



File: ULC-S319-05  
ULC G.5.2

November 5, 2009

**CERTIFICATION BULLETIN 2009- 28**

To: ULC Listees of ALVYC and Others Interested

Subject: First Edition of the Standard for Electronic Access Control System, CAN/ULC-S319-05.

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This Bulletin is a follow-up to ULC Certification Bulletin 2007-32 announcing the publication of the First Edition of Standard for Electronic Access Control Systems, CAN/ULC-S319-05 and ULC Certification Bulletin 2008-11 announcing the new certification and Listing Service for Electronic Access Control Systems

Underwriters Laboratories of Canada has adopted the provisions of this First Edition of the Standard, and all new submittals will be investigated in accordance with these requirements.

The First Edition contains new technical requirements. The changes to the Certification requirement will impact currently Listed products, and will require an industry file review to determine compliance to the new requirements. A summary of requirements for this edition is included for your reference.

The effective date, for currently Listed products to comply with the new First Edition of Standard for Electronic Access Control Systems, CAN/ULC-S319-05, will be June 06, 2012.

Any questions concerning the above should be directed to Mr. Gunsimar Paintal, Regional Quality Manager & ULC Mark Program Owner, 416-757-3611 ext. 61217.

UNDERWRITERS LABORATORIES OF CANADA

Gunsimar Paintal,  
Regional Quality Manager & ULC Mark Program Owner

## SUMMARY OF REQUIREMENTS

The following is a brief summary of the revised paragraphs in the First Edition of Standard for Electronic Access Control Systems, CAN/ULC-S319-05, which have a future Effective Date of June 6, 2012 and the action that may be required to determine compliance.

**Should you wish to review the Summary of Requirements in French, request refer to the Standard CAN/ULC-S319-05 against the specific paragraph identified below.**

Paragraphs	General Subject and Comment
1.2	<p>This standard defines four levels of protection with Level I (lowest level-Class I equipment) to Level IV (highest-Class IV equipment).</p> <p>Manufacturer is required to specify the Level of protection (Class I to IV) of the product. The information needs to be either marked on the product or provided in the instruction manual.</p> <p>Action: Review marking and instruction manual.</p>
3.2	<p>Access control systems shall have the means to indicate the current programming logic code version by either being visibly marked on the product or shall be capable of being displayed on a visual annunciator provided as part of the unit.</p> <p>Action: provide one of the above means to identify the programming logic code for service technicians and other authorized personnel.</p>
5.1.7.1	<p>Table 4 - Class I systems shall retain preset rules and logged events for a min of 96 hrs after loss of power.</p> <p>Action: testing required</p>
5.4.1.1	<p>Table 10 - Class I products employing biometrics shall have a maximum authentication time of 1 second when using biometric equipment, as well as False Acceptance and False Rejection rate limits.</p> <p>Action: testing required</p>
5.4.1.1	<p>Table 10 - Class I products employing biometrics shall have less than 10% for False Acceptance and less than 0.1% for False Rejection rate limits.</p> <p>Action: testing required</p>
5.4.2.2	<p>Pass-codes used with keypads shall have a minimum number of 10,000 different pass-codes in the system. (Class 1)</p> <p>Action: testing required</p>
5.4.1.1, 5.4.3 (all)	<p>Electronic access control equipment that utilizes a token as a means of recognition shall comply with all of 5.4.3.</p> <p>Action: testing required if a token is utilized.</p>
5.4.1.1, 5.4.4 (all)	<p>Electronic access control equipment that utilizes biometrics as a means of recognition shall comply with all of 5.4.4.</p> <p>Action: Deferred.</p>

<b>Paragraphs</b>	<b>General Subject and Comment</b>
5.4.5 (all)	<p>Systems that employ motion detectors, momentary contact switches, and/or touch sensitive devices installed at the portal shall comply with all applicable subsections of 5.4.5.</p> <p>Action: testing required if motion detectors, momentary contact switches, and/or touch sensitive devices are installed at the portal.</p>
5.5.2.2, 5.5.2.6	<p>Readers that employ an audible signal device, the sound output shall produce a minimum of 70dB up to a max of 100dB at 1 meter while at rated input.</p> <p>Action: test required on readers that employ an audible signal device</p>
5.4.5.2.7, 5.5.2.2	<p>Request-to-exit devices that employ an audible signal device, the sound output shall produce a minimum of 70dB up to a max of 100dB at 1 meter while at rated input.</p> <p>Action: test required on products that employ an audible signal device</p>
5.6 (all)	<p>Access Point Actuators for portal locking devices.</p> <p>Action: testing required</p>
7.1.3	<p>An electronic access control system, which radiates or utilizes radio frequencies, shall be shown to comply with Industry Canada ICES-003.</p> <p>Action: require to check marking or product literature for ICES-003 compliance.</p>
7.2.4 (Exception)	<p>If product under test receives power from a separate source, then the product must be tested at all voltage extremes.</p> <p>Action: testing required to be conducted while at each extreme of rated voltage or extremes of voltage range.</p>
7.2.6	<p>During Normal Operation, product under test cannot result in false operation or false alarm.</p> <p>Action: testing is required to confirm that product does not result in unauthorized access or false alarm.</p>
7.3	<p>Current Protection Test – Field-wiring terminals are to be intentionally reversed (in pairs or individually) or connected to any terminal adjacent to the proper one.</p> <p>Action: testing required, unless product is marked with a warning of consequences for improper connections and if polarity is critical, the terminals are marked with proper polarity connections.</p>
7.4.2	<p>Input Measurement Test – In addition to rated inputs as specified in Table 21, measurements shall be recorded at all voltage extremes as stated in the 7.2.4 Exception.</p> <p>Action: testing required to record measurements while at each extreme of rated voltage or extremes of voltage range.</p>
7.5.2	<p>Output Measurement Test (non power-limited and power limited) – the output voltages must be within 85% and 110% of marked output rating during the following conditions:</p> <ol style="list-style-type: none"> <li>1) rated input power</li> <li>2) 85% and 110% primary power</li> </ol>

Paragraphs	General Subject and Comment
	<p>3) 85% and 110% of secondary power</p> <p>During each condition above, the output circuit and system shall be connected to no load (minimal load).</p> <p>During each condition above, the output circuit and system shall be connected to maximum load.</p> <p>Action: testing required</p>
7.5.3	<p>Output Measurement Test (power-limited) – For products that employ float type battery chargers, the required measurements shall be recorded when both primary and secondary power sources are connected. For products that employ trickle type battery charger, the required measurements shall be recorded first with primary power only, then repeated with secondary power only.</p> <p>An instantaneous measurement of I max shall be recorded when the output is shorted.</p> <p>Action: testing required per 7.5.3</p>
7.6.2	<p>A malfunction of the power supply or a loss of both primary power and standby battery capability shall result in an <i>alert</i> or trouble signal.</p> <p>Action: testing is required.</p>
7.6.3	<p>In lieu of supervising the battery or the capability of electronic components, a manual test feature that effectively tests the battery and/or components shall be provided as part of the operation of the system.</p>
7.7	<p>Standby Power test – secondary power is required for all access control systems. Secondary power can be provided by rechargeable batteries (7.7.2) or nonrechargeable batteries (7.7.4.8).</p> <p>Standby time = 30 minutes</p> <p>Action = testing is required. See 7.7.4.5 and 7.7.4.6</p>
7.7.1.4	<p>The battery shall be protected by noninterchangeable fuse or circuit breaker rated not less than 130% and no more than 200% maximum operating load on the battery or power limited per 7.5.3.</p> <p>Action: confirm product employs properly rated noninterchangeable overcurrent protection (fuse or circuit breaker).</p>
7.7.1.5	<p>The battery connections shall be marked with the respective battery power ratings including voltage, current, capacity (Ah), the number and type to be used <u>or</u> reference to a drawing that includes this information.</p> <p>Action: provide required marking at terminals or provide reference to drawing that contains the required text.</p>
7.7.2.1	<p>Rechargeable battery shall have sealed cells with spray-trap vents and shall be float or trickled charged. Vented batteries are also suitable for use per 7.7.2.4.</p> <p>Action: employ a battery that meets the description and utilize a float or trickle type battery charger.</p>

Paragraphs	General Subject and Comment
7.7.2.2	<p>Batteries are to be mounted/located to prevent contact with metal parts and if multiple batteries are employed, adjacent battery terminals shall not come in contact with each other. Access to batteries shall be readily available.</p> <p>Action: battery area/enclosure/housing shall be sufficient enough to arrange batteries in a fashion to satisfy the requirements.</p>
7.7.2.3	<p>A conditioning charge shall be limited so that battery gases shall not affect any part of the unit.</p> <p>Action: provide a charging limit to prevent excess release of gases that can affect the unit.</p>
7.7.2.4	<p>Metal enclosures used for housing vented rechargeable batteries shall be painted with 2 coats of acid-resistant and alkali-resistant compound or protected by baked enamel.</p> <p>Action: provide an enclosure that meets the above description when vented batteries are employed.</p>
7.7.2.5	<p>Cabinets that house liquid electrolyte batteries shall be constructed so the condition of the elements can be observed without disturbing the cells.</p> <p>Action: provide an enclosure that meets the above description when liquid electrolyte batteries are employed.</p>
7.7.2.6	<p>If batteries are housed with other electronic equipment, the batteries shall be located below the electronic equipment or arranged to reduce the risk of damage from battery leakage.</p> <p>Action: locate batteries in a manner that will not damage electronic equipment if leakage occurs.</p>
7.7.2.7	<p>1 - Specifications and calculations necessary to determine properly sized batteries to operate the control equipment shall be provided.</p> <p>2 - The control equipment specifications must also provide details of charging method used so that the battery's manufacturing specification can be reviewed to determine compatibility.</p> <p>3 - Battery charger shall provide a charging current under all conditions of intended use.</p> <p>Action 1 – provide documentation that contains specifications, information and calculations to determine battery size.</p> <p>Action 2 – provide documentation that identifies charging method employed.</p> <p>Action 3 – battery charger design shall provide a charging current in all states of control equipment.</p>
7.7.2.8	<p>The battery selected to comply with 7.7.2.7 shall also comply with the battery manufacturer's specifications regarding the rate of discharge and voltage cutoff to prevent damage to the battery.</p> <p>Action: the above criteria shall also appear in the 7.7.2.7 control equipment</p>

Paragraphs	General Subject and Comment
	specifications to assist in determining a suitable battery.
7.7.2.9	<p>When 2 or more batteries are employed, connected in series or parallel, the conditions of use shall provide for equalization of cells that aligns with the battery manufacturer's specifications.</p> <p>Action: the above criteria shall also appear in the 7.7.2.7 control equipment specifications to assist in determining a suitable battery.</p>
7.7.2.10	<p>The use of the battery shall be consistent with the battery manufacturer's specifications regarding position, temperature, and state-of-charge.</p> <p>Action: the above criteria shall also appear in the 7.7.2.7 control equipment specifications to assist in determining a suitable battery.</p>
7.7.2.11	<p>1 - Batteries that are susceptible to loss in capacity due to inactivity, the control equipment shall provide a means to cycle the battery to prevent loss in capacity. Or 2 - Provide a means to detect and annunciate loss in capacity.</p> <p>Action: the control equipment design shall provide a means to cycle the battery or detect loss in capacity if the battery employed is susceptible to loss due to inactivity.</p>
7.7.2.12	<p>1 - The conditions described in 7.7.2.10 and 7.7.2.11 shall appear as a warning in the installation instructions to prevent premature battery failure. 2 - The product shall be marked adjacent to the battery with either the battery type and estimated life or method of testing battery condition.</p> <p>Action 1: install instructions must contain warning precautions related to 7.7.2.10 and 7.7.2.11. Action 2: product must bear the required marking.</p>
7.7.3.1	<p>Compartments housing nonrechargeable batteries shall be constructed to prevent adjacent battery terminals from touching each other or a dead metal part.</p> <p>Action: products employing nonrechargeable batteries shall be constructed as required.</p>
7.7.4.1	<p>Access control system shall be provided with standby power for a minimum standby time of 30 minutes.</p> <p>Action = testing is required. See 7.7.4.5 and 7.7.4.6</p>
7.7.4.2, 7.7.4.3	<p>Neither loss nor restoration of commercial power shall adversely affect normal operation of the access control system. To determine compliance, the system commercial power is to be interrupted for 1 minute and restored for 1 minute for 10 cycles.</p> <p>Action = testing is required. See 7.7.4.5 and 7.7.4.6</p>
7.7.4.5	<p>After a 30-minute or greater power failure, the rechargeable batteries shall recharge to 85% of rated capacity within 24hrs.</p> <p>Action = testing is required. See also 7.7.4.6</p>
7.7.4.6	To determine compliance with 7.7.4.1, commercial power shall be removed and the

Paragraphs	General Subject and Comment
	<p>access control system shall be sustained for 30 minutes by fully charged batteries while introducing a entry request once every 5 minutes. Commerical power is to then be reconnected per 7.7.4.5 and then removed again while batteries are sustaining access control system operation for 30 minutes while introducing a entry request once every 5 minutes.</p> <p>Action: testing required</p>
7.7.4.8	<p>If standby power is provided by nonrechargeable batteries, provisions to test the condition of the batteries shall be provided.</p> <p>Action: product design must be able to test the condition of the batteries if nonrechargeable batteries are utilized as the secondary power source.</p>
7.8.4	<p>Undervoltage – Maximum impedance as specified in the installation instructions is to be connected to an initiating device circuit. If no impedance limitation is specified, then 100ohm impedance is to be employed on the initiating device circuit.</p> <p>Action: if current product does not specify max line impedance for initiating device circuit, 100ohms impedance will need to inserted on the IDC to ensure proper operation.</p>
7.9.1.2	<p>Overtoltage – While the product is being subjected to 110% of rated voltage, 0ohm line impedance is shall be employed on the initiating device circuit.</p> <p>Action: requires testing with 0 ohms employed on IDC.</p>
7.9.2.1	<p>Overtoltage – Portal locking devices, other than electrical coils used to provide the locking action or operate the locking mechanism, shall operate as intended while operating at 110% of rated voltage for 24hrs.</p> <p>Action: requires testing at worse case condition (locked or unlocked). Portal locking devices that comply with UL 1034 are not subject to this test. (similar to UL 1034 cl. 32.1)</p>
7.9.2.2	<p>Overtoltage – An electrical coil used to provide the locking action or operate the locking mechanism, shall operate as intended while operating at 125% of rated voltage for 24hrs.</p> <p>Action: requires testing at worse case condition. Portal locking devices that comply with UL 1034 UL 1034 are not subject to this test. (similar to UL 1034 cl. 32.2)</p>
7.10.2	<p>Variable Ambients – All portal locking devices shall comply with the outdoor conditioning as specified in 9.3.3.</p> <p>Action: testing required</p>
7.11.1	<p>Humidity – Products shall operate as intended during and after exposure to an environment consisting of 93% relative humidity at 32C.</p> <p>Action: testing required</p>
7.12.1	<p>Leakage Current on an accessible part shall not exceed 0.50mA for stationary or fixed products.</p>

Paragraphs	General Subject and Comment
	<p>Action: testing is required for stationary or fixed products because previous limits were not to exceed 0.75mA.</p>
7.12.4	<p>Leakage Current test now defines “simultaneously accessible” by the following criteria:</p> <ol style="list-style-type: none"> <li>1) one hand contacting parts within 100mm by 200mm rectangle.</li> <li>2) two hands contacting parts that are not more than 1800mm apart.</li> </ol>
7.14.1.2	<p>Overload – Portal locking devices shall operate as intended after 50 cycles. A cycle consists of:</p> <ol style="list-style-type: none"> <li>1) releasing of the locking mechanism</li> <li>2) opening the portal via a pneumatic or hydraulic ram or equivalent</li> <li>3) close the portal with a size 3 or heavier duty hydraulic door closer or equivalent.</li> <li>4) Engaging the locking mechanism</li> </ol> <p>Action: portal locking devices will need to be subjected to the cycling method described above which includes the test fixture as described in 7.1.4.</p>
7.15.1.1	<p>Endurance – Products shall operate as intended for 100,000 cycles.</p> <p>Action: testing is required for supplementary circuits which were initially subjected to only 6,000 cycles.</p>
7.15.1.5	<p>Endurance – Portal locking devices shall operate as intended after 100,000 cycles. A cycle consists of:</p> <ol style="list-style-type: none"> <li>1) releasing of the locking mechanism</li> <li>2) opening the portal via a pneumatic or hydraulic ram or equivalent</li> <li>3) close the portal with a size 3 or heavier duty hydraulic door closer or equivalent.</li> <li>4) Engaging the locking mechanism</li> </ol> <p>Action: portal locking devices will need to be subjected to the cycling method described above which includes the test fixture as described in 7.1.4.</p>
7.15.1.6	<p>Endurance – If the device is intended for more than one input voltage, the total number of cycles shall be divided equally among all possible input voltages.</p> <p>Action: testing required for products utilizing various input voltages.</p>
7.16.2	<p>Jarring – Figure 8 which depicts the test fixture now includes a steel plate which differs from previous test fixtures.</p> <p>Action: testing required</p>
7.16.3	<p>Jarring - Products that employ or provide sensitivity and or a range as a feature shall not vary more than 25% after being subjected to the Jarring test.</p> <p>Action: testing is required if the product provides some type of sensitivity feature.</p>
7.17.1	<p>Temperature Rise - Referring to Table 29, components shall not exceed a temperature rise of more than:</p>



Paragraphs	General Subject and Comment
	<p>Fuses = 25C  Carbon resistors = 25C  Wirewound resistors = 50C  Other resistors = 25C  Varnished cloth insulation = 25C  Capacitors = 75% of manufacturer's rating and not more than 40C  Conductors for field wiring circuits = 25C</p> <p>Surfaces normally contacted by the user in operating the unit (control knobs, push buttons, levers, etc.) = 40C both metallic &amp; nonmetallic  Surfaces subjected to casual contact by the user (enclosure, grille, or the like) = 40C</p> <p>Components that employ insulation systems when measured via change of resistance method.  Class 105 = 75C  Class 130 = 95C</p> <p>Action: testing required to confirm temperature rises comply with the lower limits specified. 10% of input zones (but not less than 3) need to be energized during the test.</p>
7.17.9	<p>Temperature rise test – products employing multiple zones, 10% of total zones, but no less than 3 zones are to be energized during the alert or intended operation.</p> <p>Action: testing required for products employing multiple zones, shall be configured with the required minimum loading specified.</p>
7.20.2.1	<p>Supply Line Transient – product shall not false alert/trouble.</p> <p>Action: test required confirming false Troubles or Alerts are not generated.</p>
7.20.4.2	<p>Input/Output Circuit Transient – product shall not false alert/trouble.</p> <p>Action: test required confirming false Troubles or Alerts are not generated.</p>
7.21 (all)	<p>Radio Frequency Interference – products shall not false alert/trouble and work as intended when subjected to conducted and radiated frequency interference sources.</p> <p>Action: testing required</p>
7.22.1	<p>AC Induction – product shall not false Alert/Trouble while being subjected to an induced voltage on each extended circuit.</p> <p>Action: test required confirming false Troubles or Alerts are not generated.</p>
7.23	<p>Polymeric Materials – polymeric materials used as an enclosure or for support of current carrying parts shall comply with the Polymeric Temperature and Flame test of this standard or with CSA 22.2 No. 0.17.</p> <p>Action: testing required if polymeric materials utilized are not in compliance with CSA 22.2 No. 0.17, or have not been evaluated to the Polymeric Temperature and Flame test in S319.</p>

Paragraphs	General Subject and Comment
7.23.2 (all)	Polymeric Temperature test – see 7.23 Polymeric Materials
7.23.3 (all)	Polymeric Flame test – see 7.23 Polymeric Materials
7.24	<p>Battery Replacement – battery connections shall withstand 10 cycles of removal and replacement from the battery terminals without reduction of the contact integrity.</p> <p>Action:</p> <ol style="list-style-type: none"> <li>1) Testing required on Listed products that originally did not employ batteries as the secondary power. Provisions for battery connections is now needed for compliance with new requirements.</li> <li>2) none, for currently Listed products that originally employed batteries as the secondary power.</li> </ol>
7.30 (all)	<p>Attack tests – Destructive &amp; Nondestructive</p> <p>Action:</p> <ol style="list-style-type: none"> <li>1) for currently Listed products a review of UL294 attack test results is required to verify if attack time was reduced to 2 minutes due to the local alarm. S319 requires an alert at the monitoring console.</li> <li>2) No further action required if review of UL294 attack test results was conducted for 5 min.</li> </ol>
7.31 (all)	<p>Attack test for Portal Locking devices –</p> <p>Action:</p> <ol style="list-style-type: none"> <li>1) If Listed product was also evaluated to UL1034, a review of UL1034 test results is required to ensure proper test level was used. Retest if device was tested at lower level.</li> <li>2) Testing required if product was not subjected to UL1034</li> <li>3) Manufacturer is required to specify the <b>Class of Protection</b> in product literature of portal locking devices. Table 30 and 31 indicates different test levels of static and dynamic strength for each class.</li> </ol>
7.32	<p>Inductive Kickback test – All products must be subjected to this test as applicable.</p> <p>Action: Testing required.</p>
7.33	<p>Static Discharge – All products must be subjected to this test as applicable.</p> <p>Action: testing required</p>
7.34	<p>Vibration test – All products must be subjected to this test as applicable.</p> <p>Action: Testing is required.</p>
7.35	<p>Corrosion – all indoor products, except for Access Control Units and Monitoring Console Equipment shall work as intended after being subjected to the specified corrosive atmosphere.</p> <p>Action: testing required</p>
7.36	<p>Stability – All products must be subjected to this test as applicable.</p> <p>Action: Testing is required for all products other than Access Control Units and</p>

Paragraphs	General Subject and Comment
	Monitoring Console Equipments.
7.37	<p>Evaluation of Conformal Coatings – All products must be subjected this to this evaluation as applicable.</p> <p>Action: Testing is required if conformal coating is used in lieu of full electrical spacings.</p>
7.38	<p>Marking Permanency – cement or adhesive materials shall comply with specified requirements in this standard or comply with CAN/CSA 22.2 No. 0.15.</p> <p>Action: a review of current adhesive material being utilized to confirm compliance with both UL969 and CAN/CSA 22.2 No. 0.15. Testing may be required or alternate vendor utilized that provides materials complying with both standards.</p>
7.40, 5.4.1.1	<p>Recognition Accuracy -</p> <p>Action: Testing is required for systems employing various types of recognition such as biometrics, token card readers, and keypads with pass-codes.</p>
8	<p>Ancillary Equipment –</p> <p>Action: none. Similar to requirements of “Accessory Equipment” in UL294.</p>
9.1	<p>Marking –</p> <p>Action: review is required. Product intended for indoor use shall be marked “For Indoor Use only”.</p>
<b>OUTDOOR USE EQUIPMENT</b>	
9.2	<p>Construction -</p> <p>Action: Construction review is required for portal locking devices that comply with UL1034.</p> <p>No action is required for other devices.</p>
9.3.3	<p>Variable Ambient – products shall operate as intended while being subjected to - 40±2°C.</p> <p>Action: testing required only at the lower ambient because the high ambient conditioning is identical to UL294.</p>
9.3.5	<p>Corrosion – Products shall not be adversely affected after being exposed to salt spray, hydrogen sulphide, and sulphur dioxide-carbon dioxide Products shall also comply with the Dielectric Voltage Withstand test</p> <p>Salt Spray - Three samples of portal locking devices are required. One sample for other types of devices.</p> <p>Action:</p> <ol style="list-style-type: none"> <li>1) Testing is required to portal locking devices that were tested per UL1034 only.</li> <li>2) For devices that have been tested per UL294, previous test results need to</li> </ol>

<b>Paragraphs</b>	<b>General Subject and Comment</b>
	be reviewed to verify normal operation and dielectric strength after the exposures. If normal operation test and dielectric withstand test were not conducted, retest is required.
9.3.8	Marking Permanency Outdoor Exposure – labels exposed to weather shall be subjected a cycling of water spray and ultraviolet rays consistent with Section 9.3.6 for 30 days and results must comply with 7.38.1.3, A, B, and C.  Action: Testing required.