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For further technical product information:

Configuration Manual

Monitoring Devices
Article No.: 3ZW1012-5SV80-0AC1

Siemens Industry Online Support:

www.siemens.com/lowvoltage/product-support

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Application example
Certificate
Characteristic
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FAQ
Manual
Product note
Software archive
Technical data

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Introduction

Overview

Devices		Page	Application	Standards	Used in		
					Non-residential buildings	Residential buildings	Industry
Monitoring devices for electrical values							
	**5SV8 residual current monitors**	13/5	To increase system availability and operating safety through continuous monitoring of residual current in electrical systems and signaling if a defined threshold is exceeded.	IEC 62020; EN 62020	✓	--	✓
	**Modular residual current devices (MRCD), type A, type B** NEW	13/6	The MRCDs are modular residual current devices for personnel and fire protection.	EN 60947-2 (Annex M); IEC 60947-2 (Annex M)	✓	--	✓
	**5TT3 voltage relays**	13/15	Monitoring the voltage of emergency lighting in public buildings, short-time failures of 20 ms, for ensuring operational parameters for devices or system components or monitoring the neutral conductor for breaks.	IEC 60255; DIN VDE 0435-303; DIN VDE 0108; DIN VDE 0435; DIN VDE 0633	✓	--	✓
	**5TT3 voltage and frequency relays**	13/18	The voltage and frequency relay monitors the status of the grid in the case of in-plant generation systems. Violation of an upper or lower limit results in shutdown and disconnection of the generation system from the grid. This ensures a stable incoming supply system.	IEC/EN 60255-1; IEC/EN 61000; VDE-AR-N-4105	✓	✓	✓
	**5TT6 current relays**	13/20	Monitoring of emergency and signal lighting and motors. All current relays can be short-time overloaded and connected either with direct measurement or through transformers.	IEC 60255; DIN VDE 0435-303	✓	--	✓
	**5TT3 fuse monitors**	13/22	Monitoring of all types of low-voltage fuses. Can be used in asymmetric systems afflicted with harmonics and regenerative feedback motors.	IEC 60255; DIN VDE 0435	✓	--	✓

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Minimum order quantity (PS) or a multiple thereof can be ordered.

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Devices		Page	Application	Standards	Used in		
					Non-residential buildings	Residential buildings	Industry
	**5TT3 phase and phase sequence monitors**	13/23	For the visual signaling of phase failures or phase sequences in three-phase systems. The phase sequence is arbitrary. The device is also suitable for single-, two- or three-phase operation.	IEC 60255; DIN VDE 0435	--	--	✓
	**5TT3 insulation monitors for industrial applications**	13/24	To increase system availability and operating safety through continuous monitoring of the isolation resistance in non-grounded direct voltage or AC voltage systems.	IEC 60255; IEC 61557	--	--	✓
Monitoring devices for plants and equipment							
	**5TT3 fault signaling units**	13/25	Evaluation and display of fault alarms and alarm signals for monitoring industrial plants and control systems. With 4 inputs and connections for 39 expansion fault signaling units.	IEC 60255, DIN VDE 0435-303	✓	--	✓
	**5TT5 EMERGENCY STOP modules**	13/26	For EMERGENCY-OFF switching in accordance with the Directive 98/37/EC on Safety of Machines. Safe types of circuits for machines, plants or test stations in industrial, commercial and private enterprise applications.	According to the Machinery Directive 98/37/EC; EN 954-1	✓	--	✓
	**5TT3 level relays**	13/27	Control of liquid levels in containers with 3 electrode connections for 1-step and 2-step level control. High immunity to interference of the measuring circuit isolated from the system.	IEC 60255, DIN VDE 0435	✓	--	✓
	**5TT3 line circuit relays**	13/29	For disconnecting the voltage of unused lines when loads are disabled.	IEC 60255, DIN VDE 0435	--	✓	--

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Introduction

Devices	Page	Application	Standards	Used in		
				Non-residential buildings	Residential buildings	Industry
Charging infrastructure for electric vehicles						
 **WB140A charging units**	13/30	The WB140A charging unit can be used to charge electric vehicles in charging mode 3 acc. to IEC 61851. The charging cable type 2 is fixed to the charging unit and is equipped with residual current and line protection.	IEC/EN 61851-1; IEC/EN 61851-22; IEC/EN 62196-1; IEC 62196-2; IEC 60439-3; DIN 43880	✓	✓	✓
 **CC100A charging cables**	13/32	The CC100A charging cable in charging mode 2 in compliance with IEC 61851-1 is a safe and convenient alternative to using charging units or posts. The mobile charging cable for home and travel can be connected easily to common household plug-and-socket devices. The range includes versions that cater for most common plug sockets in Europe. Type 1 or type 2 vehicle charging couplers are available at the vehicle end.	IEC/EN 61851-1; IEC/EN 62196; IEC 62335	✓	✓	--

Minimum order quantity (PS) or a multiple thereof can be ordered.

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Overview

Plant safety and operating safety are becoming increasingly important alongside the protection of personnel. Shutdowns due to the unexpected tripping of protective devices cause high costs. However, it is possible to detect residual currents in the electrical installation before the protective device responds.

Residual current monitors (RCM)

Residual current monitors (RCM) monitor residual current in electrical installations and issue a signal when the residual current exceeds a set value.

RCMs are used in plants where a fault should result in a signal, but not in disconnection. This enables plant operators to detect faults and eliminate their causes before the protective devices disconnect the installation, which increases plant and operating safety and cuts costs.

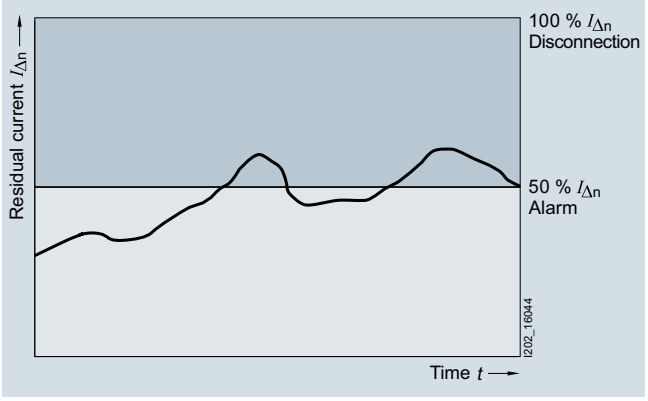
Modular residual current devices (MRCD)

Modular residual current devices (MRCD) monitor residual currents in electrical systems and trip the molded case circuit breaker via a shunt trip or an undervoltage release after an adjustable advance warning if the residual current exceeds a defined value.

This makes it possible for you to offer molded case circuit breakers (MCCBs) with personnel and fire protection in compliance with EN 60947-2 (Annex M) (also as a retrofit).

Summation current transformer

The summation current transformer detects all conductors required to conduct the current, i.e. including the neutral conductor. In a fault-free system, the magnetizing effects of the conductors through which current is flowing cancel each other out for the summation current transformer, i.e. the sum of all currents is zero. If a residual current is flowing due to an insulation fault, a residual magnetic field is left in the core of the transformer and produces a voltage. This voltage is evaluated using the electronics of the RCM/MRCD. The switched contact can be used to operate an acoustic/optical signaling device, a higher-level control system or a circuit breaker for example.



Time characteristic of the rated residual current $I_{\Delta n}$

Benefits

- Higher plant availability and operating safety through permanent monitoring of residual currents
- Adjustable limit values for residual current and response time enable timely detection and signaling – plant shutdowns are often avoidable
- Devices for every application:
  The summation current transformers are available in various sizes
- Additional fire protection can be implemented using the monitoring system

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Overview

The residual current monitors and modular residual current devices with residual current characteristic A detect sinusoidal AC and pulsating DC residual currents.

Technical specifications

		5SV8000-6KK	5SV8001-6KK	5SV8200-6KK	5SV8101-6KK
Standards		EN 62020, IEC 62020			EN 60947-2 (Annex M), IEC 60947-2 (Annex M)
Approvals		--	UL		--
Rated operational voltage U_e	V AC	230			230 from a single-phase auxiliary voltage source (also externally)
• Frequency	Hz	50/60			
Rated residual current $I_{\Delta n}$					
• Type A	A	0.03 ... 3	0.03 ... 3	0.03 ... 3	0.03 ... 3 (default setting: 30 mA)
• Type AC	A	> 3	5 ... 30	5 ... 30	--
Response time Δt	s	0.02 ... 5	0.02 ... 10, INS, SEL[1]	0.02 ... 10, INS, SEL[1]	$I_{\Delta n}$ = 30 mA: INS instantaneous $I_{\Delta n}$ > 30 mA: INS - SEL - 0.06 ... 10[1] (default INS)
Relay contacts		1 × alarm	1 × pre-alarm, 1 × alarm	1 × pre-alarm, 4 × alarm	1 × alarm, 1 × tripping operation
• Rated voltage	V AC	230	230	230	230
• Rated current	A	6	6	6	6
Summation current transformer	mm ∅	20 ... 210			35 ... 210
Maximum cable length RCM/CT (shielded cable)	m	10			
Conductor cross-section	mm^2	1.5			0.125 ... 2.08
Test/reset		Yes/Yes			
External tripping operation/external reset		--/Yes	Yes/Yes	Yes/Yes	Yes/Yes
Mounting width	MW	2	3	3	3
Degree of protection					
• Contacts		IP20			
• Front		IP41			
Operating temperature	°C	-10 ... +50			

[1] INS: Instantaneous, SEL: Selective.

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Minimum order quantity (PS) or a multiple thereof can be ordered.

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Selection and ordering data

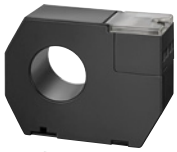
	Rated operational voltage	Rated residual current	Response time	Mounting width	SD	Article No. www.siemens.com/product?Article No.	Price per PU	PU (UNIT, SET, M)	PS	PG
	U_e	$I_{\Delta n}$	Δt							
	V AC	A	s	MW	d					
Residual current monitors										
	**RCM analog**									
	230, 50/60 Hz	0.03 ... 5 (Type A) > 3 (Type AC)	0.02 ... 5	2		**5SV8000-6KK**		1	1 unit	1BE
	**RCM digital**									
	230, 50/60 Hz	0.03 ... 3 (Type A) 5 ... 30 (Type AC)	0.02 ... 10, INS, SEL[1]	3		**5SV8001-6KK**		1	1 unit	1BE
	**RCM digital, 4 channels**									
	230, 50/60 Hz	0.03 ... 3 (Type A) 5 ... 30 (Type AC)	0.02 ... 10, INS, SEL[1]	3		**5SV8200-6KK**		1	1 unit	1BE
Modular residual current devices										
	**MRCD**									
	230, 50/60 Hz	0.03 ... 3 (Type A)	0.02 ... 10 INS, SEL[1]	3		**5SV8101-6KK**		1	1 unit	1BE

[1] INS: Instantaneous, SEL: Selective.

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5SV8 residual current monitors and protective devices > Type A

		Internal diameter	SD	Article No. www.siemens.com/product?Article No.	Price per PU	PU (UNIT, SET, M)	PS	PG
		mm	d					
Summation current transformers								
	Summation current transformers							
	Including holder for standard mounting rail[1] UL	20		**5SV8700-0KK**		1	1 unit	1BE
		30		**5SV8701-0KK**		1	1 unit	1BE
	Including holder for wall mounting[2] UL	35		**5SV8702-0KK**		1	1 unit	1BE
		70		**5SV8703-0KK**		1	1 unit	1BE
		105		**5SV8704-0KK**		1	1 unit	1BE
	Including holder for wall mounting UL	140		**5SV8705-0KK**		1	1 unit	1BE
		210		**5SV8706-0KK**		1	1 unit	1BE
	**Holders for standard mounting rail** [3]			**5SV8900-1KK**		1	2 units	1BE
	Suitable for summation current transformer with internal diameter of 20 mm, 30 mm, 35 mm, 70 mm							
Accessories for summation current transformers								
	Magnetic field centering sleeves							
	35 mm			**5SV8902-1KK**		1	1 unit	1BE
	70 mm			**5SV8903-1KK**		1	1 unit	1BE
	105 mm			**5SV8904-1KK**		1	1 unit	1BE
	140 mm			**5SV8905-1KK**		1	1 unit	1BE
	210 mm			**5SV8906-1KK**		1	1 unit	1BE

1) Not for MRCD.

2) Mounting on standard mounting rail with optional holder for standard mounting rail also possible.

3) Cannot be used together with magnetic field centering sleeves.

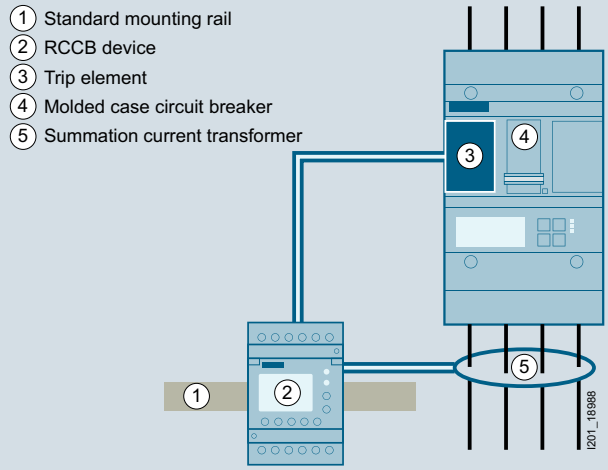
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Minimum order quantity (PS) or a multiple thereof can be ordered.

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More information

Combination options for residual current protective device

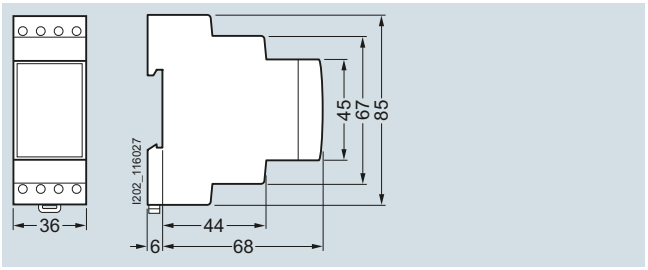


5SV8101-6KK (tested combinations)				
2	5SV8101-6KK			
1	EN 60715 - TH35 - 7.5 35 - 15			
5	Summation current transformers		Magnetic field centering sleeves	
	5SV8702-0KK	35 mm		5SV8902-1KK
	5SV8703-0KK	70 mm		5SV8903-1KK
	5SV8704-0KK	105 mm		5SV8904-1KK
	5SV8705-0KK	140 mm		5SV8905-1KK
	5SV8706-0KK	210 mm		5SV8906-1KK
4			3	3
3VL17...			3VL9400-1ST00	3VL9400-1UP00
3VL27...			3VL9400-1ST00	3VL9400-1UP00
3VL37...			3VL9400-1ST00	3VL9400-1UP00
3VL47...			3VL9400-1ST00	3VL9400-1UP00
3VA20... 3VA21... 3VA22...			3VA9988-0BL30 3VA9988-0BL32 3VA9988-0BL33	3VA9908-0BB11 3VA9908-0BB20 3VA9908-0BB24 3VA9908-0BB25
3VA10... 3VA11...			3VA9988-0BL30 3VA9988-0BL32 3VA9988-0BL33	3VA9908-0BB11 3VA9908-0BB20 3VA9908-0BB24 3VA9908-0BB25

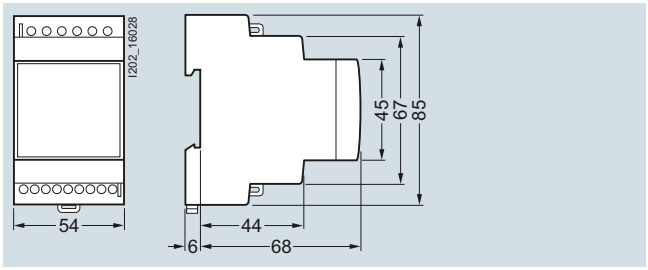
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Dimensional drawings

RCM/MRCD

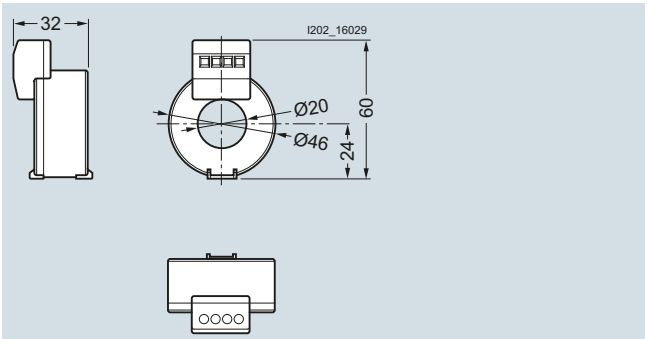


RCM analog, 5SV8000-6KK

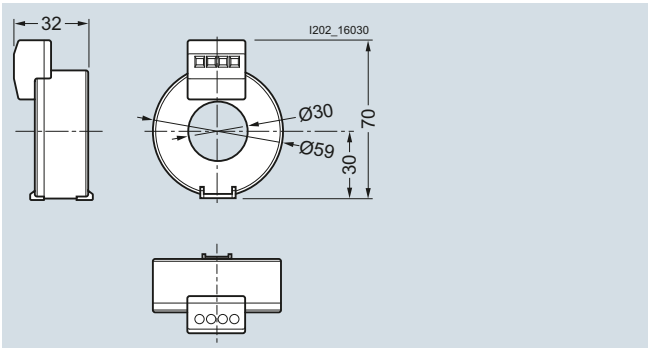


RCM digital, 5SV8001-6KK, 5SV8200-6KK, MRCD, 5SV8101-6KK

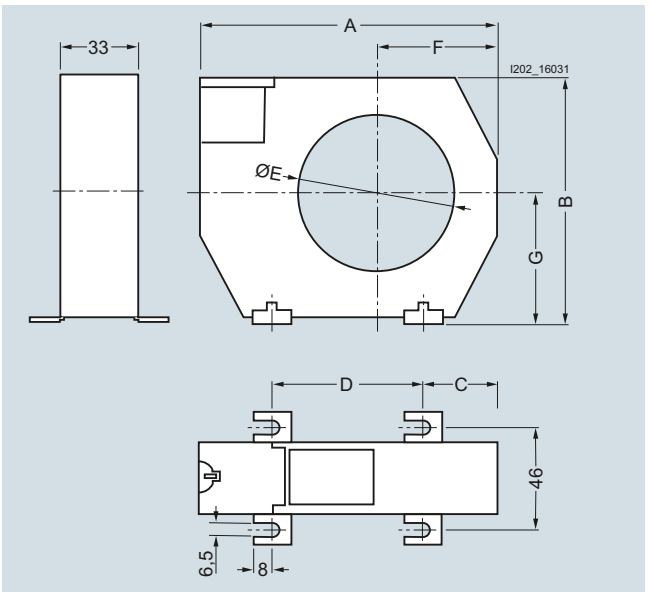
Summation current transformers



Summation current transformer, 5SV8700-0KK



Summation current transformer, 5SV8701-0KK



Summation current transformer, 5SV8702-0KK, 5SV8703-0KK, 5SV8704-0KK, 5SV8705-0KK, 5SV8706-0KK

Type	Dimensions	A	B	C	D	E	F	G
5SV8702-0KK		100	79	26	49	35	35	43
5SV8703-0KK		130	110	32	66	70	52	57
5SV8704-0KK		170	146	38	94	105	72	73
5SV8705-0KK		230	196	49	123	140	97	98
5SV8706-0KK		299	284	69	161	210	141	142

Type	Rated current	Maximum current[1)]
5SV8700-0KK	≤ 40 A	240 A
5SV8701-0KK	≤ 63 A	380 A
5SV8702-0KK	≤ 80 A	480 A
5SV8703-0KK	≤ 200 A	1200 A
5SV8704-0KK	≤ 250 A	1500 A
5SV8705-0KK	≤ 500 A	3000 A
5SV8706-0KK	≤ 600 A	3600 A

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

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Minimum order quantity (PS) or a multiple thereof can be ordered.

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Overview

The modular residual current protective devices with residual current characteristic B measure pulsating and smooth DC and AC residual currents up to 2 kHz.

Technical specifications

		5SV8101-4KK	5SV8111-4KK
Standards		EN 60947-2 (Annex M), IEC 60947-2 (Annex M)	
Mechanical data			
Width	mm	36 (2MW)	
Depth	mm	64	
Height	mm	85	
Weight	g	150	
Mounting		Standard mounting rail	
Enclosure material		Polycarbonate	
Overvoltage category		III	
Pollution degree		3	
Degree of protection			
• Components (IEC 60529)		IP30	
• Terminals (IEC 60529)		IP20	
Electrical connections		Screw terminals	
• Rigid	mm^2	0.2 ... 4	
• Flexible	mm^2	0.2 … 2.5 (AWG 24 … 12)	
Stripped length	mm	8 ... 9	
Tightening torque	Nm	0.5 ... 0.6	
Electrical data			
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	VA	< 6.5	
Relay contacts		1 x alarm, 1 x tripping operation	
• Rated voltage	V	250 AC	
• Rated current	A	5	
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 transformer)	V	690	
Response characteristic according to IEC 60947-2 (M)		Type B	
Rated frequency	kHz	0 ... 2	
Response residual current			
• $I_{\Delta n}1$ (alarm AL1)		50 ... 100% of $I_{\Delta n}2$ (factory setting: 50%)	
• $I_{\Delta n}2$ (tripping TP2)		30 mA ... 1 A (factory setting: 30 mA)	
Response delay			
• $t_{on}1$ (alarm)	s	0 ... 10 (factory setting: 1 s)	
• $t_{on}2$ (tripping operation)	s	0 ... 10 (factory setting: 0 s)	
Password		off / 0 … 999 (factory setting: 0)	
Max. cable length MRCD/CT	m	10 (6 x 0.75 mm^2)	
EMC		IEC 60947-2 (M)	
Operating temperature	°C	-25 ... +55	

Minimum order quantity (PS) or a multiple thereof can be ordered.

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5SV8 residual current monitors and protective devices > Type B NEW

Selection and ordering data

	Rated operational voltage	Rated residual current	Response time	Mounting width	SD	Article No. www.siemens.com/product?Article No.	Price per PU	PU (UNIT, SET, M)	PS	PG
	U_e	$I_{\Delta n}$	Δt							
	V	A	s	MW						
Residual current monitors										
	**MRCD digital**									
	230 AC, 50/60 Hz	0.03 ... 1	0 ... 10	2		**5SV8101-4KK**		1	1 unit	1BE
	24 DC	0.03 ... 1	0 ... 10	2		**5SV8111-4KK**		1	1 unit	1BE

Accessories

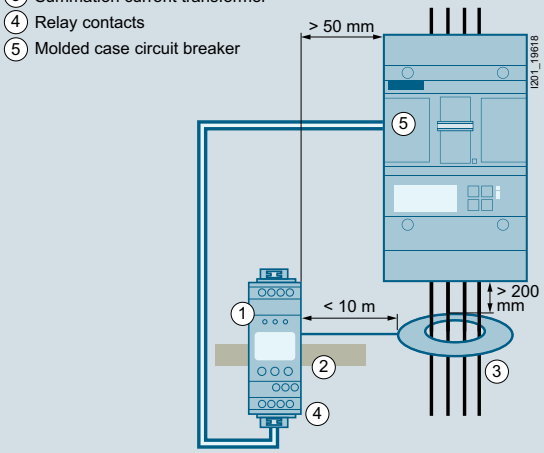
		Internal diameter	SD	Article No. www.siemens.com/product?Article No.	Price per PU	PU (UNIT, SET, M)	PS	PG
		mm						
Summation current transformer								
	--	35		**5SV8701-2KK**		1	1 unit	1BE
	With shield	35		**5SV8701-2KP**		1	1 unit	1BE
	**Holders for standard mounting rail** Suitable for summation current transformers 5SV8701-2KK, 5SV8701-2KP			**5SV8900-2KK**		1	1 unit	1BE
	--	60		**5SV8702-2KK**		1	1 unit	1BE
	With shield	60		**5SV8702-2KP**		1	1 unit	1BE
	**Holders for standard mounting rail** Suitable for summation current transformers 5SV8702-2KK, 5SV8702-2KP			**5SV8900-3KK**		1	1 unit	1BE
	--	120		**5SV8703-2KK**		1	1 unit	1BE
	--	210		**5SV8704-2KK**		1	1 unit	1BE

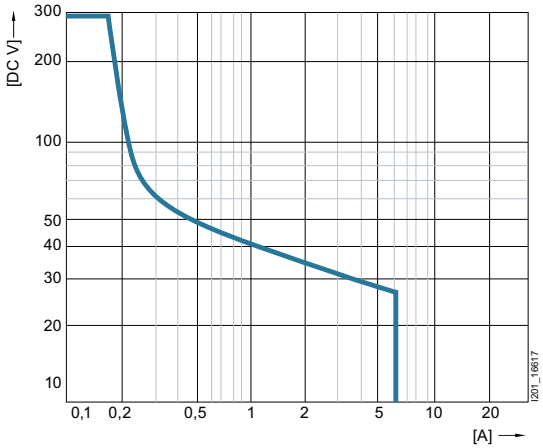
Minimum order quantity (PS) or a multiple thereof can be ordered.

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More information

Combination options for modular residual current device

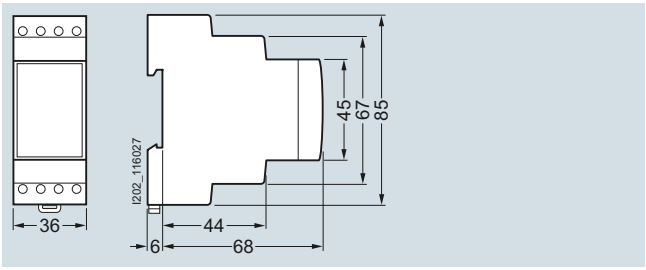


5SV8101-4KK / 5SV8111-4KK (tested combinations)			
1	5SV8101-4KK / 5SV8111-4KK		
2	EN 60715 - TH35 - 7.5 35 - 15		
3	5SV8701-2KK / 5SV8701-2KP 5SV8702-2KK / 5SV8702-2KP 5SV8703-2KK 5SV8704-2KK	35 mm 60 mm 120 mm 210 mm	
4	Relay contacts		
	DC		AC
			Max. 230 V AC 5 A
5	3VA1... 3VA20... 3VA21... 3VA22...	3VA9988-0BL30 3VA9988-0BL32 3VA9988-0BL33	3VA9908-0BB11 3VA9908-0BB24 3VA9908-0BB25
	3VA23... 3VA24...	3VA9988-0BL30 3VA9988-0BL32 3VA9988-0BL33	3VA9908-0BB11 3VA9908-0BB25

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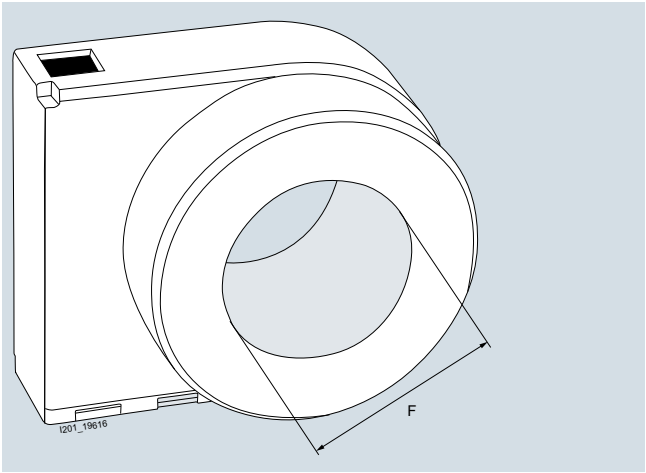
Dimensional drawings

Residual current monitor



MRCD, digital, type B
5SV8701-2KK/2KP, 5SV8702-2KK/2KP, 5SV8703-2KK, 5SV8704-2KK

Summation current transformer



Summation current transformer, 5SV8701-2KK, 5SV8701-2KP, 5SV8702-2KK, 5SV8702-2KP, 5SV8703-2KK, 5SV8704-2KK

Type	Internal diameter F	$I_{\Delta n\ min}$	Rated current I_n	Maximum current[1] I_{max}
5SV8701-2KK/2KP	35 mm	10 mA	≤ 80 A	500 A
5SV8702-2KK/2KP	60 mm	10 mA	≤ 160 A	1000 A
5SV8703-2KK	120 mm	100 mA	≤ 330 A	2000 A
5SV8704-2KK	210 mm	300 mA	≤ 630 A	3800 A

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

Minimum order quantity (PS) or a multiple thereof can be ordered.

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Overview

Voltage relays are used for device and plant protection, supplying safety light devices and the detection of N-conductor breaks and short-time voltage interruptions.

They are available as undervoltage, overvoltage and under/overvoltage relays. The devices are equipped with different functions, depending on their intended use, and comply with the pertinent regulations.

Benefits

- Complete voltage protection in a compact design for overvoltage and undervoltage monitoring in a single device
- Plants and devices are reliably and easily protected by phase-failure relays
- Overvoltages and consequential damage due to high voltages are prevented through N-conductor monitoring
- Asymmetry monitoring in the voltage relay also protects three-phase AC motors against operation with voltage skew

Technical specifications

			5TT3400 5TT3401 5TT3402 5TT3403	**5TT3404 5TT3405**	**5TT3406**	**5TT3195**
Standards			IEC 60255; DIN VDE 0435-110, -303			
Rated control circuit voltage U_c		V AC	230/400			400
Operating range (overload capability)		× U_c	1.1			1.35
Rated frequency		Hz	50/60			
Response values	ON-switching OFF-switching	× U_c	0.9/0.95 0.7/0.85		4% hysteresis 0.7 ... 0.95	 0.9 ... 1.3
Minimum contact load		V; mA	10; 100			
Phase asymmetry	Setting accuracy Repeat accuracy	% %	-- --	Approx. 5 ... 10 1		Approx. 5 ... 10 1
Phase failure detection	At L1 or L2 or L3	ms	100			--
N-conductor monitoring			--	Yes		--
Rated insulation voltage U_i	Between coil/contact	kV	4			
Contacts	μ contact (AC-11)	A	4			
Electrical isolation	Creepage distances and clearances Actuator/contact	 mm	 3	 5.5		
Rated impulse withstand voltage U_{imp}	Actuator/contact	kV	> 2.5	> 4		
Terminals	± screw (Pozidriv)		1			
Conductor cross-sections • Rigid, max. • Flexible, with end sleeve, min.		 mm^2 mm^2	 2 × 2.5 0.5			
Permissible ambient temperature		°C	-20 ... +60			
Resistance to climate	Acc. to EN 60068-1		20/60/4			

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Minimum order quantity (PS) or a multiple thereof can be ordered.

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5TT3 voltage relays

			5TT3407	5TT3408
Standards			IEC 60255; DIN VDE 0435-303	
Rated control circuit voltage U_c		V AC	230/400	
Operating range (overload capability)		× U_c	1.1	1.35
Rated frequency		Hz	50/60	
Back-up fuse	Terminals L1/L2/L3	A	2	
Response values	Overvoltage: OFF-switching ON-switching	 × U_c	 -- --	 0.9 ... 1.3 4% hysteresis
	Undervoltage: OFF-switching ON-switching	 × U_c	 0.8 0.85	 0.7 ... 1.1 4% hysteresis
Minimum contact load		V; mA	10; 100	
Phase asymmetry	Setting accuracy	%	Approx. 5 ... 10	
	Repeat accuracy	%	1	
Phase failure detection	At L1, L2 or L3	ms	≥ 20	100
OFF-delay		s	--	0.1 ... 20
Automatic reclosing delay		s	0.2 ... 2	--
Rated insulation voltage U_i	Between coil/contact	kV	4	
Contacts	μ contact (AC-11)	A	3	1
Electrical isolation	Creepage distances and clearances Contact/contact Actuator/contact	 mm mm	 -- 4	 4
Rated impulse withstand voltage U_{imp}	Actuator/contact	kV	> 4	
Rated operational power P_s	AC operation: 230 V and p.f. = 1 230 V and p.f. = 0.4	 VA VA	 2000 1250	 -- --
	DC operation: U_e = 24 V and I_e = 6 A U_e = 60 V and I_e = 1 A U_e = 110 V and I_e = 0.6 A U_e = 220 V and I_e = 0.5 A	 W W W W	 max. 100 max. 100 max. 100 max. 100	 -- -- -- --
Terminals	± screw (Pozidriv)		1	
Conductor cross-sections • Rigid, max. • Flexible, with end sleeve, min.		 mm^2 mm^2	 2 × 2.5 0.5	
Permissible ambient temperature		°C	-20 ... +60	
Humidity class	Acc. to IEC 60068-2-30		F	

			5TT3414	5TT3415
Rated control circuit voltage U_c		V AC	230/400	
Overload capability		× U_c	1.15	1.15
Rated frequency		Hz	50/60	50/60
Response values	ON-switching		5%	
	OFF-switching	× U_c	0.85	
Minimum contact load		V/mA	10/100	10/100
Phase failure detection	At L1, L2 or L3	ms	500	
N-conductor monitoring			--	--
Rated insulation voltage U_i	Between coil/contact	kV	--	
Contacts	AC-15 NO contacts		--	
	AC-15 NC contacts		--	
	AC-15 CO contacts		1	2
Electrical service life in switching cycles	AC-15, 1 A, 230 V AC		1×10^5	
Rated impulse withstand voltage	Acc. to IEC 60664-1	kV	6	
Pollution degree			2	2
Terminals	± screw (Pozidriv) – screw (slot)		-- 3.5	
Conductor cross-sections • Rigid • Flexible, with end sleeve		 mm^2 mm^2	 1 x 4 1 x 2.5	
Permissible ambient temperature		°C	-25 … +60	
Resistance to climate	Acc. to EN 60068-1		20/060/04	20/060/04

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Minimum order quantity (PS) or a multiple thereof can be ordered.

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Selection and ordering data

	Contacts	U_e	I_e	U_c	Mounting width	SD	Article No. www.siemens.com/product?Article No.	Price per PU	PU (UNIT, SET, M)	PS	PG
		V AC	A	V	MW	d					
	**Overvoltage relays**										
	For the monitoring of 3 phases against N, with N-conductor monitoring, switching thresholds: 0.9 ... 1.3 × U_c, 4% hysteresis, adjustable										
	2 CO	230	4	230/400 AC	2		**5TT3195**		1	1 unit	1BK
 5TT3400	**Undervoltage relays**										
	For the monitoring of 1, 2 or 3 phases against N, with phase failure detection,										
	• Switching thresholds: 0.7 and 0.9 x U_c, not adjustable										
	1 CO	230	4	230/400 AC	1	►	**5TT3400**		1	1 unit	1BK
	2 CO	230	4	230/400 AC	2	►	**5TT3402**		1	1 unit	1BK
	• Switching thresholds: 0.9 ... 0.95 × U_s										
	2 CO	230	4	230/400 AC	2		**5TT3403**		1	1 unit	1BK
 5TT3402	For the monitoring of 1, 2 or 3 phases against N, with phase failure detection, switching thresholds: 0.85 and 0.95 x U_c, not adjustable										
	1 CO	230	4	230/400 AC	1	►	**5TT3401**		1	1 unit	1BK
	For the monitoring of 3 phases against N, with asymmetry, reverse voltage and phase failure detection, with N-conductor monitoring										
	• Switching thresholds: 0.7 and 0.9 x U_c, not adjustable										
	2 CO	230	4	230/400 AC	2		**5TT3404**		1	1 unit	1BK
	• Switching thresholds: 0.7 ... 0.95 × U_c, 5% hysteresis, adjustable										
	2 CO	230	4	230/400 AC	2		**5TT3406**		1	1 unit	1BK
 5TT4404	For the monitoring of 3 phases against N, with asymmetry, reverse voltage and phase failure detection, with N-conductor monitoring, switching thresholds: 0.85 and 0.95 x U_c, not adjustable										
	2 CO	230	4	230/400 AC	2		**5TT3405**		1	1 unit	1BK
	For the monitoring of 1, 2 or 3 phases against N, switching thresholds: 0.85 x U_c, not adjustable, response delay 0.5 s, off-delay 60 s										
	1 CO	230	4	230/400 AC	1		**5TT3414**		1	1 unit	1BK
	• With TEST pushbutton										
	2 CO	230	4	230/400 AC	1		**5TT3415**		1	1 unit	1BK
 5TT3415											
	**Short-time relays**										
	For the monitoring of short-time failure detection ≥ 20 ms of 1, 2 or 3 phases against N, with phase failure detection and N-conductor monitoring, switching thresholds: 0.8 ... 0.85 × U_c, not adjustable										
	2 CO	230	4	230/400	2		**5TT3407**		1	1 unit	1BK
	**Undervoltage and overvoltage relays**										
	For the monitoring of 3 phases against N, with asymmetry, reverse voltage and phase failure detection, with N-conductor monitoring and adjustable time delay of 0.1 ... 20 s, switching thresholds: Undervoltage: 0.7 ... 1.1 × U_c, 4% hysteresis, adjustable Overvoltage 0.9 ... 1.3 × U_c, 4% hysteresis, adjustable										
	2 CO	230	4	230/400	2		**5TT3408**		1	1 unit	1BK

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Minimum order quantity (PS) or a multiple thereof can be ordered.

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5TT3 voltage and frequency relays

Overview

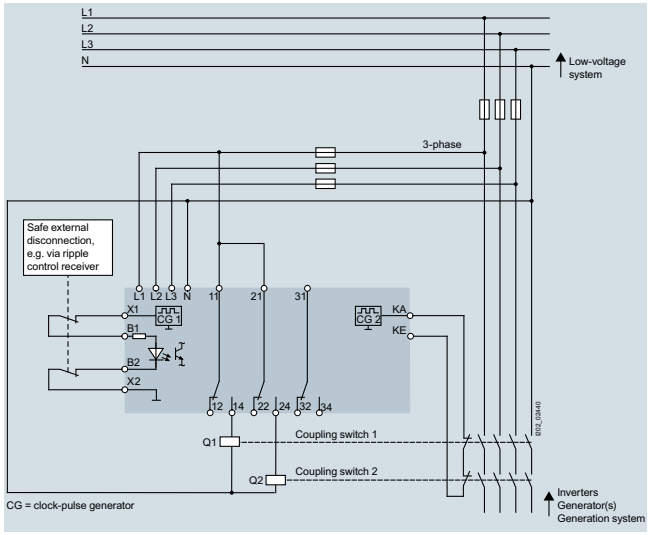


The voltage and frequency relay monitors the status of the grid in the case of in-plant generation systems. Violation of an upper or lower limit results in shutdown and disconnection of the generation system from the grid. Connection or automatic re-connection of the generation system to the grid only takes place when the grid frequency and the grid voltage have remained within their respective tolerance ranges without interruption for the duration of an adjustable time delay t_W. Following shutdown due to a brief interruption, re-connection takes place when the grid frequency and grid voltage have remained within the tolerance range for 5 s without interruption.

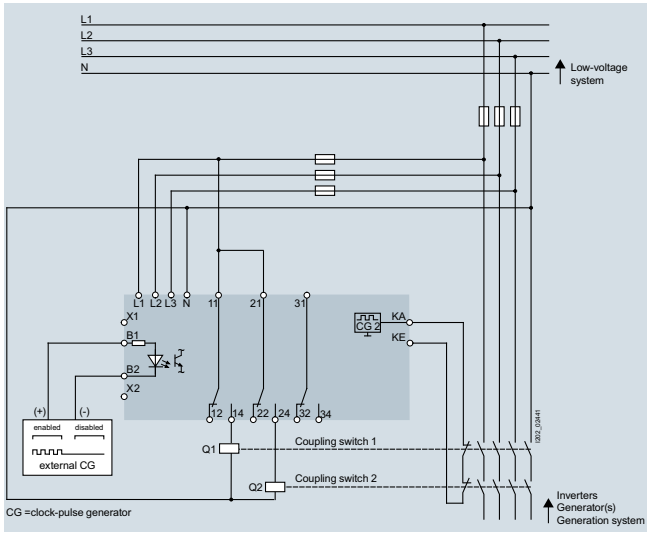
Benefits

- Clearance certification of the German Employer's Liability Association (Energy, Textile, Electrical and Media Products)
- Default settings in accordance with VDE-AR-N-4105
- The voltage and frequency relay meets the high requirements of VDE AR-N 4105
- It can be used both for centralized and integrated grid and plant protection
- The latching rotary switches enable fast and easy setting of the required values
- An illuminated LCD provides plant status information
- The voltage and frequency relay ensures single-fault tolerance as stipulated in the VDE-AR-N 4105 application guide
- Passive procedure for detecting islanding

Application



Enable via external contact



Enable using external voltage 24 V AC, 40 ... 400 Hz

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Technical specifications

			Voltage and frequency relays
			5TT3427
Standards			IEC/EN 60255-1; IEC/EN 61000; VDE-AR-N-4105
Supply voltage U_v		V AC	3 x 85 ... 288
Supply voltage B1/B2		V AC	24 (at 40 ... 400 Hz)
Rated control circuit voltage U_c		V AC	230/400
Rated impulse withstand voltage	Acc. to IEC 60664-1		
• Contact 31, 32, 34		kV	6
• KA, KE and measuring circuit		kV	4
• Pollution degree			2
Recommended fuse Measurement inputs	gG/gL	A	6
Temperature range		°C	-20 ... +60 (in the range 0 °C ... -20 °C, there may be restrictions to the functionality of the LCD)
Conductor cross-sections			
• Rigid, flexible		mm^2	0.5 ... 4
• Flexible with end sleeve		mm^2	0.5 ... 2.5
• Multi-conductor connection 2 conductors of same cross-section		mm^2	0.5 ... 1.5
Output relay			
Mode of operation			Quiescent current
Contacts			
• NO contacts	AC15	A AC/V AC	3/230
• NC contacts	AC15	A AC/V AC	1/230
Thermal current		A AC	5
Electrical service life			
• NO contacts	AC15, 1A, AC230	Switching cycles	300000
Rise in frequency		Hz	50.2 ... 51.2
Drop in frequency		Hz	47.0 ... 49.8
Rise in voltage			
• Phase/neutral		V AC	253 ... 288
• Phase/phase		V AC	438 ... 498
Drop in voltage			
• Phase/neutral		V AC	184
• Phase/phase		V AC	319
Mean rise in voltage over 10 minutes			
• Phase/neutral		V AC	253 ... 267
• Phase/phase		V AC	438 ... 462
Re-connection time t_w		s	0 ... 600
Disconnection response time		ms	< 100
Connection condition			
• Frequency		%	5
• Voltage		Hz	47.5 ... 50.05
Accuracy			
• Frequency		% (± 1 digit)	≤ ±1
• Voltage		% (± 1 digit)	≤ ±0.02
Dimensions		W x H x D	70 x 90 x 71 mm

Selection and ordering data

	Contacts	U_e	I_e	U_c	Mounting width	SD	Article No. www.siemens.com/product?Article No.	Price per PU	PU (UNIT, SET, M)	PS	PG
		V	A	V AC	MW	d					
	**Voltage and frequency relays** For monitoring of grid infeeds > 30 kVA										
	3 CO	230	5	230/400	4		**5TT3427**		1	1 unit	1BK

Minimum order quantity (PS) or a multiple thereof can be ordered.

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5TT6 current relays

Overview

Current relays monitor single and three-phase systems for the flow of current, e.g. in emergency lighting installations, and the loading of motors. They are available as undercurrent, overcurrent and under/overcurrent relays.

Benefits

- Devices with an extremely broad range of applications of minimum 0.1 A to maximum 15 A without transformer
- Permanent overload capability up to 20 A or 30 A max. for up to 3 seconds, protect the function against uncontrolled plant states and increase plant availability
- Range changing enables the precise setting of current values through a high resolution
- Ultra compact current relays require only the smallest of space and save costs

Technical specifications

			5TT6111	5TT6112
Standards			IEC 60255	
Rated control current I_c		A	1 ... 10	
Rated control circuit voltage U_c		V AC	230	
Primary operating range **Overload capability, continuous** **Overload capability, short-time**	 At 50 °C ambient temperature max. 3 s	 × U_c A A	0.9 ... 1.1 15 20	
Rated frequency		Hz	50/60	
Response values	ON-switching OFF-switching		Infinitely variable Permanent, 4% hysteresis	
Switching delay t_v	Infinitely adjustable	s	0.1 ... 20	
Response time	Non-adjustable	ms	Current corresponds to the rated operational power of the continuous-flow heater	
Minimum contact load		V; mA	10; 100	
Rated insulation voltage U_i	Between coil/contact	kV	2.5	
Contacts µ contact (AC-15)	 NO contacts NC contacts	 A A	 3 1	
Electrical isolation	Creepage distances and clearances Actuator/contact	mm	3	
Rated impulse withstand voltage U_{imp}	Actuator/contact	kV	> 4	
Terminals	± screw (Pozidriv)		1	
Conductor cross-sections	Rigid Flexible, with end sleeve	max. mm^2 min. mm^2	2 × 2.5 1 × 0.5	
Permissible ambient temperature		°C	-20 ... +60	
Resistance to climate	Acc. to EN 60068-1		20/60/4	

			5TT6113	5TT6114	5TT6115
Standards			IEC 60255; DIN VDE 0435-303		
Rated control current I_c		 A A A A	4 ranges 0.1 ... 1 0.5 ... 5 1 ... 10 1.5 ... 15		
Rated control circuit voltage U_c		V AC	230		
Primary operating range **Overload capability, continuous** **Overload capability independent of measuring range**	 Max. 3 s	 × U_c A A	0.9 ... 1.1 20 30		
Rated frequency		Hz	50/60		
Response values	ON-switching OFF-switching		Infinitely variable Permanent, 4% hysteresis		
Switching delay t_v	Infinitely adjustable	s	0.1 ... 20		
Response time	Non-adjustable	ms	See Siemens Service and Support Portal, search term "Article No.", e.g. "5TT6113"		
Minimum contact load		V; mA	10; 100		
Rated insulation voltage U_i	Between coil/contact	kV	2.5		
Contacts µ contact (AC-15)	 NO contacts NC contacts	 A A	 5 1		
Electrical isolation	Creepage distances and clearances Actuator/contact	mm	3		
Rated impulse withstand voltage U_{imp}	Actuator/contact	kV	> 4		
Terminals	± screw (Pozidriv)		1		
Conductor cross-sections	Rigid Flexible, with end sleeve	max. mm^2 min. mm^2	2 × 2.5 1 × 0.5		
Permissible ambient temperature		°C	-20 ... +60		
Resistance to climate	Acc. to EN 60068-1		20/60/4		

Minimum order quantity (PS) or a multiple thereof can be ordered.

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Selection and ordering data

	Contacts	U_e	I_e	Measuring range	Mounting width	SD	Article No. www.siemens.com/product?Article No.	Price per PU	PU (UNIT, SET, M)	PS	PG
		V AC	A	A AC	MW	d					
	**Current relays for single-phase loads up to 230 V AC, auxiliary voltage and measuring circuit not isolated**										
	Undervoltage monitoring, single-phase										
	1 CO	230	5	1 ... 10	1		**5TT6111**		1	1 unit	1BK
	Overcurrent monitoring, single-phase										
	1 CO	230	5	1 ... 10	1		**5TT6112**		1	1 unit	1BK
	**Current relays for single-phase loads up to 230 V AC, auxiliary voltage and measuring circuit electrically isolated**										
	Undervoltage monitoring, single-phase										
	2 CO	230	5	4 ranges 0.1 ... 1 0.5 ... 5 1 ... 10 1.5 ... 15	2		**5TT6113**		1	1 unit	1BK
	Overcurrent monitoring, single-phase										
	2 CO	230	5	4 ranges 0.1 ... 1 0.5 ... 5 1 ... 10 1.5 ... 15	2		**5TT6114**		1	1 unit	1BK
	Over/undervoltage monitoring, single-phase										
	2 CO	230	5	4 ranges 0.1 ... 1 0.5 ... 5 1 ... 10 1.5 ... 15	2		**5TT6115**		1	1 unit	1BK

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5TT3 fuse monitors

Overview

Fuse monitors serve to monitor all types and versions of melting fuses that cannot be equipped with a fault signal contact. This enables integration in fault signaling circuits or a central alarm in order to improve plant availability.

Benefits

- Increase in plant availability, because fuse failures – which could cause considerable damage to the plant – are detected in plenty of time
- A fuse failure is detected even if the load is switched off. This ensures the highest level of plant availability

Technical specifications

			5TT3170
Standards			IEC 60255; DIN VDE 0435-110
Rated control circuit voltage U_c		V	380 ... 415 3 AC
Primary operating range		× U_c	0.8 ... 1.1
Rated frequency		Hz	50 ... 400
Internal resistance of measuring paths		Ω/V	> 1000
Max. permissible rear feed		%	90
Response/release time		ms	< 50
Rated impulse withstand voltage U_{imp} Input/output		kV	> 4
Rated operational voltage U_e		V AC	250
Rated operational current I_e	AC-1	A	4
Electrical service life	AC-11	In switching cycles at 1 A	1.5×10^5
Terminals	± screw (Pozidriv)		1
Conductor cross-sections	Rigid, max. Flexible, with end sleeve, min.	mm^2 mm^2	2 × 2.5 1 × 0.5
Permissible ambient temperature		°C	-20 ... +45
Resistance to climate	Acc. to EN 60068-1		20/45/4

Selection and ordering data

		U_e	I_e	U_c	Mounting width	SD	Article No. www.siemens.com/product?Article No.	Price per PU	PU (UNIT, SET, M)	PS	PG
		V AC	A	3 V AC	MW	d					
	**Fuse monitors** For all low-voltage fuse systems. Can be used in asymmetric systems afflicted with harmonics and regenerative feedback motors. Signal also for disconnected loads.	230	4	380 ... 415	2	►	**5TT3170**		1	1 unit	1BK

Minimum order quantity (PS) or a multiple thereof can be ordered.

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Overview

Phase monitors monitor the voltages in three-phase system and signal the power failure of one or more phases over a floating contact. Phase sequence monitors monitor the phase sequence in three-phase systems and signal any changes in the phase sequence – change of rotating field – over a floating changeover contact.

Benefits

- The three-phase LED display in the phase monitor and the LED display in the phase sequence monitors provide constant information on the switching state of the plant
- The compact design in 1 MW saves space

Technical specifications

			5TT3421	5TT3423
Standards			IEC 60255; DIN VDE 0435	
Rated control circuit voltage U_c		V AC	230/400	400
Primary operating range		× U_c	0.8 ... 1.1	
Rated frequency		Hz	50/60	
Rated power dissipation P_v	Electronics Contacts	VA VA	9 0.2	
Rated operational voltage U_e		V AC	250	
Rated operational current I_e		A	4	
Minimum contact load		V; mA	10; 100	
Rated insulation voltage U_i	Between coil/contact	kV	4	
Contacts	µ contact (AC-11)	A	3	
Electrical isolation	Creepage distances and clearances Actuator/contact	 mm	 4	
Rated impulse withstand voltage U_{imp}	Actuator/contact	kV	> 2.5	
Terminals	± screw (Pozidriv)		1	
Conductor cross-sections	Rigid, max. Flexible, with end sleeve, min.	mm^2 mm^2	2 × 2.5 --	
Degree of protection	Acc. to EN 60529		IP20, with connected conductors	
Safety class	Acc. to EN 61140/VDE 0140-1		II	
Permissible ambient temperature		°C	-20 ... +60	
Resistance to climate	Acc. to EN 60068-1		20/60/4	

Selection and ordering data

	Contacts	U_e	I_e	U_c	Mounting width	SD	Article No. www.siemens.com/product?Article No.	Price per PU	PU (UNIT, SET, M)	PS	PG
		V AC	A	V AC	MW	d					
	**Phase monitors** With 3 green LEDs for 3 phases										
	1 CO	250	4	230/400	1	▶	**5TT3421**		1	1 unit	1BK
	**Phase sequence monitors** With one green LED, which lights up for right-rotating field										
	1 CO	250	4	400	1	▶	**5TT3423**		1	1 unit	1BK

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Minimum order quantity (PS) or a multiple thereof can be ordered.

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5TT3 insulation monitors for industrial applications

Overview

Insulation monitors are used for protection of persons and against fire in non-grounded systems (IT systems). The insulation resistance of the system being monitored is measured against ground.

These types of measurements are specified according to DIN VDE 0100-410 – Power installations up to 1000 V – Protection against electric shock.

Technical specifications

			5TT3470	5TT3471
Supply voltage U_c		V AC V DC	220 ... 240 --	-- --
Primary operating range	For AC supply For DC supply	× U_c V DC	0.8 ... 1.1 --	-- --
Frequency range for U_c		Hz	45 ... 400	--
Rated power dissipation P_v	 For DC supply	VA W	Approx. 2 --	-- Approx. 1
Rated impulse withstand voltage U_{imp}	Terminals A1 to A2 Terminals L to PE Terminals A1, A2 to L, PE Terminals against contacts	kV kV kV kV	< 4 < 4 < 4 < 6	< 4 < 4 < 3 < 6
Measuring circuit			For three-phase and AC systems	For direct voltage systems
Measurement voltage range U_{meas}		V AC V DC	0 ... 500 --	-- 12 ... 280
Primary operating range		× U_{meas}	0 ... 1.1	0.9 ... 1.1
Frequency range for U_{meas}		Hz	10 ... 10000	--
Alarm values	Measuring shunt R_{AL}	kΩ	5 ... 100	5 ... 200
Setting of alarm value	On absolute scale		Infinitely variable	Infinitely variable
Alternating current internal resistance	Internal testing resistance	kΩ	> 250	--
Direct current internal resistance	Internal testing resistance L+ and L- to PE	kΩ kΩ	> 250 --	-- 75 each
Measurement voltage U_{meas}	Internal	V DC	Approx. 15	--
Max. measurement current I_{meas}	Short circuit	mA	< 0.1	0.2 ... 4 depending on the voltage
Direct interference voltage	Max. permissible	V DC	500	--
Response delay	At R_{AL} 50 kΩ and 1µF and ∞ to 0.9 × R_{meas} and R_{meas} from ∞ to 0 Ω	 s s	 < 1.3 < 0.7	 0.8 0.4
Switching hysteresis	At R_{meas} 50 kΩ	%	15	10 ... 15
Contacts	µ contact		2 CO	2 CO
Rated operational voltage U_e		V	230 AC	12 ... 280 DC
Rated operational current I_s	Thermal current I_{th} DC-13 at 24 V DC DC-13 at 250 V DC AC-15 AC-15 NO contacts AC-15 NC contacts	A A A A A A	4 -- -- -- 5 2	4 2 0.2 3 -- --
Terminals	± screw (Pozidriv)		2	2
Conductor cross-sections	Rigid, max. Flexible, with end sleeve, min.	mm^2 mm^2	2 × 2.5 1 × 0.50	
Permissible ambient temperature		°C	-20 ... +60	
Degree of protection	Terminals (according to EN 60529) Enclosure (according to EN 60529)		IP20 IP40	
Resistance to climate	Acc. to EN 60068-1		20/060/04	

Selection and ordering data

	Contacts	U_c	U_e	Measuring range	Mounting width	SD	Article No. www.siemens.com/product?Article No.	Price per PU	PU (UNIT, SET, M)	PS	PG
		V AC	V	kΩ	MW	d					
	**Insulation monitors**										
	For monitoring the insulation resistance in non-grounded three-phase and AC systems from 10 ... 1000 Hz against ground										
	2 CO	230	0 ... 500 V AC	5 ... 100	2		**5TT3470**		1	1 unit	1BK
	For monitoring the insulation resistance in non-grounded DC systems against ground										
	2 CO	--	12 ... 280 V DC	5 ... 200	2		**5TT3471**		1	1 unit	1BK

Minimum order quantity (PS) or a multiple thereof can be ordered.

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Overview

Fault signaling units are used in small plants where the installation of complex fault signaling systems would be too labor-intensive and too expensive. In the event of a fault, they enable fast fault localization of all monitoring devices and limit monitors installed in a plant from a central location. This increases plant availability. With the correct sensor configuration, they also provide the option of preventative maintenance.

- 4 fault signal inputs with LED
- 1 LED as centralized fault indicator
- One unit each for centralized fault indication and acoustic signaling
- With acknowledgment for acoustic indicators
- Open-/closed-circuit principle to the 4 inputs can be adjusted via jumpers X1 – X2
- A maximum of 39 5TT3461 expansion fault signaling units can be connected to the 5TT3460 centralized fault signaling unit
- The maximum possible cable length between 5TT3460 centralized fault signaling units and 5TT3461 expansion fault signaling units is approx. 100 m with a conductor cross-section of 1.5 mm^2.

Benefits

- Ultra compact device designs that only require the smallest of spaces in distribution boards
- The modular design means that it is easy to add devices as your system expands

Technical specifications

			5TT3460	5TT3461
Standards			IEC 60255; DIN VDE 0435-110, -303	
Rated control circuit voltage U_c		V AC	230	
Primary operating range		× U_c	0.8 ... 1.1	
Rated frequency f_n		Hz	50/60	
Fault signaling inputs S1 ... S4		V AC	230	
Signal voltage		V	7 ... 10	
To terminals S and H				
Noise pulse duration		ms	≥ 100	
Acknowledgment pulse duration		ms	≥ 200	
Contacts				
• Rated operational voltage U_e		V AC	230	--
• Rated operational current I_e		A	5	--
• Minimum contact load		V; mA	10; 100	--
Connections				
• Terminals	± screw (Pozidriv)		PZ 1	
• Conductor cross-sections				
- Rigid, max.		mm^2	2 × 2.5	
- Flexible, with end sleeve, min.		mm^2	1 × 0.5	
Permissible ambient temperature		°C	-20 ... +60	
Humidity class	Acc. to IEC 60068-2-30		F	

Selection and ordering data

	U_e	I_e	U_c	Mounting width	SD	Article No. www.siemens.com/product?Article No.	Price per PU	PU (UNIT, SET, M)	PS	PG
	V AC	A AC	V AC	MW	d					
Centralized fault signaling units with transparent cap										
	230	5	230	2		**5TT3460**		1	1 unit	1BK
Expansion fault signaling units with transparent cap										
	230	--	--	2		**5TT3461**		1	1 unit	1BK

Minimum order quantity (PS) or a multiple thereof can be ordered.

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5TT5 EMERGENCY STOP modules

Overview

EMERGENCY STOP circuits are common safety measures in all laboratory equipment and industrial plants. The EMERGENCY STOP modules used here must meet the most rigorous demands with regard to functional reliability. Benchmark is the degree of self-monitoring.

Benefits

- The electrical isolation between electric circuit and control meets the requirements of the standard
- An LED for the operating and switching state provides constant information on the operating state

Technical specifications

				5TT5200
Standards				IEC 60204-1; EN 60204-1 (VDE 0113-1)
Supply				
• Rated control circuit voltage U_c			V AC	230
- Primary operating range			× U_c	0.8 ... 1.1
• Rated frequency f_n			Hz	50
• Rated power dissipation P_v	Coil/drive			3.5
	Contact per pole		VA	0.8
Control voltage	Terminal Y1		V AC/DC	24
Control current	Terminal Y1		mA DC	45
Recovery time			ms	500
Safety				
• Electrical isolation, creepage distances and clearances, actuator/contact			mm	3
• Rated impulse withstand voltage U_{imp} actuator/contact			kV	> 4
Contacts				
• Contacts	NO contacts	AC-15	A	3
	NC contacts	AC-15	A	2
	NO contact/ NC contact	AC-1	A	5
• Contact gap			mm	> 1
• Electrical service life	AC-15, 2 A, 230 V AC		Switching cycles	10^5
• Reliable switching frequency			Switching cycles/h	600
Vibration resistance				
Amplitude	Acc. to EN 60068-2-610	Up to 55 Hz	mm	0.35
Connections				
• Terminals	± screw (Pozidriv)			PZ 1
• Conductor cross-sections of main current paths				
- Rigid	Max.		mm^2	2 × 2.5
- Flexible, with end sleeve	Min.		mm^2	1 × 0.5
Permissible ambient temperature			°C	0 ... +50
Resistance to climate	Acc. to EN 60068-1			0/55/04

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Selection and ordering data

		U_e	I_e	U_c	Mounting width	SD	Article No. www.siemens.com/product?Article No.	Price per PU	PU (UNIT, SET, M)	PS	PG
		V AC	A AC	V AC	MW	d					
	EMERGENCY STOP modules										
		400	5	230	4		**5TT5200**		1	1 unit	1BK

Minimum order quantity (PS) or a multiple thereof can be ordered.

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Overview

Level relays are used for the monitoring and control of conductive, non-combustible liquids and powders. They ensure overflow and dry run protection. Due to their sensor performance, the devices can also be used for general resistance monitoring.

LED displays:

- Green LED: Lights up when operational voltage is applied
- Yellow LED: Lights up if MIN output relay is activated
- Red LED: Lights up if MAX output relay is activated

Benefits

The measuring range up to 450 kΩ enables a differentiation between foam and liquid. It also increases the universal application for resistance measurements.

Due to its low-frequency, electrically isolated measuring circuit, the device has a high immunity to interference against system coupling, which enables cable lengths of up to 1500 m and suppresses the effects of electrolysis in the liquid

- The two outputs for minimum and maximum control can also be used for the advance warning and tripping of limit values
- 3 electrode connections for 1-step and 2-step level control
- All standard products can be used as electrodes
- High immunity to interference of the measuring circuit isolated from the system
- Programmable for open-circuit principle (with bridge X2 COM) or closed-circuit principle (without jumper)
- Separately adjustable delay times for $t_{v\,min}$ and $t_{v\,max}$, 0.2 s to 2 s

Technical specifications

			5TT3435
Standards			IEC 60255; DIN VDE 0435-110
Supply			
• Rated control circuit voltage U_c		V AC	230
- Primary operating range		× U_c	0.8 ... 1.1
• Rated frequency f_n		Hz	50/60
Setting range of the liquid level		kΩ	2 ... 450
Switching point hysteresis of set value			
• At 450 kΩ		%	3
• At 2 kΩ		%	6
Voltage temperature influence	From set value	%	< 2
Max. cable length to the electrodes at 100 µF/km	Setting kΩ		
	450	m	50
	100	m	200
	35	m	500
	10	m	1500
	5	m	3000
Electrode voltage	Max.	V AC	Approx. 10
Electrode current	Max.	mA AC	Approx. 1.5
Response delay	Adjustable	s	0.2 ... 20
OFF-delay	Adjustable	s	0.2 ... 20
Rated operational voltage U_e		V	250
Rated operational current I_e		A	5
Test voltage			
	Input/auxiliary circuit	kV	4
	Input/output circuit	kV	4
	Auxiliary/output circuit	kV	4
Connections			
• Terminals	± screw (Pozidriv)		PZ 2
• Conductor cross-sections			
- Rigid	Max.	mm^2	2 × 2.5
- Flexible, with end sleeve	Min.	mm^2	1 × 0.5
Permissible ambient temperature		°C	-20 ... +60
Resistance to climate	Acc. to EN 60068-1		20/60/4

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Minimum order quantity (PS) or a multiple thereof can be ordered.

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Selection and ordering data

		U_e	I_e	U_c	Mounting width	SD	Article No. www.siemens.com/product?Article No.	Price per PU	PU (UNIT, SET, M)	PS	PG
		V AC	A AC	V AC	MW	d					
	**Level relays**	230	4	230	2		**5TT3435**		1	1 unit	1BK
	**Immersion electrodes** • Made of stainless steel, with PG13 sealing cap • Temperature range 0 ... 60 °C • Suitable for pure water in open containers With terminal connection						**5TG8223**		1	1 unit	1BK

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Minimum order quantity (PS) or a multiple thereof can be ordered.

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Overview

Line circuit relays are used to interrupt circuits and prevent electromagnetic fields in circuits where there are currently no active loads. If the loads are disconnected, and the line circuit relay measures a usage of only 2 to 20 VA – adjustable – it disconnects the cable to the supply voltage and switches over to extra-low voltage. As soon as loads are reconnected, the line circuit relay detects the increase in usage and switches back to the supply voltage. While the line circuit relay switches off any unnecessary system components, it is not a device for ensuring isolation in the sense of safe disconnection.

The line circuit relay is unable to detect consumers with electronic power supply units, e.g. electronically controlled vacuum cleaners. It is expedient to connect such devices to a base load resistor (PTC resistor) so that the line circuit relay is reset to supply voltage.

Benefits

- High availability to a wide range of loads, as all resistive, capacitive and inductive loads are detected
- Adjustable from 2 to 20 VA
- With status display for contact adjustment
- With switch continuously ON
- With safety information on stickers for socket outlets and distribution boards

Technical specifications

			5TT3171
Standards			IEC 60255; DIN VDE 0435-110
Rated control circuit voltage U_c		V AC	230
Primary operating range		× U_c	0.85 ... 1.15
Rated frequency		Hz	50/60
Rated power dissipation P_v	Electronics Contacts	VA VA	5 2.6
Monitoring voltage		V	3
Response value	Adjustable	VA	2 ... 20
Release value	% of the response value		70
Rated impulse withstand voltage U_{imp}	Input/output	kV	> 4
Rated operational voltage U_e		V AC	250
Rated operational current I_e	AC-1 AC-11	A A	16 3
Contacts			μ contact
Electrical service life	In switching cycles at 3 A	AC-11	5×10^5
Terminals	± screw (Pozidriv)		PZ 1
Conductor cross-sections			
• Rigid • Flexible, with end sleeve	Max. Min.	mm^2 mm^2	2 × 2.5 1 × 0.5
Permissible ambient temperature		°C	-20 ... +45
Degree of protection	Acc. to IEC/EN 60529		IP20, with connected conductors
Safety class	Acc. to EN 61140/VDE 0140-1		II
Humidity class	Acc. to IEC 60068-2-30		F

Selection and ordering data

	Contacts	U_e	I_e	U_c	Mounting width	SD	Article No. www.siemens.com/product?Article No.	Price per PU	PU (UNIT, SET, M)	PS	PG
		V AC	A AC	V AC	MW	d					
	**Line circuit relays** For disconnecting the voltage of electrical systems even when loads are disabled										
	1 NC	250	16	230	1		**5TT3171**		1	1 unit	1BK
	Base load resistors for electronic devices With 15 cm connection wires, end sleeves and shrink sleeving						**5TG8222**		1	1 unit	1BK

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Minimum order quantity (PS) or a multiple thereof can be ordered.

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Introduction

Overview

IEC/EN 61851 describes the safety requirements that must be met by conductive charging systems for electric vehicles. Standard-compliant AC charging in charging mode 3 requires a charging station with safety-relevant functions.

Application

Our charging units are system-tested, CE-compliant charging stations for charging electric vehicles in operational mode 3 according to IEC/EN 61851 and IEC/EN 62196 for indoor and outdoor use, such as carports, garages, workshops, underground parking garages or multistory parking garages.

Design

Charging unit for wall mounting



The modern functional design of the WB140A combines with its ease of handling to provide an optimal solution. It complies with the revised standard IEC 62196-2 and comes with the new charging coupler Type 2 Generation 2. This ensures compatibility with future generations of electric vehicles.

Installing electric vehicle chargers in older buildings can be a challenge. With the WB140A charging unit, the maximum value for the charging current can be adjusted by an electrical expert to match facility capability. The settings range from a maximum current of 32/20 A to 10 A. The charging unit cable can be connected optionally from the rear or from below. The delay function supports setting a charging delay in two-hour increments (2/4/6/8 hours) up to a max. of 8 hours. This allows charging with PV current or utilizing off-peak tariffs. The charging process starts automatically after the time delay has elapsed.

Large LEDs at top right and top left in the housing indicate the current operational status even from a distance. The following states are displayed:
"Ready-to-charge" / "Charging" / "Fault".

Charging cable for home and travel



Charge flexibly and safely

Charging with the new CC100A charging cable in charging mode 2 in compliance with IEC 61851-1 is a safe and convenient alternative to using charging stations or posts. The mobile charging station for home and travel can be simply connected to common household plug-and-socket devices. The intuitive control box enables fast and easy adaptation of the charging current to any building installation. The integrated type A RCCB circuit breaker meets the requirements for safe charging of electric vehicles in compliance with IEC 61851.

Functions for more safety

The clearly arranged LED indications on the control box indicate faults that cause automatic interruption of charging. Multiple-level temperature management interrupts charging if temperatures are too high or too low. Multiple-level temperature management therefore prevents a thermal overload. Charging is continued automatically once the temperature returns to a normal level. During the self-test before the start of every charging operation, wiring faults and welded contacts are also detected and are indicated to users by LEDs. The circuit is interrupted immediately in the event of a fault, thus providing comprehensive protection for users and electric vehicles.

Practical, robust enclosure

The CC100A charging cable's functional and ergonomic design permits easy operation and space-saving storage. The enclosure and the charging coupler are resistant to vehicles passing over them and also to soiling, moisture and temperature fluctuations. The control box even achieves the high IP67 degree of protection.

Universal in use

The range includes versions that cater for most common plug sockets in Europe. And e.g. the internationally used camping plug (CEE blue 6h) enables faster single-phase charging at 16 A (charging power 3.7 kW). The new CC100A charging cable is available with type-1 or type-2 vehicle charging couplers, enabling connection to virtually any commercially available vehicle.

Minimum order quantity (PS) or a multiple thereof can be ordered.

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Technical specifications

		WB140A		
		5TT3201-1KK25	**5TT3201-1KK27**	**5TT3201-1KK37**
Standards		IEC/EN 61851-1; IEC/EN 61851-22; IEC/EN 62196-1; IEC 62196-2;		
Operational voltage	V AC	230	230/400	
Rated frequency	Hz	50/60		
Rated current	A	1 x 20	3 x 20	3 x 32
Degree of protection		IP44		
Safety class		I		
Touch protection according to EN 50274		Finger and back-of-hand safe		
Ambient conditions				
• Ambient temperature	°C	-25 ... +40		
• Storage temperature	°C	-30 ... +60		
• Relative humidity	%	≤ 95		
• Installation location		Suitable for interior and exterior use		
Mains connection		Bottom/rear		
Conductor cross-sections	mm^2	1.50 ... 6		2.5 ... 10
Enclosure				
• Material		Plastic		
• Color		RAL 7035 (light gray)		
• Dimensions (H x W x D)	mm	420 x 420 x 483		
• Weight	kg	5.5	5.8	6.6
• Door/hinged lid		Plastic		
• Lock		--		
Charging outlet				
• Charging mode according to IEC 61851-1		3		
• Connection type according to IEC 62192		C, charging cable with charging coupler Type 2 Gen 2		
Charging outlet contactor				
• Rated operating current	A	40	40	40
• Number of poles		2 NO	4 NO	4 NO
Residual current protective device				
• RCCBs		--		
• Version		--		
• Rated current	A	--		
• Rated residual current	mA	--		
Conductor protection				
• Miniature circuit breaker		--		
• Tripping characteristic		--		
• Rated current	A	--		
• Rated breaking capacity	kA	--		
Operator controls		PAUSE (STOP/START charging process) DELAY 2, 4, 6, 8 hours (charging process delay)		
Displays		LED, green, orange, red, blue		
Length of charging cable	m	4		

Selection and ordering data

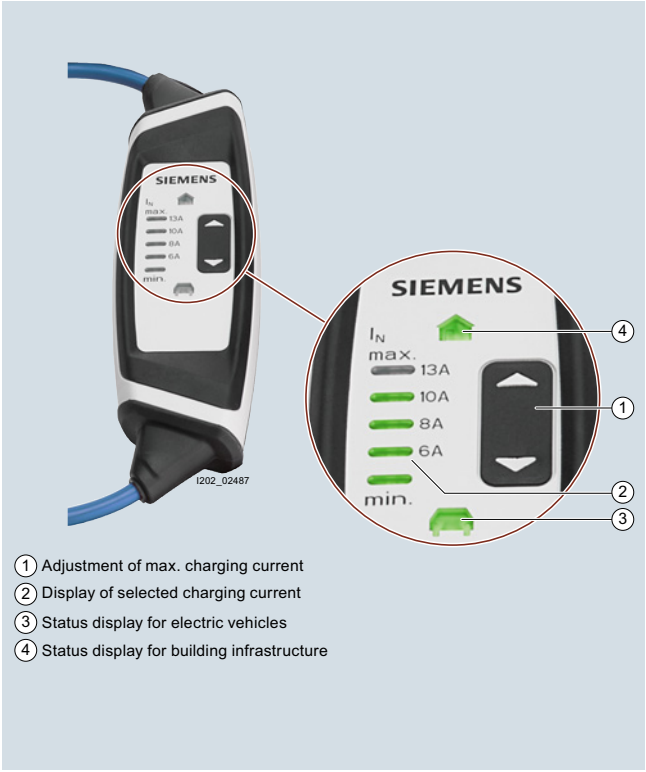
	Rated current	Plug type	Rated operational voltage	SD	Article No. www.siemens.com/product?Article No.	Price per PU	PU (UNIT, SET, M)	PS	PG
	A		V AC						
	**WB140A charging unit with charging cable and charging coupler**								
	20	2 Gen 2	230		**5TT3201-1KK25**		1	1 unit	1DA
	20	2 Gen 2	230/400		**5TT3201-1KK27**		1	1 unit	1DA
	32	2 Gen 2	230/400		**5TT3201-1KK37**		1	1 unit	1DA

Minimum order quantity (PS) or a multiple thereof can be ordered.

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CC100A charging cable

Overview



1 Adjustment of max. charging current
2 Display of selected charging current
3 Status display for electric vehicles
4 Status display for building infrastructure

CC100A charging cable

Benefits

User-friendliness

- Intuitive operation with self-explanatory symbols and unambiguous display elements.
- The large keys for setting the maximum load current are easy to operate, even when wearing gloves.
- Following a power failure, the charging process continues automatically. No action is necessary on the part of the user.
- The charging cable can be used in extreme environmental conditions without issue. Temperatures down to -32 °C, snow, salt or moisture are not a problem for the cable or control box – and they can also cope with water jets, such as from a garden hose (degree of protection IP65). The control box has even been tested for leaks while submerged up to 1 m under water (IP67).
  While plugged in, the building-end plug and the vehicle-end charging coupler are protected against water splashed on all sides (IP44), thus enabling easy charging of a vehicle outdoors in any weather.
- The durable, rugged housing is resistant to the considerable strains of everyday use on the move. The electronic circuitry is protected even if a vehicle inadvertently rolls over it, in accordance with the requirements of IEC 62335.
- The rounded design of the control box makes it easy to roll up the cable.

Automatic temperature control

In the event of inadmissible heat development due to a defect in the building socket (e.g. worn plug contacts or loose screw connections) or during charging in a hot environment, the unit and the socket are protected against damage by a temperature sensor in the plug and in the control box:

- The charging current is reduced automatically if an excess temperature is detected in the control box or in the plug.
- During active current reduction, the charging process is continued with the minimum current (6 A) and users are informed by a flashing LED. The operation is continued with the set charging current as soon as the temperature is within the normal temperature range again.
- Camping plugs and camping sockets are designed for continuous operation with loads of 16 A, and as such, these cable versions do not require temperature monitoring in the camping plug. The temperature is nevertheless still monitored in the control box, even for these versions.

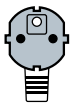
Safety features

- The maximum charging current can be adjusted to country-specific restrictions or older building installations in which only low charging currents are allowed. This avoids any dangerous overloading of the building's electrical installation.
- The control box contains an electronic RCCB to also ensure that persons are protected – regardless of the local electrical system. This ensures compliance with IEC 61851 for charging mode 2.
- The integrated RCCB circuit breaker opens on response of the L, N and PE cables' relay contacts. The inclusion of the PE cable in residual current protection ensures that persons are also protected in the event of certain hazardous wiring faults (e.g. protection against electrocution in the event that the L and PE contacts in the building socket have been inadvertently swapped during wiring and so PE is live).
- A fully automatic self-test of the cable, which checks all safety attributes – including the continuity of the PE conductor connection in the on-site infrastructure – is performed during commissioning and before the start of every charging operation.
- Users are warned immediately by a red LED fault indication if relay contacts are welded.
- If a fault occurs during charging, e.g. if the vehicle PE conductor is defective, charging is interrupted and the relay contacts are opened. Users are warned straight away by a red LED fault indication.

Minimum order quantity (PS) or a multiple thereof can be ordered.

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Technical specifications

CC100A charging cable		5TT3201-...			
		-1KK80	-1KK81	-1KK82	-1KK83
Line-side plug type					
• With SCHUKO R combination plug 90° (CEE 7/7) 		✔	✔	--	--
• With camping plug (CEE blue 6 h) 		--	--	✔	✔
Charging coupler (on vehicle)					
• With type 1 charging coupler 		--	✔	--	✔
• With type 2 charging coupler 		✔	--	✔	--
Length of cable					
• Total length of cable	m	4	8		
• Cable length (building end)	m	1.4		0.3	
Charging mode according to IEC 61851-1		Charging mode 2, keys for setting the charging current			
Standards		IEC/EN 61851-1; IEC/EN 62196; IEC 62335			
Supply voltage	V AC	230			
Frequency	Hz	50 Hz			
Line system configuration		TN, TNC, TNS, TT			
Max. rated current	A	13		16	
Adjustable charging current	A	6, 8, 10, 13		6, 8, 10, 13, 16	
Max. charging power	kW	3		3.7	
Power loss	W	< 9			
Rated residual current	mA	30			
RCCBs (electronic)	Type	A			
Degree of protection acc. to IEC/EN 60529					
• Control box		IP67			
• Charging coupler (on vehicle)		IP44			
• Plug (line-side)		IP44			
Safety class		II			
Overvoltage category		CAT II			
Touch protection according to EN 50274		Finger and back-of-hand safe			
Ambient conditions					
• Operating temperature	°C	-32 ... +40			
• Storage temperature	°C	-40 ... +75			
• Relative humidity	%	max. 95			
• Installation location		Suitable for interior and exterior use			
Enclosure					
• Material		Plastic			
• Color		Light gray (RAL 7035) and black			
• Dimensions (H x W x D)	mm	52 x 240 x 100			
• Weight	kg	2.5	2.9	3.2	2.8
Displays		LEDs, green and red			

Selection and ordering data

	Rated current (max. charging current)	Charging coupler Type	Rated operational voltage	SD	Article No. www.siemens.com/product?Article No.	Price per PU	PU (UNIT, SET, M)	PS	PG
	A		V AC	d					
	CC100A charging cable with SCHUKO combination plug								
	13	2	230		**5TT3201-1KK80**		1	1 unit	1DA
	13	1	230		**5TT3201-1KK81**		1	1 unit	1DA
	CC100A charging cable with camping plug								
	16	2	230		**5TT3201-1KK82**		1	1 unit	1DA
	16	1	230		**5TT3201-1KK83**		1	1 unit	1DA

Minimum order quantity (PS) or a multiple thereof can be ordered.

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Notes