1.1 \times U_c$	
Rated frequency		50/60 Hz	
Contacts			
μ contact	AC-11	4 A	
Response values	ON-switching	$0.9/0.95 \times U_c$	4% hysteresis
	OFF-switching	$0.7/0.85 \times U_c$	$0.7 \dots 0.95 \times U_c$
Minimum contact load		10 V/100 mA	
Safety			
Rated insulation voltage U_i	Between coil/contact	4 kV	
Electrical isolation, creepage distances and clearances	Actuator/contact	3 mm	5.5 mm
Rated impulse withstand voltage U_{imp}	Actuator/contact	>2.5 kV	>4 kV
Functions			
Phase asymmetry	Setting accuracy	–	Approx. 5 ... 10%
	Repeat accuracy	–	1
Phase failure detection	At L1 or L2 or L3	100 ms	
Functions	Monitoring of 1/2 phases against N	Yes	–
	Monitoring of 3 phases against N	Yes	
	Asymmetry (failure) detection	–	Yes
	Reverse (failure) detection	–	Yes
	Phase failure detection	Yes	
	N-conductor monitoring	–	Yes
Connection			
Terminals	± Screw (Pozidriv)	PZ 1	
Conductor cross-sections	Rigid	Max. $2 \times 2.5 \text{ mm}^2$	
	Flexible, with end sleeve	Min. $1 \times 0.5 \text{ mm}^2$	
Ambient conditions			
Permissible ambient temperature		–20 ... +60 °C	
Resistance to climate	Acc. to EN 60068-1	20/60/4	

5TT3 undervoltage relays

With response delay

For the monitoring of 1, 2 or 3 phases against N	
Contacts	1 CO
Mounting width	2 CO
	1 MW
	1 MW



Rated operational voltage U_e	Rated operational current I_e	Switching thresholds	Hysteresis	Standard	With TEST pushbutton
Not adjustable					
230 V AC	4 A	$0.85 \times U_c$	5%	5TT3414	5TT3415

Further technical specifications

		5TT3414	5TT3415
Supply			
Rated control circuit voltage U_c		230/400 V AC	
Primary operating range (overload capability)		$1.15 \times U_c$	
Rated frequency		50/60 Hz	
Contacts			
Contacts	AC-15	1 CO	2 CO
Response values	ON-switching	5% hysteresis	
	OFF-switching	$0.85 \times U_c$	
Response delay		0.5 s	
Return transfer delay		60 s	
Minimum contact load		10 V/100 mA	
Electrical endurance in operating cycles	AC-15 (1 A, 230 V AC)	1×10^5	
Safety			
Rated insulation voltage U_i	Between coil/contact	–	
Rated impulse withstand voltage	Acc. to IEC 60664-1	6 kV	
Pollution degree		2	
Functions			
Phase failure detection	At L1 or L2 or L3	500 ms	
Functions	Monitoring of 1 or 2 phases against N	Yes	
	Monitoring of 3 phases against N	Yes	
	Phase failure detection	Yes	
Connection			
Terminals	– Screw (slot)	3.5 mm	
Conductor cross-sections	Rigid	$1 \times 4 \text{ mm}^2$	
	Flexible, with end sleeve	$1 \times 2.5 \text{ mm}^2$	
Ambient conditions			
Permissible ambient temperature		–25 ... +60 °C	
Resistance to climate	Acc. to EN 60068-1	20/060/04	

5TT3 short-time voltage relay

Without response delay

For the monitoring of
1, 2 or 3 phases against N

Contacts 2 CO
Mounting width 2 MW



Rated operational voltage U_e	Rated operational current I_e	Switching thresholds	
Not adjustable			
230 V AC	4 A	$0.8 \dots 0.85 \times U_c$	5TT3407


Further technical specifications

Standards			
Standards		IEC 60255, DIN VDE 0435-303	
Supply			
Rated control circuit voltage U_c		230/400 V AC	
Primary operating range (overload capability)		$1.1 \times U_c$	
Rated frequency		50/60 Hz	
Rated operational power P_s	AC operation:	230 V and p.f. = 1	2000 VA
		230 V and p.f. = 0.4	1250 VA
	DC operation:	$U_e = 24 \text{ V}$ and $I_e = 6 \text{ A}$	Max. 100 W
		$U_e = 60 \text{ V}$ and $I_e = 1 \text{ A}$	Max. 100 W
		$U_e = 110 \text{ V}$ and $I_e = 0.6 \text{ A}$	Max. 100 W
		$U_e = 220 \text{ V}$ and $I_e = 0.5 \text{ A}$	Max. 100 W
Back-up fuse	Terminals L1/L2/L3	2 A	
Contacts			
μ contact	AC-11	3 A	
Response values	ON-switching	$0.85 \times U_c$	
	OFF-switching	$0.8 \times U_c$	
Automatic reclosing delay (return transfer delay)		0.2 ... 2 s	
Minimum contact load		10 V/100 mA	
Safety			
Rated insulation voltage U_i	Between coil/contact	4 kV	
Electrical isolation, creepage distances and clearances	Actuator/contact	4 mm	
Rated impulse withstand voltage U_{imp}	Actuator/contact	>4 kV	
Functions			
Phase failure detection	At L1 or L2 or L3	≥20 ms	
Phase asymmetry	Setting accuracy	Approx. 5 ... 10%	
	Repeat accuracy	1	
Functions	Monitoring of 1 or 2 phases against N	Yes	
	Monitoring of 3 phases against N	Yes	
	Phase failure detection	Yes	
	N-conductor monitoring	Yes	
Connection			
Terminals	± Screw (Pozidriv)	PZ 1	
Conductor cross-sections	Rigid	Max. 2x 2.5 mm ²	
	Flexible, with end sleeve	Min. 1x 0.5 mm ²	
Ambient conditions			
Permissible ambient temperature		−20 ... +60 °C	
Humidity class	Acc. to IEC 60068-2-30	F	

5TT3 undervoltage and overvoltage relays

With adjustable response delay

	For the monitoring of 3 phases against N
Contacts	2 CO
Mounting width	2 MW








Rated operational voltage U_e	Rated operational current I_e	Switching thresholds	Hysteresis	
Adjustable				
230 V AC	4 A	0.7 and $1.1 \times U_c$ 0.9 and $1.3 \times U_c$	4% 4%	5TT3408

Further technical specifications

Standards			
Standards			IEC 60255, DIN VDE 0435-303
Supply			
Rated control circuit voltage U_c			230/400 V AC
Primary operating range (overload capability)			$1.35 \times U_c$
Rated frequency			50/60 Hz
Back-up fuse	Terminals L1/L2/L3		2 A
Contacts			
μ contact	AC-11		1 A
Response values	Overvoltage:	ON-switching	4% hysteresis
		OFF-switching	$0.9 \dots 1.3 \times U_c$
	Undervoltage:	ON-switching	4% hysteresis
		OFF-switching	$0.7 \dots 1.1 \times U_c$
OFF-delay (response delay)			0.1 ... 20 s
Automatic reclosing delay (return transfer delay)			–
Minimum contact load			10 V/100 mA
Safety			
Rated insulation voltage U_i	Between coil/contact		4 kV
Electrical isolation, creepage distances and clearances	Contact/contact		4 mm
	Actuator/contact		4 mm
Rated impulse withstand voltage U_{imp}	Actuator/contact		>4 kV
Functions			
Phase failure detection	At L1 or L2 or L3		100 ms
Phase asymmetry	Setting accuracy		Approx. 5 ... 10%
	Repeat accuracy		1
Functions	Monitoring of 1 or 2 phases against N		–
	Monitoring of 3 phases against N		Yes
	Asymmetry detection		Yes
	Reverse voltage detection		Yes
	Phase failure detection		Yes
	N-conductor monitoring		Yes
Connection			
Terminals	± Screw (Pozidriv)		PZ 1
Conductor cross-sections	Rigid		Max. 2x 2.5 mm ²
	Flexible, with end sleeve		Min. 1x 0.5 mm ²
Ambient conditions			
Permissible ambient temperature			–20 ... +60 °C
Humidity class	Acc. to IEC 60068-2-30		F

5TT6 current relays

For 1-phase loads up to 230 V AC

				Auxiliary voltage and load voltage				
				Not isolated		Electrically isolated		
Mounting width				1 MW	1 MW	2 MW	2 MW	2 MW
								
Rated operational voltage U_e	Rated operational current I_e	Contacts	Rated control current I_c	Monitoring Undercurrent	Monitoring Overcurrent	Monitoring Undercurrent	Monitoring Overcurrent	Overcurrent/undercurrent
230 V AC	5 A	1 CO	1 ... 10 A	5TT6111	5TT6112	–	–	–
		2 CO	0.1 ... 1 A, 0.5 ... 5 A, 1 ... 10 A, 1.5 ... 15 A	–	–	5TT6113	5TT6114	5TT6115

Further technical specifications

Standards						
Standards					IEC 60255	IEC 60255 DIN VDE 0435-303
Supply						
Rated control current I_c					1 ... 10 A	0.1 ... 1 A, 0.5 ... 5 A, 1 ... 10 A, 1.5 ... 15 A
Rated control circuit voltage U_c					230 V AC	
Primary operating range					0.9 ... 1.1 × U_c	
Overload capability				Continuous	15 A	20 A
				At 50 °C ambient temperature max. 3 s	20 A	–
				Independent of measuring range, max. 3 s	–	30 A
Rated frequency					50/60 Hz	
Contacts						
μ contact (AC-15)				NO	3 A	5 A
				NC	1 A	
Response values				ON-switching	Infinitely variable	
				OFF-switching	Permanent, 4% hysteresis	
Switching delay t_v					0.1 ... 20 s, continuously adjustable	
Response time				Non-adjustable	Current corresponds to the rated operational power of the continuous-flow heater	See Siemens Service and Support Portal, search term "Article No.", e.g. 5TT6113
Minimum contact load					10 V/100 mA	
Safety						
Rated insulation voltage U_i				Between coil/contact	2.5 kV	
Electrical isolation, creepage distances and clearances				Actuator/contact	3 mm	
Rated impulse withstand voltage U_{imp}				Actuator/contact	>4 kV	
Connection						
Terminals				± Screw (Pozidriv)	PZ 1	
Conductor cross-sections				Rigid	Max. 2x 2.5 mm ²	
				Flexible, with end sleeve	Min. 1x 0.5 mm ²	
Ambient conditions						
Permissible ambient temperature					–20 ... +60 °C	
Resistance to climate				Acc. to EN 60068-1	20/60/4	

5TT3 fuse monitors

For all low-voltage fuse systems

Mounting width 2 MW



Rated operational voltage U_e	Rated operational current I_e	Rated control circuit voltage U_c	
Adjustable			
250 V AC	4 A	380 ... 415 V AC	5TT3170

Further technical specifications

Standards		
Standards		IEC 60255, DIN VDE 0435-110
Supply		
Rated operational voltage U_e		250 V AC
Rated operational current I_e	AC-1	4 A
Rated control circuit voltage U_c	3 AC	380 ... 415 V
Primary operating range		$0.8 \dots 1.1 \times U_c$
Rated frequency		50 ... 400 Hz
Contacts		
Internal resistance of measuring paths		$>1000 \Omega/V$
Max. permissible rear feed		90%
Response/release time		$<50 \text{ ms}$
Electrical endurance AC-11	In switching cycles at 1 A	1.5×10^5
Safety		
Rated impulse withstand voltage U_{imp}	Input/output	$>4 \text{ kV}$
Application		
Area of application		Asymmetric, systems afflicted with harmonics, regenerative motors
Message		Also for disconnected loads
Connection		
Terminals	\pm Screw (Pozidriv)	PZ 1
Conductor cross-sections	Rigid	Max. $2 \times 2.5 \text{ mm}^2$
	Flexible, with end sleeve	Min. $1 \times 0.5 \text{ mm}^2$
Ambient conditions		
Permissible ambient temperature		$-20 \dots +45 \text{ }^\circ\text{C}$
Resistance to climate	Acc. to EN 60068-1	20/45/4

5TT3 phase monitors

For monitoring of voltages in a three-phase system

Mounting width 1 MW



Rated operational voltage U_e	Rated operational current I_e	Contacts	Rated control circuit voltage U_c	With 3 green LEDs for 3 phases
250 V AC	4 A	1 CO	230/400 V	5TT3421

Further technical specifications

Standards			
Standards			IEC 60255, DIN VDE 0435
Supply			
Rated operational voltage U_e			250 V AC
Rated operational current I_e			4 A
Rated control circuit voltage U_c			230/400 V AC
Primary operating range			$0.8 \dots 1.1 \times U_c$
Rated frequency			50/60 Hz
Rated power dissipation P_v	Electronics		9 VA
	Contacts		0.2 VA
Contacts			
μ contact			AC-11
Minimum contact load			3 A
			10 V/100 mA
Safety			
Rated insulation voltage U_i			Between coil/contact
Electrical isolation, creepage distances and clearances			Actuator/contact
Rated impulse withstand voltage U_{imp}			Actuator/contact
Degree of protection			Acc. to EN 60529
Protection class			Acc. to EN 61140/VDE 0140-1
			IP20, with connected conductors
			II
Connection			
Terminals			\pm Screw (Pozidriv)
Conductor cross-sections			PZ 1
			Rigid
			Max. $2 \times 2.5 \text{ mm}^2$
			Flexible, with end sleeve
			–
Ambient conditions			
Permissible ambient temperature			–20 ... +60 °C
Resistance to climate			Acc. to EN 60068-1
			20/60/4

5TT3 phase sequence monitors

For monitoring of phase sequence in a three-phase system

Mounting width 1 MW



Rated operational voltage U_e	Rated operational current I_e	Contacts	Rated control circuit voltage U_c	With one green LED, which lights up for right-rotating field
250 V AC	4 A	1 CO	400 V	5TT3423

Further technical specifications

Standards			
Standards			IEC 60255, DIN VDE 0435
Supply			
Rated operational voltage U_e			250 V AC
Rated operational current I_e			4 A
Rated control circuit voltage U_c			400 V AC
Primary operating range			$0.8 \dots 1.1 \times U_c$
Rated frequency			50/60 Hz
Rated power dissipation P_v	Electronics		9 VA
	Contacts		0.2 VA
Contacts			
μ contact			AC-11
Minimum contact load			3 A
Safety			10 V/100 mA
Rated insulation voltage U_i			Between coil/contact
Electrical isolation, creepage distances and clearances			4 kV
Rated impulse withstand voltage U_{imp}			Actuator/contact
Degree of protection			4 mm
Protection class			>2.5 kV
Acc. to EN 60529			IP20, with connected conductors
Acc. to EN 61140/VDE 0140-1			II
Connection			
Terminals			± Screw (Pozidriv)
Conductor cross-sections			PZ 1
Rigid			Max. 2x 2.5 mm ²
Flexible, with end sleeve			–
Ambient conditions			
Permissible ambient temperature			–20 ... +60 °C
Resistance to climate			Acc. to EN 60068-1
			20/60/4

5TT3 insulation monitors for industrial applications

Are used for protection of persons and against fire in non-grounded systems (IT systems)

Mounting width 2 MW



Measurement voltage range U_{meas}	Measuring range	Contacts	Rated control circuit voltage U_c	
0 ... 500 V AC	5 ... 100 k Ω	2 CO	230 V AC	5TT3470
12 ... 280 V DC	5 ... 200 k Ω	2 CO	–	5TT3471

Further technical specifications

		5TT3470	5TT3471
Supply			
Rated operational voltage U_e		230 V AC	12 ... 280 V DC
Rated operational current I_s	Thermal current I_{th}	4 A	
	DC-13 at 24 V DC	–	2 A
	DC-13 at 250 V DC	–	0.2 A
	AC-15	–	3 A
	AC-15 NO	5 A	–
		AC-15 NC	2 A
Supply voltage U_c		For AC supply	220 ... 240 V AC
Primary operating range		For AC supply	0.8 ... 1.1 $\times U_c$
Frequency range for U_c			45 ... 400 Hz
Rated power dissipation P_v	For AC supply	Approx. 2 VA	–
	For DC supply	–	Approx. 1 W
Contacts			
μ contact		2 CO	
Switching hysteresis		At R_{meas} 50 k Ω	15%
Measuring circuit			
Measuring circuit		For 3-phase and AC systems	For direct voltage systems
Measurement voltage range U_{meas}		0 ... 500 V AC	12 ... 280 V DC
Measurement voltage U_{meas}		Internal	Approx. 15 V DC
Primary operating range		0 ... 1.1 $\times U_{\text{meas}}$	0.9 ... 1.1 $\times U_{\text{meas}}$
Frequency range for U_{meas}		10 ... 10000 Hz	–
Alarm values		Measuring shunt R_{AL}	5 ... 100 k Ω
Setting of alarm value		On absolute scale	Infinitely variable
Alternating current internal resistance		Internal testing resistance	>250 k Ω
Direct current internal resistance		Internal testing resistance	>250 k Ω
		L+ and L- to PE	–
Max. measurement current I_{meas}		Short circuit	<0.1 mA
Direct interference voltage		Max. permissible	500 V DC
Response delay at R_{AL} 50 k Ω and 1 μ F	∞ to 0.9 $\times R_{\text{meas}}$	<1.3 s	0.8 s
	R_{meas} from ∞ to 0 Ω	<0.7 s	0.4 s
Safety			
Rated impulse withstand voltage U_{imp}	Terminals A1 to A2	<4 kV	
	Terminals L to PE	<4 kV	
	Terminals A1, A2 to L, PE	<4 kV	<3 kV
	Terminals against contacts	<6 kV	
Degree of protection	Terminals (according to EN 60529)	IP20	
	Enclosure (according to EN 60529)	IP40	
Connection			
Terminals		\pm Screw (Pozidriv)	PZ 2
Conductor cross-sections		Rigid	Max. 2x 2.5 mm ²
		Flexible, with end sleeve	Min. 1x 0.50 mm ²
Ambient conditions			
Permissible ambient temperature		–20 ... +60 °C	
Resistance to climate		Acc. to EN 60068-1	20/060/04

5TT5 EMERGENCY STOP modules

Efficient personal and machine protection in small units

Mounting width 4 MW



Rated operational voltage U_e	Rated operational current I_e	Rated control circuit voltage U_c	
400 V AC	5 A	230 V AC	5TT5200

Further technical specifications

Standards		
Standards		ISO 13849-1: 2015; EN 62061: 2005 + AC: 2010 + A1: 2013 + A2: 2015; ISO 13850: 2015; EN 60204-1: 2006 + A1: 2009 + AC: 2010 (in extracts); EN 60947-5: 2004 + A1: 2009; EN 50178: 1997; EN 61508 Parts 1-7: 2010; EN 50156-1: 2005 (in extracts)
Certification		German Technical Inspectorate Rheinland
Supply		
Primary operating range		0.8 ... 1.1 × U _c
Rated frequency f _n		50 Hz
Rated power dissipation P _v	Coil/drive	3.5 VA
	Contact per pole	0.8 VA
Control voltage	Terminal Y1	24 V AC/DC
Control current	Terminal Y1	45 mA
Contacts		
Contacts	NO AC-15	3 A
	NC AC-15	2 A
	NO/NC AC-1	5 A
Contact gap		>1 mm
Electrical endurance	AC-15 (2 A, 230 V AC)	10 ⁵ operating cycles
Reliable switching frequency		600 operating cycles/h
Recovery time		500 ms
Safety		
Rated impulse withstand voltage U _{imp}	Actuator/contact	>4 kV
Electrical isolation, creepage distances and clearances	Actuator/contact	3 mm
Vibration resistance	Amplitude acc. to EN 60068-2-610 (up to 55 Hz)	0.35 mm
Connection		
Terminals	± Screw (Pozidriv)	PZ 1
Conductor cross-sections of main current paths	Rigid	Max. 2x 2.5 mm ²
	Flexible, with end sleeve	Min. 1 × 0.50 mm ²
Ambient conditions		
Permissible ambient temperature		0 ... +50 °C
Resistance to climate	Acc. to EN 60068-1	0/55/04

5TT3 level relays

For level monitoring and control

Mounting width 2 MW



Rated operational voltage U_e	Rated operational current I_e	Rated control circuit voltage U_c	
250 V AC	5 A	230 V AC	5TT3435

Further technical specifications

Standards		
Standards		IEC 60255; DIN VDE 0435-110
Supply		
Rated operational voltage U_e		250 V AC
Rated operational current I_e		5 A
Rated control circuit voltage U_c		230 V AC
Primary operating range		$0.8 \dots 1.1 \times U_c$
Rated frequency f_n		50/60 Hz
Measuring circuit		
Setting range of the liquid level		2 ... 450 kΩ
Switching point hysteresis of setting value	At 450 kΩ	3%
	At 2 kΩ	6%
Electrode voltage		Max. approx. 10 V AC
Electrode current		Max. approx. 1.5 mA AC
Response delay	Adjustable	0.2 ... 20 s
OFF-delay	Adjustable	0.2 ... 20 s
Test voltage	Input/auxiliary circuit	4 kV
	Input/output circuit	4 kV
	Auxiliary/output circuit	4 kV
Voltage temperature influence		<2%
Max. cable length to the electrodes at 100 μF/km	Setting value 450 kΩ	50 m
	Setting value 100 kΩ	200 m
	Setting value 35 kΩ	500 m
	Setting value 10 kΩ	1500 m
	Setting value 5 kΩ	3000 m
Connection		
Terminals		± Screw (Pozidriv) PZ 2
Conductor cross-sections	Rigid, max.	Max. 2x 2.5 mm ²
	Flexible, with end sleeve	Min. 1x 0.50 mm ²
Ambient conditions		
Permissible ambient temperature		-20 ... +60 °C
Resistance to climate	Acc. to EN 60068-1	20/60/4

Accessories

Immersion electrodes



- Made of stainless steel, with PG13 sealing cap
- Suitable for pure water in open containers

Temperature range	Connection	Article No.
0 ... 60 °C	Terminal connection	5TG8223

5TT3 line circuit relays

To interrupt circuits where there are no active loads

Mounting width 1 MW



Rated operational voltage U_e	Rated operational current I_e	Contacts	Rated control circuit voltage U_c	
250 V AC	16 A	1 NC	230 V AC	5TT3171

Further technical specifications

Standards		
Standards		IEC 60255; DIN VDE 0435-110
Supply		
Rated operational voltage U_e		250 V AC
Rated operational current I_e	AC-1	16 A
Rated control circuit voltage U_c		230 V AC
Primary operating range		$0.85 \dots 1.15 \times U_c$
Rated frequency		50/60 Hz
Rated power dissipation P_v	Electronics	5 VA
	Contacts	2.6 VA
Contacts		
Response value	Adjustable	2 ... 20 VA
Release value	% of the response value	70%
Electrical endurance	In switching cycles at 3 A (AC-11)	5×10^5
Safety		
Rated impulse withstand voltage U_{imp}	Input/output	>4 V
Degree of protection	Acc. to IEC/EN 60529	IP20, with connected conductors
Protection class	Acc. to EN 61140/VDE 0140-1	II
Monitoring voltage		3 V
Connection		
Terminals	± Screw (Pozidriv)	PZ 1
Conductor cross-sections	Rigid	Max. $2 \times 2.5 \text{ mm}^2$
	Flexible, with end sleeve	Min. $1 \times 0.50 \text{ mm}^2$
Ambient conditions		
Permissible ambient temperature		−20 ... +45 °C
Humidity class	Acc. to IEC 60068-2-30	F

Accessories

Base load resistors for electronic devices	
<ul style="list-style-type: none"> With 15 cm connection wires, end sleeves and shrink sleeving 	
	Article No.
	5TG8222

7LQ2 twilight switches

For lighting system monitoring and control

Mounting width 1 MW




Rated operational voltage U_e	Rated operational current I_e	Contacts	Rated control circuit voltage U_c	
230 V AC	16 A	1 NO	250 V AC	7LQ2300

Further technical specifications

Standards		
Standards		EN 60669-1
Supply		
Rated operational voltage U_e		230 V AC
Rated frequency f_n		50/60 Hz
Safety		
Degree of protection		IP30
Contacts		
Incandescent lamp/halogen lamp load		2000 W
Energy-saving lamp load		1000 W
Fluorescent lamp load	Series corrected	2000 W
	Parallel corrected (at max. 70 μ F)	1000 W
LV halogen lamp load ECG		2000 W
Luminosity setting		1 ... 100 000 Lux
Measuring circuit		
ON/OFF-delay		Approx. 90 s
Connection		
Terminals	\pm Screw (Pozidriv)	PZ1
Conductor cross-sections	Rigid	Max. 2 \times 1.5 mm ²
Mechanical data		
Width		17.5 mm (1 MW)
Mounting		DIN rail
Ambient conditions		
Permissible ambient temperature		-20 ... +55 °C

Spare part

Light sensor		
	<ul style="list-style-type: none"> Included in the 7LQ2300 package IP65 degree of protection 	
	Temperature range	Article No.
	-20 ... +70 °C	7LQ2920

