

# TESTING AND MEASURING EQUIPMENT/ALLOWED SUBCONTRACTING

## IEC 60669-1:2017, Edition 4.0

### Switches for household and similar fixed electrical installations– Part 1: General requirements

“R”	Required
“S”	May be subcontracted, see OD 2012
“SPTL”	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	LISUN Model	Subcontracting
6	Inspection of the marking	None		-
8	Marking	None		-
8.1 to 8.8	Inspection of the marking	None		-
8.9	Indelibility of markings	Chemicals		R
9	Dimensional measurement	Slide-gauge		R
10	Protection against electric shock			
10.1	Checking of the accessibility	Standard test finger, unjointed test finger, indicator, heating cabinet	<a href="#">SMT-02T50</a> <a href="#">SMT-1175</a>	R
10.2 to 10.7	See (sub-) clauses 11.4, 16 and 23	See the relevant sub-clauses		R
11	Provision for earthing			
11.1 to 11.3	See Clause 12	See the relevant sub-clause		R
11.4	Measurement of contact resistance	AC source: max. 12V, min. 25A, measuring instruments		R

Clause	Measurement/testing	Testing / measuring equipment / material needed	LISUN Model	Subcontracting
12	Terminals			
12.2.1 to 12.2.12	Mechanical tests (torque, pull) on screw terminals	Caliper, weights, screwdriver and spanner with torquemeter, test apparatus of figure 10	<a href="#">WDT-1</a>	R
12.3.5 to 12.3.11	Mechanical tests on screwless terminals Electrical tests; mV-Meter	Weights, test apparatus of figure 10, current source or similar, device to measure millivolts, heating cabinet		R
12.3.12	Conductor deflecting test	Specified test apparatus according principle of figure 11a , current source or equivalent, weights or precision dynamometer, device to measure millivolts		R
13	Constructional requirements			
13.3.2 to 13.3.3	See clause 20	See the relevant sub-clause		R
13.5	Knob of rotary switches	Weight		R
13.9	Degree of protection: see clause 15	See the relevant sub-clause		R
13.15.1 to 13.15.2	Test on membranes	Heating cabinet, unjointed test finger, dynamometer, refrigerator		R
14.3	Slow operation	See clause 19		R
14.6	Cord operated switches	Dynamometer		R
15.	Resistance to ageing, to harmful ingress of water and to humidity			
15.1	Ageing test	Heating cabinet, climatic chamber, rough cloth and devices to apply a 5N force	<a href="#">GDJS-225A</a>	R
15.2	Ingress of water and foreign solid objects	Device to apply a certain torque to the glands Test wall according to figure 27		R
		Test apparatus acc. IEC 60529: Jointed test finger Rigid sphere 50 mm diameter Rigid sphere 12,5 mm diameter Rigid steel rod 2,5 mm diameter Rigid steel rod 1,0 mm diameter	<a href="#">SMT-529T</a>	R
		Dust chamber	<a href="#">SC-015</a>	S

Clause	Measurement/testing	Testing / measuring equipment / material needed	LISUN Model	Subcontracting
		Drip box Drip box -15° Oscillating tube/spray ± 60° or spray nozzle/spray ± 60° Oscillating tube/spray ± 180° or spray nozzle/spray ± 180	<a href="#">JL-12</a> <a href="#">JL-34</a>	R
		Water jet hose nozzle – nozzle 6,3 mm diameter Water jet hose nozzle – nozzle 12,5 mm diameter Immersion tank	<a href="#">JL-56</a> <a href="#">JL-7</a>	S
15.3	Humidity treatment	Humidity cabinet	<a href="#">GDJS-010A</a>	R
16	Insulation resistance and electric strength			
16.1	Insulation resistance	DC source (500V) and instruments	<a href="#">WB2681A</a>	R
16.2	Electric strength	Adjustable high voltage test equipment (AC) up to 4000V	<a href="#">WB2673C</a>	R
17	Temperature-rise test	AC source up to 75A, temperature measuring instruments, voltage and current measuring devices, torquemeter, special flush mounted boxes		R
18	Making and breaking capacity tests specified according to the ratings	Test apparatus according to method of actuating the switch, supply source with a short circuit capacity of min. 1500A, adjustable load circuit (resistors and inductors), tungsten filament lamp load, motor load, measuring instruments	<a href="#">CZKS-6</a> <a href="#">DFX-30</a>	R
19	Normal operation, tests specified according to the ratings	See also clause 18, special load circuit for fluorescent lamp loads, self-ballasted lamp loads	<a href="#">DFX-WD20A</a> <a href="#">SBL-3P20A</a>	R
20	Mechanical strength			
20.2	Impact test	Specified test apparatus of figure 15	<a href="#">IK07-10</a>	R
20.3	Mounting test on cylinder surface	Cylinder rigid steel sheet, torque screwdriver		R
20.4	Test of screwed glands	Test spanner, cylindrical metal rod		R
20.5 to 20.9	Removal of covers, cover-plates	Calibers of figure 20 and figure 23, 1 mm thickness sheet, dynamometer		R
20.10	Pull test on operating member of a cord operated switch	Dynamometer, weights		R
21	Resistance to heat			
21.2	Heat test	Heating cabinets	<a href="#">GW-225</a>	R

Clause	Measurement/testing	Testing / measuring equipment / material needed	LISUN Model	Subcontracting
21.3 to 21.4	Ball pressure test	Ball pressure test apparatus, heating cabinet	<a href="#">ZBP-T</a>	R
22	Screws, current carrying parts and connections			
22.1 to 22.4	Inspection, manual tests, tightening	Test screwdriver, spanner		R
22.5 to 22.7	Inspections and chemical tests on metals of current carrying parts	Instruments for chemical analysis		S
23	Creepage distances, clearances	Checking by measurement with slide gauges	<a href="#">CK-1</a>	R
24	Resistance of insulating material to abnormal heat, to fire and to tracking			
24.1.1	Glow-wire test	Test apparatus according to IEC 60695-2-1	<a href="#">ZRS-3H</a>	R
24.2	Resistance to tracking	Test apparatus according to IEC 60112	<a href="#">TTC-1</a>	R
25	Resistance to rusting, treatment	Chemicals, humidity cabinet, heating cabinet	<a href="#">YWX/Q-010</a>	R
26	EMC requirements			
26.1	Immunity	Not required		-
26.2	Emission	Not required		-