CAN/ULC-S561-03

Installation and Services for Fire Signal Receiving Centres and Systems

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Underwriters Laboratories of Canada
CAN/ULC-S561-03

- Fire/Sprinkler Alarm Monitoring

- Ontario
Agenda

• CAN/ULC-S561 Compliant Installations – Overview
• Installation Requirements
• Communication Technologies
• ULC Certificate Program
• Partnership
• Improper Installations
What is covered in CAN/ULC-S561?

- Construction and operation of a Signal Receiving Centre.
- Construction and operation of a Proprietary Signal Receiving Centre.
- Installation, inspection and testing, maintenance of the Signal Transmitting Unit.
- Disposition of Signals.
Why is this important to you?

- **Present situation:**
  - Most Fire Monitoring Systems are noncompliant in Ontario.
  - Province of Ontario has been active in driving compliance.
  - Confusion in the industry on what is required.
Why is this important to you?

CAN/ULC-S561 – Helps guide the industry.

• Most Fire Signal Receiving Centres- ULC Listed
• Get signals to the fire services quickly.
• No Verification of the Fire Alarm Signals.
• Proper maintenance and testing of systems.
CAN/ULC-S561

• What Edition is valid in Ontario?

• Second Edition  CAN/ULC-S561-13
  or

• 1st Edition  CAN/ULC-S561-03 plus Amendments 1 &2.
• Signals to the Fire Department
  • New Buildings - OBC
  • Existing Buildings – OFC
Codes and Standards

Mandated in Ontario

• Ontario Building Code
  - 3.2.4.8 (4) (CAN/ULC-S561)

• Ontario Fire Code
  - 6.3.1.2 (2) (CAN/ULC-S561)
Fire Alarm Monitoring

- OBC 3.2.4.5 (1) CAN/ULC-S524-06
- OBC 3.2.4.5.(2) CAN/ULC-S537-04
- OBC 3.2.4.8 (4) CAN/ULC-S561-03
- OFC 6.3.1.2. (1) CAN/ULC-S536-04
- OFC 6.3.1.2 (2) CAN/ULC-S561-03
Occupancy

- Single Stage Fire Alarm System
  - Group A - Assembly Occupancy - >300
  - Group B Occupancy – Care or Detention Facility
  - Group F Division 1 – High Hazard
  - Fire Alarm System with Water-flow devices
  - Two Stage Fire Alarm System – Alert stage
  - Vulnerable Occupancies
Fire Alarm System Monitoring

- 5.15.1 (CAN/ULC-S524) - The interconnection wiring from the fire alarm control unit or transponder to the fire signal receiving centre shall comply with CAN/ULC-S561, Installation and Services for Fire Signal Receiving Centres and Systems.

- CAN/ULC-S537-04 Appendix C2 (G)
  - Documentation to include the name and number of the Fire Signal Receiving Centre (CAN/ULC-S561)
Fire Alarm Monitoring

• **What is a fire monitoring system?**
  
  – Fire alarm system or sprinkler riser connected to a fire alarm transmitter for the purposes of transmitting fire alarm conditions from the protected property to a fire signal receiving centre in order to dispatch the correct responding authorities.
Why is this Important?

- The fire monitoring is an extension of the Fire Alarm System.
- It is an expectation that it will work when activated.
New Fire Alarm - Documents

• New Building
  – Building and Electrical Permit
  – Fire Alarm System- Design/ Build documentation from the Engineer on record – Stamped by the AHJ
  – Fire Alarm System is installed to CAN/ULC-S524
  – Verification– CAN/ULC-S537-04
  – Documentation to be provided to the building owner and building official
  – Letter form the Engineer on record – Sign-off on the design/build
  – Letter from the Electrical Contractor- Installation to CAN/ULC-S524
  – Verification Report- No Deficiencies
  – Certificate or Document – Installation and Monitoring Accordance with CAN/ULC-S561-03
Connection of a fire alarm system to a fire signal receiving station

Installation by an electrical contractor

Installation by a Listed FSRC or Alarm Service Co. station ("shared service" installation, or "full service")

FAS CPU

Transmitter

Communication system

Protective receiving centre/monitoring station

Installation to be in accordance with CAN/ULC-S561
What makes up a compliant System?

Compliant System

- Protected Premise
  - Transmitter
  - Fire Alarm Panel
  - Sprinkler Riser

- Communication Path
  - Active or Passive
  - Multiplex, Internet
  - DACT c/w Cell

- Fire Signal Receiving Centre
  - Receiving Units
  - Sufficient Staff
New Systems- CAN/ULC-S561

- Shall use CAN/ULC-S559 compliant Signal Transmitting unit.
- Communication Channel – Active/Passive – newest technology
- Manufacturer’s Installation Instructions
- Transmitters Shall be ULC or cUL Listed
Existing Systems- CAN/ULC-S561

- Will accept CAN/ULC-S527 compliant signal transmitting units.
- Must upgrade connecting wiring – conduit
  - supervision of fire alarm, trouble & supervision
  - communicate alarms within 60 sec.
- Signal Receiving Centre shall be CAN/ULC-S561 compliant
- Installed prior to January 1, 2009 – Must show proof
Qualification of Personnel

• Recognized by the AHJ

• Must have knowledge of the fire alarm panel and interconnection with the fire alarm transmitter.

• Working on Transmitter – No Requirement
Proper “Certified” Installation- Older Style
Newer Installation- Passive
New Installation - S561 Compliant
New installation
System Requirements for Installation

- ULC Listed Transmitter (S559/S527 Compliant)
  - ULC or cUL Label only
- Electrical Permit required for 120v Supply
- Grounding of Transmitter (manufacturer’s specifications)
- AC Power from a separate breaker - label
- Transformer properly installed
- Alarm Company Label-
  - Monitoring Station contact information
Transmitter relays

• Installation of relays
Cellular Back up
System Requirements for Installation

- Install CA38A Jack – No direct wiring
- Do not twist wires or EOL’s under terminal screws
- Metallic conduit protection all connecting wires
- Standby Batteries (24hrs)- Dated
- Additional modules/relays properly mounted (Stand-offs, tie raps)
Additional Requirements

• Supervised connections- (loop troubles)
  • fire alarm, fire trouble, fire supervisory
• Supervise removable terminal strips
• Monitor for AC failure
• Monitor for Communication failure
• Fire alarm signals transmitted in 60 sec.
• Dispatch on fire in 30 seconds
• 4 hour service territory for alarm company.
Communication Paths

• **Active System**
  - DVACS- active multiplex
  - Active Cell - Polling
  - Internet– constantly supervised
  - 24 hr standby power
  - Router, modem, Switches

• No VOIP allowed
Communication Paths

- Passive Communication
- Signals: Fire alarm on both paths
  - Separate paths: Telco and Cell
    - Telco and internet
    - Exception: No cell service or internet
      - Separate path
        - Conduit on a single run
        - Local annunciation
          - Relocate the transmitter or use antenna extension
  - Local Annunciation – 24hr tests of communication
Communication Troubles

Considerations

• Good/Poor Service providers
• Loss of Communication—intermittent
• What are the best options?
  • - Internet
  • - Cell
  • - Two telephone lines
Signal Disposition and Zoning

- Fire Alarm – highest priority
- Fire Trouble
- Fire Supervisory
- Communication Failures
- Fire Loop Troubles
- Fire Alarm and Burglar Alarm Panels
- - Partitioning
Standalone Sprinkler Risers

- Water flow
- Fire Trouble
- Fire Supervisory
Disposition of Signals Cont’d

- Fire Trouble and Supervisory
- Communication Troubles
- Signal Transmitting Unit Troubles
  - Contact Owner within 5 min.
  - Dispatch service within 4hrs.
Periodic Testing
Periodic Testing

• Fire Alarm System
  - Annually

• Water-flow
  – Every two months

• Supervisory- Gate Valves, Pressure
  - Every Six months

• Records Kept - Appendix “C”
ULC Certificate Program
ULC Certificate for Monitoring

### SHARED FIRE PROTECTIVE SIGNALLING SERVICE

This Certificate that the Alarm Companies whose names appear below are Listed by Underwriters' Laboratories of Canada (ULC) and are authorized to install, monitor, and maintain Shared Services Protective Signalling Fire Alarm Systems in compliance with the requirements in CAN/ULC-S561 for Protective Signalling Systems.

The assignment of responsibilities as indicated in the following paragraphs shall be set out in a contract between the companies involved.

The Alarm Monitoring Company named on this certificate bears the responsibility for the monitoring of the status of signals generated by the system and for the keeping of records respecting these activities.

The Alarm Installation Company named on this certificate bears the responsibility for the correctness of the system installation, periodic testing, maintenance and repair, as well as the keeping of records respecting these activities.

It is also the responsibility of the Alarm Installation Company to confirm that the equipment used in this installation is ULC Labeled and is suitable for the application. All required service is provided for in the care contract between the Alarm Installation Company and the Occupant.

ULC makes no representations or warranties, expressed or implied, that the alarm system will prevent any loss by fire, smoke, water damage or otherwise, or that the system will in all cases provide the protection for which it is installed or installed. This certificate is evidence that the signalling devices are monitored by a ULC Listed Alarm Monitoring Company and that the installation, maintenance and service is provided by a ULC Listed Alarm Installation Company, which are subject to countercheck field inspections by ULC Representatives. This certificate is to be posted at the Subscriber's site and is valid only with a current maintenance contract.

ULC is not an insurer and does not assume or undertake to discharge any liability of the Alarm Companies or any other party for any loss, which may result from failure of the equipment, incorrect installation, non-conformity with requirements, cancellation of this certificate or withdrawal of the Alarm Company from Listing by ULC prior to the expiration date appearing on this certificate.

<table>
<thead>
<tr>
<th>LISTED ALARM COMPANY</th>
<th>LOCATION</th>
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<tbody>
<tr>
<td>TYPE OF SYSTEM</td>
<td>NUMBER OF SIGNAL SWITCHES</td>
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<tr>
<td>TRANSMISSION MODE</td>
<td>ISSUED D M Y</td>
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<td>LISTED ALARM INSTALLER</td>
<td>LOCATION</td>
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### MAINTENANCE

SYSTEM SHALL BE EXAMINED IN ACCORDANCE WITH NFPA 72 AND TESTED AT LEAST ONCE EACH YEAR

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<th>REPRESENTATIVE</th>
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ULC Certificate Program

• For CAN/ULC-S561-03 Compliant Systems, ULC can issue a Certificate stating Compliance to the Standard- Meets OBC & OFC

• The ULC Certificate is the only proof that the entire fire alarm monitoring system is compliant

• Each site is issued a certificate is subject to a random audit
Benefits of the ULC Certificate to the Local Authorities

• Extra Set of Eyes and Ears
  – Allows for a quicker inspection by Building and Fire Officials
  – Confidence in the Fire Alarm Monitoring System meets all the requirements of CAN/ULC-S561-03
  – Systems are audited on a random basis
  – Non-compliant systems can result in the cancellation of the ULC Certificate
What you should look for?

- ULC Listed Transmitter - S559 / S527
- Delayed Transmission of signals.
- Incoming power hardwired
- Transformer enclosed
- All wiring between fire alarm transmitter and the connected devices shall be in metal conduit.
- Separate breaker (new installations)
- 24 hour standby power (batteries)
- Wiring is supervised
Partnerships

Who should be our partners?
Partnerships are Important

- AHJ
- Engineer
- Alarm Company
- Electrical Contractor
- End User

- Collaboration is a key for maintaining compliance.
Improper Installation

• ¿The Unknown?
  – What you get when no one Polices system installations!
Power to the transmitter

- Plugged in – Not acceptable
Wiring
No Supervision of Fire Alarm Connections
Junction Box- No Supervision
System Modifications
Adding Unlisted Relays
Improper Installation
ULC Listings- Online Directories

- **WWW.ULC.CA** - Online Directories
  - Category Codes associated to ULC Listings
    - DAYRC - CAN/ULC-S559-04 Equipment
    - DAYYC - CAN/ULC-S561-04 – Shared Installation Co.
    - DAYIC - CAN/ULC-S561-03 – Shared and Full Service Fire Signal Receiving Centres
• THANK YOU

• Contact Information

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