

SEL-2730M

Type Test Certificate and EC Declaration of Conformity

We, Schweitzer Engineering Laboratories, in accordance with the following directives:

2006/95/EC Low Voltage Directive

2004/108/EC Electromagnetic Compatibility Directive

Hereby declare that the product(s) specified above is(are) in conformity with the applicable requirements of the standards referenced on the following pages.

This document contains references to the test procedures followed by SEL to certify the product(s) specified above to national and international standards, therefore, only standards issued by the IEC and/or EN are used in determining the suitability of the product(s) to bear the CE mark.



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Date



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Communication Product Testing

Substation Products	IEEE 1613 Environmental and Testing Requirements for Communications Networking Devices in Electric Power Substations	TT- 3114
	IEC 61850-3: 2002 Section 5.7.3 Power Frequency Disturbances	TT- 3423

Electromagnetic Compatibility Emissions

Generic Emissions	CFR 47 Part 15 FCC Emissions Severity Level: Class A	TT- 3018
	Product Specific Emissions	IEC 60255-25: 2000 Electrical relays - Part 25: Electromagnetic emission tests for measuring relays and protection equipment

Electromagnetic Compatibility Immunity

Conducted RF Immunity	IEC 60255-22-6: 2001 Electrical Relays – Part 22-6: Electrical disturbance tests for measuring relays and protection equipment – Immunity to conducted disturbance induced by radio frequency fields. Severity Level: 10 Vrms	TT- 3019
	IEC 61000-4-6: 2008 Electromagnetic compatibility (EMC), Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields Severity Level: 10 Vrms	TT- 3019
Electrostatic Discharge Immunity	IEC 60255-22-2: 2008 Electrical relays – part 22-2: Electrical disturbance tests for measuring relays and protection equipment - Electrostatic discharge tests Severity Level: 2, 4, 6, 8 kV contact; 2, 4, 8, 15 kV air	TT- 3020
	IEC 61000-4-2: 2008 Electromagnetic compatibility (EMC), Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test Severity Level: 2, 4, 6, 8 kV contact; 2, 4, 8, 15 kV air	TT- 3020
Fast Transient/Burst Immunity	IEEE C37.90.3: 2001 IEEE Standard for Electrostatic Discharge Tests for Protective Relays. Severity Level: 2, 4, and 8 kV contact; 4, 8 and 15 kV air	TT- 3020
	IEC 60255-22-4: 2008 Electrical relays – Part22-4: Electrical disturbance tests for measuring relays and protection equipment - Fast transient disturbance test Severity Level: Class A: 4kV, 5kHz; 2kV 5kHz on communication ports	TT- 3021

Fast Transient/Burst Immunity	IEC 61000-4-4: 2011	TT- 3021
	Electromagnetic compatibility (EMC), Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test Severity Level: 4kV, 5kHz	
Magnetic Field Immunity	IEC 61000-4-10: 2001	TT- 3022
	Electromagnetic compatibility (EMC), Part 4-10: Testing and measurement techniques – Damped oscillatory magnetic field immunity test Severity Level: 100 A/m	
	IEC 61000-4-8: 2009	TT- 3023
	Electromagnetic compatibility (EMC), Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test Severity Level: 1000 A/m for 3 seconds, 100 A/m for 1 minute	
	IEC 61000-4-9: 2001	TT- 3024
	Electromagnetic compatibility (EMC), Part 4-9: Testing and measurement techniques - Pulse magnetic field immunity test Severity Level: 1000 A/m	
Power Supply Immunity	IEC 60255-11: 2008	TT- 3025
	Measuring Relays and Protection Equipment - Part 11: Voltage Dips, short interruptions, variations and ripple on auxiliary power supply port	
	IEC 61000-4-11: 2004	TT- 3025
	Electromagnetic Compatibility Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests	
	IEC 61000-4-29: 2000	TT- 3025
	Electromagnetic compatibility (EMC), Part 4-29: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations on d.c. input power port immunity test	
Radiated RF Immunity	ENV 50204: 1995	TT- 3027
	Radiated electromagnetic field from digital radiotelephones - Immunity test Severity Level: 10 V/m at 900 MHz and 1.89 GHz	
	IEC 61000-4-3: 2010	TT- 3027
	Electromagnetic compatibility (EMC), Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity Severity Level: 10 V/m	
	IEC 60255-22-3: 2007	TT- 3027
	Electrical relays – Part 22-3: Electrical disturbance tests for measuring relays and protection equipment - Radiated electromagnetic field disturbance tests Severity Level: 10 V/m	
	IEEE C37.90.2: 2004	TT- 3028
	Standard for withstand capability of relay systems to radiated electromagnetic interference from transceivers Severity Level: 35 V/m	

Surge Immunity	IEC 60255-22-5: 2008	TT- 3029
	Electrical relays – Part 22-5: Electrical disturbance tests for measuring relays and protection equipment – Surge test Severity Level: 1 kV Line to Line, 2 kV Line to Earth	
	IEC 61000-4-5: 2005	TT- 3029
	Electromagnetic compatibility (EMC), Part 4: Testing and measurement techniques - Section 5: Surge immunity test Severity Level: 1 kV Line to Line, 2 kV Line to Earth	
Surge Withstand Capability Immunity	IEC 60255-22-1 – 2007	TT- 3030
	Electrical relays - Electrical disturbance tests for measuring relays and protection equipment - Part 22-1: 1 MHz burst disturbance tests Severity Level: 2.5 kV peak common mode, 1.0 kV peak differential mode	
	IEEE C37.90.1: 2002	TT- 3031
	Surge withstand capability (SWC), tests for protective relays and relay systems associated with Electric Power Apparatus Severity Level: 2.5 kV oscillatory, 4 kV fast transient waveform	

Environmental

Cold	IEC 60068-2-1: 2007	TT- 3032
	Environmental testing, Part 2-1: Tests - Test Ad: Cold Severity Level: 16 hours at –40°C	
Dry Heat	IEC 60068-2-2: 2007	TT- 3033
	Environmental testing, Part 2-2: Tests - Test Bd: Dry heat Severity Level: 16 hours at + 85°C.	
Damp Heat, Cyclic	IEC 60068-2-30: 2005	TT- 3034
	Basic environmental testing procedures, Part 2-30: Tests - Test Db and guidance: Damp heat, cyclic (12 + 12-hour cycle) Severity Level: 25°C to 55°C, 6 cycles, Relative Humidity: 95%	
Vibration	IEC 60255-21-2: 1988	TT- 3035
	Electrical relays - Part 21-2: Vibration, shock, bump and seismic tests on measuring relays and protection equipment, Section Two - Shock and bump tests Severity Level: Class 1 – Shock withstand, Bump, and Class 2 – Shock Response	
	IEC 60255-21-1: 1988	TT- 3035
	Electrical relays -Part 21-1: Vibration, shock, bump and seismic tests on measuring relays and protection equipment, Section One - Vibration tests (sinusoidal) Severity Level: Class 2 Endurance, Class 2 Response	
	IEC 60255-21-3: 1993	TT- 3035
	Electrical relays - Part 21-3: Vibration, shock, bump, and seismic tests on measuring relays and protective equipment, Section Three - Method A seismic tests (not tested below 5 Hz) Severity Level: Class 2 (Quake Response)	

**Damp Heat,
Steady State**

IEC 60068-2-78: 2001

TT- 3067

Basic environmental testing procedures, Part 2-78: Test - Tests Cab: Damp heat, steady state

Severity Level: 40°C, Relative Humidity: 93% □Duration: 4 days

Safety

**Insulation
Coordination**

IEEE C37.90: 2005

TT- 3036

IEEE standard for relays and relay systems associated with electrical power apparatus:: Dielectric tests, Section 8.2

Severity Level: 2500Vac on contact inputs, contact outputs, and analog inputs. 3100Vdc on power supply. Type Tested for 1 minute.

IEC 60255-5: 2000

TT- 3036

Electrical relays, Part 5: Insulation tests for electrical relays - Dielectric tests

Severity Level: 2500Vac on contact inputs, contact outputs, and analog inputs. 3100Vdc on power supply. Type Tested for 1 minute.