

Measuring Devices and Power Monitoring

Other Measuring Devices

Time counters for front-panel mounting

Overview



Time counters: Left: Counting mechanism, right: Counting mechanism with front frame

Time and pulse counters for control cabinets, control systems and mechanical engineering are used, e.g. in boilers, machine tools or compressors. The pulse counters count the starting frequencies. This supports planning for preventative maintenance.

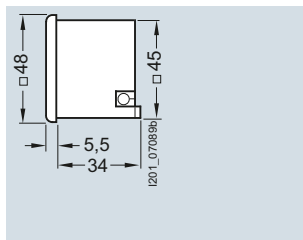
In-time and regular maintenance is the best protection against unexpected shutdowns.

Technical specifications

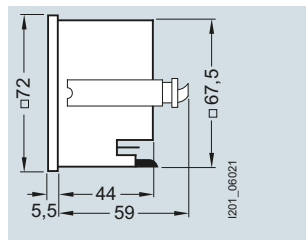
		7KT5500	7KT5501	7KT5502	7KT5503	7KT5504	7KT5505
Standards		EN 60255-6					
Rated control supply voltage U_c	V AC V DC	-- 10 ... 80	115 --	230	115	230	24
Rated frequency	Hz	--	50		60		50
Front-panel mounting	Switchboard cutout						
• Without masking frame	mm × mm	45.2 × 45.2 ^{+0.3}					
• With masking frame	Ø mm	50.2 ^{+0.3}					
• With masking frame	55 × 55 mm						

		7KT5600	7KT5601	7KT5602	7KT5603	7KT5604
Standards		EN 60255-6				
Rated control supply voltage U_c	V AC V DC	-- 10 ... 50	115 --	230	115	230
Rated frequency	Hz	--	50		60	
Front-panel mounting	Switchboard cutout	mm × mm	68 ^{+0.5} × 68 ^{+0.5}			

Dimensional drawings



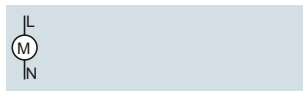
7KT55



7KT56

Circuit diagrams

Connections



7KT55, 7KT56

Overview



4NC53 current transformers

Technical specifications

4NC current transformers for measuring purposes

Standards	EN 60044-1, VDE 0414-44-1
Window-type current transformers	The conductor to be measured (busbar or cable) is passed through the window opening and constitutes the primary circuit of the window-type current transformer. Pin-wound transformers: An economical solution especially for small primary currents of 5 ... 75 A are window-type current transformers when the conductor to be measured is pin-wound several times.
Rated primary current I_{pn}	Current transformers can be continuously loaded with 1.3 times the rated primary current (I_{pn}).
Rated secondary current I_{sn}	
1 A	Particularly suitable for longer measuring leads. Cable losses of only 4 % in contrast to 5 A current transformers.
5 A	5 A current transformers generate 25 times the power losses on measuring leads as compared with 1 A current transformers. These stray losses result in higher power in the case of long cables. Only recommended for use with short measuring leads.
Accuracy class	
Class 1	Operation measurement, internal metering Current error $\pm 1\%$ at $1 \times I_{pn}$ and $1.2 \times I_{pn}$
Class 3	Coarse measurement Current error $\pm 3\%$ at $0.5 \times I_{pn}$ and $1.2 \times I_{pn}$
Rated power P_n	The rated power of transformers is specified in VA. The actual load rating should be similar to the rated power; a lower actual load rating (underburden) increases the overcurrent factor and measuring devices are not sufficiently protected in case of a short-circuit, a higher actual load rating (overburden) has a negative effect on the accuracy. With a frequency of 60 Hz the rated power increases to 1.2 times. With $16^{2/3}$ Hz the output power decreases to $1/3$ of the rated power.
Maximum voltage for equipment U_m	This is the rms value of the maximum voltage between the conductors of a system. For this voltage the insulation must be rated at normal operating conditions. 4NC5 current transformers are suitable for 720 V.
Overcurrent limiting factor FS	The overcurrent limiting factor is expressed using the characters FS and a factor, e.g. FS5 or FS10. When a short-circuit current flows through the primary winding of a current transformer, the stress on the measuring devices connected to the current transformer is the lower the smaller the overcurrent limiting factor is.
Rated short-time thermal current I_{th}	The rated short-time thermal current I_{th} is the rms value of the primary current with a duration of one second, whose heat effect the current transformer can resist without being damaged in the event of a short-circuited secondary winding.
Rated impulse current I_{dyn}	The rated impulse current I_{dyn} is the highest instantaneous value of the current after a short circuit whose force the current transformer can resist without being damaged. The rated impulse current is specified as the peak value.

Measuring Devices and Power Monitoring

Accessories

4NC current transformers

4NC51 window-type current transformers, used as pin-wound transformers, Classes 1 and 3, from 5 A to 75 A

Pin-winding increases the primary current of the current transformer. Consequently, window-type current transformers can also be used for low primary currents.

Basic type		4NC5112	4NC5113	4NC5115	4NC5117	4NC5121	4NC5122	4NC5123
Rated primary current	A	50	60	75	100	150	200	250
Power	VA	2.5	2.5	2.5	2.5	2.5	5	5
Primary current to be measured	Number of required pin windings							
	A	Class 3			Class 1			
	5	10	--	--	--	--	--	--
	10	5	6	--	10	--	--	--
	15	--	4	5	--	10	--	--
	20	--	3	--	5	--	10	--
	25	2	--	3	4	6	8	10
	30	--	2	--	--	5	--	--
	40	--	--	--	--	--	5	--
	50	--	--	--	2	3	4	5
	75	--	--	--	--	2	--	--



4NC51 used as pin-wound transformer