SPECIFICATION FOR OVERCURRENT RELAYS

without auxiliary supply

1 Procedure

A manufacturer willing to classify an overcurrent relay according to this specification should provide:

- A complete file providing a clear, unambiguous answer to the requirements hereafter; this file should be provided in paper form (2 copies) and in electronic form.
- One fully equipped relay to be classified, for testing purposes, including but not limited to the current transformer, a trip coil and a complete set of documentation.

These documents and relay should be sent to Synergrid (att. Secretary of the commission CE10), Rodestraat 125, 1630 Linkebeek.

After receipt of all documents and relay, Synergrid will send a quotation to the manufacturer for the requested analysis and classification. The analysis will start only after the order has been received from the manufacturer.

2 Identification Form Overcurrent Protection without auxiliary supply

Manufacturer :			
Type :			
Version:			
Date start approval			
Type of approval :	New relay	New version of approved relay	New version of existing file
Approved :	YES / NO	***Date of approval :***	

3 Additional Information Overcurrent Protection without auxiliary supply

Comments :

4 Main characteristics

4.1 Minimum requirements

Type	*Function*	*Requirements*	*Remarks*	*OK?*
Interface	Number	At least 4 (3 phase currents + zero sequence)		
	Tripping contacts	≥ 1		
	Signalable information via indicator LEDs or panel display	Watchdog Trip functions, started functions, service : memorized		
	Reset	Possibility of local reset		
	Sealing of the settings	Sealing of the settings at hardware level		
General	Local display	Presence of a local display required		
		Visualization of primary currents required		
Signalling Information	Available information	Trip of function		

4.2 Additional features

Please indicate the availability of the following features.

Type	*Feature*	*Availability [YES / NO]*	*Characteristics*	*Requirements*
Interface	Signalling contacts		Number :	
MM-Interface	Software compatibility with windows XP and more recent windows versions			
	User software : Standardized (common for one family of relays)			
	User language : English			
	Compatibility with all previous versions of the relay			
	Sealing of the settings at software level (password)			
Autosurpervision	Watchdog of supply, memories, processor, software			
General	Stability of working : Normal operation of			

	the relay while in communication			
	Presence of a local port for communication with relay (USB, Ethernet or local conversion mean provided with relay by manufacturer : USB or Ethernet)			
	If battery is included, this must be replaceable with the relay in operation			
Date and time	Setting : Possibility to program date and time			
	Precision : Possibility to set : year, month, day, hour, minutes, seconds			

5 Technical Characteristics

5.1 Minimum requirements

Type	***Function***	***Requirements***	***Remarks***	***OK?***
Electric strength	50Hz-1minute	2kV		
	Surge-1,2/50μs, 0.5J	5kV		
Mechanical endurance	Working	10000 workings of trip contact		
	Vibrations	Class 1 according to CEI 255-21-1		
Limits of quantities and influencing factors	Ambient air temperature	-5°C to 55°C		
	Storage temperature	-20°C to 55°C		
	Relative humidity	According to CEI 68-2-30		
Relay		Dimensioned in function of the associated circuit breaker		
	Total consumption	< 15 W		
Tripping contacts		Dimensioned in function of the associated coil		
Reaction time		Instantaneous reaction time under fault must be under 200 ms (even when relay not supplied befroe fault)		

5.2 Additional features

Please complete the following table only if the relay has additional contactors (see § 4.2)

Type	***Function***	***Requirements***	***Remarks***	***OK?***
Mechanical endurance	Working	10000 workings of signalling contacts		
Signalling contacts		Please provide specifications		

6 EMC requirements

6.1 Minimum requirements

Standard	*Concerned*	*Requirements*	*Remarks*	*OK?*
IEC 60255-22-2 Electrostatic discharge tests	Enclosure port	Class 3 of severity test : 6 kV for contact discharge to conductive surfaces 8 kV air discharge at insulating surfaces		
IEC 60255-22-3 Radiated electromagnetic field disturbance test	Enclosure port Antenna facing the front and the rear of the relay 80 – 1000 MHz 1400 – 2700 MHz 80 % AM (1 kHz)	10 V/m r.m.s. within the swept frequency range 80 MHz to 1000 MHz and 1400 to 2700 MHz		
IEC 61000-4-8 Power frequency magnetic field	Enclosure port	30 A/m continuous 300 A/m for 1 to 3 s		
IEC 60255-25 Emission		**Radiated emission limits** 30 MHz - 230 MHz : 40 dB (µV/m) quasi peak, measured at 10 m distance 230 MHz -1000 MHz : 47 dB (µV/m) quasi peak, measured at 10 m distance		

6.2 Additional features

Please complete the following table only if additional features are available (see § 4.2)

Standard	*Concerned*	*Requirements*	*Remarks*	*OK?*
IEC 60255-22-1 1 MHz oscillatory waves	AC, DC low voltage Input and Output power ports Communication Ports	CM: 2,5 kV ± 10% / DM 1 kV ± 10% / Oscillation frequency 1 MHz CM: 2,5 kV ± 10% / DM 1 kV ± 10% / Oscillation frequency 1 MHz CM: 1 kV ± 10% / DM 0 kV / Oscillation frequency 1 MHz		

IEC 60255-22-4 electrical fast transient/burst immunity test	Communication Ports AC, DC low voltage Input and Output power ports Auxiliary power supply inputs	Test severity level: Class A 2 kV ± 10% / repetition rate 5 kHz 4 kV ± 10% /repetition rate 5 kHz 4 kV ± 10% / repetition rate 5 kHz		
IEC 60255-22-5 Surge immunity test	Communication Ports AC, DC low voltage Input and Output power ports, auxiliary power supply ports	Test severity level: Class A Line to earth:2 kV ± 10% Line to earth:4 kV ± 10% ; Line to line: 2 kV ± 10%		
IEC 60255-22-6 conducted disturbances induced by radio frequency fields	Communication Ports AC, DC low voltage Input and Output power ports, auxiliary power supply ports	10 V R.M.S. 10 V R.M.S. 10 V R.M.S. 10 V R.M.S.		
IEC 60255-22-7 Power frequency immunity test	DC status input port	Test level class A Differential Mode (DM) tests 150 V r.m.s. Common mode (CM) tests 300 V r.m.s		
IEC 60255-25 Emission	this test applies to the auxiliary power supply inputs only	**Conducted emission limits** 0,15 MHz - 0,5 MHz : 79 dB (µV) Quasi peak, 66 dB (µV) Average 0,5 MHz - 30 MHz : 73 dB (µV) Quasi peak, 60 dB (µV) Average		

7 Protection functions

Type	*Function*	*Requirements*	*Remarks*	*OK?*
Currents	General	Possibility to disable each function		
		The combination CT and relay has to be tested for shortcircuit currents up tot 25kA (no damage is allowed on the current inputs of the relay) and the relay trips correctly		
	I>	Measure per phase		
		At least DT characteristics		
		Settable time delay : 0 to 3 s (maximal step 0.1 s)		
		Permissible primary rated current : 20 to 125 A		
	I>>	Measure per phase		
		At least DT characteristics		
		Settable time delay : 0 to 2 s (maximal step 0.1 s)		
		Permissible primary current : 1 to 25 IN	(CT cannot saturate for current > 100/Ucc * IN power transformer)	
	I0>	The function of the relay and the selection of the CT torus must guarantee a minimum threshold of operation of 60 A when energized only from CT	The combination CT and relay has to be tested for single phase shortcircuit currents from 50A up tot 2kA	
		At least DT characteristics		
		Possibility to use dedicated input for CT torus		
		Settable time delay : 0 to 2 s (maximal step 0.1 s)		
		Permissible primary current: 0,1 to 1 IN		
Signal filtration	harmonics	< 10 % threshold for $H_N \geq 20\ \% H_1$		
	Influence second harmonic	Possibility to block max current functions with a threshold of H_2between 15% and 25% H_1		
	Influence of ripple control signal : 175-180-283-317-750-1350 Hz	< 10 % threshold for $H_N \geq 20\ \% H_1$		
Accuracy	current	5%		
	Time	≤ 30 ms		
	Instantaneous trip time	≤ 60 ms when the CTs are already energized		
	Drop-off value	≤ 10 % of threshold		

8 Marking

Marking	*Remarks*	*OK?*
Marking in English		
Constructor name or fabrication brand (front panel)		
Designation of type (front panel) and serial number		
Firmware version (digital relays) (or available via display)		
Nominal values of supply voltages		
Rated values		
CE marking		
Indication of the execution of the factory acceptance tests (stamp of conformity tests)		

9 Documents

	Remarks	*OK?*
User manual with connection plans		
Report of dielectric tests and EMC tests		
Description of factory acceptance tests		