

# TESTING AND MEASURING EQUIPMENT/ALLOWED SUBCONTRACTING

## IEC 61439-1:2020, Edition 3.0

### Low-voltage switchgear and controlgear assemblies – Part 1: General rules

“R”	Required
“S”	May be subcontracted, see OD 2012
“SP”	Specialized Facility, see IECEE 02-2
“W”	Witness testing in the categories “MED” and “MEAS”
“3PPS”	Three Phase Power Supply required

Clause	Measurement/testing	Testing / measuring equipment / material needed	Equipment Classification
10.2.2	Resistance to corrosion	Climatic chamber according to IEC 60068-2-30 (damp heat cycling test at +40 °C), Test chamber according to IEC 60068-2-11 (salt mist at +35 °C)pH meter,	<a href="#">GDJS-015B</a> <a href="#">YWX/Q-010</a>
10.2.3.1	Thermal stability	Climatic chamber according to IEC 60068-2-2 (dry heat test at +70 °C) Force measuring equipment (to measure 5N), rough cloth	
10.2.3.2	Resistance to abnormal heat and fire due to internal electric effects	Glow-wire test apparatus according to IEC 60695-2-10	<a href="#">ZRS-3H</a>
10.2.4	Resistance to ultra-violet (UV) radiation	Test chamber according to ISO 4892-2 Flexural test and Charpy impact test equipment	<a href="#">UV-263LS</a>
10.2.5	Lifting	Crane or similar lifting equipment, weights load cell	
10.2.6	Mechanical Impact	Test apparatus (e.g. pendulum hammer, spring hammer or vertical hammer) according to IEC 60068-2-75	<a href="#">IK07-10</a>
10.2.7	Marking	Cloth, Water, Petroleum spirit	

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10.3	Degree of protection of assemblies (IP Code)	Sphere 50 mm diameter, Jointed test finger, Test rod 2,5 mm diameter, Test wire 1,0 mm diameter, Sphere 12,5 mm diameter Force gauge	<a href="#">SMT-B50H</a> <a href="#">SMT-PB</a>
		Dust chamber, Drip box. Drip box 15°, Oscillating tube/spray ± 60° or spray nozzle/spray ± 60°, Oscillating tube/spray ± 180°, Water jet hose nozzle - nozzle 6,3 mm diameter, Waterjet hose nozzle - nozzle 12,5 mm diameter, Immersion tank Fan jet nozzle Turn table Flow meter	<a href="#">JL-X</a> <a href="#">SC-015</a>
10.4	Clearances and creepage distances	Sliding gauge, vernier calliper	<a href="#">CK-1</a>
10.5.2	Effective earth continuity between the exposed-conductive-parts of the class I assembly and the protective circuit	Resistance measuring instrument with a driving current of at least 10 A (a.c. or d.c.).	
10.5.3	Short-circuit withstand strength of the protective circuit	For short-circuit test currents higher 10 kA (AC) / 1 kA (DC) and short-circuit withstand testing (testing without SPCDs for a given time) in general:	
10.9.2	Power-frequency withstand voltage	AC High-voltage source (0 - min. 3,5 kV), Voltmeter (min. 3,5 kV) timer, leakage current meter	
10.9.3	Impulse withstand voltage	Impulse voltage generator (1,2/50 µs), Oscilloscope, High voltage probe	<a href="#">SUG255</a>

Clause	Measurement/testing	Testing / measuring equipment / material needed	Equipment Classification
10.10.2	Temperature rise (verification by testing)	Load resistors, Temperature acquisition unit, Current/voltage source current measuring device	<a href="#">WS-1</a>
10.11	Short-circuit withstand strength	For short-circuit test currents higher 10 kA (AC) / 1 kA (DC) and short-circuit withstand testing (testing without SPCDs for a given time) in general:	
10.12	Electromagnetic compatibility (EMC)	---	<a href="#">ESD61000-2</a> <a href="#">GTEM-2</a> <a href="#">EFT61000-4</a> <a href="#">SG610000-5</a> <a href="#">RFCI61000-6</a> <a href="#">PFM61000-8A</a> <a href="#">CSS61000-11</a>