

## STANDARD INFORMATION

**If the project requires any changes to the Certification Data Report outside of Section 1, then this SUN applies.**

**Standard:** UL 61010-031 / CSA C22.2 No. 61010-031

**Standard ID:**

Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 031: Safety Requirements for Hand-Held and Hand-Manipulated Probe Assemblies for Electrical Test and Measurement [UL 61010-031:2024 Ed.3]

Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 031: Safety Requirements for Hand-Held and Hand-Manipulated Probe Assemblies for Electrical Test and Measurement [CSA C22.2#61010-031:2024 Ed.3]

**Previous Standard ID:**

Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use - Part 031: Safety Requirements for Hand-held Probe Assemblies for Electrical Measurement and Test [UL 61010-031:2017 Ed.2+R:07Jan2020]

Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use - Part 031: Safety Requirements for Hand-Held Probe Assemblies for Electrical Measurement and Test [CSA C22.2#61010-031:2017 Ed.2+A1]

## EFFECTIVE DATE OF NEW/REVISED REQUIREMENTS

**Effective Date:** April 3, 2026

## IMPACT, OVERVIEW, AND ACTION REQUIRED

**Impact Statement:** No action is required for currently certified products. If modifications to the product after the effective date require an evaluation and/or testing, then the product must undergo re-evaluation to the new requirements.

**Overview of Changes:**

- Revisions to spacings and impedance
- Revised Requirements for unmated connectors
- Requirements for IP2X probe tips with retractable sleeve have been added
- Revisions to Type E probe assembly

Specific details of new/revise requirements are found in table below.

***Current Listings Not Active? – Please immediately identify any current Listing Reports or products that are no longer active and should be removed from our records. We will do this at no charge as long as Intertek is notified in writing prior to the review of your reports.***



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*Additions to existing requirements are underlined and deletions are shown ~~lined-out~~ below.*

### The following changes have been identified in the foreword of the standard:

The scope has been made succinct. General information from the scope of Edition 2 has been moved to a new Clause 4. Consequently, Clause 4 to Clause 8 of Edition 2 have been renumbered. Clause 9 of Edition 2 has been deleted;

In Clause 2, normative references have been dated and new normative references have been added

In 3.1.4, the definition of probe tip has been modified;

In 4.1, there is no longer any differentiation between high voltage and low voltage probe assemblies. Type C probe assemblies have been merged with Type B probe assemblies;

In 4.1 d) "Kelvin" probes have been added to the list of probe assemblies as a new Type E and a new Figure 5;

In 4.1 e), probes for voltage measurement without electrical connection to conductors have been added to the list of probe assemblies as a new Type F and a new Figure 6;

In 4.2.1, spread of fire is no longer considered as a hazard;

Subclause 4.4.2.5 from Edition 2 has been deleted;

Subclause 4.4.4.3 from Edition 2 has been deleted;

In 5.4.4.1 consideration has been given to spacings and impedance;

In 6.1.1, removable parts of probe tips which bear markings are allowed;

In 6.1.5, the voltage to be marked for measurement categories is the AC line-to-neutral or DC voltage;

In 7.4.2, requirements for unmated connectors have been modified as follows:

- 1) Table 2 has been modified and expanded,
- 2) a calculation method for clearances of connectors above 20 kV has been defined,
- 3) creepage distances have been aligned with clearances;

In 7.4.3.1 and 7.4.3.5, requirements for IP2X probe tips with retractable sleeve have been added;

In 7.4.3.2, Probe tips are now applicable to non-contact probe assemblies;

In 7.5.2.3.2, the values of Table 5 have been modified;

In 7.6.2, voltage tests of clearances are done without humidity preconditioning;

Pre-treatments for rigidity test from Clause 10 of Edition 2 have been moved to 9.2;

Subclause 11.1 of Edition 2 has been deleted;



Addition of an exception for Type E probe assembly in 13.2. Removable parts of probe tips which bear markings are allowed;

Figure F.1 has been modified;

Annex G has been added, for determination of clearances for Table 2;

Annex H has been added, covering line-to-neutral voltages for common mains supply systems.

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The following changes have been identified as having the most impact on current products:

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| 5  | Info | <b>Tests</b>   |
| 5.4  | Info | <b>Testing in SINGLE FAULT CONDITION</b>   |
| 5.4.4  | Info | <b>Conformity after application of fault conditions</b>  |
| <b>Electric shock</b>  |      |  |
| Conformity with requirements for protection against electric shock after the application of single faults is checked as follows: |      |  |
| 5.4.4.1  |      | a) by making the measurements of 7.3.3 to check that no ACCESSIBLE conductive parts have become HAZARDOUS LIVE, except as permitted by 7.1;<br>b) by performing a voltage test on DOUBLE INSULATION, REINFORCED INSULATION or BASIC INSULATION plus impedance when the impedance is short-circuited to check that the protection is still at least at the level of BASIC INSULATION. The voltage tests are made as specified in 7.6 (without humidity preconditioning) with the test voltage for BASIC INSULATION;<br><u>c) by inspection and measurements of the SPACINGS for the levels of BASIC INSULATION. This also applies to impedance or PROTECTIVE IMPEDANCE.</u> |
| 7  | Info | <b>Protection against electric shock</b>   |
| 7.4  | Info | <b>Means of protection against electric shock</b>  |
| 7.4.2  | Info | <b>CONNECTORS</b>  |



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| 7.4.2.1                               |         | Insulation, ACCESSIBLE parts and SPACINGS for CONNECTORS of probe assemblies shall meet the applicable requirements of 7.4.2.2 to 7.4.2.4. <u>When a CONNECTOR is intended to mate with another CONNECTOR or a TERMINAL having different RATINGS, the lower RATING applies.</u>  |
|                                       |         | <u>Insulation covers or sleeves over CONNECTORS which are intended to be hand-held or hand-manipulated by the OPERATOR during measurement or test, and which can be removed or displaced by the OPERATOR without the use of a TOOL, are not considered to provide the required protection against electric shock except when they are needed for connection to test or measurement equipment that is equipped with TERMINALS which cannot accept fully shrouded CONNECTORS. For example, retractable insulation sleeves are not considered to provide adequate protection.</u> |
|                                       |         | Annex E provides information regarding the recommended dimensions of 4 mm CONNECTORS up to 1 000 V.<br><u>Conformity is checked by inspection.</u>   |
| <hr/> <b><i>New clause added;</i></b> |         |  |
| <b>CONNECTORS in unmated position</b> |         |  |
| 7.4.2.4                               |         | When RATED voltages are applied to other CONNECTORS or to PROBE TIPS of the probe assembly, the following requirements apply to CONNECTORS in unmated position.  |
|                                       |         | 1) ACCESSIBLE parts of locking-type or screw-held-type CONNECTORS in unmated position, including CONNECTORS which do not require the use of a TOOL for unlocking or unscrewing are permitted to be HAZARDOUS LIVE.<br><br>Conformity is checked by inspection.   |
|                                       |         | 2) ACCESSIBLE parts of unmated integrated TERMINALS of STACKABLE CONNECTORS shall be insulated from HAZARDOUS LIVE parts by BASIC INSULATION.<br><br>Conformity is checked by the determination of ACCESSIBLE parts as specified in 7.2 (see Figure 7 d) for the part defined by key 1 of Figure 1 and measurement of the CLEARANCES as specified in 7.5.2 for BASIC INSULATION.   |
|                                       |         | 3) ACCESSIBLE parts of other unmated CONNECTORS shall be insulated from HAZARDOUS LIVE parts by PROTECTIVE IMPEDANCE (see 7.4.5) or SPACINGS meeting the requirements of a) and b) below.<br>a) For CONNECTORS with a voltage RATING up to 20 kV, the CLEARANCE shall be at least the applicable value of Table 2.   |



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|         |         | <p>For CONNECTORS with a RATING above 20 kV, the CLEARANCE shall be at least the D2 value of Table 5 with <math>U_m</math> equal to 1,25 times the peak value of the RATED voltage (see 7.5.2.3.2). If the probe assembly is RATED to operate at an altitude greater than 2 000 m, the value of the CLEARANCE shall be multiplied by the applicable factor of Table 3.</p> <p>Conformity is checked by one of the following tests:</p> <ul style="list-style-type: none"><li>i) the determination of ACCESSIBLE parts as specified in 7.2 (see Figure 7 d)) and the measurement of the CLEARANCE, or</li><li>ii) the AC voltage test of 7.6.5.1 or the DC voltage test of 7.6.5.2 for probe assemblies stressed only by DC with a duration of at least 5 s, or the impulse voltage test of 7.6.5.3, using the test voltage of Table 11 for the required CLEARANCE.</li></ul> <p>Correction factors of Table 12 are applicable to the values of the test voltages for CLEARANCES given in Table 11.</p> <p>b) The CREEPAGE DISTANCE values shall be at least the applicable CLEARANCE values defined in a).</p> <p>Conformity is checked by determination of ACCESSIBLE parts as specified in 7.2 (see Figure 7 d)) and measurement of the CREEPAGE DISTANCE.</p> |
| 7.4.3   | Info    | <p><b>PROBE TIPS</b></p> <p><b>General</b></p> <p>PROBE TIPS that can become HAZARDOUS LIVE during NORMAL USE (see also 7.1 b)) shall meet the requirements of one of the following subclauses, 7.4.3.2 (if protection by a PROTECTIVE FINGERGUARD), 7.4.3.3 (if protection by distance) or 7.4.3.4 (if protection by tactile indicator). <u>In addition, IP 2X PROBE TIPS with retractable sleeve shall meet the requirements of 7.4.3.5.</u></p>   |
| 7.4.3.1 |         | <p>PROBE TIPS that can be used as CONNECTORS shall also meet the requirements of 7.4.3.6.</p> <p>NOTE See Clause 13 for additional requirements for the exposed conductive parts of PROBE TIPS.</p> <p>SPRING-LOADED CLIPS and similar probes that are intended to pierce the insulation of a wire to touch the conductor for measuring voltage purposes shall not have a voltage RATING above the levels of 7.3.2 a).</p> <p>Conformity is checked by inspection and measurement.</p>   |



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| <b>New clause added;</b>  |         |  |
| <b>IP2X PROBE TIPS with retractable sleeve</b>                                      |         |  |
| 7.4.3.5   |         | <p>IP2X probe assemblies are probe assemblies with an IP2X protection of the PROBE TIP. HAZARDOUS LIVE parts of the PROBE TIP with an IP2X degree of protection are prevented by a retractable sleeve from being ACCESSIBLE. In non-operative position, the sleeve covers the PROBE TIP. The sleeve can be retracted voluntarily by pressing on a trigger or by applying a strength force exceeding the value as set out in Table 6 of IEC 60529:1989. When the sleeve is retracted, the OPERATOR's hand holds onto the probe body.</p> <p>EXAMPLE Figure 16 gives an example of probe assembly with an IP2X PROBE TIP.</p> <p>IP2X PROBE TIPS with retractable sleeve do not provide particular protection against risk of short circuits.</p> <p>The conductive parts of PROBE TIPS of IP2X probe assemblies shall not be ACCESSIBLE when the sleeve is in the non-operative position.</p> <p>Conformity is checked by determination of the ACCESSIBLE parts when performing the test from IEC 60529:1989, 12.2.</p> |
| 7.6   | Info    | <b>Procedure for voltage tests</b>   |
| <b>Humidity preconditioning</b>   |         |  |
| 7.6.2   |         | To ensure that the probe assembly does not become hazardous in the humidity conditions of 4.4, it is subjected to humidity preconditioning before the voltage tests of solid insulation. <u>There is no humidity preconditioning before the voltage tests of CLEARANCES.</u> The probe assembly is not operated during preconditioning.  |
| 13  | Info    | <b>Prevention of HAZARD from arc flash and short-circuits</b>  |
| <b>Exposed conductive parts</b>   |         |  |
| The exposed conductive part of a PROBE TIP or jaws shall be constructed as follows: |         |  |
| 13.2  |         | <p>a) For probe assemblies except for SPRING-LOADED CLIPS RATED for MEASUREMENT CATEGORY III or IV:</p> <p><u>1) when RATED for MEASUREMENT CATEGORY III or IV, the exposed conductive part of a PROBE TIP shall not exceed 4 mm in length;</u></p> <p><u>2) when RATED for use in special applications where the energy levels will not support arc flash or fire but not RATED for any MEASUREMENT CATEGORY, the exposed conductive part of a PROBE TIP shall not exceed 80 mm;</u></p> <p><u>3) when RATED for MEASUREMENT CATEGORY II, and for other probe assemblies not covered by items 1) and 2), above, the exposed conductive part of a PROBE TIP or jaw shall not exceed 19 mm.</u></p>   |



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|        |         | <p><u>b) For SPRING-LOADED CLIPS RATED for MEASUREMENT CATEGORY III or IV:</u></p> <ul style="list-style-type: none"><li>1) in closed position, the exposed ACCESSIBLE conductive parts shall not exceed 4 mm in all directions;</li><li>2) in open position,<ul style="list-style-type: none"><li>i) the length of the exposed ACCESSIBLE conductive parts of SPRING-LOADED CLIPS with one hook shall not exceed 10 mm,</li><li>ii) the outer surfaces of SPRING-LOADED CLIPS with more than one hook or jaw shall not be conductive.</li></ul></li></ul> |