

Standard Information

ADDENDUM 3: See updated Impact Statement below in green font.

ADDENDUM 2: See updated Impact Statement below in blue font.

ADDENDUM 1: DWT OF 6.8 WAS OMITTED FROM FIRST ISSUE OF SUN

Standard Name: Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use – Part 1: General Requirements

Standard Number: UL 61010-1 / **CSA C22.2 No. 61010-1-04**

Standard Edition and Issue Date: Second Edition, July 12, 2004

Date of Revisions: Standard withdrawn replaced by UL 61010-1 / **CSA C22.2 No. 61010-1-12**, Third Edition, May 11, 2012

Date of Previous Revisions to Standard: October 28, 2008

Effective Date of New/Revised Requirements

Effective Date: **January 1, 2018**

Impact, Fees, Overview, and Action Required

Impact Statement: Effective immediately, this revised standard will be exclusively used for evaluation of new products unless that Applicant requests in writing that the current requirements be used, until December 31, 2017. Older listings to the current requirements only need to be updated to the latest version if the product has been modified to include major design changes after January 1, 2018. Major design changes include different physical dimensions from currently certified products, different electrical ratings, new or redesigned power supply or any change that requires evaluation of a sample and/or testing.

Manufacturers are encouraged to utilize the available associated Part 2 standards.

Provided in the table below is a list of the currently available Part 2 standards and the effective date in which Intertek will require utilization.

Overview:

After January 1, 2018:

- 1) All new listings must be evaluated to UL 61010-1/CSA C22.2 No 61010-1 3rd edition and the associated Part 2 Standard(s).
- 2) For recently published new Part 2 standards the effective date is January 1, 2020. See the table below for a list of part 2 standards (to be used in conjunction with UL 61010-1/CSA C22.2 No 61010-1 3rd Edition) and their effective dates.
- 3) Existing listings may remain at UL 61010-1/CSA C22.2 No 61010-1 2nd edition unless a major design change is made to the product or an associated Part 2 standard is available.

Part 2	Edition	IEC Publication Year	Title	Effective date
2-010	3rd edition	2014	Safety Requirements for Electrical Equipment For Measurement, Control And Laboratory Use - Part 2-010: Particular Requirements for Laboratory Equipment for the Heating Of Materials	January 1, 2019
2-011	1st edition	2016	Safety Requirements For Electrical Equipment for Measurement, Control, and Laboratory Use - Part 2-011: Particular Requirements for Refrigerating Equipment	January 1, 2020
2-012	1st edition	2016	Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use - Part 2-012: Particular Requirements for Climatic and Environmental Testing and Other Temperature Conditioning Equipment	January 1, 2020
2-020	3rd edition	2016	Safety Requirements for Electrical Equipment for Measurement, Control, And Laboratory Use - Part 2-020: Particular Requirements For Laboratory Centrifuges	January 1, 2020
2-030	1st edition	2010	Safety Requirements For Electrical Equipment for Measurement, Control, and Laboratory Use - Part 2-030: Particular Requirements for Testing And Measuring Circuits	January 1, 2019
2-030	2nd edition	2017	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 2-030: Particular Requirements for Testing And Measuring Circuits	January 1, 2020
2-032	1st edition	2012	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 2-032: Particular Requirements for Hand-Held and Hand-Manipulated Current sensors for Electrical Test and Measurement	January 1, 2019
2-033	1st edition	2012	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use – Part 2-033: Particular Requirements for Hand-Held Multimeters and Other Meters, for Domestic and Professional Use, Capable of Measure Mains Voltage	January 1, 2019
2-034	1st edition	2017	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 2-034: Particular Requirements for Measurement Equipment for Insulation Resistance and Test Equipment for Electric Strength	January 1, 2020
2-040	2nd edition	2015	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 2-040: Particular Requirements for Sterilizers and Washer-Disinfectors Used to Treat Medical Materials	January 1, 2019
2-051	3rd edition	2015	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 2-051: Particular Requirements for Laboratory Equipment for Mixing and Stirring	January 1, 2019
2-061	3rd edition	2015	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 2-061: Particular Requirements for Laboratory Atomic Spectrometers With Thermal Atomization and Ionization	January 1, 2019
2-081	2nd edition	2015	Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use – Part 2-081: Particular Requirements for Automatic and Semi-Automatic Laboratory Equipment for Analysis and Other Purposes	January 1, 2019
2-091	1st edition	2012	Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use - Part 2-091: Particular Requirements for Cabinet X-Ray Systems	January 1, 2019
2-101	2nd edition	2015	Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use – Part 2-101: Particular Requirements for In Vitro Diagnostic (IVD) Medical Equipment	January 1, 2019

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Part 2	Edition	IEC Publication Year	Title	Effective date
2-201	1st edition	2013	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 2-201: Particular Requirements for Control Equipment	January 1, 2019
2-201	2nd edition	2017	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 2-201: Particular Requirements for Control Equipment	January 1, 2020
2-202	1st edition	2016	Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use - Part 2-202: Particular Requirements for Electrically Operated Valve Actuators	January 1, 2020

Description of New/Revised Technical Requirements – UL 61010-1 3rd Edition

Clause	Verdict	Comment	NC#
4.4.2.2		Protective impedances of a single component meeting clause 6.5.4 need not be short-circuited or disconnected	
4.4.2.5		One supply phase of multi-phase motors shall be interrupted while the motor is operating under intended full load	
5.1.5.1		Push buttons and actuators of emergency stop devices and indicators used for warning or danger shall be colored red	
		IEC 60073 shall be consulted for meaning of colors for safety of persons or the environment	
5.1.8		Symbol 14 can be used for the operate to consult accompanying documents for field wiring requirements	
5.3		If a specified cleaning agent is not specified 70% isopropyl alcohol to be used	
5.4.1		Information in this clause shall be provided to the Operator or Responsible Body	
		Documentation for service personnel shall be made available to such personnel	
		Documentation can be provided on printed or electronic media, but any safety information that might not be available when need should be printed	
5.4.1 e		Information on mitigating risks remaining after risk assessment has been performed	
5.4.1 f		If only specified accessories are to be used the manufacturer shall specify the required specifications	
5.4.1 g		If a hazard can occur from incorrect reading of measuring, indicating, or detecting of a harmful substances, guidance is provided to show that the equipment is functioning correctly	
5.4.1 h		Instructions for lifting and carrying are provided	
5.4.2 f		If a rating impact of less than 5 J is used the information specified in Clause 8.1 d is provided	
5.4.4		If any IEC 60950 equipment is used, information is provided if a hazard could occur due to moisture or liquids	

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Clause	Verdict	Comment	NC#
5.4.4 j		Methods to reduce risk of burns if surfaces exceed the limits in Clause 10.1	
5.4.5		Information on not to replace detachable mains supply cords with inadequately rated cords	
		The following service instructions shall be provided: 1. product-specific risks for service personnel, 2. protective measures for the risks, and 3. verification of safe state after repair	
5.4.6		The documentation shall describe aspects of integration into systems or results of special ambient or application conditions	
6.1.1		The values in Clause 6.3.1 and 6.3.2 shall not be exceeded for an accessible part and earth or any two accessible parts on the same piece of equipment within a distance of 1.8 m	
6.2.2		Added figure 1 to assist with the determination of accessible parts	
6.4.4		Impedances used as a primary means of protection shall meet the following: 1. Limit current or voltage to the values in Clause 6.3.2 2. Rated for the maximum working voltage and power to be dissipated 3. Clearance and creepage distances of Clause 6.7 are met between the terminals of the impedance	
6.5.2.4		The impedance of the protective bonding for a non-detachable power cord shall not exceed 0.2Ω	
6.5.2.6		Transformers with a protective bonding screen, that separate basic insulation from hazardous live circuits, shall satisfy the requirements of Clauses 6.5.2.2 a, b, and be of low impedance	
6.5.6		Current or voltage-limiting devices shall meet the following: 1. Be rated to limit current or voltage to the values not exceed Clause 6.3.2 2. Rated for the maximum working voltage and current of the product 3. Clearance and creepage distances of Clause 6.7 are met at the terminations of the devices	
6.7		Rewrite of the requirements for Clearance and Creepage distances, applies the requirements of working voltage instead of rated voltage	
6.8		refer to Table 5 of clause 6.7.2.2.1. The values were changed from 1390Vac to 1500Vac between primary and ground and from 1.6 times by 1390Vac to 3000Vac between primary and secondary circuits. This change requires the test. refer to Table 5 of clause 6.7.2.2.1. The values were changed from 1390Vac to 1500Vac between primary and ground and from 1.6 times by 1390Vac to 3000Vac between primary and secondary circuits. This change requires the test.	

Clause	Verdict	Comment	NC#
refer to Table 5 of clause 6.7.2.2.1. The values were changed from 1390Vac to 1500Vac between primary and ground and from 1.6 times by 1390Vac to 3000Vac between primary and secondary circuits.	This change requires the test.		
		Tests are completed within 1 hr of the recovery period for humidity conditioning	
6.8.3.3		Two additional impulses in each polarity are conducted on the equipment along with the original three impulses from the second edition	
6.9.1 d		Loosening of wires shall not reduce the clearance and creepage distances between the enclosure and hazardous live parts below values for basic insulation	
6.10.1		Detachable power cords and their appliance inlets shall have adequate temperature ratings	
6.10.2.2		A tool is required to loosen a cord anchorage	
7.2		Easily touched parts shall be smooth and rounded	
		Unless a fault presents an obvious hazards, easily touched parts shall not cause a injury in single fault conditions	
7.3.1		Moving parts shall not cause a hazard except as specified in Clause 7.3.2, if conditions are not met a risk assessment in accordance with Clause 17 shall be conducted	
7.3.3		Table 12 gives the requirements for risk assessment for mechanical hazards to body parts	
7.3.4		The following levels shall be met in normal and single fault conditions: 1. Continuous contact pressure is 50 N/cm ² with a max force of 150 N 2. Temporary force for body contact areas of at least 30 cm ² is 250 N for 0.75 seconds	

Clause	Verdict	Comment	NC#
7.3.5.1		If access is normally allowed and the limits of Clause 7.3.4 are exceeded and body part could be inserted between the moving part, the requirements of Table 13 are to be met, in both normal and single fault conditions	
7.3.5.2		If access is normally prevented the requirements for Table 14 are to be met, in both normal and single fault conditions	
7.4 d		Castor or support foot that supports the greatest load is loaded at four times of that load	
7.4 e		The castor or support foot is then removed from the equipment and the equipment is placed on a flat surface	
7.5.3		Parts that support a heavy load are tested to withstand four times the maximum static load	
7.6		If more than one fastener is specified for mounting, one means of fastening is removed and the load test is repeated at two times the weight of the equipment	
8.1		Requirements are listed for equipment that uses a normal energy protection level less than 5 J	
		Added following requirement for compliance after mechanical tests - no leaks of corrosive or harmful substances	
9.3.2		To show that the product has a fire enclosure, all insulated wires and cables shall retard flame propagation	
10.1		Equipment that is heated by its environment to values above Table 19 in normal conditions and 105°C in single fault conditions need not be marked with symbol 13	
		New requirements for temperature testing have been added to Table 19 retesting is not required review of data against the new temperature requirements	
10.5.2		Within ten minutes of the completion of the resistance to elevated temperatures, the equipment shall be subjected to the stresses of Clause 8.2 and 8.3 and meet the pass criteria of Clause 8.1	
11.3		If aggressive substances are used with the equipment and are likely to be spilled, analysis should be conducted to determine compatibility	
11.7.2		The product is inspected to determine if it complies with the leakage and rupture at high pressure requirements, if a hazard could occur then the following tests are conducted 1. 1.5 times the maximum pressure for leakage and 2. 2 times the maximum pressure for burst	
12.2.1.2		For equipment intended to emit radiation the following markings shall appear, if applicable 1. Symbol 17 of Table 1, 2. The abbreviations of the radionuclides, if more than one is present, and 3. Maximum dose rate at 1 m or the dose rate between 1µSv/h and 5µSv/h at the appropriate distance	

Clause	Verdict	Comment	NC#
16.1		A risk assessment shall be conducted for the following conditions: 1. Hazards that arise from adjustments, knobs, software or hardware-based controls set in a way not intended and 2. Reasonably foreseeable misuse not address in this standard	
16.2		Ergonomic aspects of the equipment shall be documented in a risk assessment if a hazard could occur	
17		For any hazards not addressed in Clauses 6 to 16 a risk assessment shall be conducted covering the following: 1. Risk Analysis 2. Risk Evaluation 3. Risk Reduction	
		CUSTOMERS PLEASE NOTE: This Table and column "Verdict" can be used by you to assist in determining how current or future production of the product is or will be in compliance with the new/revised requirements by the Effective Date.	