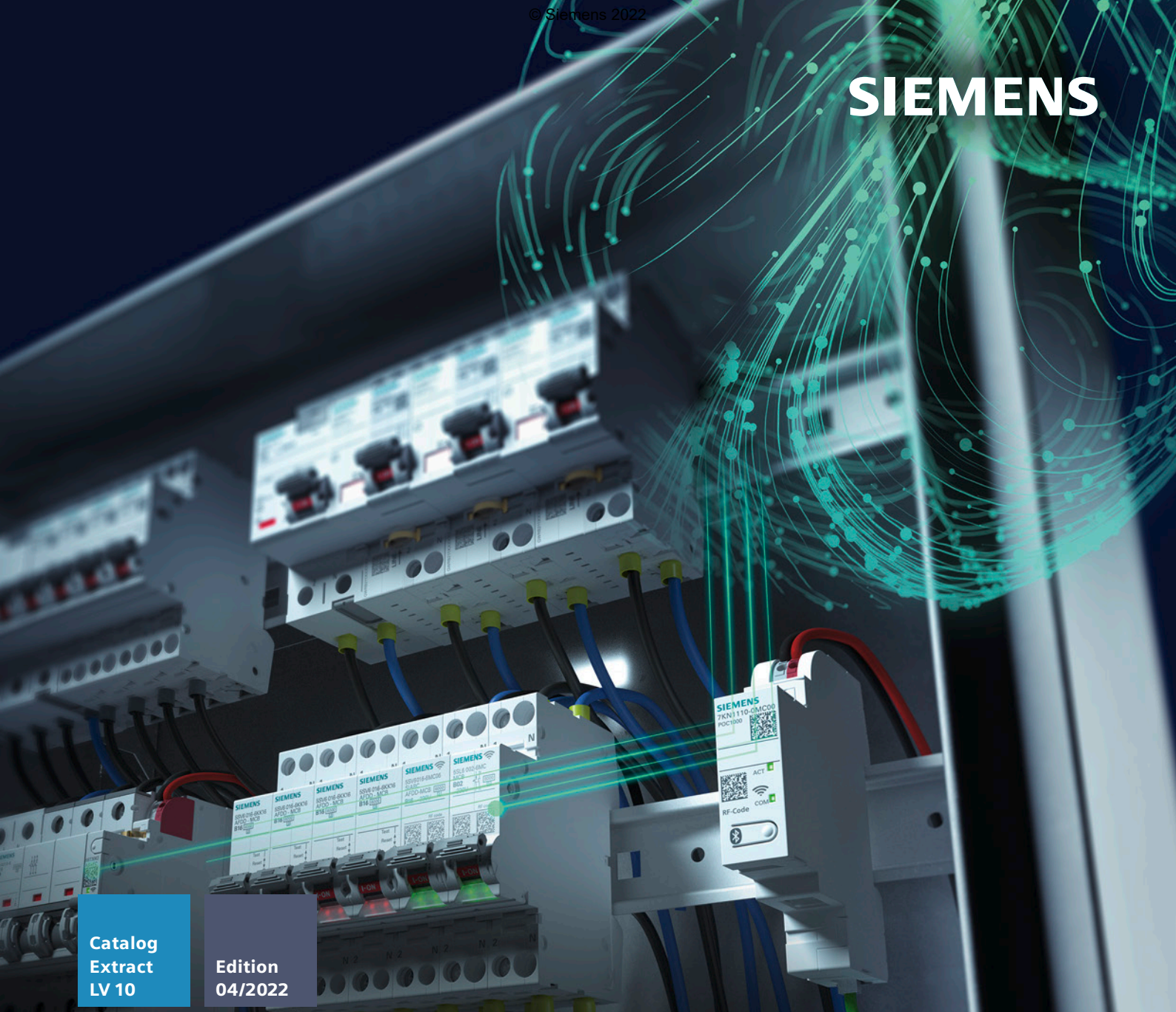
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Catalog Extract LV 10

Edition 04/2022

SENTRON • SIVACON • ALPHA

Low-Voltage Power Distribution and Electrical Installation Technology

Monitoring Devices

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All illustrations are not binding.

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Low-Voltage Power Distribution and Electrical Installation Technology

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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.

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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

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- Monitoring devices **sie.ag/2m3no4A**

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- Characteristic curves
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Provision of 3D data (step and u3d data formats)

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

Engineering data for CAD or CAE systems are available in the CAx Download Manager at
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Manuals

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

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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

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Accessories



Immersion electrodes

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

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5SV8 residual current monitors

Type A and type AC

	RCM analog	RCM digital	
Modular width	2 MW	3 MW	3 MW
			

Rated operational voltage U_e	Rated residual current $I_{\Delta n}$ Type A	Type AC	Response time Δt		1 channel	4 channels
230 V AC	0.03 ... 5 A	>3 A	0.02 ... 5 s	5SV8000-6KK	–	–
	0.03 ... 3 A	5 ... 30 A	0.02 ... 10 s, INS, SEL [1]	–	5SV8001-6KK	5SV8200-6KK

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		
	Type AC	>3 A	5 ... 30 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

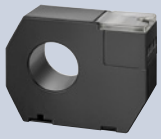
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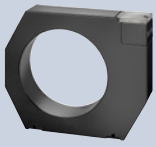
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Accessories

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

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5SV8 modular residual current device

Type A

	MRCD
Modular width	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 mA	INS instantaneous
	$I_{\Delta n}$ > 30 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 mm²
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

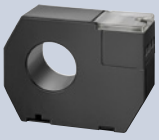
[1] INS: Instantaneous,
SEL: Selective

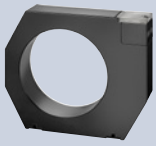
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Accessories

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

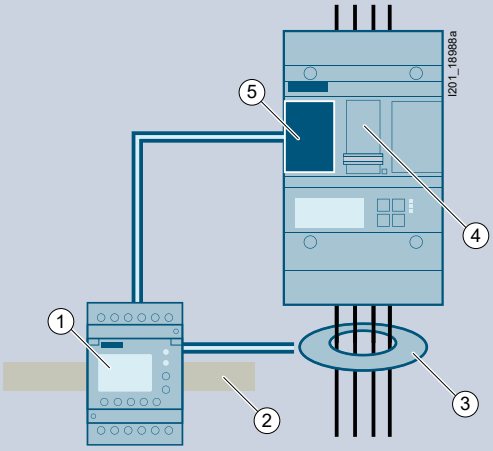
Magnetic field centering sleeves



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)

❶ Modular residual current device		
5SV8101-6KK		
❷ DIN rail		
EN 60715 – TH35 – 7.5 35 – 15		
❸ 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
❹ Molded case circuit breakers		**❺ 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

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5SV8 modular residual current device

Type B

	MRCD digital
Modular width	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	$I_{\Delta n}1$ (AL1 alarm)	50 ... 100% of $I_{\Delta n}2$ (factory setting: 50%)	
	$I_{\Delta n}2$ (TP2 tripping)	30 mA ... 1 A (factory setting: 30 mA)	
Response delay	$t_{on}1$ (alarm)	0 ... 10 s (factory setting: 1 s)	
	$t_{on}2$ (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	

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Accessories

Summation current transformers



Lowest measurable residual current $I_{\Delta n\ min}$	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

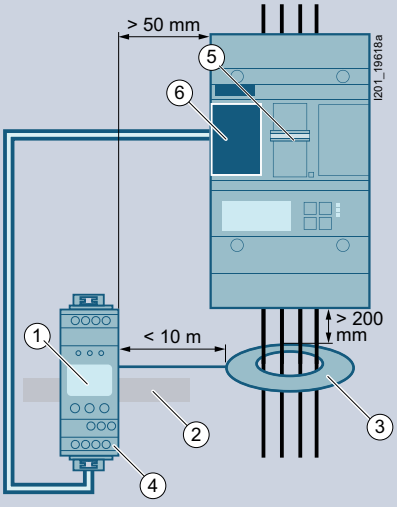
Holders for DIN rails



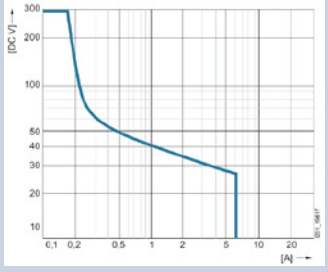
Suitable for summation current transformers	Article No.
5SV8701-2KK, 5SV8701-2KP	5SV8900-2KK
5SV8702-2KK, 5SV8702-2KP	5SV8900-3KK

[1] Short-time starting current, up to 2 s

Tested combination options



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

❶ Modular residual current device	
5SV8101-4KK/5SV8111-4KK	
❷ DIN rail	
EN 60715 – TH35 – 7,5 35 – 15	
❸ 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
❹ Relay contacts	
DC: 	AC: max. 230 V, 5A

❺ Molded case circuit breakers	❻ Trip element
3VA1...	3VA9908-0BB11
3VA20...	3VA9908-0BB24
3VA21...	3VA9908-0BB25
3VA22...	
3VA23...	3VA9908-0BB11
3VA24...	3VA9908-0BB25

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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
			Modular 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 and 0.9 × U_c	–	5TT3400	5TT3402	5TT3404
		0.85 and 0.95 × U_c	–	5TT3401	–	5TT3405
Adjustable						
230 V AC	4 A	0.7 ... 0.95 × U_c	5%	–	–	5TT3406
		0.9 ... 0.95 × U_c	–	–	5TT3403	–

Further technical specifications

		5TT3400 5TT3401 5TT3402 5TT3403	5TT3404 5TT3405	5TT3406
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 × U_c		
Rated frequency		50/60 Hz		
Contacts				
µ contact	AC-11	4 A		
Response values	ON-switching	0.9/0.95 × U_c		4% hysteresis
	OFF-switching	0.7/0.85 × U_c		0.7 ... 0.95 × 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. 2x 2.5 mm²		
	Flexible, with end sleeve	Min. 1x 0.5 mm²		
Ambient conditions				
Permissible ambient temperature		–20 ... +60 °C		
Resistance to climate	Acc. to EN 60068-1	20/60/4		

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System overview, page 11/4

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5TT3 undervoltage relays

With response delay

				For the monitoring of 1, 2 or 3 phases against N	
				Contacts	1 CO	2 CO
				Modular width	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 × 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 × 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 × U_c	
Response delay		0.5 s	
Return transfer delay		60 s	
Minimum contact load		10 V/100 mA	
Electrical service life 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× 4 mm^2	
	Flexible, with end sleeve	1× 2.5 mm^2	
Ambient conditions			
Permissible ambient temperature		–25 ... +60 °C	
Resistance to climate	Acc. to EN 60068-1	20/060/04	

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5TT3 short-time voltage relay

Without response delay

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



Rated operational voltage U_e	Rated operational current I_e	Switching thresholds	
Not adjustable			
230 V AC	4 A	0.8 ... 0.85 × 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 × 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 V and I_e = 6 A	Max. 100 W
		U_e = 60 V and I_e = 1 A	Max. 100 W
		U_e = 110 V and I_e = 0.6 A	Max. 100 W
		U_e = 220 V and I_e = 0.5 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 × U_c
	OFF-switching		0.8 × 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 mm²
	Flexible, with end sleeve		Min. 1x 0.5 mm²
Ambient conditions			
Permissible ambient temperature			–20 ... +60 °C
Humidity class	Acc. to IEC 60068-2-30		F

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5TT3 undervoltage and overvoltage relays

With adjustable response delay

	For the monitoring of 3 phases against N
Contacts	2 CO
Modular 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 × U_c 0.9 and 1.3 × 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 × 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 ... 1.3 × U_c
	Undervoltage:	ON-switching	4% hysteresis
		OFF-switching	0.7 ... 1.1 × U_c
On/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 mm²
	Flexible, with end sleeve		Min. 1x 0.5 mm²
Ambient conditions			
Permissible ambient temperature			–20 ... +60 °C
Humidity class	Acc. to IEC 60068-2-30		F

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5TT6 current relays

For 1-phase loads up to 230 V AC

				Auxiliary voltage and load voltage				
				Not isolated		Galvanically isolated		
			Modular 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	Overcurrent	Monitoring Undercurrent	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

		5TT6111 5TT6112	5TT6113 5TT6114 5TT6115
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 mm²	
	Flexible, with end sleeve	Min. 1x 0.5 mm²	
Ambient conditions			
Permissible ambient temperature		–20 ... +60 °C	
Resistance to climate	Acc. to EN 60068-1	20/60/4	

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5TT3 fuse monitors

For all low-voltage fuse systems

Modular 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 ... 1.1 × U_c
Rated frequency		50 ... 400 Hz
Contacts		
Internal resistance of measuring paths		>1000 Ω/V
Max. permissible rear feed		90%
Response/release time		<50 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 kV
Application		
Area of application		Asymmetric, systems afflicted with harmonics, regenerative motors
Message		Also for disconnected loads
Connection		
Terminals	± Screw (Pozidriv)	PZ 1
Conductor cross-sections	Rigid	Max. 2x 2.5 mm²
	Flexible, with end sleeve	Min. 1x 0.5 mm²
Ambient conditions		
Permissible ambient temperature		–20 ... +45 °C
Resistance to climate	Acc. to EN 60068-1	20/45/4

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5TT3 phase monitors

For monitoring of voltages in a 3-phase system

Modular 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 ... 1.1 × U_c
Rated frequency		50/60 Hz
Rated power dissipation P_v	Electronics	9 VA
	Contacts	0.2 VA
Contacts		
µ contact	AC-11	3 A
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	>2.5 kV
Degree of protection	Acc. to EN 60529	IP20, with connected conductors
Protection class	Acc. to EN 61140/VDE 0140-1	II
Connection		
Terminals	± Screw (Pozidriv)	PZ 1
Conductor cross-sections	Rigid	Max. 2x 2.5 mm²
	Flexible, with end sleeve	–
Ambient conditions		
Permissible ambient temperature		–20 ... +60 °C
Resistance to climate	Acc. to EN 60068-1	20/60/4

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5TT3 phase sequence monitors

For monitoring of phase sequence in a 3-phase system

Modular 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 ... 1.1 × U_c
Rated frequency		50/60 Hz
Rated power dissipation P_v	Electronics	9 VA
	Contacts	0.2 VA
Contacts		
µ contact	AC-11	3 A
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	>2.5 kV
Degree of protection	Acc. to EN 60529	IP20, with connected conductors
Protection class	Acc. to EN 61140/VDE 0140-1	II
Connection		
Terminals	± Screw (Pozidriv)	PZ 1
Conductor cross-sections	Rigid	Max. 2x 2.5 mm²
	Flexible, with end sleeve	–
Ambient conditions		
Permissible ambient temperature		–20 ... +60 °C
Resistance to climate	Acc. to EN 60068-1	20/60/4

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5TT3 insulation monitors for industrial applications

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

Modular width 2 MW



Measurement voltage range U_{meas}	Measuring range	Contacts	Rated control circuit voltage U_c	
0 ... 500 V AC	5 ... 100 kΩ	2 CO	230 V AC	5TT3470
12 ... 280 V DC	5 ... 200 kΩ	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 × 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 kΩ	15%	10 ... 15%
Measuring circuit			
Measuring circuit		For 3-phase and AC systems	For direct voltage systems
Measurement voltage range *Umeas*		0 ... 500 V AC	12 ... 280 V DC
Measurement voltage *Umeas*	Internal	Approx. 15 V DC	–
Primary operating range		0 ... 1.1 × *Umeas*	0.9 ... 1.1 × *Umeas*
Frequency range for *Umeas*		10 ... 10000 Hz	–
Alarm values	Measuring shunt R_{AL}	5 ... 100 kΩ	5 ... 200 kΩ
Setting of alarm value	On absolute scale	Infinitely variable	Infinitely variable
Alternating current internal resistance	Internal testing resistance	>250 kΩ	–
Direct current internal resistance	Internal testing resistance	>250 kΩ	–
	L+ and L- to PE	–	75 kΩ each
Max. measurement current I_{meas}	Short circuit	<0.1 mA	0.2 ... 4 mA, depending on the voltage
Direct interference voltage	Max. permissible	500 V DC	–
Response delay at R_{AL} 50 kΩ and 1 µF	∞ to 0.9 × R_{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	± Screw (Pozidriv)	PZ 2	
Conductor cross-sections	Rigid	Max. 2x 2.5 mm²	
	Flexible, with end sleeve	Min. 1× 0.50 mm²	
Ambient conditions			
Permissible ambient temperature		–20 ... +60 °C	
Resistance to climate	Acc. to EN 60068-1	20/060/04	

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5TT5 EMERGENCY STOP modules

Efficient personal and machine protection in small units

Modular 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 service life	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 mm²
	Flexible, with end sleeve	Min. 1× 0.50 mm²
Ambient conditions		
Permissible ambient temperature		0 ... +50 °C
Resistance to climate	Acc. to EN 60068-1	0/55/04

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5TT3 level relays

For level monitoring and control

Modular 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 ... 1.1 × U_c
Rated frequency f_n		50/60 Hz
Measuring circuit		
Setting range of the liquid level		2 ... 450 kΩ
Switching point hysteresis of set 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	From set value	<2%
Max. cable length to the electrodes at 100 µF/km	Set value 450 kΩ	50 m
	Set value 100 kΩ	200 m
	Set value 35 kΩ	500 m
	Set value 10 kΩ	1500 m
	Set value 5 kΩ	3000 m
Connection		
Terminals	± Screw (Pozidriv)	PZ 2
Conductor cross-sections	Rigid, max.	Max. 2x 2.5 mm²
	Flexible, with end sleeve	Min. 1× 0.50 mm²
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

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5TT3 line circuit relays

To interrupt circuits where there are no active loads

Modular 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 ... 1.15 × 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 service life	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. 2x 2.5 mm²
	Flexible, with end sleeve	Min. 1× 0.50 mm²
Ambient conditions		
Permissible ambient temperature		–20 ... +45 °C
Humidity class	Acc. to IEC 60068-2-30	F

Accessories

Base load resistors for electronic devices

- With 15 cm connection wires, end sleeves and shrink sleeving

Article No.
5TG8222

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7LQ2 twilight switches

For lighting system monitoring and control

Modular 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 µF)	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	± Screw (Pozidriv)	PZ1
Conductor cross-sections	Rigid	Max. 2× 1.5 mm²
Mechanical data		
Width		17.5 mm (1 MW)
Mounting		DIN rail
Ambient conditions		
Permissible ambient temperature		–20 ... +55 °C

Spare part

Light sensor



- Included in the 7LQ2300 package
- IP65 degree of protection

Temperature range	Mounting	Article No.
–20 ... +70 °C	Surface mounting	7LQ2920

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Appendix



Conditions of sale and delivery A/2

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Link directory

Catalog LV 10

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Brochures/catalogs	www.siemens.com/lowvoltage/catalogs
Operating instructions/manuals	www.siemens.com/lowvoltage/manuals
Siemens Industry Online Support (SIOS)	www.siemens.com/lowvoltage/product-support
Siemens Industry Online Support app	www.siemens.com/support-app
My Documentation Manager (MDM)	www.siemens.com/lowvoltage/mdm
Configurators	www.siemens.com/lowvoltage/configurators
Siemens Industry Mall – product catalog and online ordering system	www.siemens.com/lowvoltage/mall
Direct forwarding to the Industry Mall	www.siemens.com/product?Article No.
Training	www.siemens.com/sitrain-lowvoltage
Local contacts	www.siemens.com/lowvoltage/contact www.siemens.com/lowvoltage/components/contact www.siemens.com/lowvoltage/systems/contact www.siemens.com/lowvoltage/software/contact
Technical Support	www.siemens.com/support-request
Information on services	www.siemens.com/service-catalog
Manual for the generation, transmission and distribution of electrical energy	www.siemens.com/power-engineering-guide
Control panels for the North American market	www.siemens.com/northamerican-standards
Control panel building	www.siemens.com/controlpanel
Energy savings and amortization	www.automation.siemens.com/sinasave
SIMATIC Energy Suite	www.siemens.com/energysuite
SITOP power supplies	www.siemens.com/sitop
Power distribution with Totally Integrated Power	www.siemens.com/tip

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Catalogs and further information



LV 10
Low-Voltage Power Distribution and Electrical Installation Technology
SENTRON • SIVACON • ALPHA

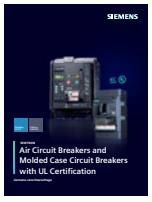
Protection, Switching, Measuring and Monitoring Devices, Switchboards and Distribution Systems

PDF (E86060-K8280-A101-B5-7600)



ET D1
Switches and Socket Outlets
DELTA

PDF



LV 18
Air Circuit Breakers and Molded Case Circuit Breakers with UL Certification
SENTRON

PDF (E86060-K8280-E347-A9-7600)



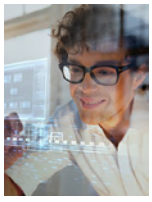
Industry Mall
Information and Ordering Platform on the Internet:

www.siemens.com/industrymall



IC 10
Industrial Controls
SIRIUS

PDF (E86060-K1010-A101-B3-7600)



SITRAIN
Digital Industry Academy

www.siemens.com/sitrain

Siemens TIA Selection Tool
for the selection, configuration and ordering of TIA products and devices

www.siemens.com/tst

The catalogs listed above and additional catalogs are available in PDF format at Siemens Industry Online Support **www.siemens.com/lowvoltage/catalogs**

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