# ULC Installation Guide

## All Installations:
During any ULC installation described within this Guide, all the rules for safe installation specified in the CEC (Canadian Electrical Code) shall be respected. This guide is intended to be used in conjunction with the following DSC alarm control panel models unless otherwise stated: MAKSYS (PC4020), PowerSeries (PC 1965PC1832PC1616), PowerSeries Neo (HS2122HS2064/HS2032/HS2016). Always use this guide in conjunction with the installation manual of mentioned alarm control panel,

* For mounting on the exterior of vault, safe, or stockroom, installation of vibration detector is required. (3.304, B.1.5)
* Transformer: Plug-in type or hardwired, minimum rated: 16VVac; 37-40VA Class 2 Power Limited. CSA/EETU/KUL Listed. Refer to product installation manual for acceptable models. **Note:** Do not mount the hardwired transformer inside the DSC enclosure models PC5000C, PC4050C
* Install with ULC Listed devices where applicable.

## Requirements

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<tr>
<th>Requirements</th>
<th>Household Burglary</th>
<th>Household Fire</th>
<th>Central Station Burglary Monitoring</th>
<th>Central Station Fire Monitoring</th>
<th>Local Burglary (only applicable to MAKSYS Systems)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Battery Standby</td>
<td>4 Hour</td>
<td>24 Hour</td>
<td>24 Hour</td>
<td>24 Hour</td>
<td>24 Hour</td>
</tr>
<tr>
<td>Battery Size Note: Battery capacity can be selected based on calculated AUX current consumption for the system (including all accessories).</td>
<td>12V4Ah or 12V7Ah</td>
<td>12V7Ah or 24V7Ah</td>
<td>12V7Ah or 24V7Ah</td>
<td>12V7Ah or 24V7Ah</td>
<td>12V7Ah or 24V7Ah</td>
</tr>
<tr>
<td>System Entry Delay</td>
<td>≤ 45 s</td>
<td>not applicable</td>
<td>programmable</td>
<td>not applicable</td>
<td>≤ 45 s</td>
</tr>
<tr>
<td>System Exit Delay</td>
<td>≤ 60 seconds</td>
<td>not applicable</td>
<td>programmable</td>
<td>not applicable</td>
<td>≤ 60 seconds</td>
</tr>
<tr>
<td>Minimum Biff Cut Off Time</td>
<td>4 minutes</td>
<td>5 minutes</td>
<td>programmable</td>
<td>not applicable</td>
<td>Optional</td>
</tr>
<tr>
<td>Installation Standard</td>
<td>CAN-ULC-5310</td>
<td>CANULC-5540</td>
<td>CANULC-5302</td>
<td>CANULC-5561-03</td>
<td>CANULC-5532</td>
</tr>
<tr>
<td>Communicator</td>
<td>Enabled</td>
<td>Enabled</td>
<td>Enabled *Note 1</td>
<td>Enabled *Note 2</td>
<td>Optional</td>
</tr>
<tr>
<td>ULC Marking Note: For residential installation the commercial type marking is also acceptable (Subscribers' Unit).</td>
<td>Household Burglary Alarm System Control Unit</td>
<td>Household Fire Warning Alarm System Control Unit</td>
<td>Subscribers' Unit Burglary or Subscribers' Unit Auxiliary Burglary</td>
<td>Subscribers' Unit Fire Alarm or Subscribers' Unit Auxiliary Fire Alarm</td>
<td>Local Burglar Alarm</td>
</tr>
<tr>
<td>Power LED (Model ULC-LA) (Not required of PK/SRS/SXXX keyboards with AC indicator enabled are being used.)</td>
<td>Optional</td>
<td>Required</td>
<td>Required</td>
<td>Required</td>
<td>Required</td>
</tr>
<tr>
<td>AC Power</td>
<td>Plug-in transformer</td>
<td>Plug-in transformer</td>
<td>Plug-in transformer</td>
<td>Hardwired connection</td>
<td>Plug-in transformer</td>
</tr>
<tr>
<td>Tamper Protection</td>
<td>Optional</td>
<td>Optional</td>
<td>Optional *Note 8</td>
<td>Optional *Note 8</td>
<td>Optional *Note 8</td>
</tr>
<tr>
<td>Cabinet Note: ULC marking might be applied on the outside of the enclosure or inside the PCB assembly.</td>
<td>DSC Models (PC500C/PC500C)</td>
<td>DSC Models (PC500C/PC505C)</td>
<td>DSC Models (PC500C/PC505C)</td>
<td>DSC Models (攻击系统)</td>
<td>DSC Models (CNC)</td>
</tr>
<tr>
<td><em>Notes:</em> Note 1: Communication Channel Security (applicable to Commercial Burglary/Financial Installations)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Special Notes

*Notes:*

<table>
<thead>
<tr>
<th>Passive Levels</th>
<th>Note: Test Transmission required every 24h (on each communication channel)</th>
<th>Transmitter(s)</th>
<th>Equipment at Protected Premises</th>
<th>Supervision of Communication Channel(s)</th>
<th>Receiver Equipment at Signal Receiving Centre (SRC)</th>
<th>Risk Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P2</strong></td>
<td>Communication channel: Dailer and GSM back-up, IP and Dailer back-up, GSM and Dailer back-up, IP and GSM back-up, GSM and IP back-up. Refer to diagrams 3, 6, 7, 10.</td>
<td>Failure of either channel shall be reported to the SRC within 240 seconds</td>
<td>SG-MURZ2DGS/SG-MURZ2000/SG-System IV / SG-System II/ SG-System I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>P3</strong></td>
<td>Dual Communication System: GSM and IP and Dailer and GSM</td>
<td>Status change signals shall be sent simultaneously over both communication channels. Refer to diagrams 3, 6, 7, 10.</td>
<td>Failure of either channel shall be reported to the SRC within 240 seconds</td>
<td>SG-MURZ2DGS/SG-MURZ2000/SG-System IV / SG-System II/ SG-System I</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: The telephone service should be of a type that provides for timed release disconnect, in order to give the digital alarm communicator transmitter (dialer) the ability to disconnect an incoming call to all the protected premises. If the lines (numbers) are in a single hunt group, they shall be individually accessible; otherwise, separate hunt groups shall be required. These lines shall be used for no other purpose than receiving signals from a digital alarm communicator transmitter. These lines (numbers) shall be unidirectional. A timed release disconnect requirement applies to the telephone lines (numbers) connected to the digital alarm communicator receiver. The numbers assigned to the digital alarm communicator receiver shall be individually accessible, even where they are connected in rotary (hunt group).

Models: SG-MURZ2000 and 5G-MURZ2000 Receivers (DAOR type) are legacy products that are still used by some ULC Listed Signal Receiving Centres.
### Active Levels

**Note:** Check-in/polling signal required every 90 seconds.

<table>
<thead>
<tr>
<th>Transmitter(s)</th>
<th>Equipment at Protected Premises</th>
<th>Supervision of Communication Channels</th>
<th>Receiver Equipment at Signal Receiving Centre (SRC)</th>
<th>Risk Levels</th>
<th>Back-up Requirements for Network Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 IP (FL) T/L2603GR, T/L2603GS, T/L260VGR, T/L260VGS, T/L260VGR</td>
<td>Loss of communication channel shall be indicated at SRC within 180 seconds</td>
<td>SG-System IV</td>
<td>Low</td>
<td>24-hour standby power or G2M as back-up</td>
<td></td>
</tr>
<tr>
<td>A1 IP (FL) T/L2603GR, T/L2603GS, T/L260VGR, T/L260VGS, T/L260VGR</td>
<td>Loss of communication channel shall be indicated at SRC within 180 seconds</td>
<td>SG-System IV</td>
<td>Low</td>
<td>24-hour standby power or G2M as back-up</td>
<td></td>
</tr>
<tr>
<td>A1 IP (FL) T/L2603GR, T/L2603GS, T/L260VGR, T/L260VGS, T/L260VGR</td>
<td>Loss of communication channel shall be indicated at SRC within 180 seconds</td>
<td>SG-System IV</td>
<td>Low</td>
<td>24-hour standby power or G2M as back-up</td>
<td></td>
</tr>
<tr>
<td>A1 IP (FL) T/L2603GR, T/L2603GS, T/L260VGR, T/L260VGS, T/L260VGR</td>
<td>Loss of communication channel shall be indicated at SRC within 180 seconds</td>
<td>SG-System IV</td>
<td>Low</td>
<td>24-hour standby power or G2M as back-up</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** For equipment used at the protected premises or SRC and intended to facilitate IP communications (hub, routers, NIC, DSU/Cable modem) 24-hour back-up power is required. Where such cannot be facilitated, a secondary back-up communication channel is required.

**Notes for using Private, Corporate and High Speed Data Networks:** Network access and domain access policies shall be set to restrict unauthorized network access and "spoofing" or "denial of service" attacks. Select the internet service providers that have redundant server systems, back-up power, routers with firewalls enabled and methods to identify and protect against "denial of service" attacks (e.g., "spoofing").

**Notes for using Public Switched and Wireless Data Networks:** Communication channels shall be facilitated such that the communicator will restrict unauthorized access, which could otherwise compromise security.

### Note 2: Fire Monitoring Communication Systems

(Refere to the wiring diagrams in this guide for possible configurations)

Fire alarms shall be received at SRC in 60 seconds. Trouble signals shall be received at SRC in 90 seconds.

<table>
<thead>
<tr>
<th>Type</th>
<th>Transmitter(s)</th>
<th>Equipment at Protected Premises</th>
<th>Supervision of Communication Channels</th>
<th>Receiver Equipment at Signal Receiving Centre (SRC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passive</td>
<td>Fire alarm shall be sent simultaneously over both communication channels</td>
<td>Failure of other channel shall be reported to the SRC within 180 seconds</td>
<td>SG-System IV</td>
<td>Low</td>
</tr>
<tr>
<td>Active</td>
<td>Fire alarm shall be sent simultaneously over both communication channels</td>
<td>Loss of communication channel shall be indicated at SRC within 180 seconds</td>
<td>SG-System IV</td>
<td>Low</td>
</tr>
</tbody>
</table>

**Notes:**

- Model: SG-MLR2-OG, SG-MLR2000 are not LUC Listed under the LUC-SS99-04 requirements. Dual diar is not for use with PowerSeries Neo panels.

### Note 3:

Each ULC labelled “Subscribers” Unit Fire and/or Burglary” communication system shall be connected to a ULC labelled “Fire Alarm Control Unit” if they are to monitor a complete fire alarm system. As minimum, system fire alarms, supervisory and trouble signals shall be transmitted to the SRC.

**Note 4:** Program input zones as Fire Type for connection of ULC labelled 4-wire smoke detectors (e.g., DSC PSA-410A series) or program PGM 2 for connection of compatible ULC labelled 2-wire smoke detectors (e.g., DSC PSA-210A series). Refer to Zone Wiring Diagrams in this guide for possible configurations.

**Note 5:** Double or different zone configuration must be used for Medium, High and Very High Risk Installations (refer to Zone Wiring Diagrams in this guide for possible configurations).

**Note 6:** Only one contact per zone (refer to Zone Wiring Diagrams for double door/window contact in this guide).

**Note 7:** For fire alarm applications when mounting the control panel on the exterior of a vault, safe, or stockroom, installation of vibration detector is required. Recommended assault sensor UTC, model 5422.

**Note 8:** This may be connected to ULC labelled Sprinkler Riser devices (refer to Zone Wiring Diagrams in this guide).

**Note 9:** All system enclosures must be 24-hour tamper protected against opening or removal (DSC Tamper Kit T-1 or equivalent). This includes control unit and accessary cabinets, transmitters, initiating devices and bell/strobe. Keypads must be tampered if they use a zone input or if they are installed outside the protected area.

**Note 10:** When testing the sensor for loss of communications channel on a T/L2603GR(S), T/L2603GR(T2), T/L2603GR(T2) or T/L2603GR(T2), it is recommended that you remove the SIM card from the communicator to simulate loss of communications. Removing the antenna is not an acceptable method for testing as the 3G radio used in this product may be able to communicate without the antenna connected.

### Programming

The notes in the installation and programming sections describing the system configurations for ULC listed installations must be implemented.**

**Protection of the Control Unit - Burglary**

The local control unit and local power supply must be protected in one of the following ways:

- The control unit and power supply must be located within the area of greatest protection on a tamper protected circuit.
- Each partition shall arm the area protecting the control unit and the audible alarm device power supply. This may require duplicate protection armed by each partition. Access to this protected area, without causing an alarm, will require that all partitions are disarmed.
- In all cases described above, the protected area for the control unit must be programmed so that it cannot be bypassed, and installed in accordance with CAN/ULC-S302 or CAN/ULC-S310.

**User Information**

The installer should advise the users and note the following in the user instruction manual:

- Service organization name and telephone number
- The programmed exit time
- The programmed entry time
- Safety precautions specified for the connected equipment

Products or components of products, which perform communications functions only, shall comply with the requirements applicable to communications equipment as specified in CAN/CSA-C22.2 No. 60950-1, Information Technology Equipment-Safety - Part 1: General Requirements.
Zone Wiring Diagrams

4-Wire Smoke Detectors

Smoke Detector must be latching type (such as DSC MN240 Series). To read smoke detectors, enter [11][11].

Refer to Installation guidelines in Installation Manual and detector manufacturer's literature when locating smoke detectors.

2-Wire Smoke Detectors

2-Wire Smoke Detectors

Double End-of-line Zone Configuration

Door/Window Contact (1)
ULC Commercial Zone
For One Form C Contact

Double End-of-line Zone Configuration

Door/Window Contact (2)
ULC Commercial Zone
For One Form A Contact

Water Flow Connection

Water Flow Connection

ULC Standpipe Monitoring

NOTE: Reference to WF terminal block designation is only specific to certain DSC modules (MAXSYS system), the PowerSeries and PowerSeries Neo control panels can use any zone programmed as type 24-Hr Sprinkler when used in conjunction with a sprinkler supervision system.
Double End-of-line Zone Configuration

Intrusion Detector (with tamper)
ULC Commercial Zone
For One Form A Contact

Intrusion Detector
ULC Commercial Zone
For One Form C Contact

Intrusion Detector (with tamper)
ULC Safe and Vault Installation
For Heat and Seismic Detector

NOTE: The tamper and relay contacts (NC) used in door/window detectors or motion detectors are shown as the product is powered-up and in normal supervisory condition.
Fire Monitoring Communication Systems Wiring Diagrams

Notes:
- These wiring diagrams are also representative for Commercial Burglary Monitoring applications.
- Either RM1C ULC OR RM2 relays can be used for ULC installations.
- Recommended DSC power supply models: PCS204/PCS200/PC4204CX/HSM2204/HSM2300.
- Refer to power supply installation manual for compatible control panels.

1. DSC Subscribers' Unit Fire and Dual Dialer (Passive Communication System)

2. DSC Subscribers' Unit Fire and IP Transmitter (Active Communication System)
3. DSC Subscribers' Unit Fire and IP Transmitter (Passive Communication System)

Fire Alarm Control Unit
- Outputs Fire
- Supervisory Trouble

DSC Subscribers' Unit Fire
- Zone Inputs
- Power 12V/275mA
- PC-Link
- TIP RNG
- PGM1
- RM1C ULC Relay

PC4050CR cabinet

DSC Keypad
- LCD2501
- PK56XX

IP Transmitter
- T-Link TL250
- Zone 1 Input

Router/Modem
- Internet/Intranet
- PSTN

Notes:
- All wiring connections shall be run in a mechanically protective conduit.
- Phone 1 program for T-Link ([501] set as DCAA).
- Phone 3 program in [303] and set as back-up to Phone 1 ([303] option 5 ON, 6 OFF).
- Phone 2 program in [202] the same as Phone 3.
- T-Link supervision enabled (Section [85], option [023] set to 01).
- Phone Line Monitoring (TLM) shall be enabled.
- PGM1 programmed as System Trouble (Section [009] Program as type 09; Section [051] TLM option 3 ON).
- T-Link TL250 Zone 1 program as type 21 in Section [036]
- and use reporting code 99 in section [050].
- 24h Test Transmission over phone line 1 and 2 must be enabled (Section [376] set options 1 and 2 ON).
- Fire Alarms shall be sent over both channels (section [351] set options 1 and 2 to ON).
- Dry contact outputs from ULC Listed Fire Alarm Control Unit shall be connected to Zone inputs on the ULC Listed DSC Subscribers' Unit Fire.

4. Fire Alarm Control Unit (with no dialer) and IP Transmitter (Active Communication System)

Fire Alarm Control Unit
- Zone Input
- Outputs Fire
- Supervisory Trouble

IP Transmitter
- T-Link TL250
- Keybus
- Zone Inputs
- PGM Output

Router/Modem
- Internet/Intranet

Notes:
- Power for T-Link TL250 shall be provided from Fire Alarm Control Unit or separately listed Power Supply rated for the application (12V/275mA).
- All wiring connections shall be run in a mechanically protective conduit.
- T-Link TL250 Supervision at Signal Receiving Centre (SRC) shall be enabled (180 Sec.).
- For local supervision of the IP communicator connect PGM output from T-Link TL250 to one zone input on the Fire Alarm Control Unit.
- Dry contact outputs from ULC Listed Fire Alarm Control Unit shall be connected to Zone inputs on the T-Link TL250 (or PCs108 if used).
5. Fire Alarm Control Unit (with dialer) and IP Transmitter (Active Communication System)

![Diagram of Fire Alarm Control Unit and IP Transmitter]

Notes:
- Power for T-Link TL300 shall be provided from Fire Alarm Control Unit or separately listed Power Supply rated for the application (12V/275mA).
- All wiring connections shall be run in a mechanically protective conduit.
- T-Link TL250 Supervision at Signal Receiving Centre (SRC) shall be enabled (180 Sec.).
- For local supervision of the IP communicator connect PGM output from T-Link TL300 to one zone input on the Fire Alarm Control Unit.
- Dry contact Trouble output from ULC Listed Fire Alarm Control Unit shall be connected to Zone input on the T-Link TL300 for supervision of TIP/Ring connection.

6. Fire Alarm Control Unit (with dialer) and GSM Transmitter (Passive Communication System)

![Diagram of Fire Alarm Control Unit and GSM Transmitter]

Notes:
- Power for GS3055-I/GS3060/3G3070 shall be provided from Fire Alarm Control Unit or separately listed Power Supply rated for the application (12V/700mA).
- (Jumper JP3 shall be ON for Fire Monitoring)
- All wiring connections shall be run in a mechanically protective conduit.
- For local supervision of the GSM transmitter connect PGM output from GS3055-I/GS3060/3G3070 to one zone input on the Fire Alarm Control Unit.
- Dry contact Trouble output from ULC Listed Fire Alarm Control Unit shall be connected to Zone input on the GS3055-I/GS3060/3G3070 for supervision of TIP/Ring connection.
- Fire Alarms shall be sent over both communication channels. Fire output from Fire Alarm Control Unit shall be connected to the Input 1 on the GS3055-I/GS3060/3G3070.
- 24h Test Transmission must be enabled on the dialer and on the GS3055-I/GS3060/3G3070.
7A. DSC Subscribers' Unit Fire and GSM Transmitter (Passive Communication System)

Notes:
- Power for GS3055-I/GS3060/3G3070 shall be provided from Fire Alarm Control Unit or separately listed Power Supply rated for the application (12V/700mA) (Jump JP3 shall be ON for Fire Monitoring).
- All wiring connections shall be run in a mechanically protective conduit.
- Phone Line Monitoring (TLM) shall be enabled.
- Connect PG44 output from GS3055-I/GS3060/3G3070 (Trouble condition) to a zone input on the Subscriber Unit for supervision of the GSM Transmitter.
- 24h Test Transmission over phone line (PSTN) and GS3055-I/GS3060/3G3070 must be enabled.
- Fire Alarms shall be sent over both communication channels.
- On the Subscribers' Unit program PG1 for PC1864/PC1832/PC1616 as System Event (Section 009) as type 10; Section 001 [Fire Event option 2 ON]. An alternate option is to program PG1 as Zone Follower (Sec [009] = 2F) and assign Fire Zone to PG1 in Section 851. Ensure Bit 3 is on in 851, in this case, any restored fire alarm condition does not require the DSC control panel to be reset. For PC4020 program PG1 as program 48 [Overhanging Steady Fire [0007/02/04], etc].
- Dry contact outputs from ULC Listed Fire Alarm Control Panel shall be connected to Zone inputs on the ULC Listed DSC Subscribers' Unit Fire.
- For ULC-3561 installations when using the PG443C enclosure it is required to install the listed hardwired transformer outside the enclosure.
- The control panel manual shall be consulted for the list of compatible keypads.
- Refer to detailed diagrams in Figure 8.

7B. DSC Subscribers' Unit Fire and GSM Transmitter Mounted Remotely

Alternate Wiring Diagram for DSC Subscribers' Unit Fire and GSM Transmitter
Passive Communication System - Using Phone Line Supervision Relay

Notes:
- Connect PGM output from GS3060/3G3070 (Phone Line Trouble) to a zone input on the subscriber unit for supervision of the PSTN phone line voltage.
- When the GS3060/3G3070 is installed remotely from the DSC Control Panel, it is required to monitor the Phone Line Trouble condition at the keypad by using an additional RM1C Relay.
- All wiring connections shall be run in a mechanically protective conduit.
- Refer to notes in Figure 7A and detailed diagrams in Figure 9 for additional information.
8. Connection Details for GSM Supervision Relay and Redundant Fire Alarm Transmission

**GS3060/3G3070**

- **GSM Supervision Relay**
- **Redundant Fire Alarm Initiation**

**NOTE:** Use EOL resistor in series with N.O. contacts of the relay connected to PGM4

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**GS3060/3G3070**

- **GSM Supervision Relay**
- **Redundant Fire Alarm Initiation**

**NOTE:** Use EOL resistor in parallel with N.C. contacts of the relay connected to PGM4
9. Connection Details for GSM Supervision Relay, Phone Line Supervision and Redundant Fire Alarm Transmission

NOTE: Use EOL resistor in series with N.O. contacts of the relay connected to PGM4

NOTE: Use EOL resistor in parallel with N.C. contacts of the relay connected to PGM4
PC1616/1832/1864

**NOTE:** For more details, refer to the control, panel installation Manual p/n 29007916.

**Notes:**
- Power for TL260/TL260GS/GS2060/TL2603G/TL2603GR/3G2060/3G2060R/TL260/TL260R shall be provided from PC1664/PC1832/PC1616 Subscriber’s unit (Bell+ and AUX).
- Use for communication SIA format, program Section [350]=04, Section [165]=001 and Section [167]=080.
- TL260/TL260GS/GS2060/TL2603G/TL2603GR/3G2060/3G2060R/TL260/TL260R can be used as a passive communication module (back-up mode for Dialer) or an active communication module (IP, GSM or both).
- For passive configurations:
  - Phone line monitoring (TLM) shall be enabled on the panel (section [015] bit 7 ON).
  - Program the analog phone number in Section [301] (primary path).
  - Program “DCAA” in Section [302] (redundant path for Fire Alarms) and program Section [351] bit 1 and 2 ON.
  - Program “DCAA” in Section [303] (back-up path).
  - Program the call directions for tamper [359], opening/closing [367], maintenance [375] and test transmissions [376] as required by the application (bit 1 and 5 ON).
  - For 24hr test transmission, [851] system test options [026-029] shall be enabled (FF) for the communication paths available. [851][124-125] and [224-225] shall be programmed with time of day for test transmission and 1440 minutes (24h) for test transmission cycle.
  - For active configurations:
    - Phone line use is optional (depends on the IP or GSM channel being used and back-up power provisions for the IP channel). TLM does not need to be programmed if the phone line is not used.
    - Program "DCAA" in location [301] (IP/GSM module primary path). Select in section [851][005] whether the IP or GSM will be the primary or secondary path.
    - Program heartbeat interval in Section [851][004]=005A (90s). The supervision window at the Signal Receiving Centre's receiver shall be programmed as max. 190s.