StarLink™ SLE-LTE Commercial Series Alarm Communicators
INSTALLATION INSTRUCTIONS

WI2226DLF 6/19

INTRODUCTION

The StarLink™ Commercial / Residential Fire and Burglary alarm capture radio communicators are fully supervised, wireless digital two-way subscriber units supported by an extensive nationwide wireless network. All models are compatible with most 12VDC alarm control panels (always adhere to the documentation provided by the control panel manufacturer). Model **SLE-LTEV-CFB** and **SLE-LTEA-CFB** are compatible with most 12 or 24VDC control panels. All can function as a backup to existing telephone lines, or as sole path primary communicators. In backup mode, all units will automatically switch the communication channel from the telephone line to the network when telephone line trouble is detected. **See WI2140 for programming information.**

The SLE-LTE Series radios use data-capture technology that captures the alarm report from the control panel and transmits the alarm signals to the SLE Control Center; the alarm signals are then forwarded to ANY central station via Contact ID or 4/2 via DACT from the NOC or Sur-Gard System II, Sur-Gard System V, Bosch D6100IPV6 or Bosch D6600 Receiver (with ITS-D6686 Ethernet Adapter) via TCP/IP using standard line security. The SLE Control Center reports a trouble signal in the event that the network does not receive the expected supervision signal from the wireless communicator.

For Commercial Burglary installations, under the armed condition, any loss of communication must be treated as a Burglary Alarm at the Central Station.

The following Verizon (**LTEV**) and AT&T (**LTEA**) models are available:

SLE-LTEV-CFB-PS & **SLE-LTEA-CFB-PS**: Commercial / Residential Fire and Burglary Radio in red metal housing with SLE-ULPS-R power supply and 16.5V / 20VA transformer mounted inside housing

SLE-LTEV-CB-TF & **SLE-LTEA-CB-TF**: Commercial / Residential Burglary and Residential Fire Radio in white metal housing with SLE-ULPS-R power supply and TRF12/T123 plug-in 16.5V / 20VA transformer

SLE-LTEV-CFB & **SLE-LTEA-CFB**: Commercial / Residential Fire and Burglary in red metal housing. Powered directly from control panel (no power supply, no transformer, rated 12/24VDC input)

SLE-LTEV-CB & **SLE-LTEA-CB**: Commercial / Residential Burglary and Residential Fire Radio in white metal housing. Powered directly from control panel (no power supply, no transformer)

The following features are included with models that include a SLE-ULPS-R power supply:

- Power limited output to the StarLink radio PC board 12V input terminals
- Battery connection red and black flying leads
- Monitored battery charging and Active battery test circuits
- StarLink radio trouble input (from StarLink radio PC board **PGM1** terminal to detect StarLink radio trouble)
- Requires a sealed lead acid min 4AH / max 7AH battery for minimum 24-hour standby time (max charge current 200mA).
- Trouble relay output (**C**, **N/O** and **N/C** terminals) to wire to a panel zone dedicated to "LTE Trouble" (dry contacts). Remove jumper "**J2**" to isolate common from ground
- Green **AC ON** LED visible from the exterior housing
- Yellow **TROUBLE** LED on PC board. Flashes signify:

STARLINK RADIO REPORTING PATH

The diagram below shows the transmission path of a signal from the StarLink radio to the central station.

1. **Signal from a Control Panel.**
2. **StarLink** radio receives the signal transmission (from the TIP an RING wires); sends RF signal through the network operator.
3. **Network Operator**, part of the vendor system, a section of the cellular spectrum.
4. **SLE Control Center**, receives and routes data.
5. **Central Station**.
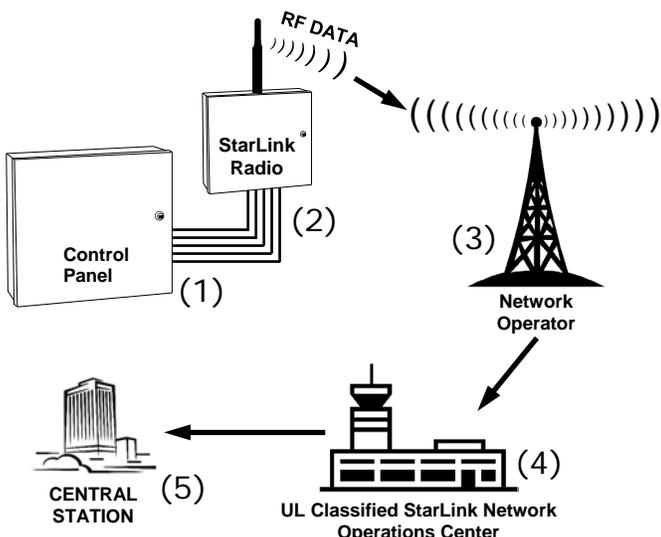
AGENCY LISTINGS

- UL 864 Standard For Control Units and Accessories For Fire Alarm Systems, 10th Edition
- UL 1610 Standard For Central-Station Burglar-Alarm Units
- UL 985 Standard For Household Fire Warning System Units
- UL 1023 Standard For Household Burglar-Alarm System Units

LTEV models are *Verizon® Network Certified*

One flash: AC fail / brownout (2 hour delay)
Two flashes: Low battery
Three flashes: Charging circuit trouble
Four flashes: StarLink radio trouble

The housing-mounted transformer (when provided) is mounted inside its own housing compartment with a re-placeable UL Listed .5A fast blow primary fuse. 120VAC connections are to be made by a licensed electrician using suitable connectors, in accordance with N.E.C. and local code requirements.

ADDITIONAL COMPONENTS

In addition to the models listed above, the following sub-assemblies are available:

SLE-ULPS-R - Power Supply. Required for installations where the control panel cannot provide the 71mA of Auxiliary power required to operate the StarLink radio. Uses a standard 4AH / 12V minimum (7AH maximum) rechargeable battery to provide radio standby power. Requires connection to either the model NAPCO TRF12/T123 (16.5V / 20VA) external plug-in transformer or the chassis-mounted 16.5VAC / 20VA transformer affixed inside the housing (see wiring diagrams further in this manual). **Note:** For models without the SLE-ULPS-R, connect the radio terminals 1 and 2 to the control panel Aux Power terminals (observing polarity).

SLE-DLCBL - Download Cable, 6 feet
SLE-ANTEXT30 - Extended antenna with 30 feet of cable
SLE-ANTEXT50 - Extended antenna with 50 feet of cable
SLE-ANTEXT75 - Extended antenna with 75 feet of cable (Any suitable external cellular antenna is permitted by UL). Always follow the manufacturer's installation instructions. **Note:** Antennas are not Listed by UL.
GEM-Tamperkit - Tamper switches and screws to protect metal housing (see page 18).

SPECIFICATIONS

The following specifications apply to all StarLink radio models unless otherwise stated:

Electrical Ratings for 120VAC, 60Hz
For Models with Power Supply
- Input Voltage: 120VAC nominal

- Input Current: 150mA maximum
- Maximum Charging Current: 200mA

Electrical Ratings for +12V
For Models without Power Supply*
- Input Voltage: 10-15VDC (power-limited output from Listed control panel). **Note:** Models **SLE-LTEV-CFB** and **SLE-LTEA-CFB** are rated 10-25VDC input.
- Input Current for **SLE-LTEV-CB** and **SLE-LTEA-CB**: 10V = 90mA, 12-15V = 71mA, with peak RF transmission current of 200mA.
- Input Current for **SLE-LTEV-CFB** and **SLE-LTEA-CFB**: 10V = 90mA, 12-25V = 71mA, with peak RF transmission current of 200mA.

Electrical Ratings for the IN 1 Burg/Fire Input:
- Input Voltage: 9-15VDC. **Note:** Models **SLE-LTEV-CFB** and **SLE-LTEA-CFB** are rated 9-25VDC input.
- Maximum Input Current: Up to 2mA from FACP NAC circuit

Electrical Ratings for IN 2 and IN 3:
- Maximum Loop Voltage: 15VDC. **Note:** Models **SLE-LTEV-CFB** and **SLE-LTEA-CFB** are rated max 25VDC input.
- Maximum Loop Current: 1.2mA
- End of Line Resistor (EOLR) Value: 10K (2 req'd)

Electrical Ratings for 3 PGM Outputs:
- Open Collector Outputs: Maximum Voltage 3V when active; 15V maximum when not active. **Note:** Models **SLE-LTEV-CFB** and **SLE-LTEA-CFB** are rated max 25VDC output.
- Maximum PGM Sink Current: 50mA (up to 15VDC), 25mA (15.1VDC - 25VDC)

Physical (W x H x D)
- Metal Housing: 11½ x 9½ x 3½" (29.2 x 24.1 x 8.9cm)
- Mounting: Metal housing includes two keyhole slots for wall mounting (see measurements on page 7)

Environmental
- Operating Temperature: 0°C - 49°C (32°F - 120°F)
- Humidity: Maximum 93% Non-Condensing
- Indoor / dry location use only

NOTICE TO AUTHORITIES HAVING JURISDICTION, USERS, INSTALLERS, DEALERS, AND OTHER AFFECTED PARTIES			
FIRE PROGRAMMING OPTION	PERMITTED IN UL864? (Y/N)	AVAILABLE SETTINGS	REQUIRED UL 864 SETTINGS
Unattended Remote Downloading	No	Enable / Disable	Disabled (Jumper 1 installed). Also required for Commercial / Burglary installations. **Note:** See page 7 "**Configuration Download / Firmware Updates**" for jumper instructions.
IN2 and **IN3** Unsupervised	Yes	Supervised / Unsupervised	Unsupervised using conduit within 20 feet of FACP (default). If not using conduit, install Jumpers 4 and 5 and EOL Resistors (see pages 3 and 4).
7 Day Supervision, Radio to NOC	No	200 seconds, 5 minutes, 60 minutes, 7 days	200 seconds, 5 minutes, 60 minutes

*For Commercial Fire installations, a UL Listed Fire Alarm regulated power supply or FACP regulated auxiliary output is required.

TERMINAL DESCRIPTIONS

Configure all inputs and outputs using the Management Center screen (located at www.napconoc.com). Located at the bottom of the StarLink radio PC board, the 17 terminals are described as follows:

TB1: **PWR (+12V) Note:** Models **SLE-LTEV-CFB** and **SLE-LTEA-CFB** are rated 12/24VDC input.
(Refer to section "**STEP 4: APPLY POWER**")

TB2: **PWR GND (–)**
(Refer to section "**STEP 4: APPLY POWER**")

TB3: **PGM1 (–):** Open collector output. PGM1 is normally on (active low). When it is triggered (for example, a trouble is detected) it becomes open collector/high. To have a zone dedicated to an StarLink radio trouble, insert one side of the end of line resistor into this PGM1 terminal, and wire the other side of the resistor to the positive terminal of the zone.

TB4: **PGM2 (–):** Open collector output. This output is defaulted as "Fail to Communicate", and is normally open collector/high. When a report fails to communicate anywhere in the communications path, the output is active low.

TB5: **PGM3 (–):** Open collector output. This output is defaulted as "Telephone Line Cut". When the telephone line voltage is correct, the output is open collector/high; when the telephone line voltage is too low, the output is active low.

TB6: **IN 1:** Active high input for wiring to the panel bell output. When this input detects a pulsing temporal 3 high, it sends a Fire alarm; a pulsing temporal 4 (CO Alarm), a CO alarm is sent. When used, these conductors must be run in conduit (max 20 feet for Commercial Fire, and 3 feet for Residential Fire). **Do not use for Burglary applications**.

TB7: **IN 2:** See **TB9**, below.

TB8: **GND:** Common ground terminal.

TB9: **IN 3:** Both terminals **IN 2** and **IN 3** by default are supervised end-of-line resistor inputs that can be triggered with N/O or N/C relay contacts. Wire the common ground terminal **GND** (terminal **TB8**) to the relay common. In Burglary applications, when used as arm/disarm status input, a low indicates "armed" and a high indicates "disarmed". For these inputs to report to a central station, the radio must be configured with the central station telephone number and correct reporting formats and codes. See table on page 17 for more information.

TB10: **TIP:** See **TB11**, below.

TB11: **RING:** Terminals **TIP** and **RING**: When used for backup reporting, the house Tip and Ring telephone wires must be routed from the outside to these terminals. Under normal back up conditions, these terminals are internally wired to the **PANEL TIP** and **PANEL RING** terminals, allowing all transmissions to the central station to be monitored. These wires are monitored for voltage such that if voltage falls below 1.5V, a Telco Line Fault trouble is detected, and the StarLink radio applies telephone line voltage to the control panel Tip and Ring DACT interconnect to the radio allowing it to receive and transmit any alarms sent by the panel.

TB12: **PANEL RING:** See wiring diagrams.

TB13: **PANEL TIP:** See wiring diagrams.

Note: TB14-TB17 no connections permitted by UL.

TB14: **RTS (R):** See **TB17** below.

TB15: **PANEL TX (B):** See **TB17** below.

TB16: **PANEL RX (G):** See **TB17** below.

TB17: **CTS (Y):** No connections permitted.

LED DESCRIPTIONS

The PC board contains several LED's, as follows:

GREEN RF SIGNAL STRENGTH LED
Labeled "**D3**", this LED is located at the lower right corner of the PC board.
Every 30 seconds, the StarLink radio receiver section turns on and listens to the cell tower. Depending on the

Supervised Fire / Burg Input

⑧ Radio GND (TB8)   ⑦ or ⑨ To StarLink Terminals IN2 (TB7) -or- IN3 (TB9)

(Radio)
(Alarm Panel)

10K

10K

C   N/O   C   N/O

TBL*   N/C   Alarm

The EOLR must be installed and located within the control panel housing.

Supervised Arm / Disarm Input

⑧ Radio GND (TB8)   ⑦ or ⑨ To StarLink Terminals IN2 (TB7) -or- IN3 (TB9)

(Radio)
(Alarm Panel)

10K

10K

C

Open = Disarmed
Closed = Armed

The EOLR must be installed and located within the control panel housing.

*Reverse polarity / energized state.

RED DIAGNOSTIC LED (Labeled "D7")

YELLOW OPERATIONAL STATUS LED (Labeled "D4")
GREEN RF SIGNAL STRENGTH LED (Labeled "D3")
RED TROUBLE LED (Labeled "D5")

D4 D3 D5
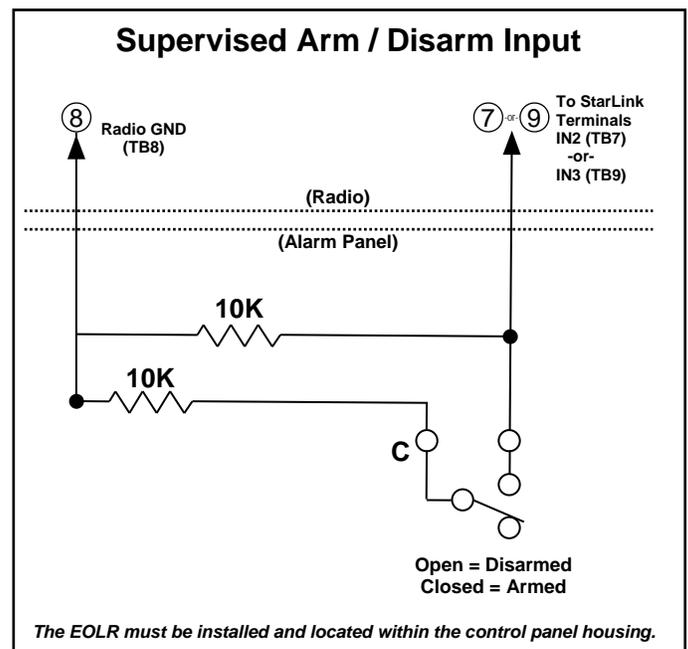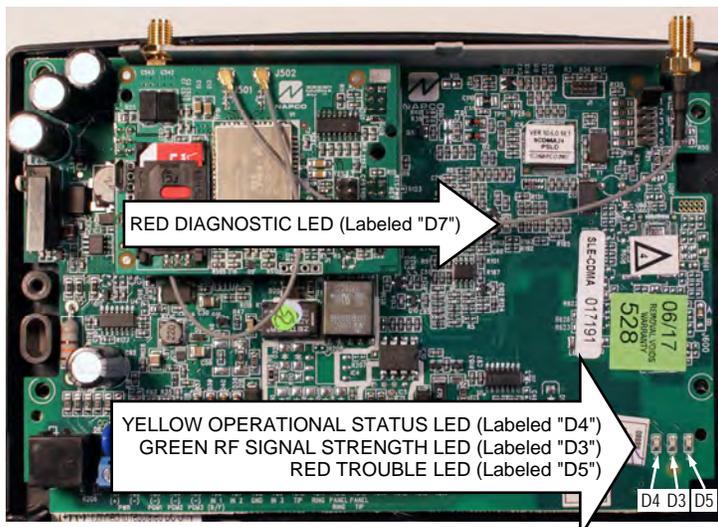
LED LOCATIONS

signal strength detected, it will blink the Signal Strength LED from 1 to 5 times, providing a signal strength indicator that is updated constantly and is always displayed.

Green LED Operation

Signal strength (as received by the radio) is displayed by this LED blinking 1 to 5 times at a constant rate (with a short delay between blink cycles). Acceptable power level is greater than or equal to 2 blinks.

YELLOW OPERATIONAL STATUS LED

Labeled "**D4**", this LED is located at the bottom right of the PC board. Operation is as follows:

Normal Standby Condition:

- **Blinks on momentarily every 10 seconds:** Unit is in standby waiting for an alarm to report.

Processing Alarm Conditions:

- When processing an alarm, this LED will blink variably during each part of the process (dialing, handshaking, data transmission, etc.).

RED TROUBLE LED

Labeled "**D5**", this LED is located at the bottom right of the PC board. Operation is as follows:

- **1 Blink:** Low Aux Power input voltage
- **2 Blinks:** Battery trouble
- **3 Blinks:** Alarm report Failed to Communicate
- **4 Blinks:** RF trouble (antenna connection or cellular registration)
- **5 Blinks:** Network trouble (signal unable to reach the SLE Control Center)
- **6 Blinks:** Unit disabled (reporting or control panel downloading not allowed)
- **7 Blinks:** Unit was shutdown and has no functionality; requires a restart (full power down and full power up sequence) to restore operation
- **8 Blinks:** Telco Line Cut (this is not the DACT interconnect to the radio)

RED DIAGNOSTIC LED

Labeled "**D7**", this LED is located in the middle of the PC board. One blink indicates a weak or non-existent signal

from the network (green LED is off). If this red LED is blinking in any other manner, please contact technical support.

SUPPLYING POWER

Control panels can provide power through their Auxiliary Power terminals if the available standby current is reduced by 71mA. When there is insufficient standby current due to the application (such as when 24-hour standby time is required for Fire or CO), the SLE-ULPS-R Charger Module accessory must be used to charge an additional battery and to supply the power for the StarLink radio. See WI2131.

JUMPER DESCRIPTIONS

Jumper block labeled "**X5**"; from top to bottom, as detailed in the following table. **Note:** Contact ID is always available in response to a Contact ID handshake.

Jumper Block "X5" Options Jumper block labeled "X5" contains 5 jumper terminals; from top (labeled "1") to bottom (labeled "5") as follows:		
Jumper ON	**Jumper Number**	**Jumper OFF**
Tech on site must temporarily remove to download	1	Not permitted by UL 864 and UL 1610
4/2 with Checksum Pulse Format	2	4/2 Pulse Format
Backup Mode	3	Primary Mode
Supervised inputs. EOLR(s) required, see page 3	4 and 5	Not permitted by UL 864 and UL 1610 (UL 864 permits use of conduit within 20 feet of FACP in lieu of Supervision)

The StarLink SLE-LTE Series radios are compatible with any Listed alarm control unit DACT communicating contact ID or any 4+2 pulse format (4/2 Pulse Dialing formats such as Ademco Slow, Radionics Slow, Silent Knight Fast, Radionics Fast and Universal High Speed, with 10pps, 20pps, and 40pps with and without checksum, either 1400Hz or 2300Hz handshake / kissoff).

The StarLink SLE-LTE Series radios and NOC are compatible with the Listed Ademco model 685 with model 685-8 line card DACR or any Listed compatible DACR with any 4+2 pulse or contact ID format which is specified in the Installation Instructions for the interconnected DACT / Alarm Control Unit.

Refer to WI2140 (available on the NOC) for selecting the required handshake / kissoff frequency in the NOC (www.NapcoNOC.com) setup screens (as required by the control panel).

PRIMARY AND BACK-UP REPORTING

The StarLink radio can function as a primary wireless communicator, in cases where there are no telephone lines present, when connected directly to the control panel Telco terminals. For primary reporting, do NOT install jumper 3 in terminal block "**X5**". The StarLink radio can also function as a backup to the existing telephone lines (install jumper 3 in terminal block "**X5**"). When used as a backup communicator and when it senses telephone line trouble, the StarLink radio automatically switches the communication channel from the telephone line to the network.

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NETWORK COVERAGE

The StarLink radio constantly supervises the network coverage. When the StarLink radio is configured for primary reporting, and the StarLink radio detects a loss in network coverage, the StarLink radio must be configured to prompt the control panel to announce a Telco Line Cut failure trouble using the Management Center screen (located at www.NapcoNoc.com). **Note:** This Telco Line Cut failure trouble will NOT activate when the StarLink radio is configured for backup reporting.

INSTALLATION STEPS

STEP 1: ACCOUNT REGISTRATION

Create a new account and register specific StarLink radio modules at www.NapcoComNet.com. Accounts and modules registered via the Internet are enabled for activation within 24 hours.

STEP 2: SELECT A MOUNTING LOCATION

The mounting location should be indoors within the protected area and selected based on RF performance. It is HIGHLY recommended that the installer carefully adhere to the following recommendations BEFORE any wires are installed.

- Generally, high locations are best. DO NOT mount radio in basements or below grade as unpredictable performance may result.
- DO NOT mount the radio in non-climate controlled environments (i.e. attics may become extremely hot in summer, garages may become extremely cold in winter).
- Avoid mounting locations within 3 feet of AC power lines, fluorescent light fixtures, or large metal objects (air conditioners, metal garage doors, etc.) as these locations have been shown to have a detrimental effect on signal strength.
- A fair amount of care may be required to mount the StarLink radio so as to achieve an optimal RF path. The installer should spend as much time as needed to obtain the highest signal level possible.
- For Commercial Burglary installations, install in accordance with UL 681, Standard for Installation and Classification of Burglary and Holdup Alarm Systems. Installation shall also be in accordance with UL 827, Standard for Central-Station Alarm Services, and UL 1641, Standard for Installation and Classification of Residential Burglar Alarm Systems

  a. ***Before applying power, be sure to connect the antennas***. Temporarily connect power to the StarLink radio from a fully charged 12V (4AH minimum) battery. DO NOT mount the radio at this time. Press **Tamper** switch to send a signal.

  b. Position the unit in the desired mounting location, with antenna oriented vertically. The signal strength is displayed by the Green "Signal Strength LED" labeled "D3" (located at the lower right corner of the PC board). The radio tower signal strength may fluctuate from day to day, therefore it is best to try to find a mounting location where the LED provides a **minimum of 2 blinks**.

  c. Once a location has been selected based on signal coverage, permanently secure the unit using #8 screws (not supplied) in the two mounting holes.

WARNING: To ensure user safety and to satisfy FCC RF exposure requirements, this unit must be installed so that a minimum separation distance of 60cm (24") is always maintained between the antenna of the transmitting device and nearby persons.

STEP 3: WIRING (PRIMARY AND BACKUP MODES)

22-gauge wire may be used if mounted up to 50 feet from the control panel, and 18-gauge wire should be used for up to 100 feet. Reference the wiring diagrams further in this manual. See the section **CONTROL PANEL PROGRAMMING** further in this manual.

For Primary Mode:

Remove jumper #3 in jumper block labeled "**X5**". The wiring between the control panel and the StarLink radio is over five (5) wires, as follows:

- **TB1: PWR (+12V) Note:** Models **SLE-LTEV-CFB** and **SLE-LTEA-CFB** are rated 12/24VDC input.
- **TB2: PWR GND (–)**
- **TB13: PANEL TIP**
- **TB12: PANEL RING**
- **TB3: PGM1 (–)**. Normally low output wired to the (+) of a zone dedicated to monitoring the radio status. See page 12 for GEMC-F8ZCPIM wiring. Should be programmed on Napco control panels as Day Zone, but be programmed to sound locally and NOT activate the bell. **Note:** See steps "a" and "b", below.

For Backup Mode:

Install jumper #3 in jumper block labeled "X5". The wiring between the control panel and the StarLink radio is over seven (7) wires, as follows:

- **TB1: PWR (+12 or 12/24V)**
- **TB2: PWR GND (–)**
- **TB10: TIP**
- **TB11: RING**
- **TB13: PANEL TIP**
- **TB12: PANEL RING**
- **TB3: PGM1 (–)**. Normally low output wired to the (+) of a zone dedicated to monitoring the radio status (see page 12 for GEMC-F8ZCPIM wiring). Should be programmed on Napco panels as Day Zone, but be programmed to sound locally and NOT activate the bell.

  a. *Without applying power (voltage)*, connect to screw terminals **TB1 (+12 or 12/24V)** and **TB2 (–)**. If the control panel *Aux. Output* cannot supply the necessary current, then you must use the SLE-ULPS-R *Power Supply* accessory with additional battery (see WI2131). For wiring connections, see the wiring diagrams further in this manual.

  b. Referencing the correct wiring diagram for the appropriate control panel (wiring diagrams are located further in this manual), connect the "TELCO" control panel terminals TIP and RING (DACT interconnect wiring to the radio). **Do NOT** connect the StarLink radio terminals TB10-13 to house telephone lines (RJ31X modular plug wires, etc.).

Wiring Methods

- Strip wire carefully to avoid exposed conductors after installation, etc.
- Use UL Listed wire, ensuring that all conductors are to

be insulated for the maximum voltage of any conductor in the enclosure
- All wiring methods must be performed in accordance with NFPA 70, Articles 725, and 800

STEP 4: APPLY POWER
- ***Attach primary (top left) antenna before applying power !***
- The StarLink radio requires +12 or 12/24VDC. It draws less than 71mA during standby, *and almost 200mA during transmissions* (for less than 1 second).

STEP 5: SIGNAL VERIFICATION
- <u>Verify Online</u>: To verify that the signals have been received by the StarLink radio LTE Network online, go to www.napconoc.com, log in with your Username and Password, enter your **Company ID** number and the StarLink LTE **Radio Number**, then click **Signal Log**.

IMPORTANT: Verify that the signals transmitted by the StarLink radio have been properly received by your central station before leaving the premises.

NAPCO CONTROL PANEL PROGRAMMING
To program the central station receiver reporting format, use PCD-Windows Quickloader download software. Open the **Digital Communications** screen, *Central Station Receivers* tab, as shown in the following image. A "Point ID" (also called "Contact ID") receiver format programming example is shown:
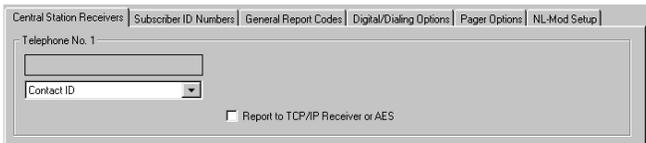
The radio can transmit to any central station capable of receiving SIA Contact ID or 4/2 via DACR technology or the DSC Sur-Gard Model System II or Sur-Gard System V central station receivers, Bosch D6100IPV6 or Bosch D6600 Receiver (with ITS-D6686 Ethernet Adapter) via TCP/IP using standard line security.

Note: A receiver reporting format must be entered for each telephone number used, but each telephone number may be assigned a different format.

CAUTION: The installer should always be certain an area code is programmed into the control panel.
Optional: If you wish the StarLink radio to report a code and zone number (Contact ID by default) to the central station in response to a triggered input event, see the table on the previous page.

Note: These event codes and zone numbers can be changed from the Management Center screen (located at www.napconoc.com).

Upon alarm, the NOC can optionally send an SMS message to a third party that includes the appropriate Contact ID alarm code, including the zone or user number, if applicable. The "**STARLINK RADIO RELATED EVENT REPORT CODES**" table also includes the most common Contact ID alarm codes.

STARLINK RADIO RELATED EVENT REPORT CODES (Contact ID by default)

EVENT	AREA	CONTACT ID CODE	CONTACT ID ZONE #	PULSE 4/2
IN 1 Fire	0	E110	990	1A
IN 2 Panic	0	E120	992	22
IN 3 Trouble	0	E300	993	F3
Low Battery/Voltage	0	E302	994	F4
Tamper Trouble	0	E341	995	F5
Line Cut	0	E352	996	F6
Reboot	0	E625	997	F7
IN 1 CO (Carbon Monoxide)	0	E162	998	18
Panic Alarm*		E123		
Holdup Alarm*		E122		
Medical Alarm*		E100		
24 hour Aux. Alarm*		E150		
24 hour Aux. Restore*		R150		
Burg Perimeter Alarm*		E131		
Burg Interior Alarm*		E132		
Keypad Holdup Alarm (ambush)*		E121		
Keypad Panic Alarm*		E123		
Keypad Emergency Alarm*		E140		
Opening*		E401		
Closing*		R401		
A.C. Trouble*		E301		
Tel 1 Fail*		E351		

*Not generated by the StarLink radio.

SIGNALS ORIGINATED AT THE NOC

NOC Originated Alarms	Contact ID Event Data Sent	Initiated By	Comments
Supervisory Fail	E356 A00 Zn000	Automatically by NOC if fail to receive any signal from StarLink radio within Supervisory Timeout duration.	For Auto Enroll, uses captured telephone number, Sub ID and format. For Dealer Programmed, uses entered telephone number, Sub ID and format.
Press to Send Test Signal	E601 A00 Zn000	Manually by dealer from the Management Center **Signal Log** screen (located at www.napconoc.com). Sends test into CS receiver.	Same comment as above.
Press to Send Radio Test	Not Applicable Nothing sent to CS receiver	Manually by dealer from the Management Center **Checkins** screen (located at www.napconoc.com). Sends a command to the StarLink radio to force a check-in to the NOC.	----

Programming StarLink Radio Troubles

It is required that if a StarLink radio or control panel trouble is detected, that it is reported to the central station.

When the StarLink radio detects and sends a trouble to the control panel, the control panel must be programmed to annunciate this trouble. The radio can detect multiple troubles as indicated by the "Red Trouble LED" ("**D5**"). For these troubles to be annunciated at the panel, there are several methods, some of them are configurable at the Management Center screen (www.napconoc.com):

Wire the radio PGM1 output to a dedicated control panel zone (input) to annunciate the trouble (activate a trouble sounder) when an open is detected. The radio must also report this trouble to the central station. With Napco control panels, program a dedicated zone for Day Zone, Mini-sounder on Alarm and No bell on Alarm. Wire the zone as indicated in the wiring diagrams further in this manual. For models **with** the **SLE-ULPS-R** Power Supply, wire this Power Supply trouble output relay to the two terminals of the control panel zone dedicated to the trouble. With the GEMC Commercial Fire control panels, use the dry contacts of the Power Supply relay by removing the jumper and using the contacts of the Power Supply relay (Common and N/O) in series with a 2.2k EOLR.

For radio models **without** the **SLE-ULPS-R** Power Supply (powered by the control panel Aux Power terminals), wire the radio directly to the PGM1 output of the control panel (program the radio to report all troubles on PGM1). Alternatively, you can use the GEMC-F8ZCPIM module to detect a trouble on the zone by use of a PGM output of the radio. See special wiring instructions for use of the GEMC-F8ZCPIM zones.

You can also wire to the positive terminal of the dedicated zone on a GEMC-EZM8. Thus when a radio trouble is detected, the radio PGM activates the control panel zone, and the panel generates a trouble that is sent to the central station.

All installations also require wiring an output from the control panel, as follows: With Gemini C-Series (GEMC) control panels, we recommend using the Fire Aux Relay. Program the Fire Aux Relay to activate as a trouble relay. Wire this relay to the StarLink module **IN2** terminal. **Note:** We recommend using the text "LTE Trouble" as the Zone Description.

StarLink Radio Supervision

If the two Telco wires (DACT interconnect wiring to the radio) between the StarLink radio and the control panel are cut or otherwise disconnected, the control panel must detect and generate a local trouble indication. The control panel must trigger an output to activate the StarLink radio to report this line cut fault to the central station. Program the control panel for telephone supervision. Program the StarLink radio using the Management Center "Advanced Features" screen (at www.napconoc.com) to enable the Line Cut feature on all troubles (therefore a dedicated zone is not required). **Note:** Some control panels may require a different duration than the default time of 3 minutes.

Supervision Time Schedule Considerations

If a status change (alarm trouble, etc.) is transmitted, the radio supervision timer is restarted.

For example, if a status change is sent, the next regular supervision transmission will occur at the interval determined by your rate plan.

Configuration Download / Firmware Updates
Technician on site required.

For Commercial Installations a technician is required to be on site during any reprogramming of the radio or control panel and must perform / re-perform acceptance testing. To perform a download or update the radio firmware, jumper 1 must be removed. UL requires that the jumper be replaced after the download is complete. ***Failure to replace the jumper would allow downloads to the radio without a technician on-site***.

For Residential installations jumper 1 may be removed to permit uploading and downloading without a technician on site, however, the dealer is responsible for ensuring the system is operating correctly after any downloads or changes to the system.

Cover Tamper

The SLE-LTE series radios in the metal housings may optionally have front and rear tamper switches installed (GEM-Tamperkit) and wired to the control panel (see page 18). **Note:** The tamper switch on the radio PC board is not used in this housing (but continues to function if pressed).

11-1/2"
10-1/8"
9-1/2"
9-21/64"
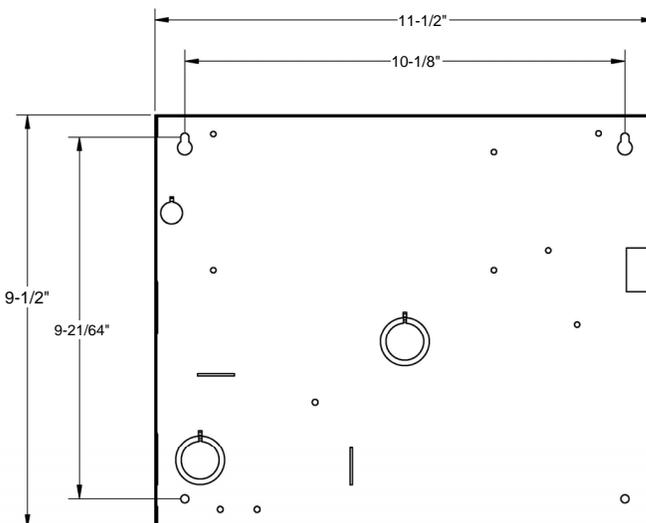
Red and White Metal Housing Dimensions (inches)

(Commercial Fire and Commercial Burglary) SLE-LTEV-CFB-PS and SLE-LTEA-CFB-PS Wiring Diagram

SLE-LTEV-CFB-PS and SLE-LTEA-CFB-PS PC Boards
All connections are power limited except AC Mains, Telco and battery terminals

Terminals 14-17: No connections permitted .

Note: Connect IN2 to a panel output used for identifying Telco line cut (this is the DACT interconnect wiring to the radio).

(To control panel*)

+V	(–)	PGM1	PGM2	PGM3	IN1	IN2*	GND	IN3	TIP	RING	PANEL RING	PANEL TIP	RTS (R)	PANEL TX (B)	PANEL RX (G)	CTS Y
1*	2*	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

Power Supply (SLE-ULPS-R)

Yellow Trouble LED

Green AC ON LED

Relay contacts rated max 30VDC, 0.5A

12VDC output is power limited

N/C COM N/O
8 9 10
J2

AC IN	+12V –	IN1	+ BAT – RED BLK
1 2	3 4	5	6 7

Red (+) Black (–)

Remove shunt J2 to isolate relay common from ground (i.e. jumper on = wet; off = dry contact)

EOLR*

Battery

Note: Maintain minimum 1/4" separation of battery leads from all other wiring.

.5A Fuse

BLK

WHT

GRN

(Earth Ground)

Chassis Mounted 16.5VAC / 20VA Transformer

16.5VAC Class 2

Note: Maintain minimum 1/4" separation of all wiring in this compartment from the yellow wires of the transformer.

*Notes:
- Connect the StarLink radio to the control panel output for Telco Trouble (this is the DACT interconnect wiring to the radio). Remember to program the StarLink communicator module to report this **IN2** Telco Trouble and for line cut (EOLR) to the central station (options 1 or 4 on page 17). In addition, always add an EOLR at the control panel Telco Trouble Output (Fire Aux Relay for the GEMC control panels).
- Use EOLR value as specified by the control panel installation instructions.
- **IN1** not supervised. **IN2** and **IN3** are supervised.
- Licensed electrician required to wire the 120VAC connections to the transformer in accordance with N.E.C. and local code requirements.
- Route 120VAC only through the transformer compartment knockouts.
- Keep all non-power limited wiring separate from all power-limited wiring inside the housing by 1/4". In addition, maintain a minimum 1/4" separation of all primary wiring in the transformer compartment from the yellow secondary wires of the transformer.
- Remove shunt J2 to isolate relay common from ground (i.e. jumper on = wet (circuit common); off = dry contact). When wet, configuration is used; the power should be derived from the alarm control panel.
- StarLink module must be configured to trigger PGM1 on any trouble.
- PGM1 of the StarLink module must be wired to the trouble input (terminal 5) of the power supply.
- The Power Supply Trouble Output must be wired to a control panel zone dedicated to a LTE trouble; see control panel programming instructions and program to Report Alarm / Alarm Restore / Trouble / Trouble Restore.

(Commercial Burglary)
SLE-LTEV-CB-TF and SLE-LTEA-CB-TF
Wiring Diagram

**SLE-LTEV-CB-TF and SLE-LTEA-CB-TF
PC Boards
All connections are power limited except
AC Mains, Telco and battery terminals**

Terminals 14-17: No connections permitted.

Note: Connect IN2 to a panel output used for identifying Telco line cut (this is the DACT interconnect wiring to the radio).

(To control panel*)

+V	(−)	PGM1	PGM2	PGM3	IN1	IN2*	GND	IN3	TIP	RING	PANEL RING	PANEL TIP	RTS (R)	PANEL TX (B)	PANEL RX (G)	CTS Y
1*	2*	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

TRF12/T123
16.5V / 20VA
Transformer

Yellow Trouble LED   Green AC ON LED

Power Supply (SLE-ULPS-R)

Relay contacts rated max 30VDC, 0.5A

12VDC output is power limited

Remove shunt J2 to isolate relay common from ground (i.e. jumper on = wet; off = dry contact)

N/C	COM	N/O
8	9	10

J2

AC IN		+ 12V −	IN1		+ BAT − RED BLK
1	2	3	4	5	6	7

EOLR*

Red (+)   Black (−)

Battery

Note: Maintain minimum 1/4" separation of battery leads from all other wiring.
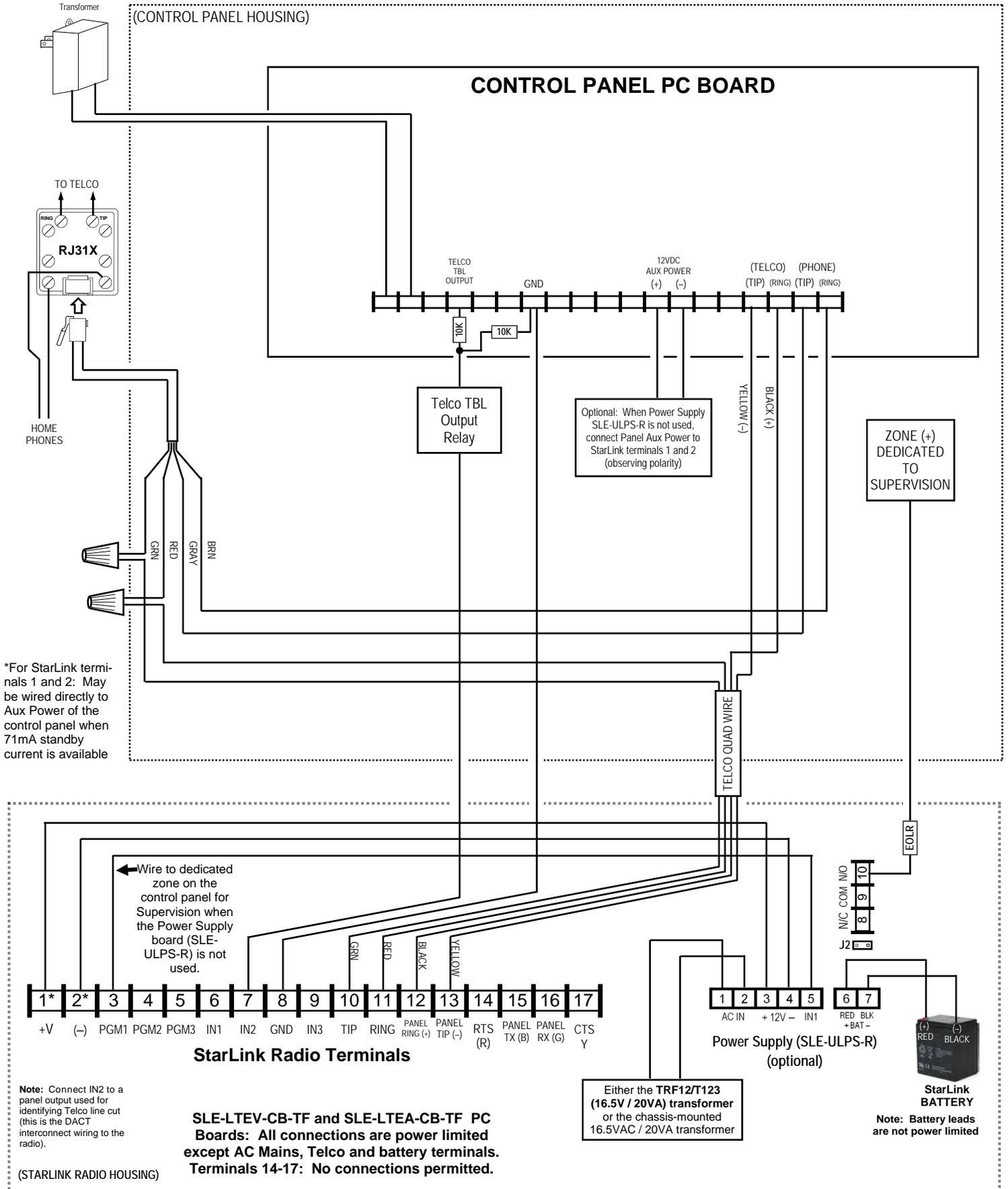
**16.5VAC
Class 2**

*Notes:
- Connect the StarLink radio to the control panel output for Telco Trouble (this is the DACT interconnect wiring to the radio). Remember to program the StarLink communicator module to report this IN2 Telco Trouble and for line cut (EOLR) to the central station (options 1 or 4 on page 17). In addition, always add an EOLR at the control panel Telco Trouble Output (Fire Aux Relay for the GEMC control panels).
- Use EOLR value as specified by the control panel installation instructions.
- **IN1** not supervised. **IN2** and **IN3** are supervised.
- Keep all non-power limited wiring separate from all power-limited wiring inside the housing by 1/4".
- Remove shunt J2 to isolate relay common from ground (i.e. jumper on = wet (circuit common); off = dry contact). When wet, configuration is used; the power should be derived from the alarm control panel.
- StarLink module must be configured to trigger PGM1 on any trouble.
- PGM1 of the StarLink module must be wired to the trouble input (terminal 5) of the power supply.
- The Power Supply Trouble Output must be wired to a control panel zone dedicated to a LTE trouble; see control panel programming instructions and program to Report Alarm / Alarm Restore / Trouble / Trouble Restore.

Wiring Diagram for PRIMARY Reporting Configuration
Generic Control Panels
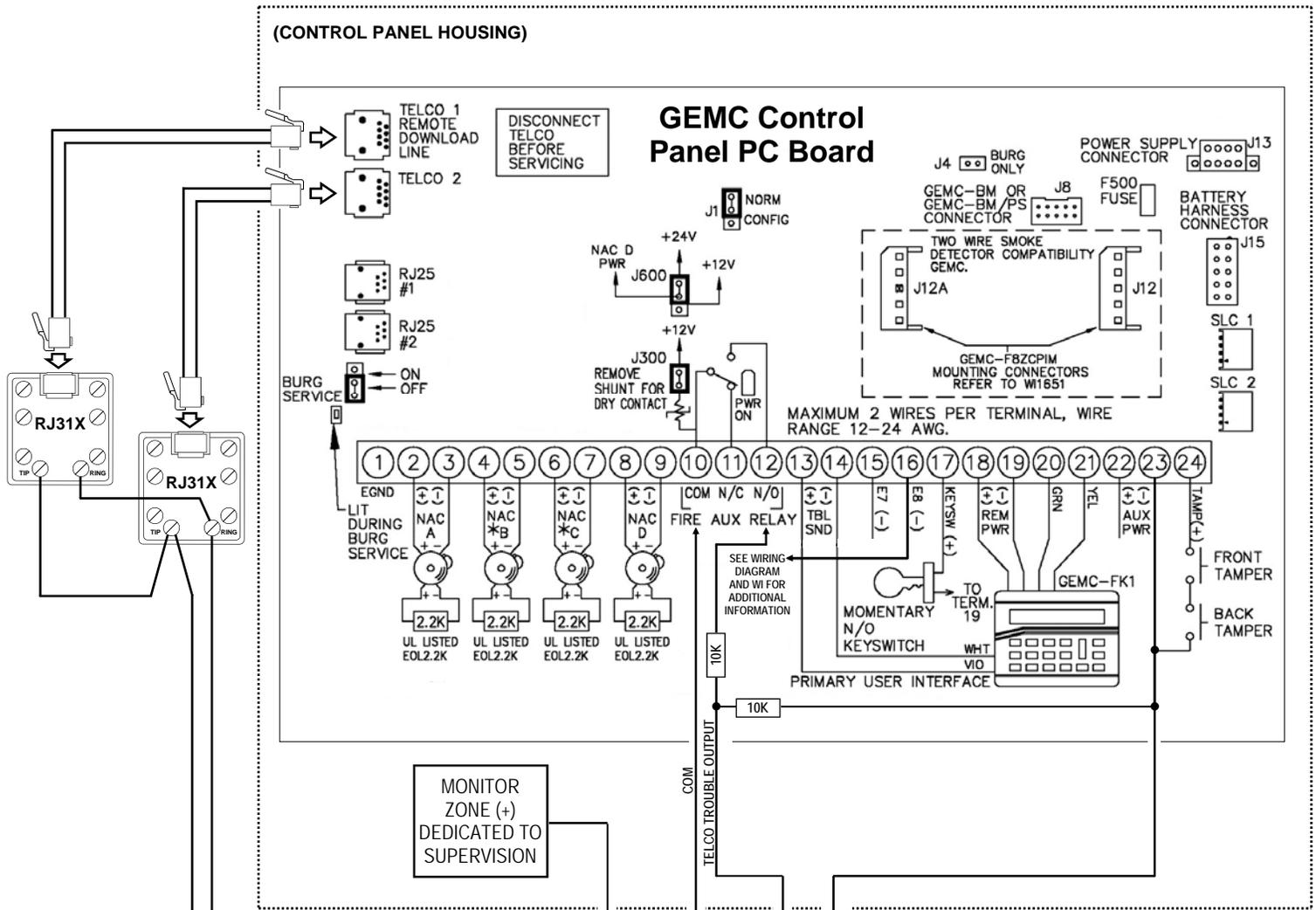## (Use when telephone line is NOT available)

(CONTROL PANEL HOUSING)

CONTROL PANEL PC BOARD

Transformer

TBL INPUT
GND

12VDC
AUX POWER
(+)   (–)

(–)   (+)
(TIP) (RING)

Optional: When Power
Supply SLE-ULPS-R is not
used, connect Panel Aux
Power to StarLink terminals
1 and 2 (observing polarity)

Wire to dedicated zone on the control
panel for Supervision when the Power
Supply board (SLE-ULPS-R) is not used.

Note: Connect IN2 to a
panel output used for
identifying Telco line cut (this
is the DACT interconnect
wiring to the radio).

N/C COM N/O
8   9   10

J2

1*	2*	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
+V	(–)	PGM1	PGM2	PGM3	IN1	IN2	GND	IN3	TIP	RING	PANEL RING (+)	PANEL TIP (–)	RTS (R)	PANEL TX (B)	PANEL RX (G)	CTS Y

StarLink Radio Terminals

**SLE-LTEV-CB-TF and SLE-LTEA-CB-TF PC
Boards: All connections are power limited ex-
cept AC Mains, Telco and battery terminals.
Terminals 14-17: No connections permitted.**

(STARLINK RADIO HOUSING)

1	2	3	4	5	6	7
AC IN		+ 12V –		IN1	RED BLK + BAT –	

Power Supply (SLE-ULPS-R)
(optional)

Either the **TRF12/T123 (16.5V /
20VA) transformer** or the chas-
sis-mounted 16.5VAC / 20VA
transformer

(+)   (–)
RED   BLACK

**StarLink
BATTERY**
**Note: Battery leads
are not power limited**

*Refer to section "**SUPPLYING POWER**".

Wiring Diagram for BACKUP Reporting Configuration
Generic Control Panels

Transformer

(CONTROL PANEL HOUSING)

CONTROL PANEL PC BOARD

TO TELCO

RING · TIP

RJ31X

HOME PHONES

TELCO TBL OUTPUT

GND

12VDC AUX POWER (+) (−)

(TELCO) (TIP) (RING)

(PHONE) (TIP) (RING)

10K 10K

Telco TBL Output Relay

Optional: When Power Supply SLE-ULPS-R is not used, connect Panel Aux Power to StarLink terminals 1 and 2 (observing polarity)

YELLOW (−)   BLACK (+)

ZONE (+) DEDICATED TO SUPERVISION

GRN RED GRAY BRN

*For StarLink terminals 1 and 2: May be wired directly to Aux Power of the control panel when 71mA standby current is available

TELCO QUAD WIRE

EOLR

N/C COM N/O

8 9 10

J2

Wire to dedicated zone on the control panel for Supervision when the Power Supply board (SLE-ULPS-R) is not used.

GRN RED BLACK YELLOW

1*	2*	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
+V	(−)	PGM1	PGM2	PGM3	IN1	IN2	GND	IN3	TIP	RING	PANEL RING (+)	PANEL TIP (−)	RTS (R)	PANEL TX (B)	PANEL RX (G)	CTS Y

StarLink Radio Terminals

1	2	3	4	5
	AC IN		+ 12V −	IN1

6	7
RED	BLK
+ BAT −

Power Supply (SLE-ULPS-R) (optional)

(+) RED   (−) BLACK

StarLink BATTERY

Note: Battery leads are not power limited

Note: Connect IN2 to a panel output used for identifying Telco line cut (this is the DACT interconnect wiring to the radio).

SLE-LTEV-CB-TF and SLE-LTEA-CB-TF PC Boards: All connections are power limited except AC Mains, Telco and battery terminals. Terminals 14-17: No connections permitted.
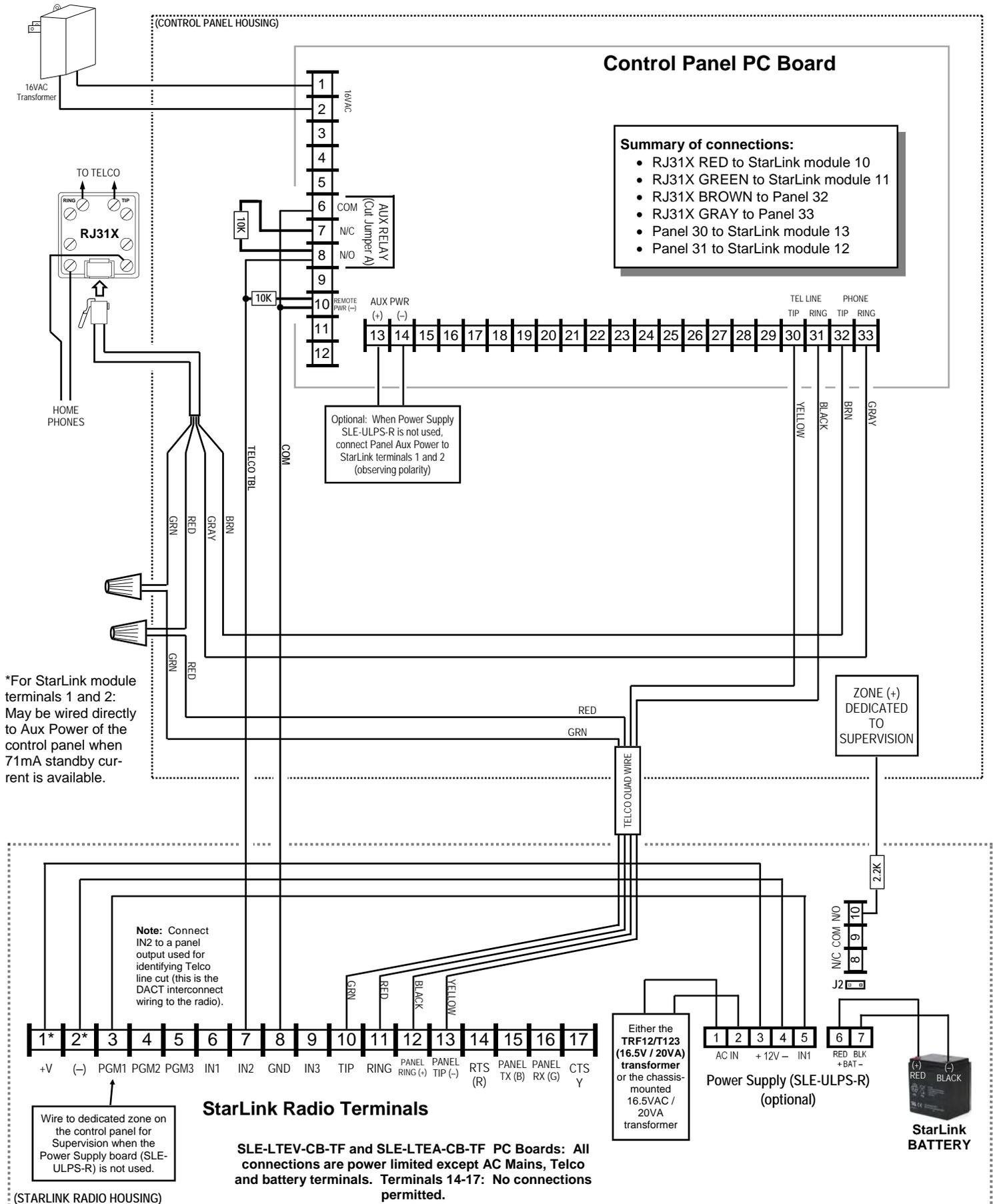
Either the **TRF12/T123 (16.5V / 20VA) transformer** or the chassis-mounted 16.5VAC / 20VA transformer

(STARLINK RADIO HOUSING)

*Refer to section "**SUPPLYING POWER**".

Wiring Diagram for PRIMARY Reporting Configuration
GEMC-32, GEMC-96, GEMC-128 and GEMC-255 Control Panels
(Use when telephone line is NOT available)

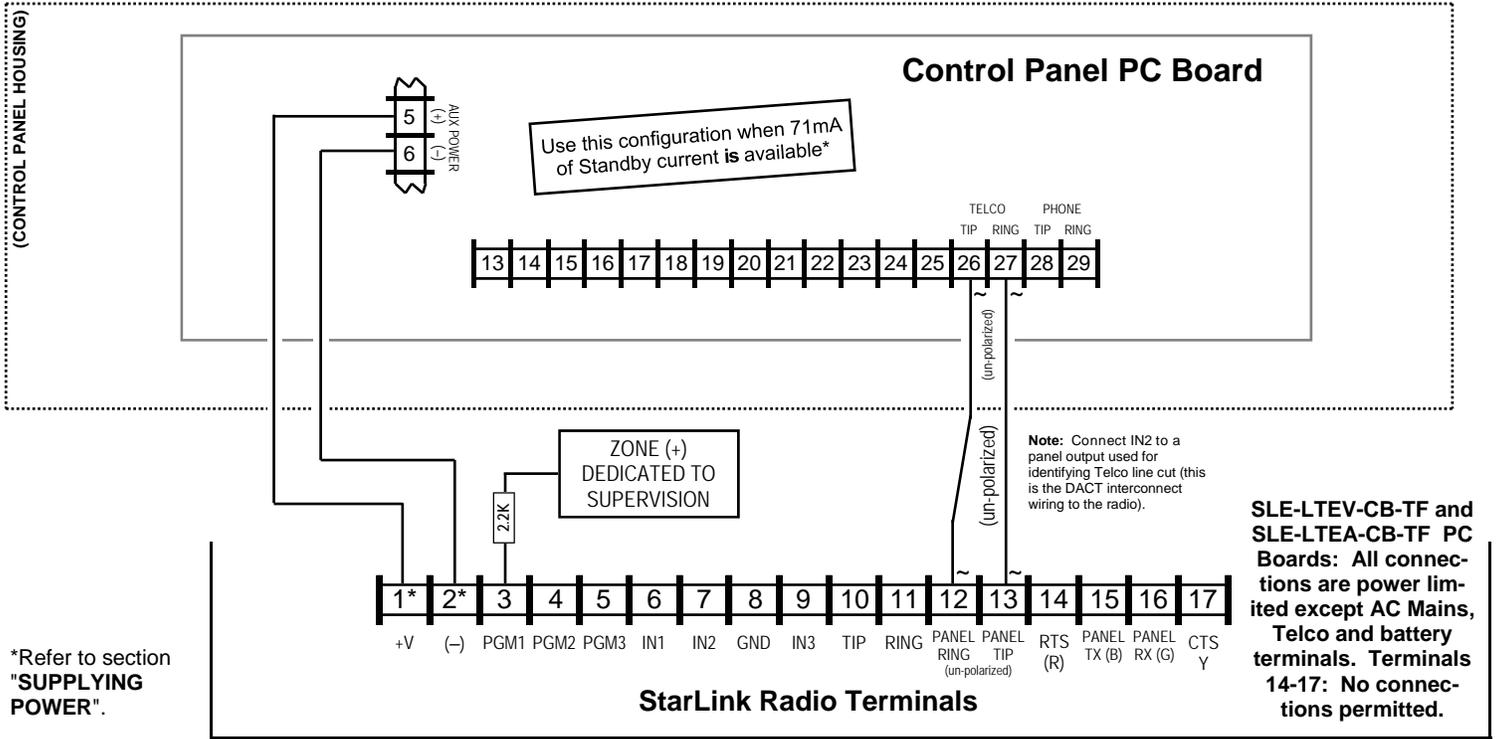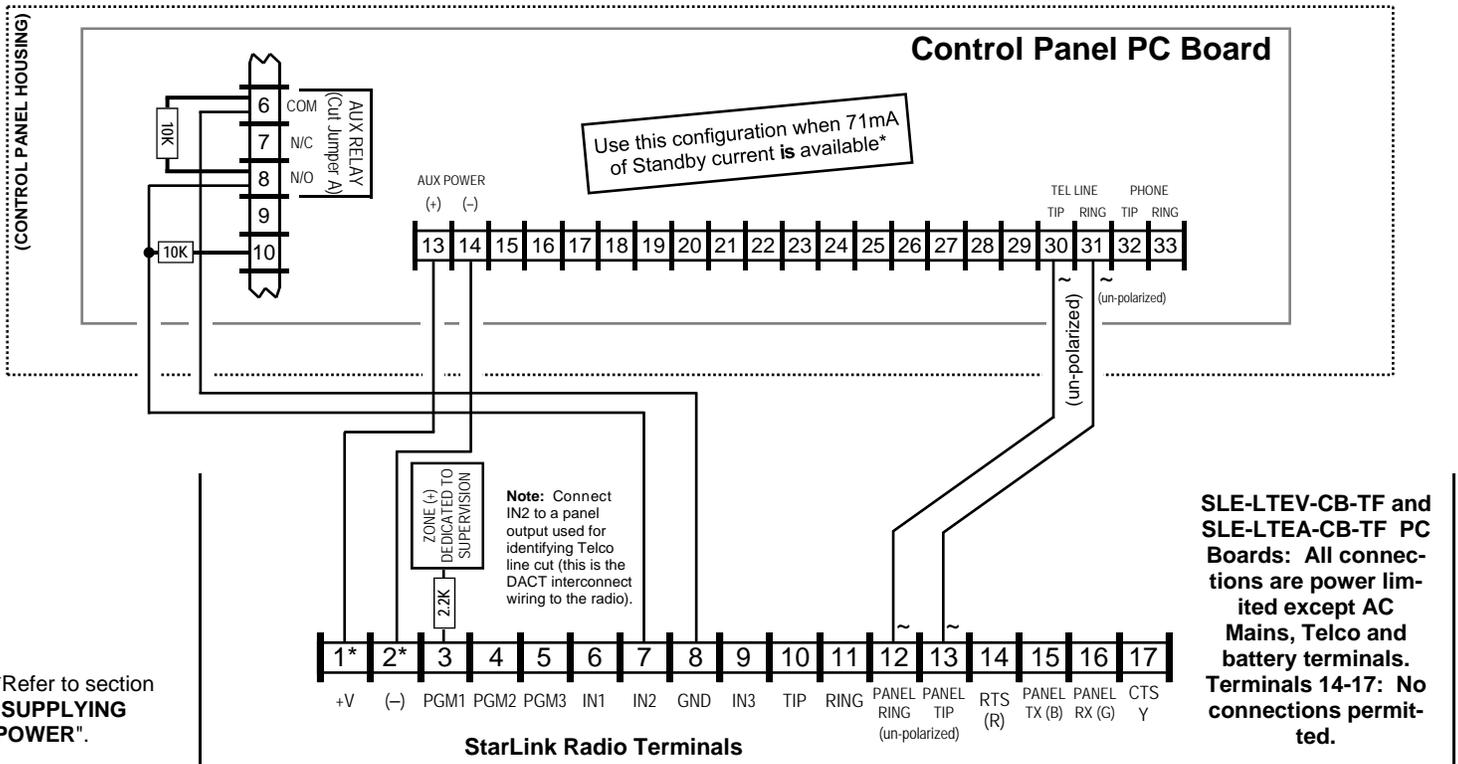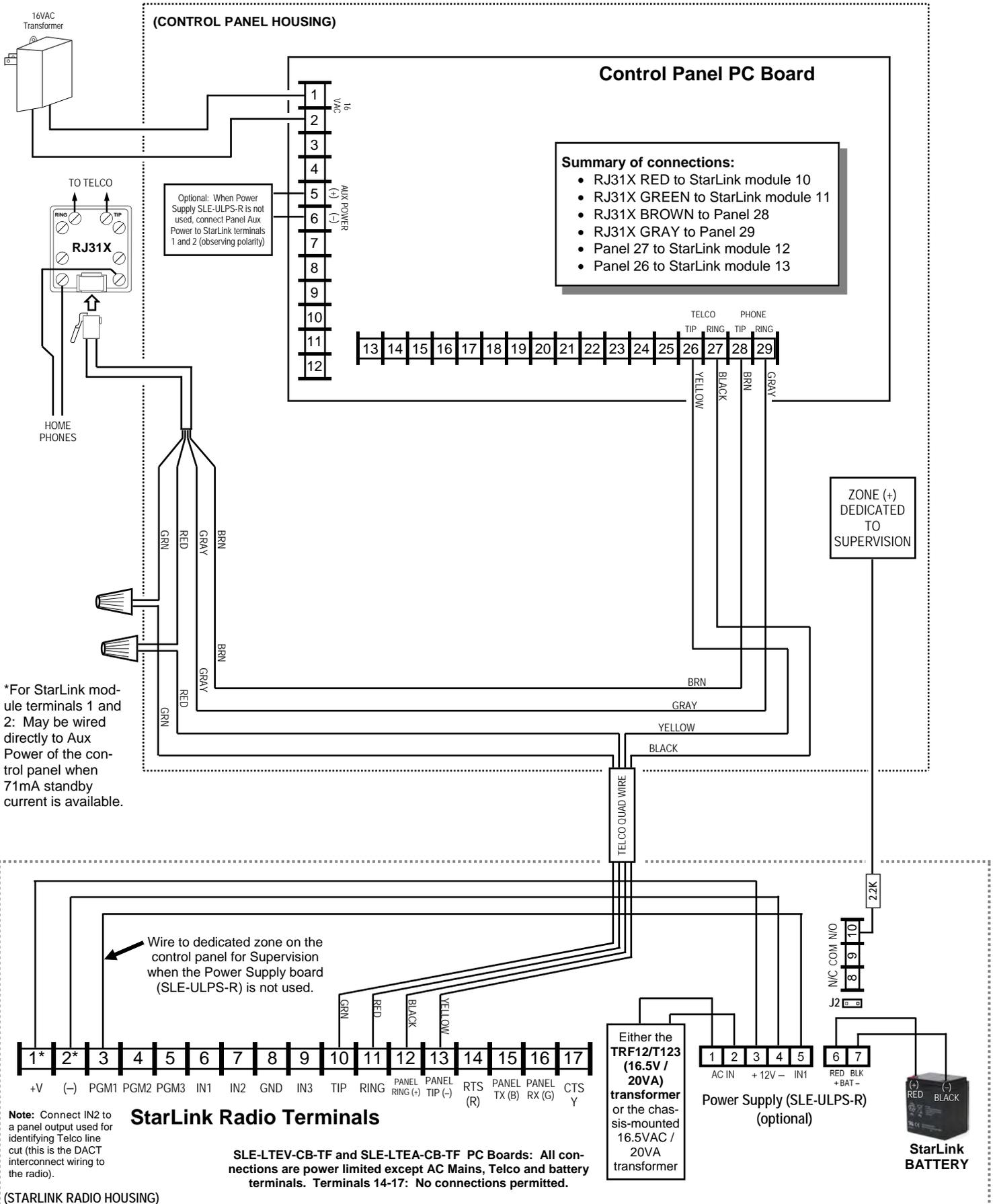**Special Wiring Instructions for the GEMC-F8ZCPIM as a Monitor Zone Only**

When PGM1 is wired to a GEMC-F8ZCPIM zone, replace the 2.2k ohm EOL resistor with a 560ohm **1/2 watt** min EOL resistor. Connect PGM1 to the negative terminal of the zone. When PGM2 and/or PGM3 are wired to a GEMC-F8ZCPIM zone, replace the 2.2k ohm EOL resistor with two 1K ohm **1/4 watt** min EOL resistors. Connect the PGM wire to the common wire of the two resistors in series.

Note: Connect IN2 to a panel output used for identifying Telco line cut (this is the DACT interconnect wiring to the radio).

SLE-LTEV-CB-TF and SLE-LTEA-CB-TF PC Boards: All connections are power limited except AC Mains, Telco and battery terminals. Terminals 14-17: No connections permitted.

*Refer to section "**SUPPLYING POWER**".

Wiring Diagram for PRIMARY Reporting Configuration
GEMC-32, GEMC-96, GEMC-128 and GEMC-255 Control Panels
(Use when telephone line is NOT available)

SLE-LTEV-CB-TF and SLE-LTEA-CB-TF PC Boards: All connections are power limited except AC Mains, Telco and battery terminals. Terminals 14-17: No connections permitted.

*Refer to section "**SUPPLYING POWER**".

Wiring Diagram for BACKUP Reporting Configuration
GEM-X255 / GEM-P9600 / GEM-P3200 Control Panels

(CONTROL PANEL HOUSING)

Control Panel PC Board

16VAC Transformer

1
2   16VAC
3
4
5
6   COM
7   N/C   AUX RELAY (Cut Jumper A)
8   N/O
9
10   REMOTE PWR (−)
11
12

TO TELCO

RING   TIP

RJ31X

HOME PHONES

10K

10K

Summary of connections:
- RJ31X RED to StarLink module 10
- RJ31X GREEN to StarLink module 11
- RJ31X BROWN to Panel 32
- RJ31X GRAY to Panel 33
- Panel 30 to StarLink module 13
- Panel 31 to StarLink module 12

AUX PWR
(+) (−)
13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33

TEL LINE
TIP RING

PHONE
TIP RING

YELLOW   BLACK   BRN   GRAY

Optional: When Power Supply SLE-ULPS-R is not used, connect Panel Aux Power to StarLink terminals 1 and 2 (observing polarity)

TELCO TBL

COM

GRN RED GRAY BRN

GRN RED

*For StarLink module terminals 1 and 2: May be wired directly to Aux Power of the control panel when 71mA standby current is available.

RED
GRN

ZONE (+) DEDICATED TO SUPERVISION

2.2K

TELCO QUAD WIRE

N/C COM N/O
8 9 10
J2

Note: Connect IN2 to a panel output used for identifying Telco line cut (this is the DACT interconnect wiring to the radio).

GRN RED BLACK YELLOW

1*	2*	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
+V	(−)	PGM1	PGM2	PGM3	IN1	IN2	GND	IN3	TIP	RING	PANEL RING (+)	PANEL TIP (−)	RTS (R)	PANEL TX (B)	PANEL RX (G)	CTS Y

Either the **TRF12/T123 (16.5V / 20VA) transformer** or the chassis-mounted 16.5VAC / 20VA transformer

1 2 3 4 5
AC IN   + 12V −   IN1

Power Supply (SLE-ULPS-R) (optional)

6 7
RED BLK
+ BAT −

RED   BLACK

StarLink BATTERY

Wire to dedicated zone on the control panel for Supervision when the Power Supply board (SLE-ULPS-R) is not used.

StarLink Radio Terminals

SLE-LTEV-CB-TF and SLE-LTEA-CB-TF PC Boards: All connections are power limited except AC Mains, Telco and battery terminals. Terminals 14-17: No connections permitted.

(STARLINK RADIO HOUSING)

*Refer to section "**SUPPLYING POWER**".

Wiring Diagram for PRIMARY Reporting Configuration
GEM-816 / GEM-P1632 / GEM-P1664 Control Panels
(Use when telephone line is NOT available)

(CONTROL PANEL HOUSING)

Control Panel PC Board

5 AUX POWER (+)
6 (−)

Use this configuration when 71mA of Standby current **is** available*

TELCO TIP RING | PHONE TIP RING

| 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 |

(un-polarized)

ZONE (+) DEDICATED TO SUPERVISION

2.2K

(un-polarized)

Note: Connect IN2 to a panel output used for identifying Telco line cut (this is the DACT interconnect wiring to the radio).

SLE-LTEV-CB-TF and SLE-LTEA-CB-TF PC Boards: All connections are power limited except AC Mains, Telco and battery terminals. Terminals 14-17: No connections permitted.

| 1* | 2* | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| +V | (−) | PGM1 | PGM2 | PGM3 | IN1 | IN2 | GND | IN3 | TIP | RING | PANEL RING (un-polarized) | PANEL TIP | RTS (R) | PANEL TX (B) | PANEL RX (G) | CTS Y |

*Refer to section "**SUPPLYING POWER**".

StarLink Radio Terminals

Wiring Diagram for PRIMARY Reporting Configuration
GEM-X255 / GEM-P9600 / GEM-P3200 Control Panels
(Use when telephone line is NOT available)

(CONTROL PANEL HOUSING)

Control Panel PC Board

6 COM
7 N/C AUX RELAY (Cut Jumper A)
8 N/O
9
10

10K
10K

AUX POWER (+) (−)

Use this configuration when 71mA of Standby current **is** available*

TEL LINE TIP RING | PHONE TIP RING

| 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 |

(un-polarized)

ZONE (+) DEDICATED TO SUPERVISION

2.2K

Note: Connect IN2 to a panel output used for identifying Telco line cut (this is the DACT interconnect wiring to the radio).

(un-polarized)

SLE-LTEV-CB-TF and SLE-LTEA-CB-TF PC Boards: All connections are power limited except AC Mains, Telco and battery terminals. Terminals 14-17: No connections permitted.

| 1* | 2* | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| +V | (−) | PGM1 | PGM2 | PGM3 | IN1 | IN2 | GND | IN3 | TIP | RING | PANEL RING (un-polarized) | PANEL TIP | RTS (R) | PANEL TX (B) | PANEL RX (G) | CTS Y |

*Refer to section "**SUPPLYING POWER**".

StarLink Radio Terminals

Wiring Diagram for BACKUP Reporting Configuration
GEM-816 / GEM-P1632 / GEM-P1664, Freedom F-64 Control Panels

(CONTROL PANEL HOUSING)

16VAC Transformer

Control Panel PC Board

TO TELCO

RING   TIP

RJ31X

Optional: When Power Supply SLE-ULPS-R is not used, connect Panel Aux Power to StarLink terminals 1 and 2 (observing polarity)

Summary of connections:
- RJ31X RED to StarLink module 10
- RJ31X GREEN to StarLink module 11
- RJ31X BROWN to Panel 28
- RJ31X GRAY to Panel 29
- Panel 27 to StarLink module 12
- Panel 26 to StarLink module 13

16 VAC (terminals 1, 2)

AUX POWER (+) (−) (terminals 5, 6)

Terminals 3, 4, 7, 8, 9, 10, 11, 12

HOME PHONES

TELCO TIP RING   PHONE TIP RING

| 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 |

YELLOW BLACK BRN GRAY

ZONE (+) DEDICATED TO SUPERVISION

GRN RED GRAY BRN

BRN

GRAY

*For StarLink module terminals 1 and 2: May be wired directly to Aux Power of the control panel when 71mA standby current is available.

BRN

GRAY

RED

GRN

BRN

GRAY

YELLOW

BLACK

TELCO QUAD WIRE

2.2K

N/C COM N/O
8   9   10

J2

Wire to dedicated zone on the control panel for Supervision when the Power Supply board (SLE-ULPS-R) is not used.

GRN RED BLACK YELLOW

Either the **TRF12/T123 (16.5V / 20VA) transformer** or the chassis-mounted 16.5VAC / 20VA transformer

1 2 | 3 4 5
AC IN | +12V − IN1

6 7
RED BLK
+BAT −

1*	2*	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
+V	(−)	PGM1	PGM2	PGM3	IN1	IN2	GND	IN3	TIP	RING	PANEL RING (+)	PANEL TIP (−)	RTS (R)	PANEL TX (B)	PANEL RX (G)	CTS Y

Power Supply (SLE-ULPS-R) (optional)

RED BLACK

StarLink BATTERY

Note: Connect IN2 to a panel output used for identifying Telco line cut (this is the DACT interconnect wiring to the radio).

StarLink Radio Terminals

SLE-LTEV-CB-TF and SLE-LTEA-CB-TF PC Boards: All connections are power limited except AC Mains, Telco and battery terminals. Terminals 14-17: No connections permitted.

(STARLINK RADIO HOUSING)

*Refer to section "**SUPPLYING POWER**".

Input Configuration Options

Option	Application	Armed			Disarmed			Resend TBL every 24 Hrs.	NOC Inputs "Function" Selection	Comments
		Cut Wire*	Open	Short	Cut Wire*	Open	Short			
1	FACP *with* DACT Use IN2 or IN3 only for trouble. Panel reports via dialer capture, but Linecut for DACT interconnection wiring to the radio reports via an input on radio.	TBL	TBL	TBL	-	-	-	Yes	Supervised Fire Trouble (Linecut)	Requires two EOLRs. Radio reports in CID (use jumpers 4/5)
		--	--	--	-	-	-	Yes	User Defined Unsupervised Fire Trouble (Linecut)	Non-supervised (use conduit max 20 feet Commercial Fire or 3 feet Residential Fire) (remove jumpers 4/5).
2	FACP *with* DACT Use IN1 (not supervised) either for trouble <u>or</u> alarm. Panel has trouble (or alarm) relay that closes on the condition.	-	TBL (or ALARM)	-	-	-	-	Yes	Un-Supervised Fire Trouble (use 'User Defined' selection for Alarms)	Non-supervised (use conduit activation requires +12V or 12/24V)
3	FACP *without* DACT Use IN2 or IN3 for both Alarm and Trouble on one input. Panel has alarm and trouble relay outputs.	TBL	TBL	ALARM	-	-	-	Yes	Supervised Fire Alarm/Trouble	Requires two EOLRs. The Trouble relay N.O. contact (de-energized opens) is put in series with one EOLR. Alarm relay put across both EOLR and trouble relay.
4	BURG *with* DACT Use IN2 or IN3 for only trouble reporting. Panel reports via dialer capture but Linecut for DACT interconnection wiring to the radio reports via an input on radio.	ALARM	ALARM	ALARM	TBL	TBL	TBL	No	Supervised Burg-Linecut	Requires two EOLRs. Program panel to report Open/Close (radio remembers last state of panel for Napco panels when used with local download cable).
5	BURG *without* DACT Use IN2 or IN3 for both Alarm and Trouble. Panel has alarm and Trouble Relay/PGM outputs. Two EOLRs are needed since for UL Burg it is required to detect both wire breaks and shorts.	ALARM	TBL	ALARM	TBL	TBL	TBL	No	Supervised Burg Alarm/Trouble	Requires two 10K EOLRs. Three off normal conditions can be detected, namely, cut wire, shorted loop and one of the EOLR's having a closed contact in series. The Trouble relay N.O. contact (de-energized opens) is put in series with one EOLR. The Alarm relay N.O. contact is put across both EOLRs and trouble relay. The panel Armed or Disarmed state is determined by a separate input (see Option 6 in this table below for armed status operation). (**Note:** The Alarm relay should NOT activate on 24hr zones.)
6	BURG *without* DACT: **Armed Status** Use IN2 or IN3 for Armed Status input. Two EOLRs are needed since for UL Burg it's required to supervise for both wire breaks and shorts.	TAMPER ALARM	N/A	ALARM	TBL	N/A	TBL	No	Supervised Arm/Disarm Status	Requires two 10K EOLRs. A relay or PGM for Arm/Disarm status goes in series with one EOLR where open is disarmed and closed is armed. The other EOLR is across the series combination (relay for Arm/Disarm and first EOLR) to provide the loop supervision.

REN = 0. The *Ringer Equivalence Number* (**REN**) indicates the maximum number of devices allowed to be connected to a telephone interface. The termination of an interface may consist of any combination of devices subject only to the requirement that the sum of the **REN**s of all the devices not exceed five (5).

***Note:** On line cut, PGM1 will activate.

Tamper Switch Mounting Instructions

WIRING THE TAMPER SWITCHES
(REQUIRED FOR UL COMMERCIAL BURGLARY)

Before installation and wiring, the tamper switches (part **GEM-Tamperkit**) are normally open devices; when placed into the circuit and into operation, they are normally closed devices.

Tamper switches protect against the opening of the radio cabinet door or the removal of the radio enclosure from the wall or other mounting surface.

There are two places in the cabinet to mount tamper switches: (1) To prevent cabinet removal from the wall, located on the left side of the cabinet there is one knockout for the switch plunger and three mounting holes (in the enclosure sheet metal). (2) To protect the cabinet door, mount a tamper switch in the three mounting holes (in the enclosure sheet metal). When mounted, the switch button contacts the inside surface of the door. **Note:** Be sure to alert the user that opening the enclosure door will cause a tamper alarm.

Wiring a normally closed sensor loop for tamper supervision, wire to a zone on the control panel.
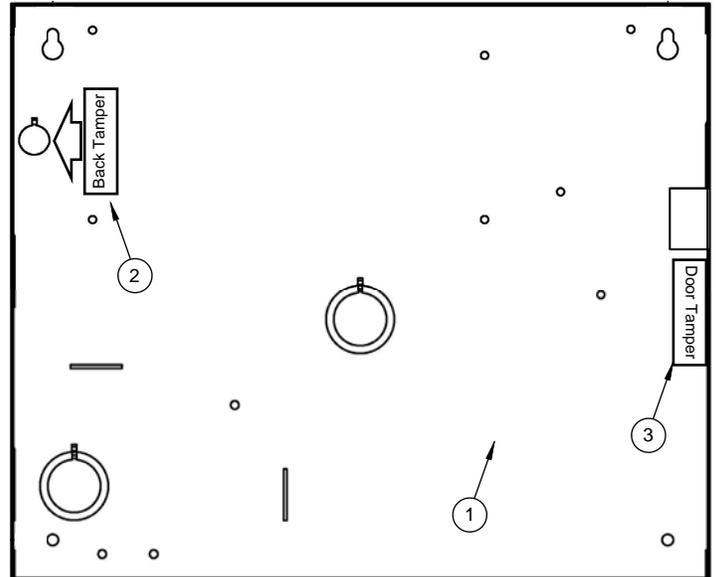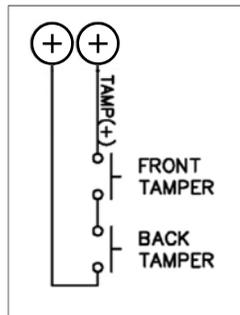
VIEW OF TAMPER SWITCHES:
(1) = ENCLOSURE BASE;
(2-BACK) = TAMPER SWITCH TO PREVENT REMOVAL FROM WALL;
(3-DOOR) = TAMPER SWITCH TO PROTECT THE ENCLOSURE DOOR

GEM-Tamperkit consists of	Description	QTY
SC206LF	Slotted Pan Head 6-32 x 3/4 Machine Screw	6
SW105	Tamper Switch	2

NYCFD Conditions of Acceptability

1. Only radios Listed for UL 864 Commercial Fire are NYCFD approved.
2. All installations must be dual path (DACT and Radio) and DACT shall be primary.
3. Each path must be supervised not exceeding 24 hours.
4. Failure of either path shall be annunciated at the protected premises.
5. Failure of either path shall cause a trouble to be sent to the central station within 5 minutes on the other communications path.
6. When a remote antenna is used, the antenna transmission line shall be installed in rigid metal, intermediate metal, or electrical metallic tubing in accordance with NFPA70, NEC.
7. Interconnections between elements of transmitting equipment, including any antennas, shall be supervised either to cause an indication of failure at the protected premises or to transmit a trouble signal to the supervising station.
8. All UL requirements must be complied with.

Optional Alternate Methods for Commercial Fire Branch Circuit Power Connections to the SLE Charger Board

COVER

EXAMPLE OF CONDUIT LOCATION

EXAMPLE OF CONDUIT LOCATION

8 IN.

8 IN.

FRONT VIEW

Minimum Pull Box Dimensions

Min. 4 inch with flush mount receptacle and min. 6 inch with surface mount receptacle

4 to 6 IN.

SIDE VIEW
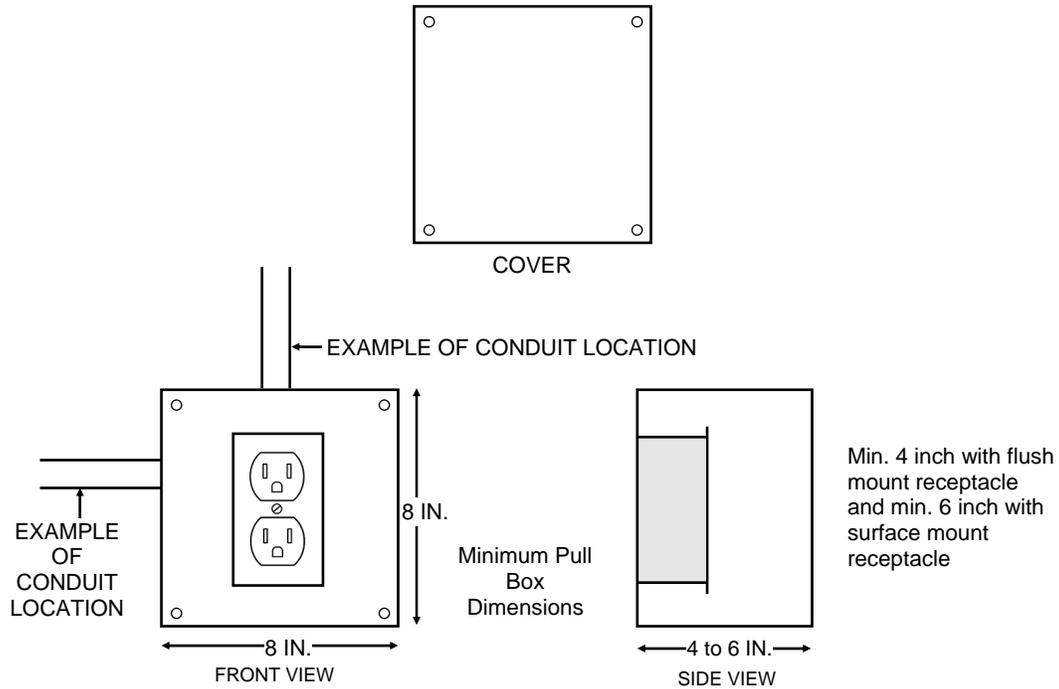
UL LISTED ELECTRICAL PULL BOX WITH LISTED OUTLET BOX AND NON-SWITCHED RECEPTACLE ON DEDICATED FIRE ALARM SYSTEM BRANCH CIRCUIT

CONDUIT TRANSFORMER OUTPUT WIRING

UL LISTED PULL BOX

WALL

UL LISTED NAPCO TRF12/T123 TRANSFORMER FOR CONNECTION TO SLE CHARGER BOARD

UL LISTED SURFACE OR FLUSH MOUNT OUTLET BOX AND NON-SWITCHED RECEPTACLE

CONDUIT 120V

Maintain a minimum of 1/4 inch separation of circuits (transformer secondary wiring from 120V branch circuit).
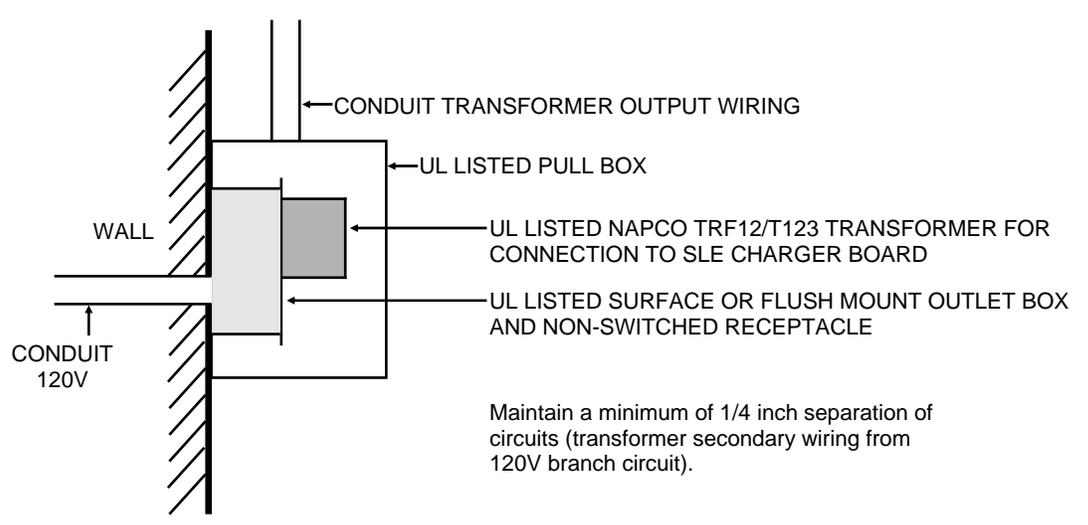
TRANSFORMER SECONDARY WIRING CONDUIT LIMITED TO 20 FEET MAXIMUM LENGTH

NAPCO LIMITED WARRANTY

NOTE: This equipment has been tested and found to comply with the limits for a Class B Unintentional Radiator, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the Instruction Manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of more of the following measures: 1. Reorient or relocate the receiving antenna; 2. Increase the separation between the equipment and receiver; 3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected; 4. Consult the dealer or an experienced radio/TV technician for help.
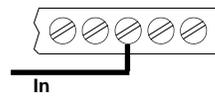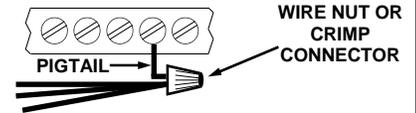
IMPORTANT WIRING METHODS

For single-conductor terminal blocks (like the type shown at left), to terminate more than one conductor to a terminal, use the wiring methods shown at right:
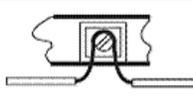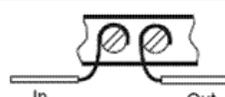
In   **Out**

Incorrect

In

PIGTAIL →
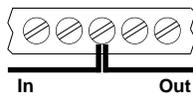
WIRE NUT OR CRIMP CONNECTOR

Correct -- Single incoming and/or pigtail with wire nut / crimp connectors

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For "barrier" type terminal blocks (like the type shown at left), to terminate two conductors to a terminal, use the wiring methods shown at right:
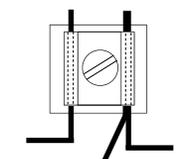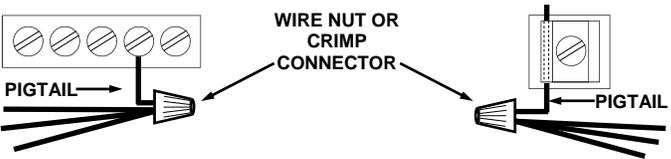
Incorrect

In   Out   In   Out   **In**   **Out**

Correct -- Separate incoming and outgoing conductors

To terminate more than two conductors or conductors of different wire sizes to a terminal, use the "pigtail" type wiring method as shown at right. Use insulated wire for the pigtail, and firmly secure the conductors to the pigtail using an appropriate wire nut or crimp connector for the number and gauge of conductors used.

Incorrect

WIRE NUT OR CRIMP CONNECTOR

PIGTAIL →   ← PIGTAIL

Correct -- Use pigtail and wire nut / crimp connector