**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.
- Transformer - Plug-in type or hardwired, minimum rated 16VAC, 37-40VA Class 2 Power limited, CSA/cETL/cUL Listed.
- Install with ULC Listed devices where applicable.

### Requirements

<table>
<thead>
<tr>
<th></th>
<th>Household Burglary</th>
<th>Household Fire</th>
<th>Central Station Burglary Monitoring</th>
<th>Central Station Fire Monitoring</th>
<th>Local Burglary</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</td>
<td>12V/4Ah</td>
<td>1 x 12V/7Ah</td>
<td>1 x 12V/7Ah</td>
<td>1 x 12V/7Ah</td>
<td>1 x 12V/7Ah</td>
</tr>
<tr>
<td>Note: battery capacity can be selected based on calculated AUX current consumption for the system (including all accessories)</td>
<td>2 x 12V/7Ah</td>
<td>2 x 12V/7Ah</td>
<td>2 x 12V/7Ah</td>
<td>2 x 12V/7Ah</td>
<td></td>
</tr>
<tr>
<td>System Entry delay</td>
<td>≤ 45 Sec.</td>
<td>not applicable</td>
<td>programmable</td>
<td>not applicable</td>
<td>≤ 60 Sec.</td>
</tr>
<tr>
<td>System Exit delay</td>
<td>≤ 60 Sec.</td>
<td>not applicable</td>
<td>programmable</td>
<td>not applicable</td>
<td>≤ 120 Sec.</td>
</tr>
<tr>
<td>Minimum Bell cutoff time</td>
<td>4 minutes</td>
<td>5 minutes</td>
<td>programmable</td>
<td>not applicable</td>
<td>programmable</td>
</tr>
<tr>
<td>Equipment Standard</td>
<td>ORD-C1023-1974</td>
<td>CAN/ULC-S545-02</td>
<td>CAN/ULC-S540-06</td>
<td>CAN/ULC-S559-04</td>
<td>CAN/ULC-S5303</td>
</tr>
<tr>
<td>Installation Standard</td>
<td>CAN/ULC-S310</td>
<td>CAN/ULC-S540</td>
<td>CAN/ULC-S302</td>
<td>CAN/ULC-S561-03</td>
<td>CAN/ULC-S302</td>
</tr>
<tr>
<td>Communicator</td>
<td>Enabled</td>
<td>Enabled</td>
<td>Enabled</td>
<td>Enabled</td>
<td>Optional</td>
</tr>
<tr>
<td>ULC Marking Note:</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 Accessory Burglary</td>
<td>Subscribers' Unit Fire Alarm or Subscribers' Unit Accessory Fire Alarm</td>
<td>Local Burglar Alarm</td>
</tr>
<tr>
<td>Power LED (Model ULC-LA)</td>
<td>Optional</td>
<td>Required</td>
<td>Required</td>
<td>Required</td>
<td>Required</td>
</tr>
<tr>
<td>Note: Power LED might be applied on the outside of the enclosure or inside on the PCB assembly</td>
<td>Optional hardwired connection</td>
<td>Optional hardwired connection</td>
<td>Optional hardwired connection</td>
<td>Check Local Authority</td>
<td>Optional hardwired connection</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>Required</td>
<td>Optional</td>
<td>Required</td>
</tr>
<tr>
<td>Cabinet Note:</td>
<td>DSC Models PC5003C PC5000C Concourse</td>
<td>DSC Models PC5003C PC4050C Concourse</td>
<td>DSC Models PC5003C PC4050C</td>
<td>DSC Models PC5003C PC4050C CR (Red)</td>
<td>DSC Models (Attack Resistant) CMC-1 PC4050CAR</td>
</tr>
<tr>
<td>Special Notes</td>
<td>*see Note 4</td>
<td>*see Note 5</td>
<td>*see Notes 3 &amp; 7</td>
<td>*see Notes 5 &amp; 6</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

1. Line Security (applicable to Commercial Burglary/Financial Installations)

### Passive Levels

**Note:** Test Transmission required every 24h (on each communication channel)

<table>
<thead>
<tr>
<th>Passive Levels</th>
<th>Transmitter(s) 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>P1</strong></td>
<td>One communication channel: Dialer (PC1020/PC1864/1832/1816) GSM (GS3055/GS3060/LT260G/GS2060) IP (T-Link TL250/LT300/LT260G)</td>
<td>Loss of communication channel shall initiate local trouble signal within 180 Sec.</td>
<td>SG-MRL2-DG SG-MRL2000 SG-System III SG-System II SG-System I</td>
<td>Low</td>
</tr>
<tr>
<td><strong>P2</strong></td>
<td>Two communication channels: Dialer and GSM back-up Dialer 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 Sec.</td>
<td>SG-MRL2-DG SG-MRL2000 SG-System III SG-System II SG-System I</td>
<td>Medium</td>
</tr>
<tr>
<td><strong>P3</strong></td>
<td>Dual Communication System: GSM and IP Dialer and IP或 Dialer and GSM Status change signals shall be sent simultaneously over both communication channels. Refer to diagrams 3, 6, 7, 10. Use separate PGM outputs programmed to activate for each type of event identified as a status change signal: Burglar Alarm, Holdup, Duress, Tamper, Opening/Closing. Use PC5108 where more zone inputs are required.</td>
<td>Failure of either channel shall be reported to the SRC within 240 Sec.</td>
<td>SG-MRL2-DG SG-MRL2000 SG-System III SG-System II SG-System I</td>
<td>High</td>
</tr>
</tbody>
</table>

**Note:** 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 the protested premises.
5. Double end of line zone configuration must be used for Medium, High and Very High Risk Installations (refer to Zone Wiring Diagrams in this guide). 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.

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

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

8. All system enclosures must be 24h tamper protected against opening or removal (DSC Tamper Kit T-1 or equivalent). This includes control units, local power supplies, transmitters, initiating devices and bells/strobes. Keypads must be tampered if they use a zone input or if they are installed outside the protected area.

2. Fire Monitoring Communication Systems (Refer to the wiring diagrams in this guide for possible configurations)

<table>
<thead>
<tr>
<th>Type</th>
<th>Transmitter(s)</th>
<th>Supervision of communication channel(s)</th>
<th>Receiver</th>
<th>Risk Levels</th>
<th>Back-up requirements for network equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passive</td>
<td>Dual Communication System:</td>
<td>Failure of either channel shall be reported to the SRC within 180 Sec.</td>
<td>SG-System III</td>
<td>Low</td>
<td>24h standby power or dialer as back-up</td>
</tr>
<tr>
<td>Note: Test Transmission required every 24h (on each communication channel).</td>
<td>Dual Dialer (PC.4701/PC.5700)</td>
<td>Failure of both channels shall be indicated locally in 240 Sec.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Note: Subject to AHJ approval</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dialer with GSM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dialer with IP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fire Alarms shall be sent simultaneously over both communication channels</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>IP (T-Link TL250/TL300/TL260GS)</td>
<td>Loss of communication channel shall be indicated at SRC within 180 Sec.</td>
<td>SG-System III</td>
<td>Very High</td>
<td>24h standby power</td>
</tr>
<tr>
<td>Note: Check-in/Polling signal required every 90 Sec.</td>
<td>GSM (GS2060)</td>
<td>Loss of communication channel shall be indicated at SRC within 180 Sec. (substitution)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>AES 128bit encryption</td>
<td>Compromise detection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Refer to diagrams 2, 4, 5, 10</td>
<td>Compromise Signal</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: For equipment used at the protected premises or SRC and intended to facilitate IP communications (hubs, routers, NID, DSL/Cable modems) 24h back-up power is required. Where such cannot be facilitated, a secondary (back-up) communication channel is required.

Notes for using Public Switched and Wireless 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 serversystems, back-up power, routers with firewalls enabled and methods to identify and protect against “denial of service” attacks (i.e. via “spoofing”).

Notes for using Private, Corporate and High Speed Data Networks: Communication channels shall be facilitated such that the communicator will restrict unauthorized access, which could otherwise compromise security.

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. System fire alarms, supervisory and troubles signals shall be transmitted to the SRC.

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

5. Double end of line zone configuration must be used for Medium, High and Very High Risk Installations (refer to Zone Wiring Diagrams in this guide for possible configurations).

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

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

8. All system enclosures must be 24h tamper protected against opening or removal (DSC Tamper Kit T-1 or equivalent). This includes control unit and accessory cabinets, transmitters, initiating devices and bells/strobes. Keypads must be tampered if they use a zone input or if they are installed outside the protected area.

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
Zone Wiring Diagrams

4-Wire Smoke Detectors

2-Wire Smoke Detectors

Water Flow Connection

Double End-of-line Zone Configuration

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

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

Double Door/Window ULC Commercial Zone
Uses Two Form C Contacts

Smoke Detector must be latching type (such as DSC MN240 Series). To reset smoke detectors, enter [67] [2]. Refer to installation guidelines in Installation Manual and detector manufacturer’s literature when locating smoke detectors.

Latching 4 Wire Smoke Detector
For Example, DSC MN240 Series

5k6

TO ANY Z

5k6

5k6

TO ANY Z

5K6

5K6

Physically Protected Wires

5K6

5K6

TO ANY Z

5K6

5K6

UVC Standpipe Monitoring

• 5 maximum in parallel, in one zone
• must be in close proximity to each other in one zone
NOTE: The tampers and relays 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: PC5204/PC5200/PC4204CX.*

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

   ![Diagram 1]

   **Notes:**
   - This configuration falls under the exception of ULC-559 and ULC-S561 and its use is subject to approval by ULC Inspector and/or AHJ. This configuration can be used only if the PSTN is the only communication technology available on the premises.
   - All wiring connections shall be run in a mechanically protective conduit.
   - 24hr Test Transmission shall be enabled.
   - Dry contact outputs from ULC Listed Fire Alarm Control Unit shall be connected to Zone inputs on the ULC Listed DSC Subscribers’ Unit Fire.

2. DSC Subscribers’ Unit Fire and IP Transmitter (Active Communication System)

   ![Diagram 2]

   **Notes:**
   - 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.)
   - Dry contact outputs from ULC Listed Fire Alarm Control Unit shall be connected to Zone inputs on the ULC Listed DSC Subscribers’ Unit Fire.
3. DSC Subscribers' Unit Fire and IP Transmitter (Passive Communication System)

- All wiring connections shall be run in a mechanically protective conduit.
- Phone 1 program for T-Link ([301] set as DCAA).
- Phone 3 program in [303] and set as back-up to Phone 1 ([380] option 5 ON, 6 OFF).
- Phone 2 program in [302] the same as Phone 3.
- T-Link supervision enabled (Section [851], option [023] set to 01).
- Phone Line Monitoring (TLM) shall be enabled.
- PGM1 programmed as System Trouble (Section [009] Program as type 09; Section [501] 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)

- 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 PC5108 if used).
5. Fire Alarm Control Unit (with dialer) and IP Transmitter (Active Communication System)

6. Fire Alarm Control Unit (with dialer) and GSM Transmitter (Passive Communication System)
7A. DSC Subscribers' Unit Fire and GSM Transmitter (Passive Communication System)

- **Power** for GS30XX 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.
- Phone Line Monitoring (TLM) shall be enabled.
- Connect PGM4 output from GS30XX (Trouble conditions) to a zone input on the Subscriber Unit for supervision of the GSM Transmitter.
- 24h Test Transmission over phone line (PSTN) and GS30XX must be enabled.
- Fire Alarms shall be sent over both communication channels.
- On the Subscribers’ Unit program PGM1 for PC1864/PC1832/PC1616 as System Event (Section [009] as type 10; Section [501] Fire Event option 2 ON). An alternate option is to program PGM1 as Zone Follower (Sec [009] = 29) and assign Fire Zone to PGM1 in Section [551]. Ensure Bit 3 is on in [501]. In this case, a restored fire alarm condition does not require the DSC control panel to be reset. For PC4020 program PGM1 as type [49] Steady Fire ([00070049]).
- Dry contact outputs from ULC Listed Fire Alarm Control Unit shall be connected to Zone inputs on the ULC Listed DSC Subscribers’ Unit Fire.
- Refer to detailed diagrams in Figure 8.

**NOTES:**
- Connect PGM output from GS3060 (Phone Line Trouble) to a zone input on the subscriber unit for supervision of the phone line voltage.
- When the GS3060 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.
- Refer to detailed diagrams in Figure 9.
8. Connection Details for GSM Supervision Relay 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
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
**Notes:**

- Power for TL260GS/GS2060 shall be provided from PC1864/PC1832/PC1616 Subscriber's unit (Bell+ and AUX-).
- Connect PC-Link cable between TL260GS/GS2060 and PC1864/PC1832/PC1616 as instructed and enable T-Link interface (section [382] bit 5 ON).
- Use for communication SIA format, program Section [350]= 04, Section [165] = 001 and Section [167]=060.
- TL260GS/GS2060 can be used as a passive communication module (back-up mode for Dialer) or as 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).
  - Complete programming of the TL260GS/GS2060 module in section [851] (IP/GSM address, supervision options, IP/GSM test transmission time and 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.
  - Complete programming of the TL260GS/GS2060 module in section [851] (IP/GSM address, supervision options, IP/GSM test transmission time and cycle).
  - Program heartbeat interval in Section [851][004]=005A (90s). The supervision window at the Signal Receiving Centre’s receiver shall be programmed as max. 180s.