

# TESTING AND MEASURING EQUIPMENT/ALLOWED SUBCONTRACTING

## IEC 62841-1:2014 + AMD1:2025

### Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety – Part 1: General requirements

Abbreviations to be used at the column “Equipment Classification”:

“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	LISUN Model	Equipment Classification
6	Radiation, toxicity and similar hazards	Measuring equipment according to IEC 62471	<a href="#">EN62471-C</a>	S
8	Marking and instructions	Petroleum Spirit, IRM 903 oil, flat steel blade 0,8 mm thickness, Device/equipment to establish required thermal and humidity conditions”	<a href="#">GDJS-015B</a>	R
9	Protection against access to live parts	2000 ohm non-inductive resistor, Test probe B, 13 of IEC 61032, Voltmeter, Milliammeter, Force gauges. Capacitance meter,	<a href="#">SMT-PB</a> <a href="#">SMT-1312</a>	R
10	Starting	Voltmeter, Ammeter, Timer, Variable voltage source		R
11	Input and current	Voltmeter, Ammeter, Wattmeter		R

Clause	Measurement/testing	Testing / measuring equipment / material needed	LISUN Model	Equipment Classification
12	Heating	Variable voltage source, Measurement system to determine temperature rise, Temperature Recorder, Fine wire thermocouples, Winding resistance measurement system, Torque meter, Device/equipment to attain load conditions, Timer, Suitable mechanical gauge, Heating Cabinet	<a href="#">WS-1</a> <a href="#">GW-500</a>	R
13	Resistance to heat and fire	Ball Pressure apparatus according to IEC 60695-10-2:2003, Glow-wire test apparatus according to IEC 60695-2-11:2000. Heating cabinet, Timer	<a href="#">ZBP-T</a> <a href="#">GW-500</a> <a href="#">ZRS-3H</a>	R
14	Moisture resistance	IPX1-7 apparatus in accordance with IEC 60529 (only when required by relevant part 2s), NaCl, Fluid gauge, Timer, Equipment to measure hydrostatic pressure, Environmental chamber capable for specifications, Equipment including those required in Annex C and D Measurement equipment according to clause 9.9.2 of IEC 61540:1999	<a href="#">JL-X</a>	R R S
15	Resistance to rusting	Ammonium chloride, Suitable degreasing agent, Device/equipment to establish required thermal and humidity conditions, Timer	<a href="#">YWX/Q-010</a>	R
16	Overload protection of transformer and associated circuits	Slide resistors (variable load), Variable voltage source, Measurement system to determine temperature rise		R
17	Endurance	Timer (100s ON, 20s OFF), Variable voltage source		R

Clause	Measurement/testing	Testing / measuring equipment / material needed	LISUN Model	Equipment Classification
18	Abnormal operation	Timer, Variable voltage source, Measurement equipment to determine temperatures, Measurement system to determine temperature rise of windings, Ammeter, Circuit breaker, 12 kVA, Device/equipment to attain load conditions, Soft wood surface, Tissue paper, Untreated 100 % cotton medical gauze Electrostatic discharge test apparatus (IEC 61000-4-2:2008), Fast transient burst test apparatus (IEC 61000-4-4:2012), Voltage surges test apparatus (IEC 61000-4-5:2005), Injected current test apparatus (IEC 61000-4-6:2008), Voltage dips and interruptions test apparatus (IEC 61000-4-11:2004),	<a href="#">ESD61000-2</a> <a href="#">EFT61000-4</a> <a href="#">SG61000-5</a> <a href="#">RFCI61000-6</a> <a href="#">CSS61000-11</a>	R  S
19	Mechanical hazards	Tachometer, Angle meter, Timer, Force gauge, Test probe B according to IEC 61032:1997	<a href="#">SMT-PB</a>	R
20	Mechanical strength	Spring operated test apparatus according to clause 5 of IEC 60068-2-75:1997, Torque screwdriver, Pendulum as specified, Suitable mechanical gauge, Concrete surface	<a href="#">IK01-06</a>	R
21	Construction	Force gauge, Steel ball 6 mm, Fuchsine, methylated spirit and pressure apparatus Rigid sphere (100 ±1) mm diameter, Suitable mechanical gauges, Capacitance meter, Timer, Voltmeter, Torque meter, Measurement equipment to determine temperatures, Heating cabinet, Rigid test probe with the dimensions of test probe B of IEC 61032:1997 or test probe B of IEC 61032:1997 with the option to prevent any articulation, Test Fingernail	<a href="#">SMT-PB</a> <a href="#">GW-500</a>	R S R
22	Internal wiring	Flexing apparatus with counter and timer,		R

Clause	Measurement/testing	Testing / measuring equipment / material needed	LISUN Model	Equipment Classification
23	Components	Variable voltage source, Voltmeter Equipment according to clause 17 of IEC 60730-1:2010 Equipment according to clauses 7.1.2 and 17.2. of IEC 61058-1:2008, timer Equipment according to IEC 61558-2-4 , IEC 61558-2-6		R S S  S
24	Supply connection and external flexible cords	Flexing test apparatus with counter, weights (mass), Force gauge, Torque Screwdriver, Timer, Torque gauge, Angle meter, Suitable mechanical gauges, Test probe B of IEC 61032:1997	<a href="#">WDT-B42</a> <a href="#">SMT-PB</a>	R
25	Terminals for external conductors	Force gauge, Suitable mechanical gauges, Equipment according to clause 9.6 of IEC 60999-1:1999		R
26	Provision for earthing	Suitable mechanical gauges, Voltmeter, Voltage source as specified Equipment according to IEC 60998-2-2 ISO 2178 or 1463 measurement		R  S S
27	Screws and connections	Suitable torque tool, Force gauge, Suitable mechanical gauges		R
28	Creepage distances, clearances and distance through insulation	Suitable mechanical gauges, Test probe B of IEC 61032:1997, Force gauge, Heating cabinet	<a href="#">CK-1</a> <a href="#">SMT-PB</a>	R
Annex C	Leakage current	Leakage current meter as specified	<a href="#">WB2675D</a>	R
Annex D	Electric Strength	High-voltage source as specified, Sandbag		R
Annex E	Methods of applying ISO 13849-1 to power tools	Informative		
Annex F	Rules for routine tests	Informative		

Clause	Measurement/testing	Testing / measuring equipment / material needed	LISUN Model	Equipment Classification
Annex G	Determination of applicable requirements for tools covered by Annex K	Informative		
Annex H	Determination of a low-power circuit	Variable resistor, timer, wattmeter		R
Annex I	Measurement of noise and vibration emissions	Informative	<a href="#">LVD-100KG</a>	
Annexes K and L - All tests for Annexes K and L must be done in a single location.				R or SPTL
K.5 / L.5	General conditions for the tests	Electrical measurement equipment with maximum error of 5%(See clause 5 of Part 1)		R or SPTL
		Equipment for voltage measurement with minimum 1M input resistance and a maximum parallel capacitance of 150pF(See clause 5 of Part 1)		R or SPTL
		Single pole resistive-capacitive low pass filters with a cut-off frequency of 5 kHz $\pm$ 500 Hz. Measurement tolerance within 1%		R or SPTL
K.12 / L.12	Heating	Temperature Recorder, Fine wire thermocouples		R or SPTL
K.12.201 / L.12.201	Normal charging of lithium-ion systems	Heating Cabinet		R or SPTL
		Variable load(s) for discharging Li-ion cells or batteries at different C rates		R or SPTL
		Single pole resistive-capacitive low pass filters with a cut-off frequency of 5 kHz $\pm$ 500 Hz(See clause 5 of Part 1)		R or SPTL
		Equipment for current measurement and monitoring with an averaging period of 1 to 5s		R or SPTL

Clause	Measurement/testing	Testing / measuring equipment / material needed	LISUN Model	Equipment Classification
		Equipment for voltage measurement and monitoring with minimum input resistance and a maximum parallel capacitance of 150pF, maximum error of 5% (See clause 5 of Part 1)		R or SPTL
		DC power source for charging to a predetermined state of charge for Li-ion cells or battery packs.		R or SPTL
		Temperature Recorder, Fine wire thermocouples		R or SPTL
K.18.201/ L.18.202	Lithium-ion charging systems – abnormal conditions	Heating Cabinet		R or SPTL
		Variable load for discharging Li-ion cells or batteries at different C rates		R or SPTL
		Single pole resistive-capacitive low pass filters with a cut-off frequency of 5 kHz ± 500 Hz (See clause 5 of Part 1)		R or SPTL
K.18.201/ L.18.202	Lithium-ion charging systems – abnormal conditions	Equipment for current measurement and monitoring with an averaging period of 1 to 5s		R or SPTL
		Equipment for voltage measurement and monitoring with minimum input resistance and a maximum parallel capacitance of 150pF, maximum error of 5% (See clause 5 of Part 1)		R or SPTL
		DC power source for charging to a predetermined state of charge for Li-ion cells or battery packs.		R or SPTL
		Temperature Recorder, Fine wire thermocouples		R or SPTL
		Shorting means with a resistance not to exceed 10 mΩ		R or SPTL

Clause	Measurement/testing	Testing / measuring equipment / material needed	LISUN Model	Equipment Classification
K.18.202/ L.18.203	Lithium-ion BATTERY short circuit	Shorting means with a resistance not to exceed 10 mΩ		R or SPTL
K.18.203/ L18.204	Batteries other than lithium-ion– overcharging	DC power source capable of providing current according to the desired C rating (10 time the C <sub>5</sub> rating)		R or SPTL
K.19.202/ L.19.202	Lithium-ion enclosure pressure test	Apparatus designed to deliver a total of 21 ml ± 10 % of air at an initial pressure of 2 070 kPa ± 10 % through a (2,87 ± 0,05) mm diameter orifice to the enclosure of a tool or battery pack.		R or SPTL
		Pressure gauge		R or SPTL
Annex M	Remote communication through public networks	Capability for evaluation of remote communication through public networks		S
Annex N	Methods to estimate the average probability of dangerous failure per hour caused by remote communication through public networks	Informative		