

CAN/ULC-S561-03 & 13

**Installation and Services for
Fire Signal Receiving
Centres and Systems-
Things You Need To Know**



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Underwriters Laboratories of Canada**

November 2018

Edmonton

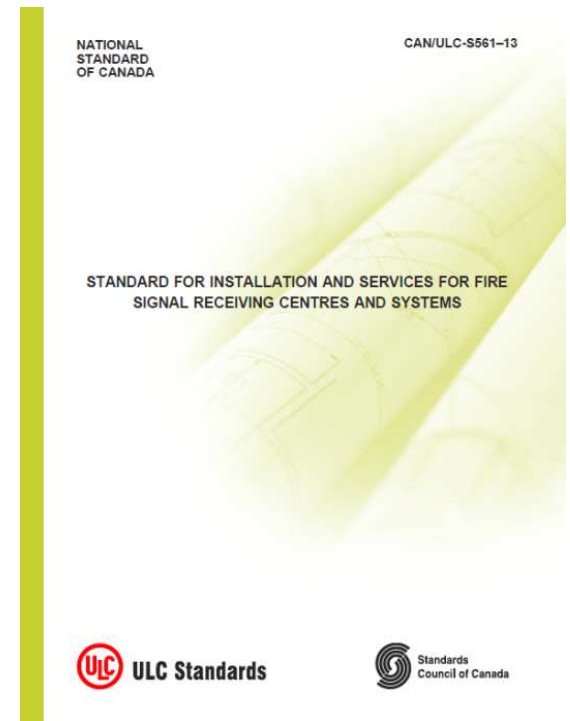
Agenda

- Building and Fire Code Requirements
- CAN/ULC-S561 Compliant Installations – Overview
- Installation Requirements
- Communication Technologies
- ULC Certificate Program
- Non-Conformances
- Improper Installations



What Edition of CAN/ULC-S561 ?

2015 National Building/Fire Code -
References 2013 Edition
- Was released in January 2016



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.



Fire Monitoring System

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.



Where does it start?

National Building Code Fire Alarm Installation

- 3.2.4.5 (1) Fire Alarm Systems shall be installed to CAN/ULC-S524, “Installation of Fire Alarm Systems”
- 5.15.1 of 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 Signal Receiving Centres and Systems)



Where does it start?

3.2.4.5.(2) Fire Alarm systems shall be verified to
CAN/ULC-S537 “Verification of Fire Alarm Systems”

CAN/ULC-S537-04 Appendix C2 (G)

- Documentation to include the name and number of the
Fire Signal Receiving Centre (CAN/ULC-S561)



Where does it start?

National Building Code – Fire Alarm Signals

3.2.4.8. Signals to Fire Department

(1) **A single stage fire alarm system** installed in a building of assembly occupancy that has an **occupant load more than 300** shall be designed to notify the fire department... that an alarm signal has been initiated



3.2.4.8.(1) Signals to Fire Department



**Group A
Occupancy
300+**



3.2.4.8.(2) Signals to Fire Department

Fire Alarm system that includes **waterflow-indicating devices** shall be designed to notify the fire department, in conformance with Sentence (4) when an alarm is initiated



3.2.4.8.(3) Signals to Fire Department

A **two-stage** fire alarm shall be designed to notify the fire department, in conformance with sentence (4), that an **alert signal** has been initiated.



3.2.4.8.(4) Signals to Fire Department

Notification of the fire department required by Sentences (1), (2), and (3) shall be provided in conformance with CAN/ULC-S561, “Installation and Services for Fire Signal Receiving Centres and Systems



Fire Code - Monitoring

6.3.1.3.

- (1) Central Stations, including their fire protective signalling systems, shall be maintained in conformance with CAN/ULC-S561, "Installation and Services for Fire Signal Receiving Centres and Systems"



Documentation

Records shall be kept for a minimum of 2 years on all activities related to the maintenance of the fire monitoring system.

Service, Maintenance, Annual Tests



Documentation

APPENDIX C (INFORMATIVE) – TEST AND INSPECTION REPORTS

(References: Clauses 9.6.1 and 11.1.3)

TABLE C1 — ALARM SIGNAL TRANSMITTER ANNUAL TEST AND INSPECTION REPORT

Date of Inspection:
Building Name:
Building Address:
MONITORING SYSTEM DESCRIPTION
Sprinkler System — Alarm and Supervisory Devices:
Fire Alarm System:
Others:
Alarm Signal Transmitter Manufacturer: Model No.:
Equipment Listing No.:
Fire Signal Receiving Centre:
Fire Signal Receiving Centre Identification:
Telephone Number:

1. This is to certify that the monitored system has been tested and inspected in accordance with CAN/ULC-S561, Standard for Installation and Services for Fire Signal Receiving Centres and Systems, Section 11, Periodic Inspections and Tests, and these records document the results of testing performed.

2. The monitored system is now fully functional? Yes ____

OR

The monitored system has deficiencies noted on the pages attached? Yes ____

3. Comments: _____

4. A copy of this report will be given to _____, who is the *owner* or *owner's* representative for this building.

Printed Name of Service Personnel Conducting Test _____
 Signature of Service Personnel Conducting Test Company _____
 Telephone Number _____



Understanding Fire Alarm Monitoring

- Easiest Category to meet Compliant.
- High Percentage of Fire Monitoring Systems are Non- Compliant
- Usually the last thing considered for Occupancy
- ULC Certificate is the only proof of Compliance.



Why is this Important?



- **The fire monitoring is an extension of the Fire Alarm System.**
- **AHJ's are requesting compliance.**
- **Expectation that it will work when activated.**

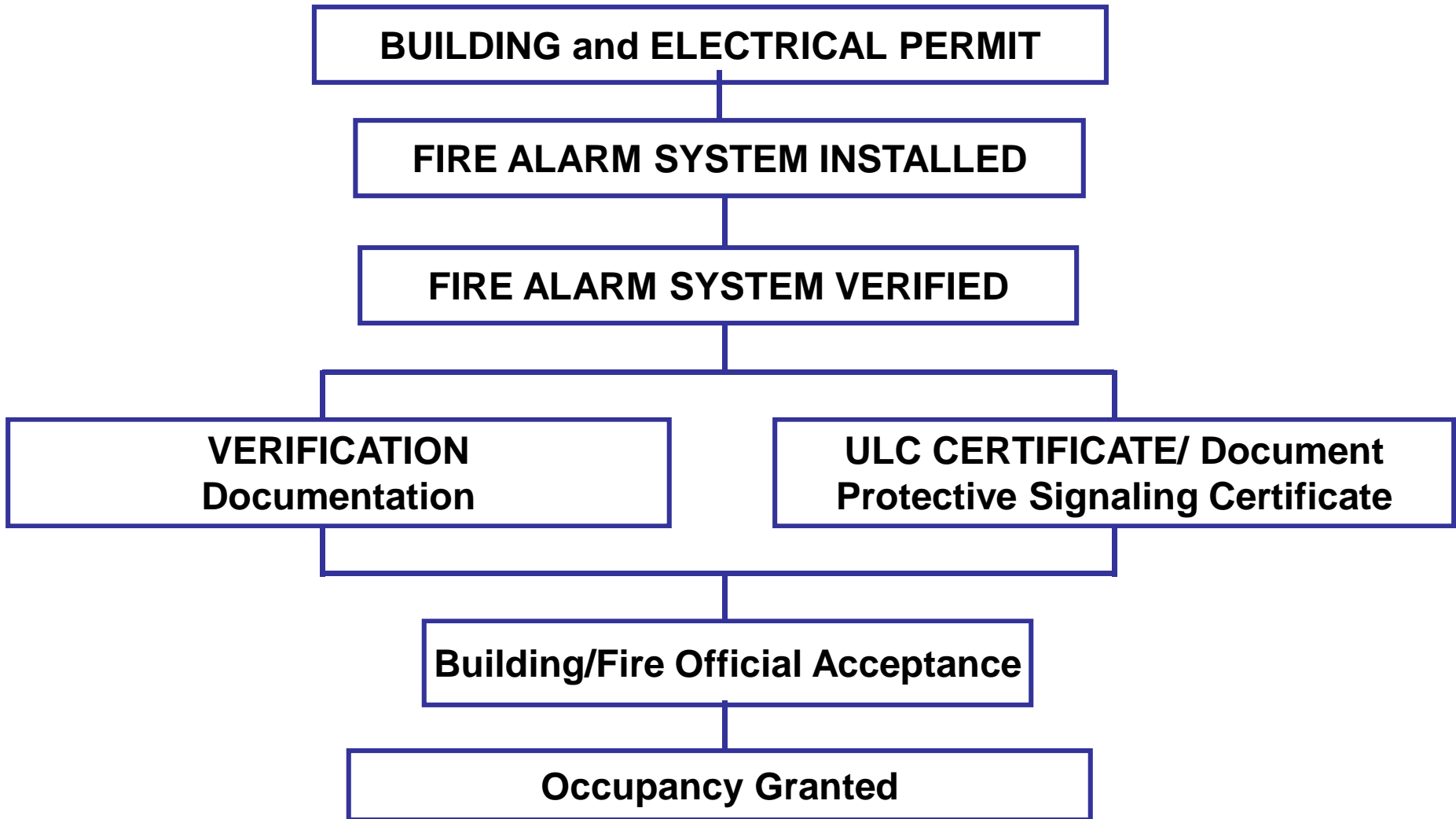


What Are Some Things You Need to Know?

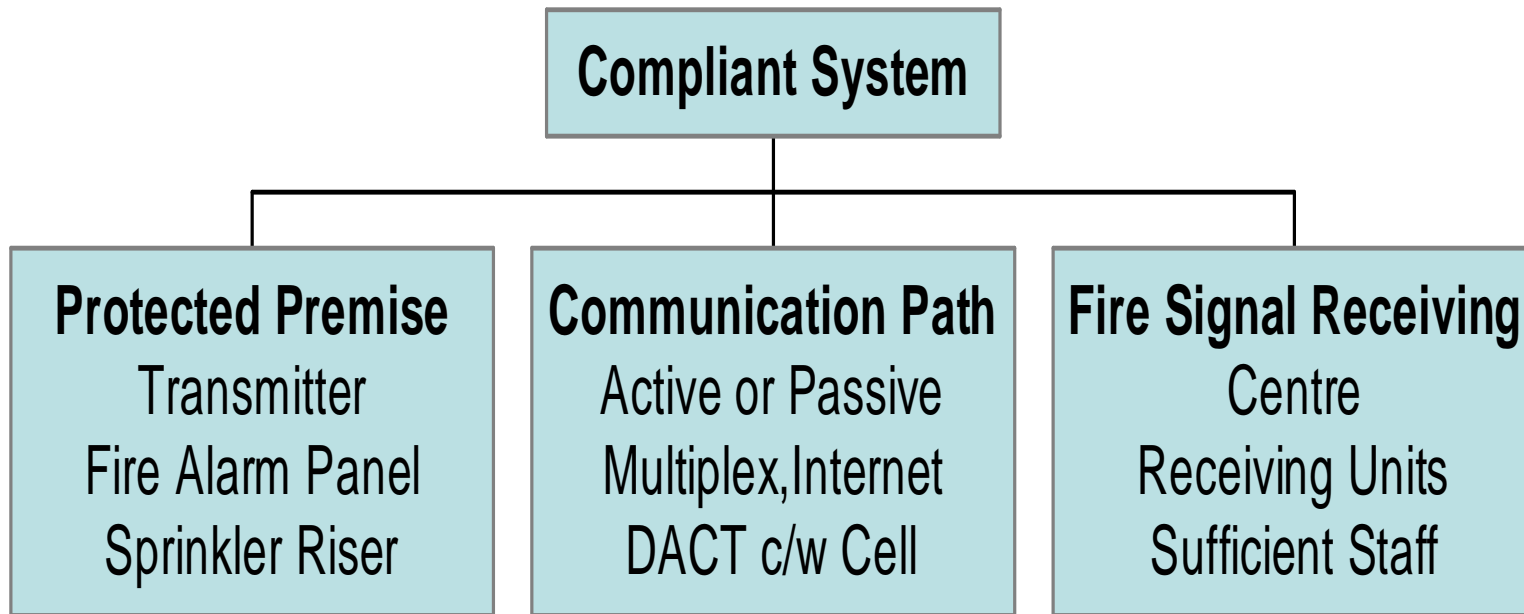
- No Fire Alarm Verification
- Signals need to be transmitted to the Fire Signal Receiving Centre (FSRC) within 60 seconds.
- FSRC shall contact the fire department in 30 seconds. Contact customer within 5 minutes
- Trouble and Supervisory Signals – (90 sec) Contact customer within 5 minutes.
- Communication Troubles-(180 sec) Contact Customer within 5 Minutes.



Fire Alarm Installation



What makes up a compliant System?



Signal Receiving Centres

Signal Receiving Centres

- Signal Receiving Centres
 - Multiple Different Customers
- Proprietary Signal Receiving Centres
 - One Company with multiple properties
 - Hospitals, Campus locations, Retailers



Signal Receiving Centres

- Designed and built to CAN/ULC-S561.
- Built with a 2hr fire separation.
- Standby Power- UPS and Generator
- Signal Receiving units. CAN/ULC-S559 & S561
- Computer Automation of Signal Receiving Function.
- Emergency Lighting.
- Controlled Access to Station.(CCTV and Access Control)
- Properly trained sufficient Staff. Records to show proof of training.
- Not always located locally.



Coming Soon

- Publication of CAN/ULC-S561 and CAN/ULC-S301 .
- Certification Bulletins for CAN/ULC-S561 and CAN/ULC-S301 announcing changes to the latest editions of these documents.
- Allowance for remote login to the accounts.
- All Signal Receiving Centres will be required to have a redundant site within 5 years. (Jan 2024)
- Guard Service Changes for the industry.
- Hosted Central Station
- Manage Video Services



Fire Alarm Monitoring Installations

New Systems- CAN/ULC-S561

Shall use CAN/ULC-S559 compliant Signal Transmitting unit.

Communication Channel – Active/Passive – newest technology

Manufacturer's Installation Instructions



Existing Systems- CAN/ULC-S561

- Will accept CAN/ULC-S527 compliant signal transmitting units .
- Must upgrade connecting wiring – Metallic conduit
- Supervision of fire alarm, trouble & supervisory
 - communicate alarms within 60 sec.
- Signal Receiving Centre shall be CAN/ULC-S561 compliant.
- Manufacturer's Installation Instructions



Fire Alarm Transmitter

- Burglar Alarm System may not be a fire alarm transmitter.
- Most burglar alarm systems do not comply to this requirement.
- Burglar/ Fire combination -Partitioning is possible.
- Fire Alarm always takes priority.



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



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
- Standby Batteries shall be replaced every 5 years
- Additional modules/relays properly mounted (Stand-offs, tie raps)
- Minimum wire size for connections between Fire Alarm Panel and Fire Alarm Transmitter - 22 gauge.
- Serviced within 4hrs. (Travel Distance)



System Requirements for Installation

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



Additional requirements

- Supervised connections- (loop troubles)
 - fire alarm, fire trouble, fire supervisory
- Supervise removable terminal strips
- Monitor for AC failure
- Monitor for Communication failure.

Reinforce Point

- Fire alarm signals transmitted in 60 sec.
- Dispatch on fire in 30 seconds



Typical Installation - Older Style



Proper “Certified” Installation- Older Style



Newer Installation- Passive



New Installation- S561 Compliant



Chubb EDU
Help Desk Support
1-800-668-24
Ligne directe de soutien
Please have your system number
Veuillez avoir votre numéro
votre mot de passe

MODULE 24

ID 151432

CLASS 2 WET CLASS 2 NOT WET
WHITE REV 2/04
BLACK 1/01/02
FTB13716-DA-100
MADE IN CANADA
CLASS 2 WET CLASS 2 NOT WET

LX2-11

GARDEN PS

CLASS 2 WET CLASS 2 NOT WET
WHITE REV 2/04
BLACK 1/01/02
FTB13716-DA-100
MADE IN CANADA
CLASS 2 WET CLASS 2 NOT WET

CLASS 2 WET CLASS 2 NOT WET
WHITE REV 2/04
BLACK 1/01/02
FTB13716-DA-100
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CLASS 2 WET CLASS 2 NOT WET

LX2-9

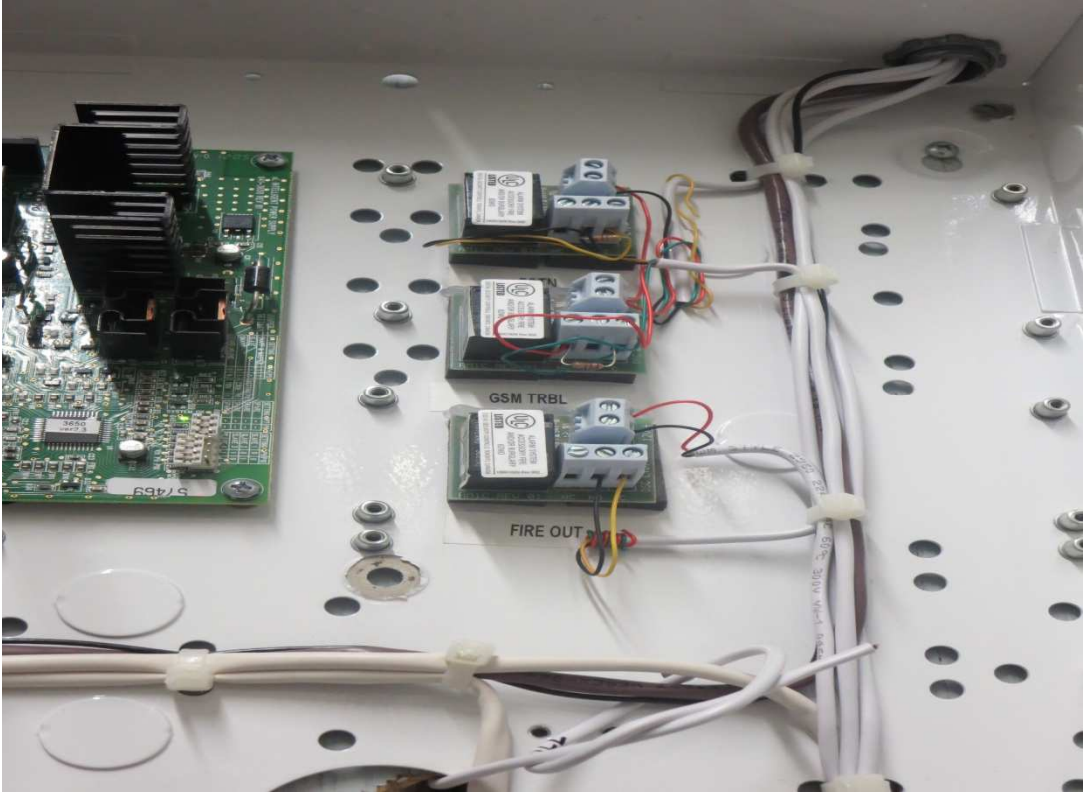


Cellular Back up



Transmitter relays

Installation of relays

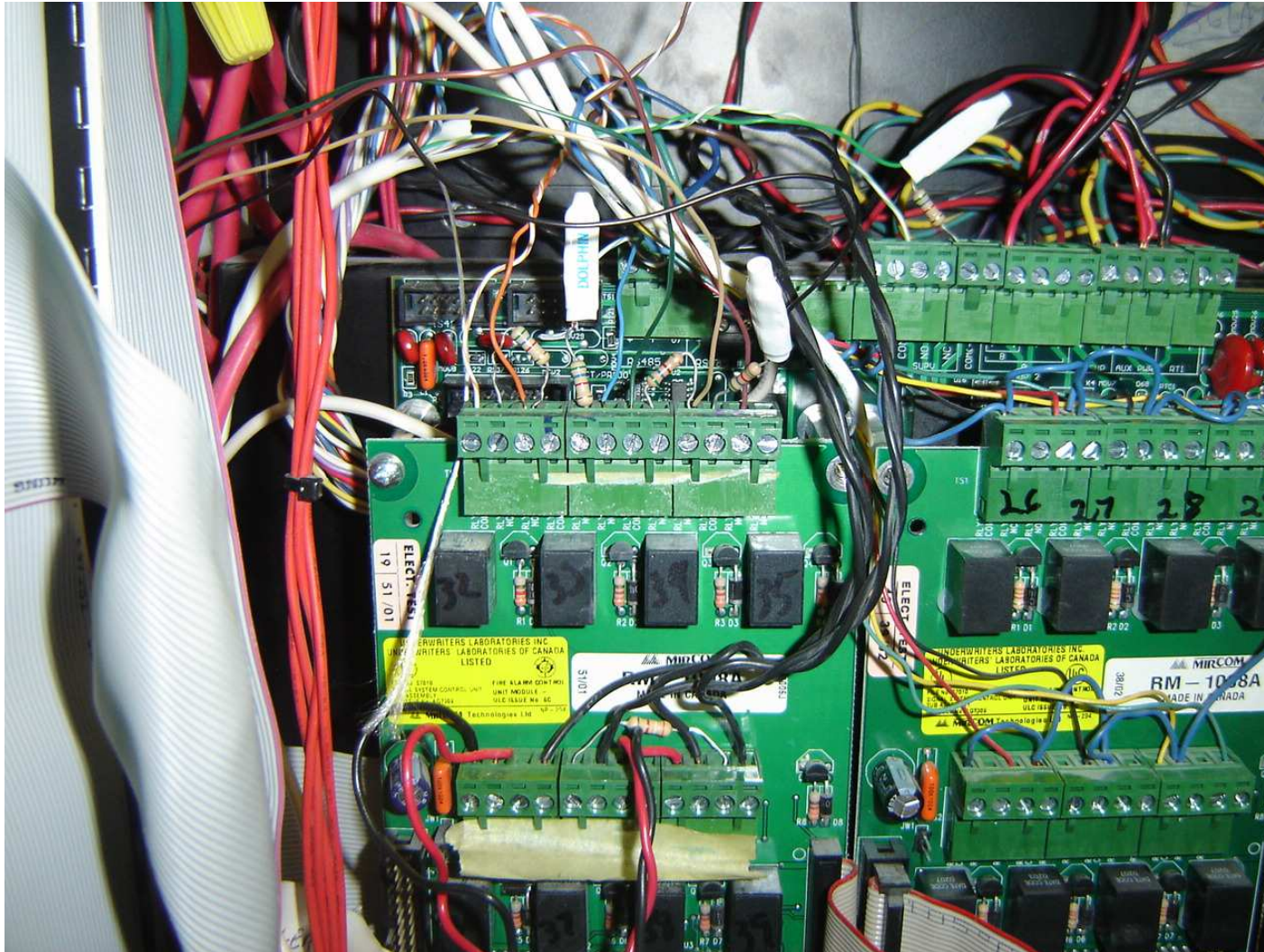




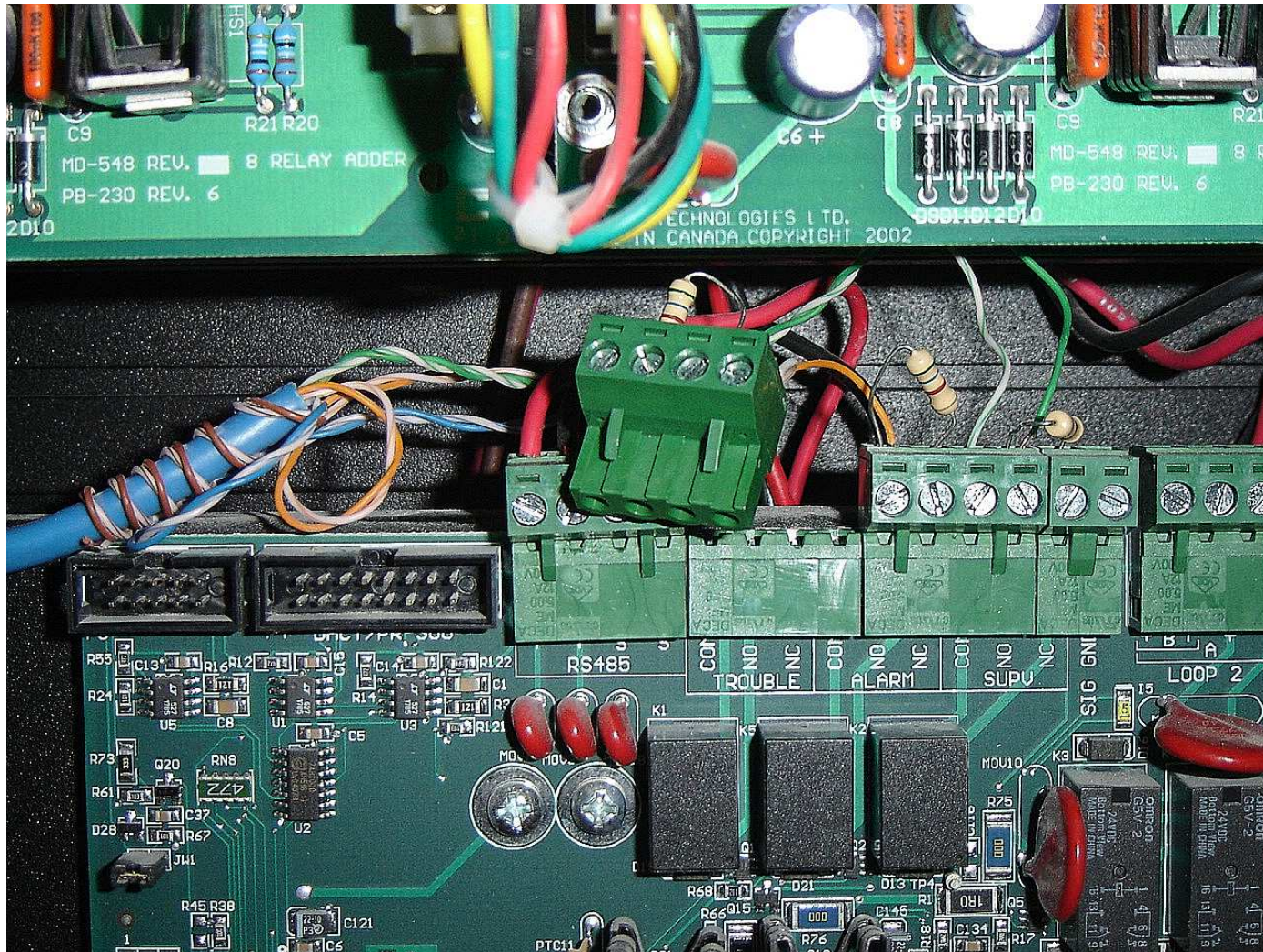
ATC-FROST FTC3718
INPUT BLK 120V 60Hz
OUTPUT W6 5V 37VA
CLASS 2 NOT WET
CLASS 3 WET
MADE IN CANADA
HELD
9786130

ATC-FROST FTC3718
INPUT BLK 120V 60Hz
OUTPUT W6 5V 37VA
CLASS 2 NOT WET
CLASS 3 WET
MADE IN CANADA
REV G
9786130

Removable Terminal Strip



Removable Terminal Strip



Communication Paths

Communication Paths

Active System

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



Communication Paths

Passive Communication

Signals- Fire alarm on both paths

- Separate paths- Telco and Cell
 - Telco and internet
- Exception- No cell service or internet
 - Telco line on separate paths
 - Conduit on a single run
 - Local annunciation
 - Relocate the transmitter or use antenna extension

Local Annunciation – 24hr tests of communication



Communication Troubles

- Good/Poor Service providers
- Loss of Communication– intermittent
- What are the options?
 - - Internet
 - - Cell
 - - Two telephone lines



Passive Communications

Digital Phone Service

- Managed Facility Voice Network (MFVN)
 - Providers usually National Companies (Bell, Shaw, Rogers, Telus, Cogeco)
 - Providers are called to fix communication problems.
 - Provide a minimum 8 hour standby power to network
 - 24hr daily test has been reduced to 6hr test . Consistent within North America

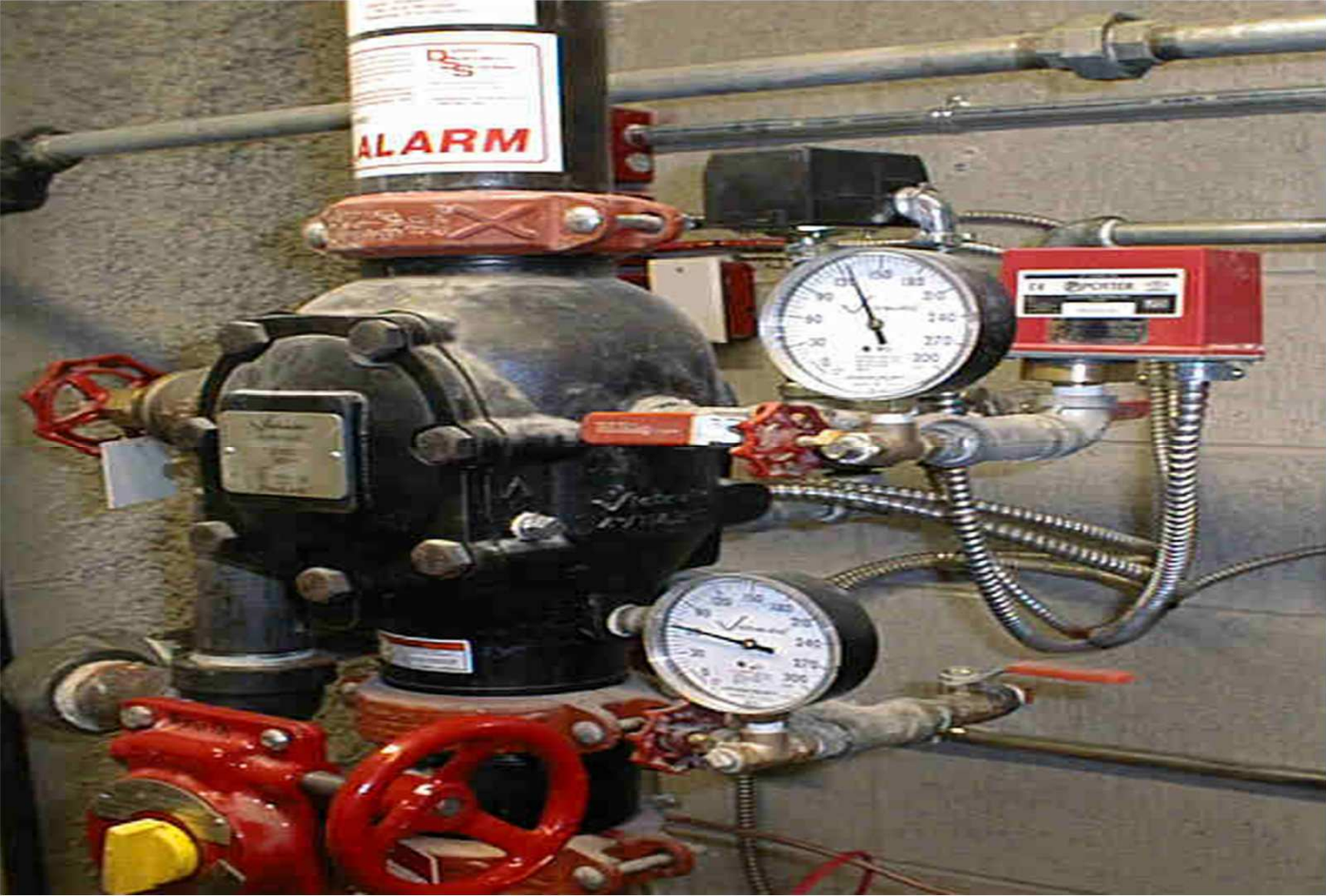


Standalone Sprinkler Risers

- Water flow
- Fire Trouble
- Fire Supervisory – Gate Valve /Pressure



Trimmed Sprinkler



Accuracy of Signal Transmitted

- All installed fire monitoring systems shall properly program to transmit accurate signals to the FSRC in order that the operators can quickly dispatch responding authorities.
- Fire Alarm/Waterflow = Fire Alarm
- Fire Supervisory/Gate Valve/ Pressure = Fire Supervisory
- Fire Trouble = Fire Trouble
- Communication Failures
- Circuit Faults and Loops Troubles
- No conflicting signals . (ie Burglar alarm)



Transmitter Upgrades

When is it required to upgrade the installation?

- Standard is not written in a way to force an upgrade.
 - Existing Systems are not required to be upgraded if they continue to operate according to the Standard

When is required?

- The transmitter can no longer be serviced.
- The Fire Alarm System is upgraded.
- Telecommunication network is no longer available.



Periodic Testing



Periodic Testing

- **Fire Alarm System**
 - Annually

Standalone Sprinkler Riser

- Water-flow
 - Every two months
- Supervisory- Gate Valves, Pressure
 - Every Six months
- Records Kept- Two years



ULC Certificate Program



ULC Certificate for Monitoring




**Underwriters
Laboratories**

Corporate Headquarters
7 Underwriters Road
Toronto, ON M1R 3B4

Certificate Number

SHARED FIRE PROTECTIVE SIGNALLING SERVICE

This Certifies 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 CAN/ULC-S561 for Protective Signalling Systems.



**Underwriters
Laboratories**

Corporate Headquarters
7 Underwriters Road
Toronto, ON M1R 3B4

Certificate Number

PROTECTIVE SIGNALLING SERVICE

This Certifies that the Alarm Company whose name appears below is Listed by Underwriters' Laboratories of Canada (ULC) and is authorized to install and monitor Protective Signalling Fire Alarm Systems in compliance with the requirements in CAN/ULC-S561 for Protective Signalling Systems.

The Alarm 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 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 Company and the Occupant.

Underwriters' Laboratories of Canada 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. This certificate is evidence that the signalling devices are monitored and maintained by a ULC Listed Monitoring Station and that the service is 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 Company 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.

LISTED ALARM COMPANY		LOCATION	

TYPE OF SYSTEM	NUMBER OF SIGNAL SWITCHES						LOCAL FIA INTERCONNECTION
	ROOM TEMP	WATER FLOW	WATER LEVEL	PRESSURE	WATER TEMP	OUT OFF VALVES	

TRANSMISSION MODE	ISSUED: D M Y	EXPIRES: D M Y	MAXIMUM TERM

SUBSCRIBER	MAINTENANCE SYSTEM SHALL BE EXAMINED AND TESTED AT LEAST ONCE EACH YEAR			
	REPRESENTATIVE	DATE		
		D	M	Y



**Underwriters
Laboratories**

Certificate No: PS67031903
File No: 56777 CCN: DAYIC
Service Center No: 1
Expires: 02/04/2021
Issued: 02/04/2016

FIRE PROTECTIVE SIGNALING CERTIFICATE
(CAN/ULC-S561)

This Certifies 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.

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 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 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.

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.

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.

SN: PS67031903

Protected Property:
SUMMIT
13050 HILTON AVE
SURREY, BC V3R 5J4

Alarm Service Company:
PRICES ALARM SYSTEMS LTD
3623 HENNING DRIVE, UNIT 116
BURNABY
BC V5C 6P5 CANADA

Alarm System Description:
This system is installed and operated in accordance with STANDARD CAN/ULC-S561, 2013 edition.

System Description
System Type: Fire Protective Signaling
Authority Having Jurisdiction: CITY OF SURREY
Responding Fire Department: SURREY FIRE DEPT

System Deviations from Referenced Standards:
None

System Type: Fire Panel

Control or Transmitter Unit:
PC 1532, #05-03-1578 (02-20-1578)
Local FIA Interconnection: Yes
Line Security: Passive

ULC Certificate Program

For CAN/ULC-S561-03 Compliant Systems, ULC Certificate is a method to show Compliance to the Standard- Meets NBC & NFC

The ULC Certificate is the only proof that the entire fire alarm monitoring system is compliant by a ULC Listed Company.

Each site is issued a certificate is subject to a random audit . Yearly based on activity.



Who can issue a ULC Certificate?

- Full Service Monitoring Station - ULC
 - Installation and monitoring – Same company

- Shared Service Monitoring Station with Installation Company - ULC
 - Two different companies

Certificate Requirements

- Installation company is ULC Listed
- Monitoring Company is ULC Listed
- Contracts between the customer and Alarm Service (installation) Company
- Contracts Between the Alarm Service company and the monitoring company
 - Full Service companies excluded
- Regular Testing of System (ULC-S561)
- ULC Certificate posted on-site



What ULC Inspectors Look for?

- ULC Listed Transmitter - S559 / S527
- Incoming power hardwired
- Transformer enclosed
- Connecting wiring – Conduit & min 22 gauge
- Separate breaker (new installations)
- 24 hour standby power (batteries)
- Wiring is supervised
- Proper Transmission times
- Accuracy of Signals transmitted.



Non-Compliance

- ULC issues an inspection report
- Alarm Companies must correct deficiencies
- Cancel ULC Certificate
- Increased inspection – 100% inspection
- Suspension of Certificate issuing
- ULC Listing Withdrawal



What is done with non-conformances and what are the consequences?

- Need to be corrected in at an agreed upon time frame.
- Cancellation of Certification
- Send Letters to the alarm company and the property owner.
- Notification to AHJ (Cancellation of Certificates)



Coming Soon – New Web Portal

- Automatic Notification of new or cancelled certificates – AHJ
- New enhanced reports
- New Certificate features
- QR Codes on Certificates
- Invoices available through web portal
- Annual audit reports and replies through the web portal
- Data recorded to identify trends.
- Online directory of equipment listing, companies etc.



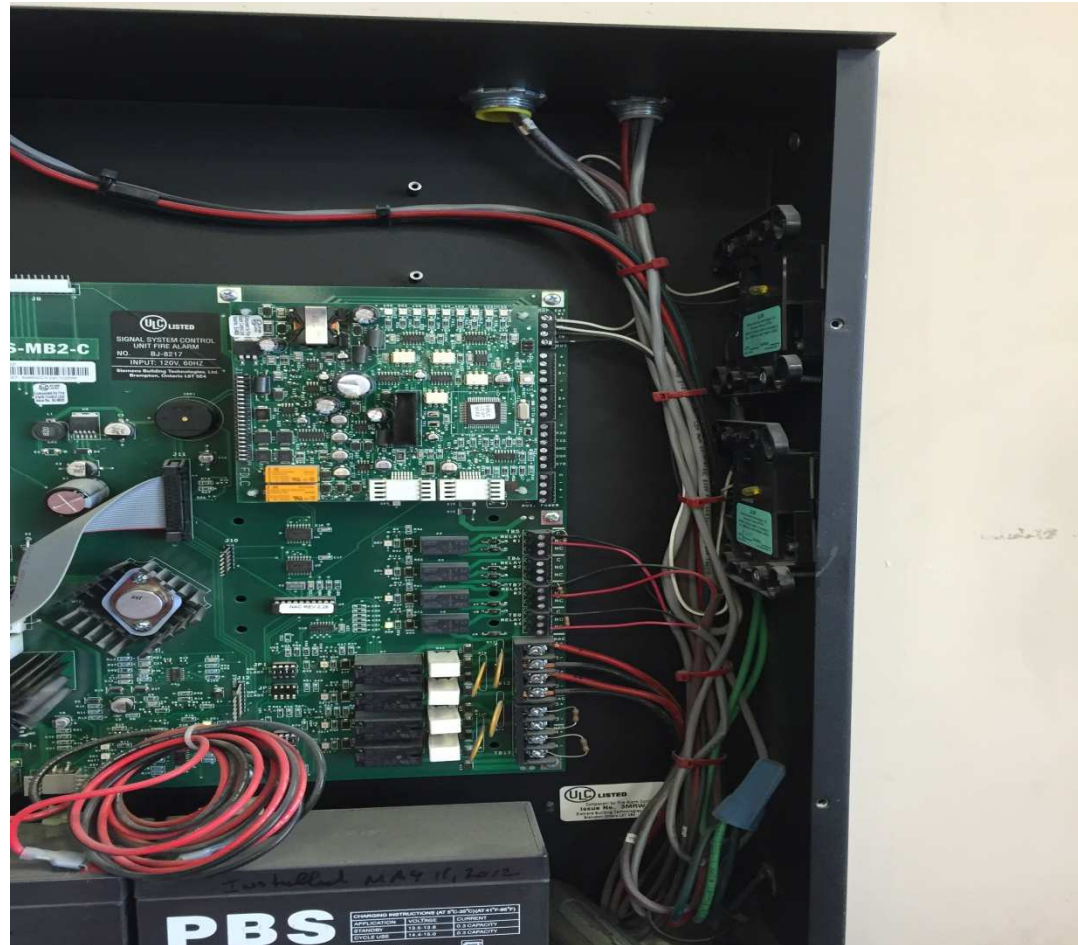
Improper Installation

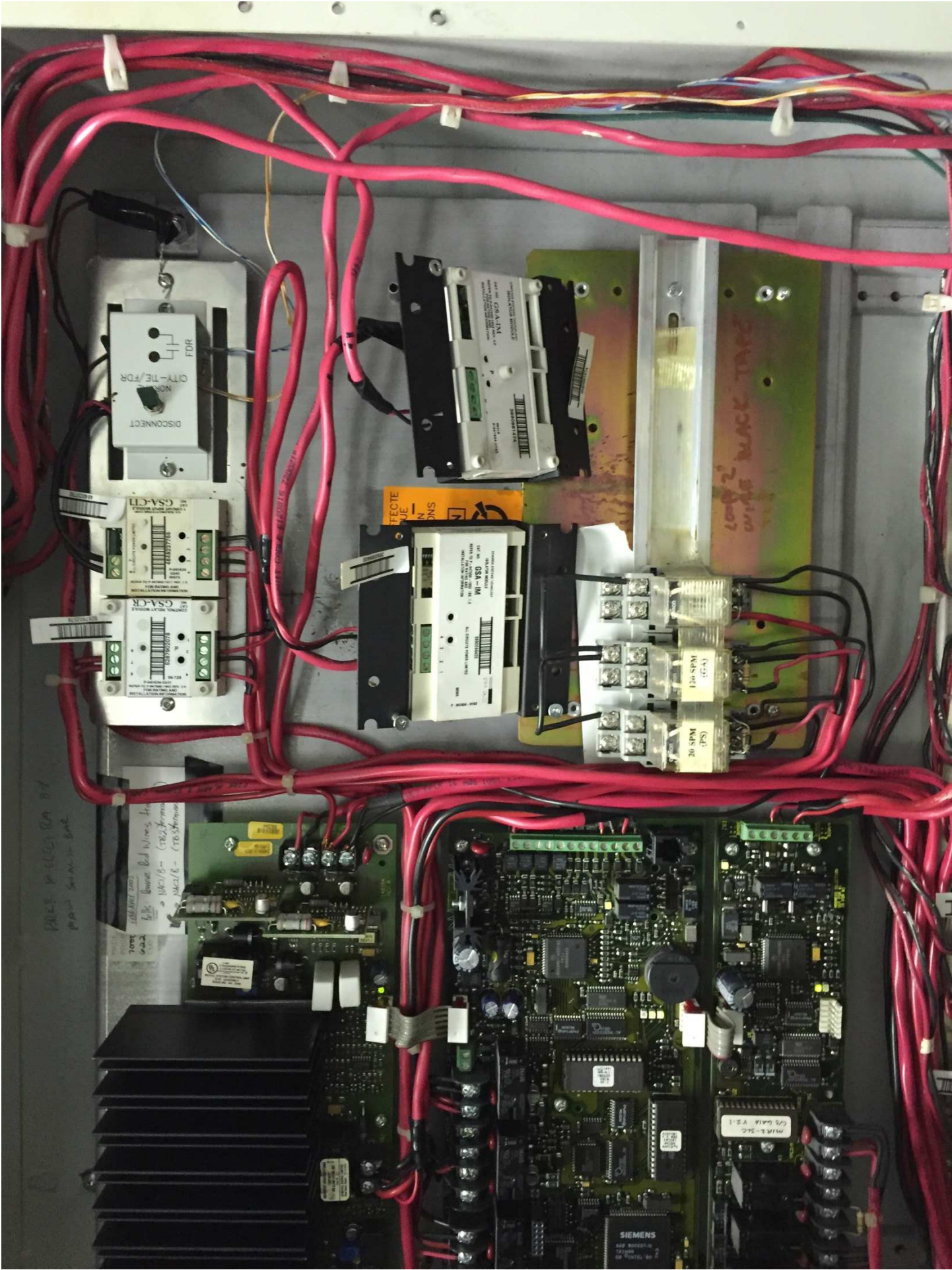
¿The Unknown?

- What you get when no one Polices system installations!



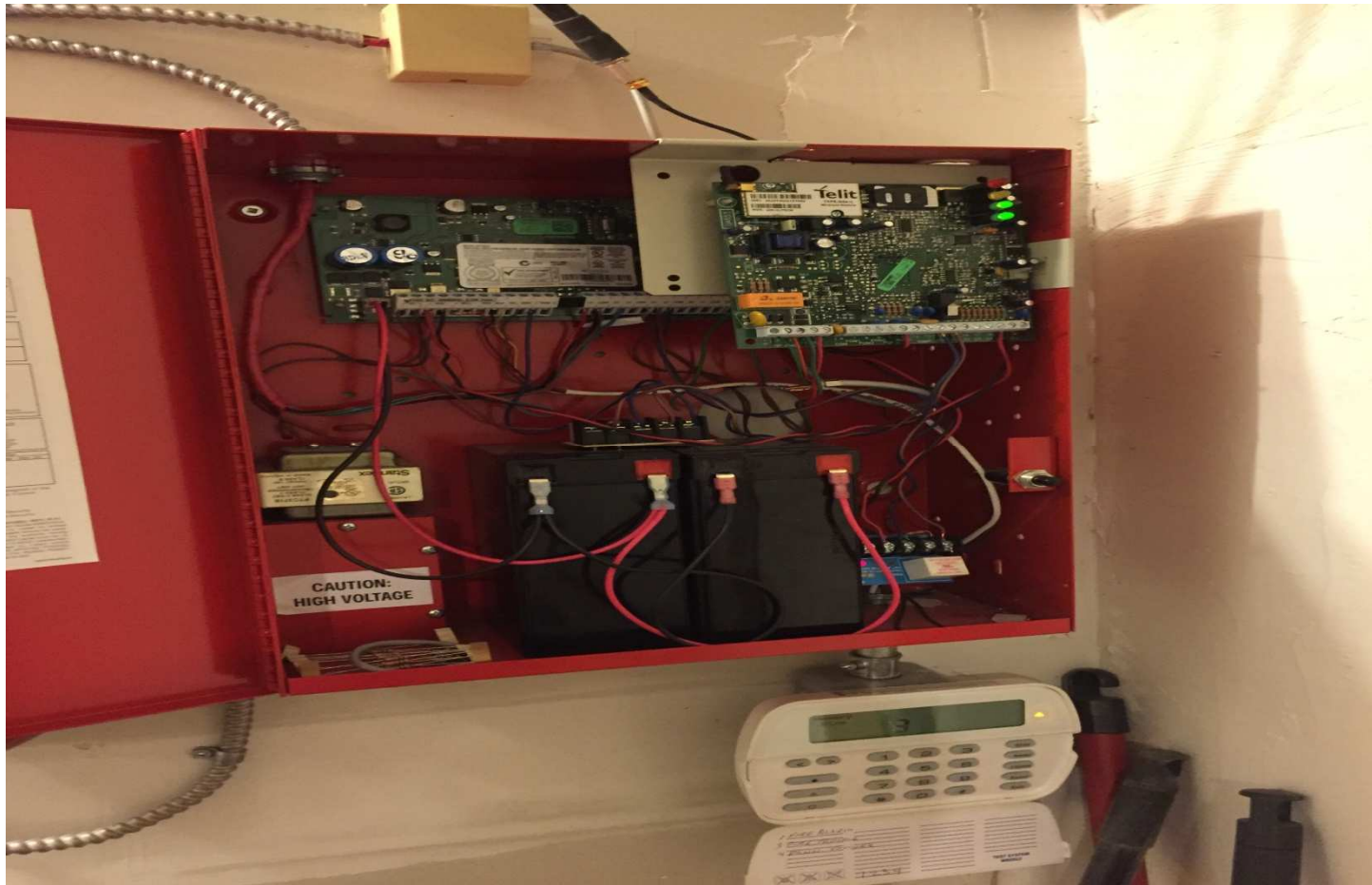
Unlisted EOL Relays





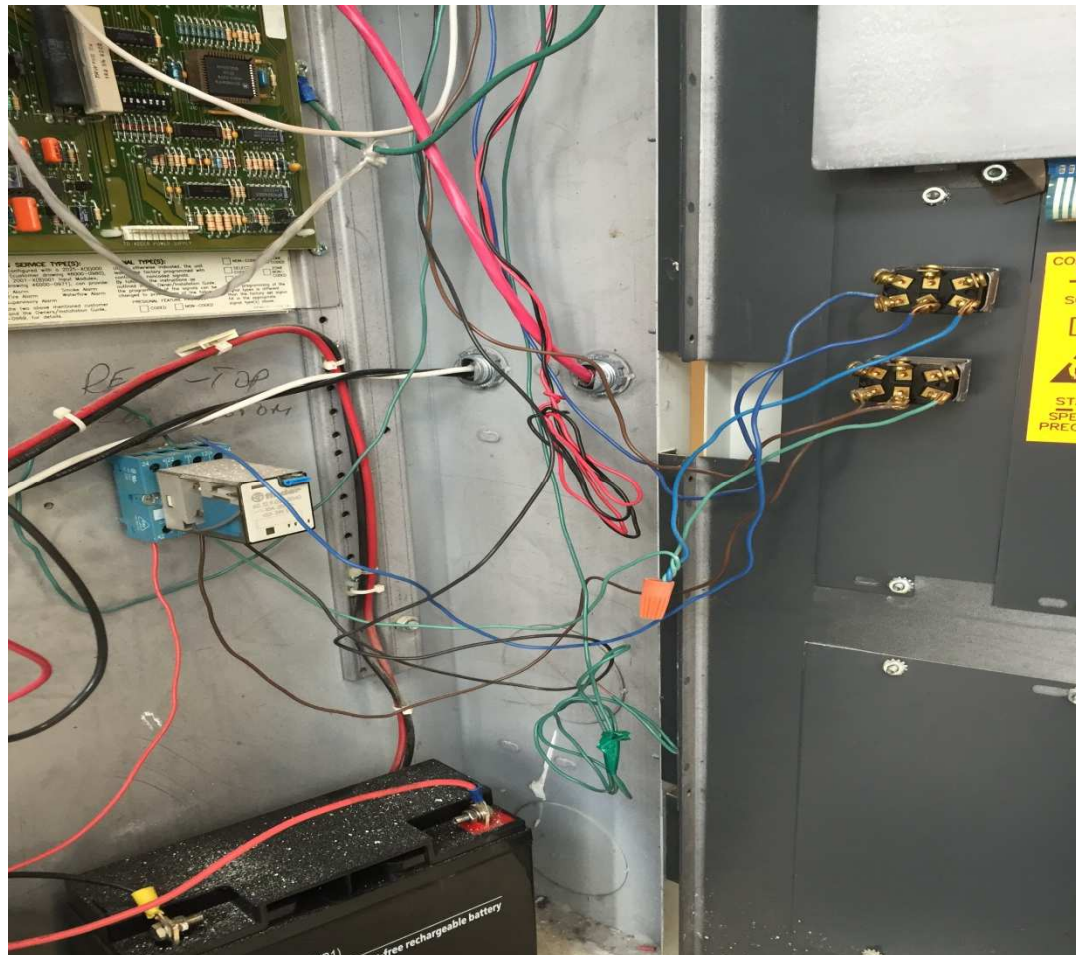
Incorrect Cellular Back-up Module

1



Unsupervised City Tie Cut-off

2



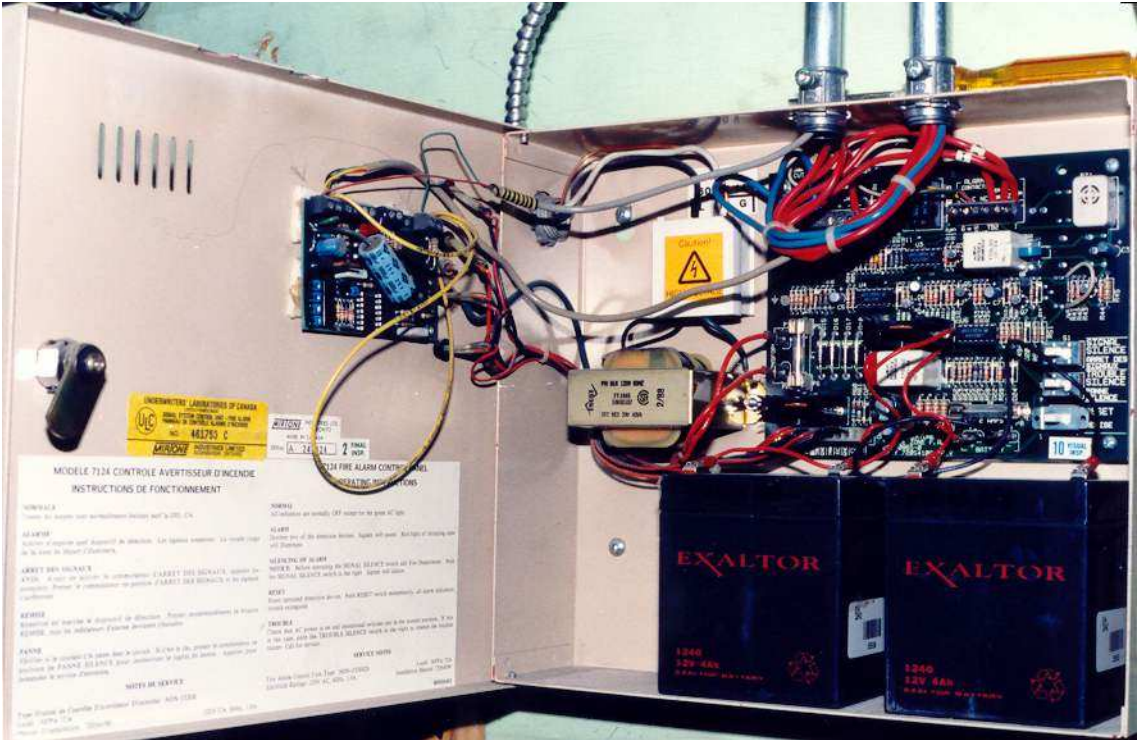
Plug in Transformers



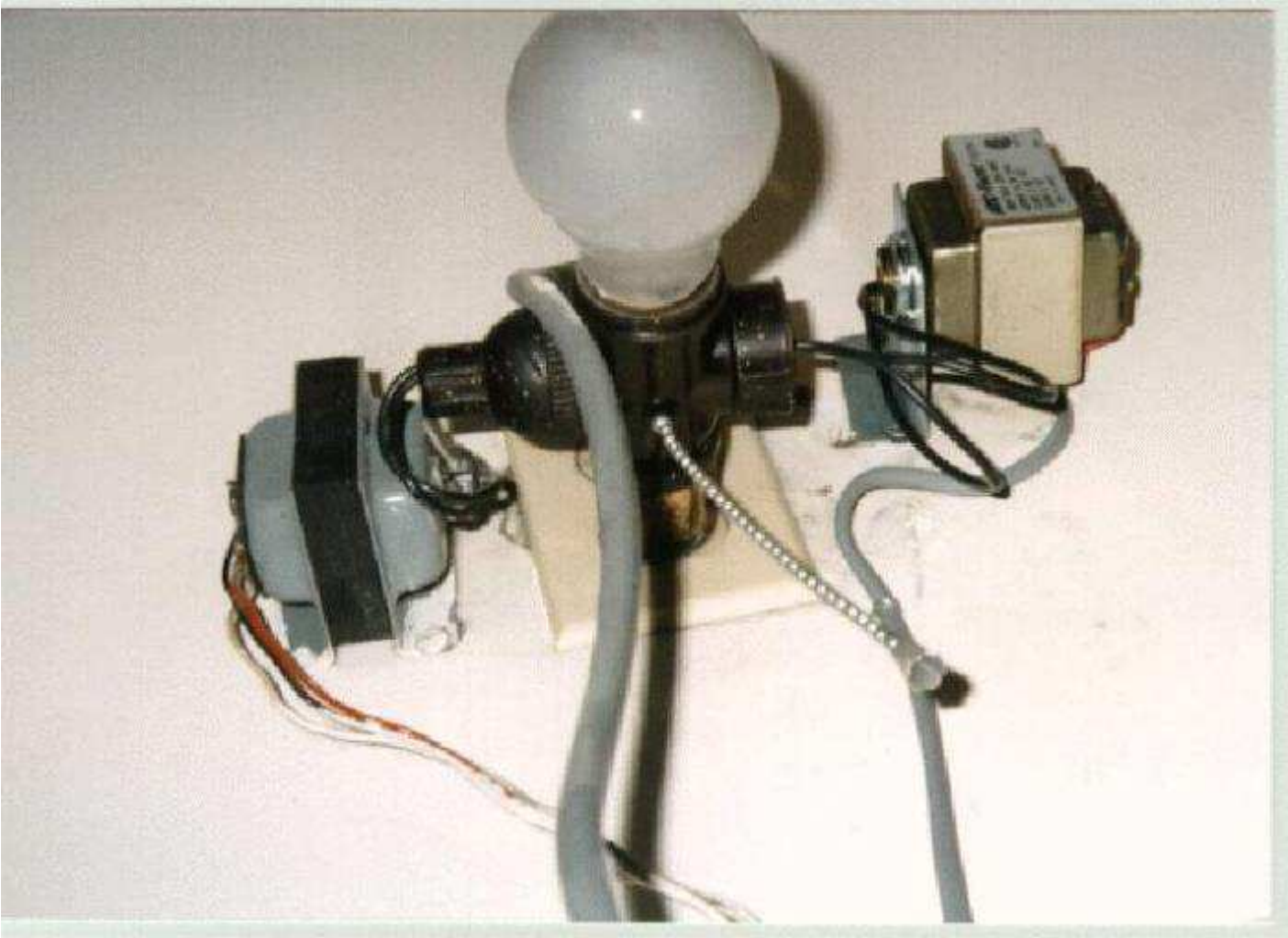
System Modifications



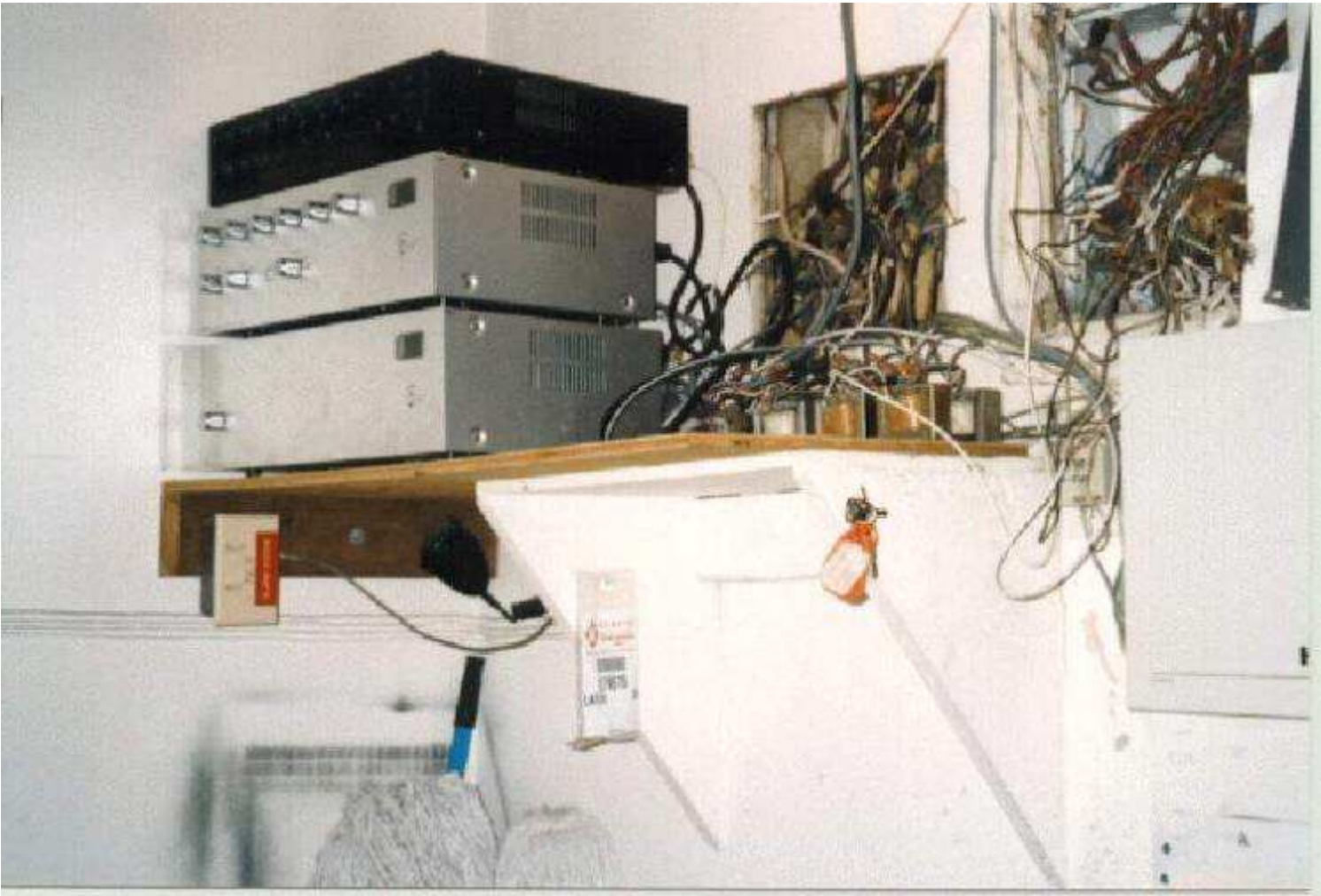
Adding Unlisted Relays



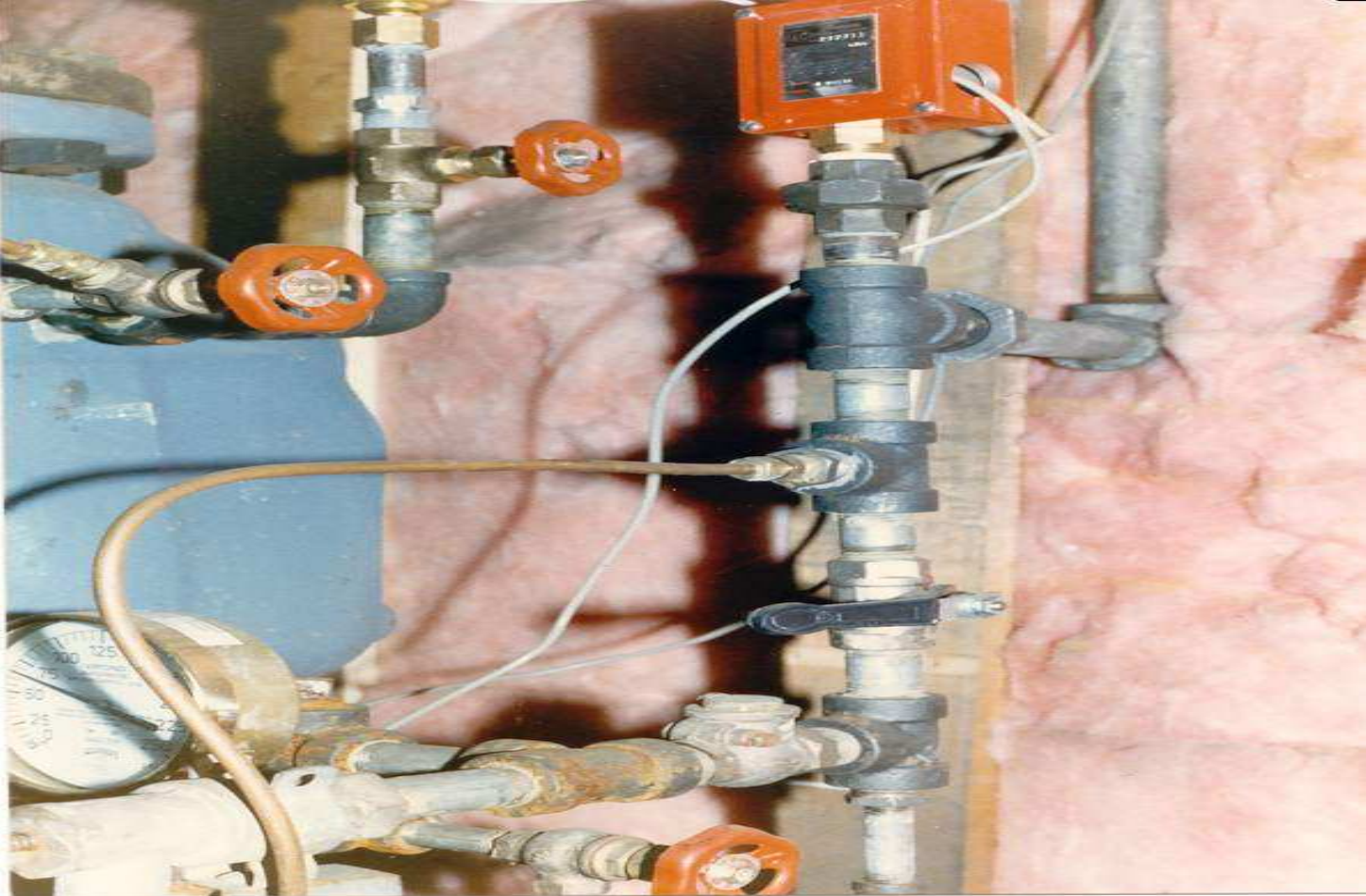
Improper Installation



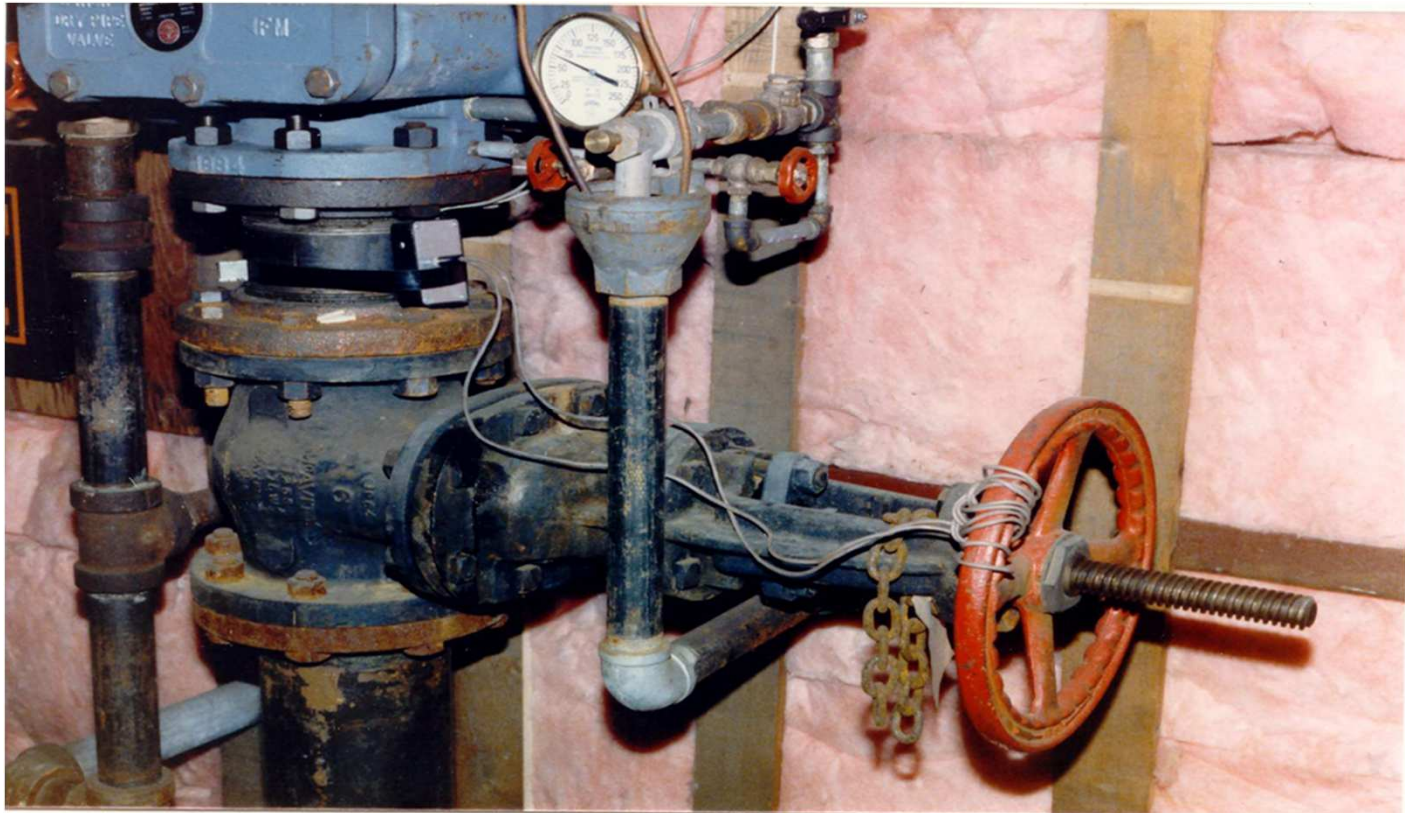
Improper Installation



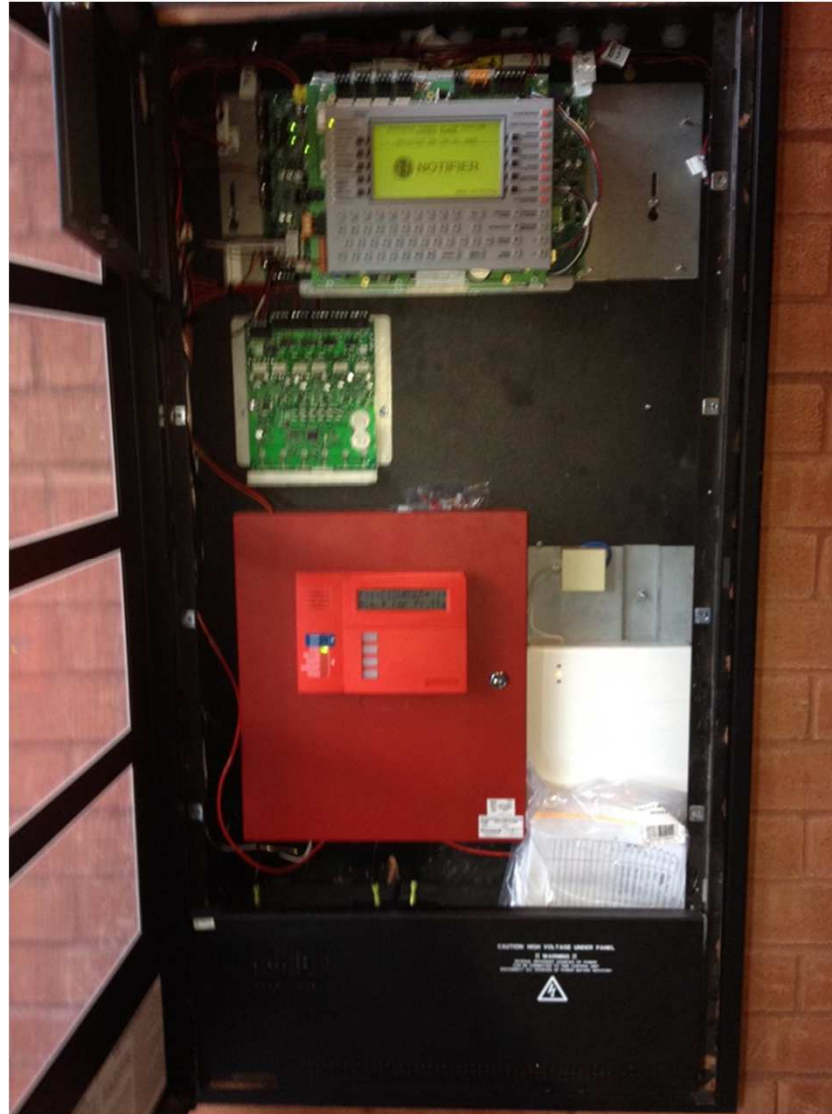
Sprinkler Flow Switch



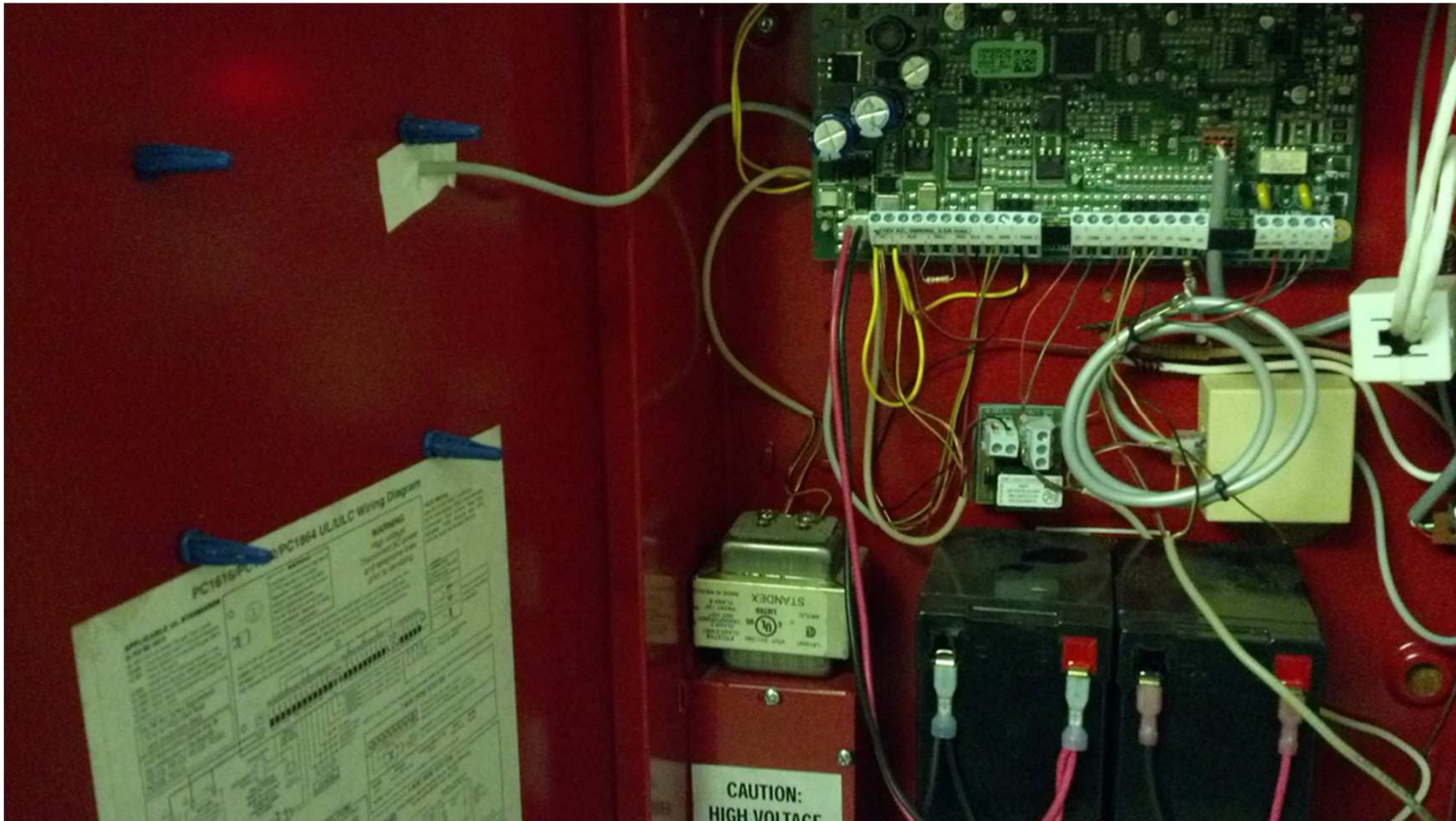
Plug Type Switch



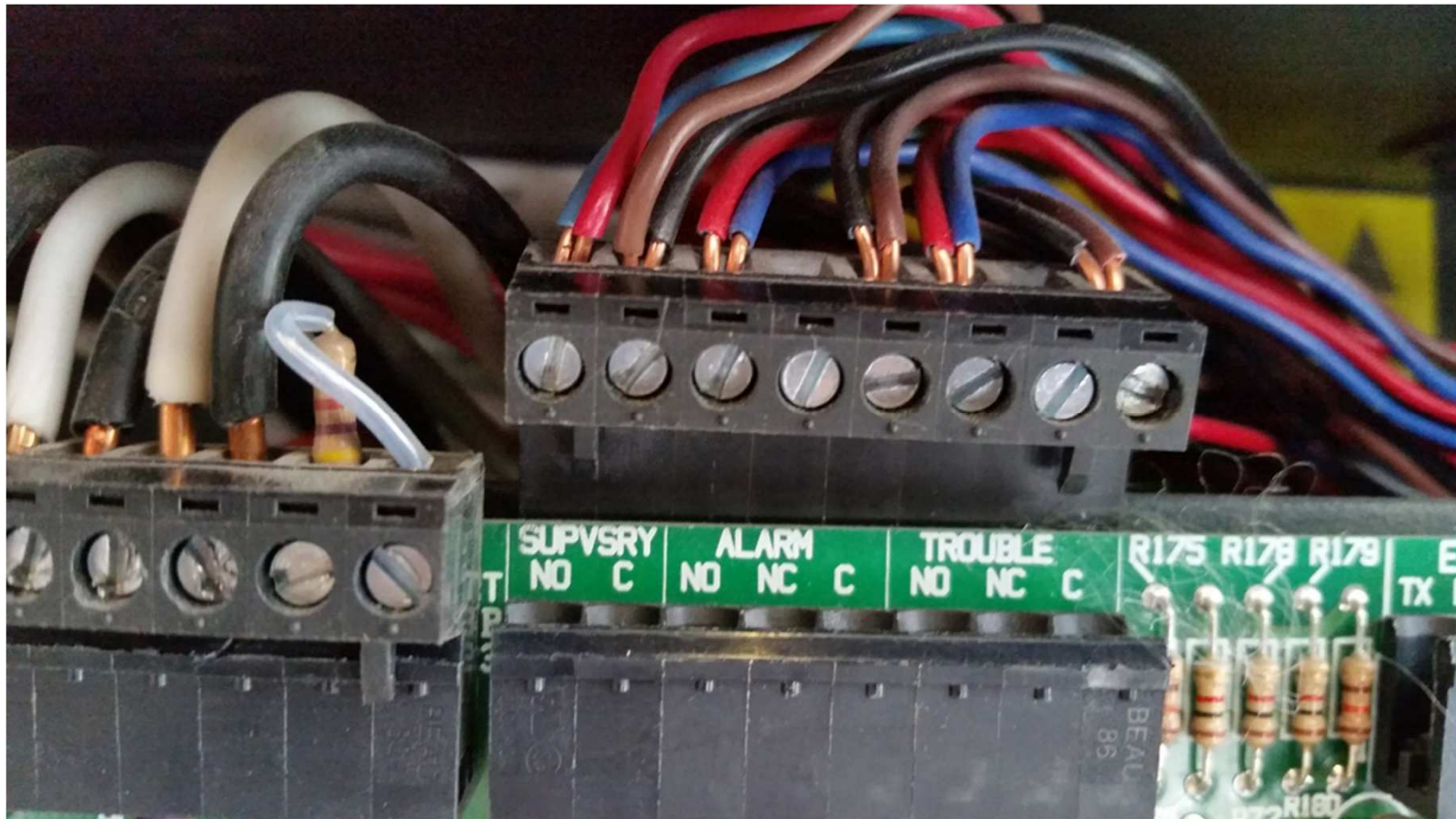
Installation - Non Conformance



Installation – Non Conformance



Non Supervised Terminal Strips



Modifications



ULC Listings- Online Directories

WWW.ULC.CA- Online Directories

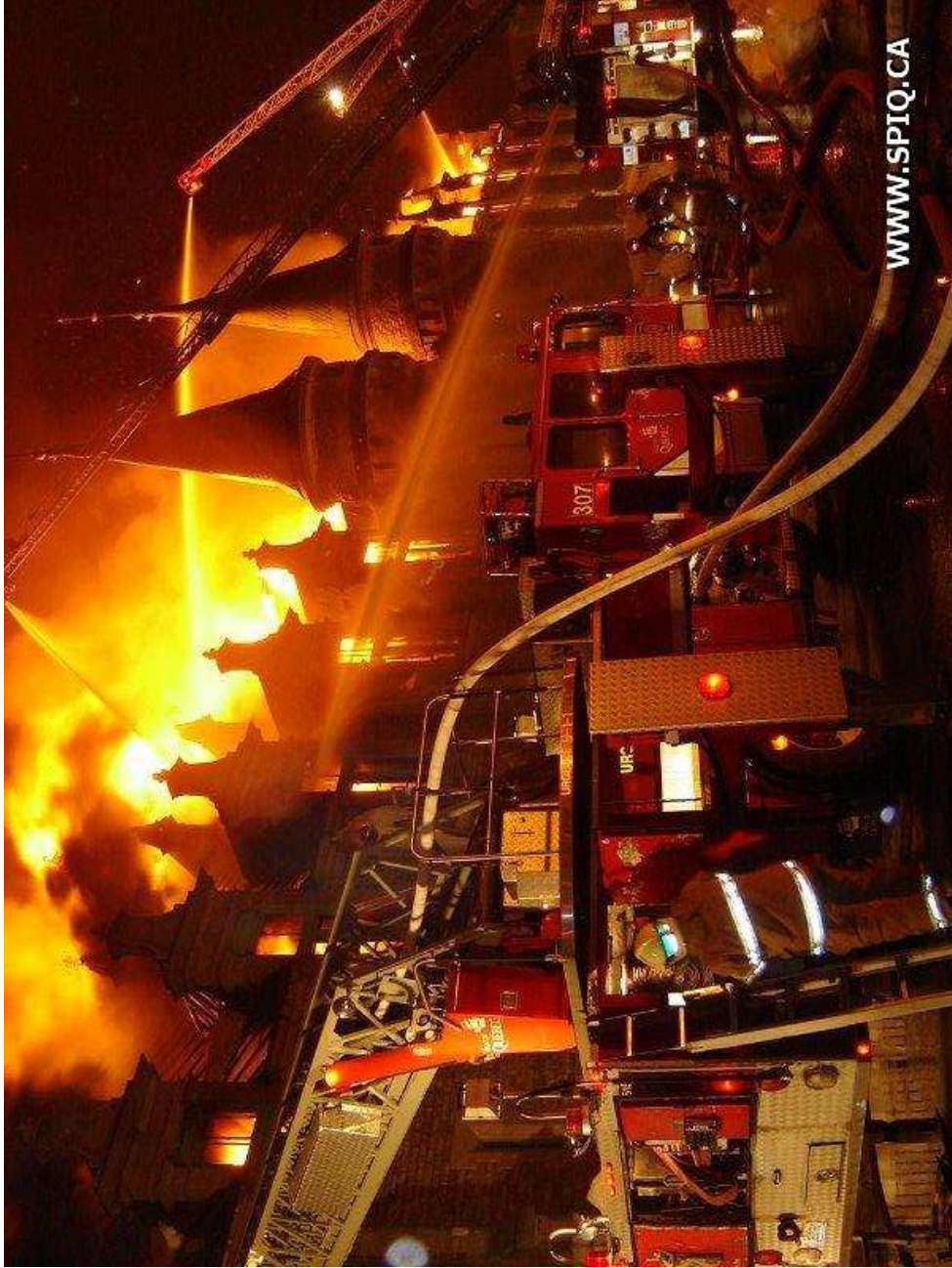
- Category Codes associated to ULC Listings
- DAYRC- CAN/ULC-S559-04 Equipment
- DAYYC- CAN/ULC-S561-04 – Shared Installation Co.
- DAYIC - CAN/ULC-S561-03 – Shared and Full Service Fire Signal Receiving Centres



Important Take Away Points

- No Fire Alarm Verification
- Signals need to be transmitted to the Fire Signal Receiving Centre (FSRC) within 60 seconds.
- FSRC shall contact the fire department in 30 seconds.
- ULC Certificate Program can assist with Compliance





WWW.SPIQ.CA

Questions



CAN/ULC-S561-03

THANK YOU

Contact Information

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