Junction box: Overview of check routine according to IEC/EN 62790:2014

Table 8 – Marking, information, documentation, test group A

No.	Kind of test	Test conditions
A.1	Visual inspection of documents	Check of marking
A.2		Check of technical information
A.3		Check of documents with technical information, certificates and data sheets of components

Table 9 – Material test, test group B (single tests)

No.	Kind of test	Test conditions
B.1	Durability of marking	10 cycles, force of 5N, wet test
B.2	Protection against corrosion	10 min Ammoniumchlorid, 10 min storing at 91%-95% RH, 10 min drying at 100°C
B.3	Flammability classification	Outer Polymers and polymers serving to support live parts, V-1
B.4	UV-radiation resistance	Outer polymers: Test acc. to ISO 4892-2 or ISO 4892-3: 500 h at 60W/m², 300-400nm, 65°C, 65%RH, cycles: 18 min spraying, 102min drying with Xenon-lamp
B.5	Glow wire test after B.4	Sample of B.4 650°C
B.6	Glow wire test	Polymers serving to support live parts and potting material, 750°C
B.7	Temp. resistance	Outer polymers: Ball pressure test at 90°C
B.8	Temp. resistance	Polymers serving to support live parts: Ball pressure test at 125°C
B.9	Resistance against ageing	Sealing or gaskets are stored in a heating cabinet for 240h at (100 ± 5)°C
B.10	Flammability classification	Outer Polymers, if wall thickness is less than 3mm, sample of C7: 5 VB

Table 10 – Constructional requirements, test group C (single tests)

No.	Kind of test	Test conditions
C.1	Protection against electric shock	Parts shall be protected from loosening and turning.
C.2	Accessibility test	Test finger 20N
C.3	Measuring	Barriers, minimal thickness
C.4	Visual inspection	No sharp edges
C.5	Visual inspection	Fixed position of connections
C.6	Measuring	Creepage and clearence distances
C.7	Visual inspection	Wall thickness min. 3,0mm otherwise test B10
C.8	Visual inspection	Fixing of lid

Table 11 – Mechanical test, test group D (single tests)

No.	Kind of test	Test conditions
D.1	Torque test	Terminals, according to relevant standard
D.2	Knockout-Test	No damage
D.3	Tension and torque test	Test of cord anchorage with relevant mass and force
D.4	Mechanical test at low temperatures	Test of mechanical durability storing at –40°C for 5h, energy with 1 Joule
D.5	Pressure and torque test	Adequate fixing of lid at preconditioned samples.

Table 12 - Test sequence I , test group E (tests to be performed consecutively in this order)

No.	Kind of test	Test conditions
E.1	Initial measurement	Test current 1A / Contact resistance ≤ 5mΩ
E.2	Wet leakage test	Insulation resistance ≥ 400MΩ
E.3	Thermal cycle test	with rated current, 200 cycles -40°C to +85°C
E.4	Dielectric strength	5.3.6 b) RMS withstand voltage (2000V + 4x rated voltage)
E.5	Dielectric strength	5.3.6 a) Impulse withstand test
E.6	Final measurement	Test current 1A / Contact resistance ≤ 150% of initial value
E7	Wet leakage test	Insulation resistance ≥ 400MΩ

Table 13 – Test sequence II, test group F (tests to be performed consecutively in this order)

No.	Kind of test	Test conditions
F.1	Wet leakage test	Insulation resistance ≥ 400MΩ (Specimen with attached and short circuit cell- connections)
F.2	Damp heat test	1000h at +85°C and 85%RH ; no damage visible
F.3	Resistance against shearing	Visual test, no shearing occurred
F.4	Rentention on the mounting surface	Specimen of test group F and G. Mechanical test no loosening or displacement of the specimen and Wet leakage current test ; Insulation resistance ≥ 400MΩ
F5	Dielectric strength	RMS withstand voltage (2000V + 4x rated voltage)
F6	Wet leakage test	Insulation resistance ≥ 400MΩ

Table 14 – Test sequence III , test group G (tests to be performed consecutively in this order)

No.	Kind of test	Test conditions
G.1	Thermal cycle test	Thermal cycle test Specimen with attached and short circuit cell-connections) Test cycle 50 -40°C to +85°C
G.2	Humidity freeze test	10 cycles –40°C to +85°C at 85%RH
G3	Retention on the mounting surface	Specimen of test group F and G. Mechanical test no loosening or displacement of the specimen and Wet leakage current test Insulation resistance ≥ 400MΩ
G.4	Wet leakage test	Insulation resistance ≥ 400MΩ

Table 15 – Test sequence IV, test group H (tests to be performed consecutively in this order)

No.	Kind of test	Test conditions
H.1	Bypass diode thermal test	Storing in a heating cabinet at (75 ± 5)°C with rated current for 1h, bypass diodes in direction of current flow. Diode junction temperature not exceed the manufacturer junction temperature rating After that the 1,25 times value of rated current will be applied for 1 h in a heating cabinet at (75 ± 5)°C. No visible damages shall be occured
H.2	Wet leakage test	Insulation resistance ≥ 400MΩ

Table 16 – Reverse current test, test group I

No.	Kind of test	Test conditions
I.1	Reverse current test	Test current according to manufacturer's specification. No flaming of the junction box, no charring of the cheesecloth

Table 17 – Test sequence V, Test group J (tests to be performed consecutively in this order)

No.	Kind of test	Test conditions
J.1	Degree of protection	min. IP 55
J.2	Dielectric strength	RMS withstand voltage (2000V + 4x rated voltage)

If coating or potting is used to reduce the pollution degree the requirements of Annex B have to be fulfilled.