

# CAN/ULC-S561

## TO COMPLY, OR NOT TO COMPLY.... ACTUALLY IT'S NOT EVEN A QUESTION!

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CAN/ULC-S561, Installation And Services For Fire Signal Receiving Centres And Systems is without a doubt one of the most misunderstood standards in the lexicon of the ULC S500 Series of Fire and Life Safety Standards. Simply stated, CAN/ULC-S561 promotes reliable fire alarm monitoring. This standard has been a Code requirement in Canada for over 10 years and yet every day Authorities find non-compliant systems and ULC, along with organizations like the Canadian Fire Alarm Association (CFAA), field daily inquiries about in conformity to, listing of, requirements for and understanding of CAN/ULC-S561. This article will endeavor to provide for a better understanding of this Standard, its place and requirements, in fire and life safety systems.





**WHY IS IT IMPORTANT?**

In Ontario, fire alarm system installations are required to meet the intent of the Ontario Building Code (OBC). The OBC requires that signals to the Fire Signal Receiving Centre are received and disposed of in a uniform manner.

The CAN/ULC-S561 Standard covers:

- Construction, operation, installation, inspection and tests applicable to fire signal receiving centres for fire protective signalling services utilizing fire signal receiving centre facilities and satellite centres and bridging centres;
- Construction and operation of a proprietary fire signal receiving centre; and
- Installation, inspection and tests applicable to a fire signal transmitting unit and its field device inputs at the protected premises.

Fire signal receiving centres come in two defined types; a Signal Receiving Centre and a Proprietary Fire Signal Receiving Centre. What’s the difference? A Signal Receiving Centre is a facility that receives alarm signals and at which trained personnel and service persons are on duty at all times.

- Think normal commercial businesses like an ADT or Chubb Edwards - these involve the monitoring of multiple properties and/or for multiple owners.

A Proprietary Fire Signal Receiving Centre is a facility, operated by the owner of the protected premises in which services encompassed in this Standard are monitored at all times by trained personnel.

- Think Specific business or facility with one owner, often having multiple sites and no third party monitoring. These are often Hospitals or Universities with large multi-building campuses

with their own in-house policing/security service that can provide 24/7 monitoring. Also some national retail chains will provide their own monitoring of their facilities.

**CODES AND STANDARDS**

The OBC governs the requirements for signals to the fire department for new buildings and for existing buildings it is the Ontario Fire Code (OFC). The occupancies that are generally required to have CAN/ULC-S561 compliance are:

- For Single Stage Fire Alarm System**
- Group A -Assembly Occupancy - >300
- Group B – Detention, Care and Care and Treatment Occupancies
- Group F, Division 1 – High Hazard Industrial Occupancy
- Buildings regulated by the provisions of Subsection 3.2.6. (Additional requirements for high buildings)
- Buildings containing interconnected floor space required to conform to Articles 3.2.8.3 to 3.2.8.11
- A retirement home regulated under the Retirement Homes Act, 2010 that is a Group C – Residential Occupancy

- For Two Stage Fire Alarm System**
- All Occupancies at the initiation of an Alert Signal



Occupancies with Fire Alarm System that includes waterflow indicating devices

The fire monitoring service for a building fire alarm system is mandated in Ontario in the OBC Division B, 3.2.4.8 (4) and in the OFC Division B, 6.3.1.2. Further Code references for fire alarm monitoring service and CAN/ULC-S561 conformity are made through three other Code referenced ULC fire alarm standards.

1. CAN/ULC-S524, Standard for Installation of Fire Alarm Systems which is referenced at OBC Division B, 3.2.4.5 (1) has as its last enforceable clause:
  - 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.
2. and CAN/ULC-S537, Verification of Fire Alarm Systems in OBC 3.2.4.5.(2) contains within it the following:
  - CAN/ULC-S537-04 Appendix C2 (G) -

Documentation to include the name and number of the Fire Signal Receiving Centre (CAN/ULC-S561), and the latest edition of CAN/ULC-S537-13, has expanded this section to impart the importance on fire monitoring:

- (CAN/ULC-S561-13) NOTE: This standard presupposes that, where provided, the interconnection from the fire alarm control unit or transponder to the fire signal receiving centre shall comply with CAN/ULC-S561, Standard for Installation and Services for Fire Signal Receiving Centres and Systems. (Refer to Items A to I in Appendix C5.13, Interconnection to Fire Signal Receiving Centre.)
3. And CAN/ULC-S536, Inspection and Testing of Fire Alarm Systems in OFC Division B, 6.3.2.2.(1)

The key take away here is that the fire alarm system monitoring is an extension of the fire alarm system, hence similar installation methods, and carries the same importance for installation and maintenance as the fire alarm system.

**FIRE MONITORING SYSTEM**

So, what is a fire monitoring system? It is a Fire alarm system or a sprinkler riser that is 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.

COMPLIANT SYSTEM		
Protective Premise	Communication Path	Fire Signal Receiving
Transmitter	Active or Passive Multiplex	Center
Fire Alarm Panel	Internet	Receiving Units
Spinkler Riser	DACT c/w Cell	Sufficient Staff

*All 3 parts are required to make up a compliant system. This article focuses is on Fire Signal Receiving Centres but will touch on the installation and periodic testing for them.*



### SIGNAL RECEIVING CENTRE VS. PROPRIETARY

#### SIGNAL RECEIVING CENTRE

#### PROPRIETARY SIGNAL RECEIVING CENTRE

A facility that receives alarm signals and at which trained personnel and service persons are on duty at all times.

A facility, operated by the owner of the protected premises in which services encompassed in this Standard are monitored at all times by trained personnel.



This facility must consist of the following:

- Facility with 2hr. Fire rating
- Signal receivers, station automation computer
- Dedicated Power Source
- Back-up systems which include – Telephone back-up, generator, Uninterrupted Power Supply Units (UPS)
- Security Vestibule- Interlocked Doors where only one can be opened at a time by the alarm room operator.
- CCTV Camera System and intercom
- Early warning fire protection system
- Fire Extinguishers
- Buddy System – as in back up alarm centre
- Trained staff to handle and dispatch alarms – 24hrs a day/7 days a week
- Contingency Plan – for unforeseen disasters – natural or man-made

These facilities must consist of the following:

- 2 hour fire separation.
  - Exception- 1 hour only if the building is sprinklered.
- Single locked door
- Owner will provide Staffing 24/7
- Owner usually provides installation and maintenance on the protected premises.
- Owner usually provides a runner service.

Fire Signal Receiving Centres receiving the following alarms or notification from the fire alarm system

- Fire Alarm
- Fire Trouble
- Fire Supervisory
- AC Fail
- Communication Failures

Also the installations at the protected buildings can be proprietary fire alarm equipment or off the shelf fire alarm transmitters.

## INSTALLATION OF A FIRE ALARM MONITORING SYSTEM

Although there are differences between an FRSC and a Proprietary system regarding the physical centres themselves, the installation of a CAN/ULC-S561 compliant fire alarm monitoring system at the protected premises are very similar. Both require:

- Transmitter that is CAN/ULC- S559 ( a Proprietary System is eligible to use CAN/ULC-S527 Compliant transmitter)
- Manufacturer’s Installation Instructions.
- Communication Channels
- Metallic raceway for interconnecting wires
- Supervision of circuits
- Installed as per CAN/ULC-S561
- Tested prior to occupancy

When it comes to the transmission of signals, CAN/ULC-S561 lays out the methods of communication for these systems. Communications can be Active or Passive. Active means that the channel between the fire alarm system and the alarm centre is continuously monitored so that any fault or failure that could affect signal transmission and reception is identified to the fire signal receiving centre. Passive means that it is not monitored but that incorporates dual or multiple communications. These dual or more channels create a communication system where the signal is transmitted through all channels and when acknowledgement through one is received, the other(s) will stop transmitting that signal. These channels also monitor each other for any faults and is tested every 24hrs.

Regardless of Active or Passive, the maximum time to receive a fire alarm signal from a protected premise is **60 seconds**, and this brings us to the requirements for accuracy of Signals.



All installed fire monitoring systems shall be properly programed to transmit accurate signals to the Signal Receiving Centre in order that the operators can quickly dispatch responding authorities. Therefore there can be no miscommunication of what is occurring at the system,

**Fire Alarm = Fire Alarm**

**Fire Trouble = Fire Trouble**

**Fire Supervisory = Fire Supervisory**

and there can be no conflicting signals (i.e. Burglar alarm – there are provisions for a location to be both fire and burglar alarmed through the same transmitter but fire alarm signals ALWAYS take precedents over burglar).

It’s not just the transmitted signals that are required to be accurate for compliance with CAN/ULC-S561 but also that the Contact Lists for each protected premise is up to date, that the proper fire department phone numbers are recorded (and not just 911) and that there is no system of verification of fire alarm signals prior to notification of the fire service to respond. CAN/ULC-S561 provides for the disposition of signals as follows:



maximum time to receive a fire alarm signal from a protected premise	<b>60 seconds</b>
maximum time to contact the fire department	<b>30 seconds</b>
maximum time to contact persons designated by the owner	<b>5 minutes</b>
maximum time for Fire Trouble and Supervisory, Communications Troubles or Signal Transmitting Unit Troubles to contact the owner	<b>5 minutes</b>
distance a service company/personnel is from the location to effect repairs.	<b>within 4 hours</b>



ULC-S561 lays out further required periodic testing which is also referenced in CAN/ULC-S536.

- Fire Alarm System - Annually
- Waterflow - Every two months
- Supervisory- Gate Valves, Pressure -Every Six months

**A note on Standalone Sprinkler Risers**

Standalone Sprinkler Risers that are monitored have the same time frame requirements but only transmit the following signals:



- Waterflow (alarm)
- Fire Trouble
- Fire Supervisory (pressure and gate valves)

As the communications systems of fire alarm systems are tested communication, active or passive, CAN/

**HOW DO YOU MAKE SURE ALL THESE REQUIREMENTS ARE MET?**

Compliance with CAN/ULC-S561 is not a simple matter of just checking off a box or two but rather involves a complete audit of both the Receiving Centre and the Fire Alarm Transmitter. Authorities Having Jurisdiction (AHJ), Property Owners and Alarm Companies all require the knowledge that the fire monitoring system as a whole is in compliance. The National Codes required that these systems to comply to the NBC/ NFC – Signals to the Fire Department by way of Fire Alarm Monitoring System in Compliance to CAN/ULC-S561 and that they shall provide a Certificate of Compliance attesting that the fire alarm monitoring system is in compliance to the applicable Standard for submission to the AHJ.



What kind of certificate to submit? There are two options,

<b>1</b>	<b>2</b>
<p>A document that is acceptable to the Authority Having Jurisdiction. Your local Building Official for new construction/installation and your Fire Official for existing buildings/installations.</p>	<p>A ULC Fire Protective Signalling System Certificate – provided through ULC listed Alarm Company. Companies that are certified to CAN/ULC-S561 can be found on our ULC Online Directory at <a href="http://database.ul.com/cgi-bin/XYV/template/LISCANADA/1FRAME/index.html">http://database.ul.com/cgi-bin/XYV/template/LISCANADA/1FRAME/index.html</a> and using the following ULC Category Codes:</p>
	<p>DAYRC- CAN/ULC-S559-04 Equipment</p>
	<p>DAYYC- CAN/ULC-S561-03 – Shared Installation Co.</p>
	<p>DAYIC - CAN/ULC-S561-03 – Shared and Full Service Fire Signal Receiving Centres</p>

**A FINAL NOTE**

CAN/ULC-S561 is a vital component in the chain of Fire Alarm standards and is mandated by our Codes, yet is possibly one of the highest non-conformity issues with fire alarm systems that require monitoring. Although the National Codes have since 2005 explicitly required CAN/ULC-S561 conformity, for the upcoming 2015 National Codes ULC has submitted an Appendix Note to further clarify the interconnection between it and CAN/ULC-S524 Installation of Fire Alarm Systems so that Code users and enforcement authorities ensure complete conformance with Code requirements. The draft Appendix note submitted (and as of this writing not yet finalized by the Codes Commission) is:

CAN/ULC-S561, “Installation and Services for Fire Signal Receiving Centres and Systems,” which is referenced in Sentence 3.2.4.8.(4), and CAN/ULC-S524, “Installation of Fire Alarm Systems,” which is referenced in Sentence 3.2.4.5.(1), go hand-in-hand: conformity to CAN/ULC-S561 entails conformity with the fire alarm system components required in that standard. These components include fire alarm transmitter (signal transmitting unit), interconnections and communication path.

We hope you have a clearer picture and understanding of CAN/ULC-S561, its requirements and how it fits into our Codes and requirements for fire alarm systems. If any further assistance, interpretation, details or concerns are required, do not hesitate to contact either ULC Regulatory Services or Certificate Services below. The CAN/ULC-S561 Standard, along with any other ULC standards, can be purchased at the link below:

**ULC Store:** <http://canada.ul.com/ulcstandards/aboutus/salesofulcstandardsmaterials/>



 <b>Underwriters Laboratories</b>	<b>Certificate No:</b> PSxxxxxxxx <b>File No:</b> CCN: DAYIC <b>Service Center No:</b> <b>Expires:</b> <b>Issued:</b>
<b>FIRE PROTECTIVE SIGNALING CERTIFICATE (CAN/ULC-S561)</b>	
<p><b>This Certifies</b> that the Alarm Companies whose names appear below are Listed by ULC and are authorized to install, monitor, and maintain Protective Signaling Fire Alarm Systems in compliance with the requirements in CAN/ULC-S561 for Protective Signaling Systems.</p> <p>The assignment of responsibilities as indicated shall be set out in a contract between the companies involved.</p> <p>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.</p> <p>The Alarm Installation Company named on this certificate bears the responsibility for the correctness of the system installation, periodic testing, maintenance repair, as well as the keeping of records respecting these activities.</p> <p>It is also the responsibility of the Alarm Installation Company to confirm that the equipment used in the 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.</p> <p>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 intended. The certificate is evidence that the signaling 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.</p> <p>ULC is not an insurer and does not assume any obligation or undertake to discharge any liability of the Alarm Companies or any other party for any loss, which may result from failure of 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.</p>	
<b>SN:</b> PSxxxxxxxx <u>Protected Property:</u> <u>Alarm Monitoring Company:</u> <u>Alarm Service Company:</u>	
<p><b>Alarm System Description:</b> This system is installed and operated in accordance with STANDARD CAN/ULC-S561,2013 edition.</p> <p>System Type: Fire Protective Signaling                      Authority Having Jurisdiction:  Responding Fire Department:  <b>System Deviations from Referenced Standards:</b> No deviations from Standards  System Type: Fire Panel</p> <p><b>Alarm Transmission Method:</b>  Local F/A Interconnection:  Line Security:  Control or Transmitter Unit:</p>	

<h3>ULC CODES AND ADVISORY SERVICES</h3>	<h3>ULC CERTIFICATE SERVICES</h3>
<p>For additional information or questions ULC Codes and Advisory Services is here to help.</p>	<p>For additional information or questions to ULC Certificate Services you can reach them at</p>
<p>Contact Brian McBain  T +1.613.751.3404  E: Brian.McBain@ul.com</p>	<p>T: +1.866.937.3852  Alan Covers ext. 612070r  E: TRT.Certificate@ul.com</p>
	<hr/> <p><b>Visit us at</b>  <a href="http://canada.ul.com/ulcprograms/fireandsecurityalarmcertificateprograms/">http://canada.ul.com/ulcprograms/fireandsecurityalarmcertificateprograms/</a>  <a href="http://industries.ul.com/life-safety-and-security/alarm-service/ulwebcerts">http://industries.ul.com/life-safety-and-security/alarm-service/ulwebcerts</a></p>