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333 Bayview Avenue  
Amityville, New York 11701  
For Sales and Repairs, (800) 645-9445  
For Technical Service, (800) 645-9440 or visit us at  
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# StarLink™ SLE-LTE Residential / Commercial Series Alarm Communicators INSTALLATION INSTRUCTIONS



WI2227.aLF 5/18

## 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-FIRE** is 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. For Commercial installations, mount the unit to a single-, dual-, or three-gang electrical box and route the wires through the back knockout(s), or as specified by local codes. **See WI2140 (available on the NOC) for programming information.**

The SLE-LTE Series radios use proprietary 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 Sur-Gard System II 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. In addition, all models are powered directly from the control panel.

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

The model names are as follows:

**SLE-LTEV** - Commercial / Residential Burglary and Residential Fire alarm capture Communicator, SIM card included. Black plastic enclosure.

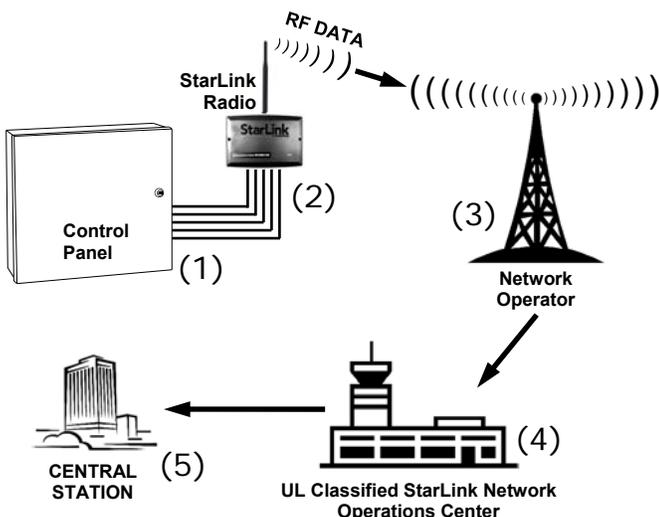
**SLE-LTEV-8D** - Commercial / Residential Burglary and Residential Fire capture Communicator. Supports remote downloading to the Gemini GEM-P400, GEM-P800, GEMP-801, Express XP-400 and XP-600 series control panels. SIM card included. Black plastic enclosure.

**SLE-LTEV-FIRE** - Commercial / Residential Fire and Burglary alarm capture Communicator. SIM card included. Red plastic enclosure. Rated 12/24VDC input.

## 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 and 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.**



## ADDITIONAL COMPONENTS

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

**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. For LTE radios where an External Antenna needs to be installed outside of the room in which the radio is installed (maximum 30 meters (98 feet) in Residential applications), please use RF Transmitter Board

## 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
- Commercial Fire Radios CSFM Listed and NYC FD COA #6213

LTEV models are **Verizon® Network Certified**

9SLELTEEXAPSLD available from our Customer Service Department, if not provided. The 9SLELTEEXAPSLD is identified by "two red dots" located on the lower right corner of the board. See WI2239 included with the 9SLELTEEXAPSLD for the simple installation procedure.

- Mounting: Plastic housing includes three keyhole slots for triple gang boxes (see scale template on page 20);

**Environmental**

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

**SPECIFICATIONS**

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

**Electrical Ratings (all models powered by the control panel)\***

- Input Voltage: 10-15VDC (power-limited output from Listed control panel). **Note:** Model **SLE-LTEV-FIRE** is rated 10-25VDC input.
- Input Current: 10V = 90mA, 12V = 71mA, 15V = 63mA and 25VDC = 68mA with peak RF transmission current of 200mA (80mA with peak RF transmission current of 200mA for model **SLE-LTEV-8D**).

**Electrical Ratings for the IN 1 Burg/Fire Input:**

- Input Voltage: 9-15VDC. **Note:** Model **SLE-LTEV-FIRE** is 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:** Model **SLE-LTEV-FIRE** is 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:** Model **SLE-LTEV-FIRE** is rated max 25VDC output.
- Maximum PGM Sink Current: 50mA (up to 15VDC), 25mA (15.1VDC - 25VDC)

**Physical (W x H x D)**

- Plastic Housing: 8 x 5<sup>-29</sup>/<sub>64</sub> x 1½" (20.3 x 13.9 x 3.8cm)

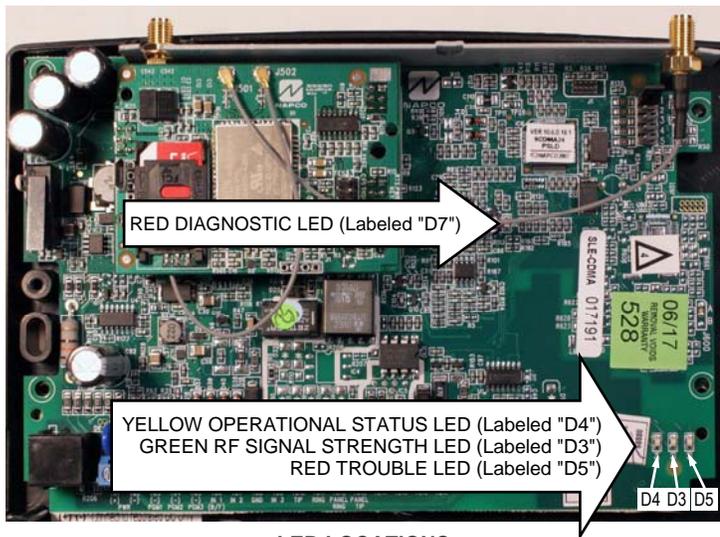
**TERMINAL DESCRIPTIONS**

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

- TB1: PWR (+12V) Note:** Model **SLE-LTEV-FIRE** is 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 control 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

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 8 "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.



**LED LOCATIONS**

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.** For this input to report to a central station, the StarLink radio must be configured with the central station telephone number and correct reporting formats and codes.

**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 21 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 control 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.

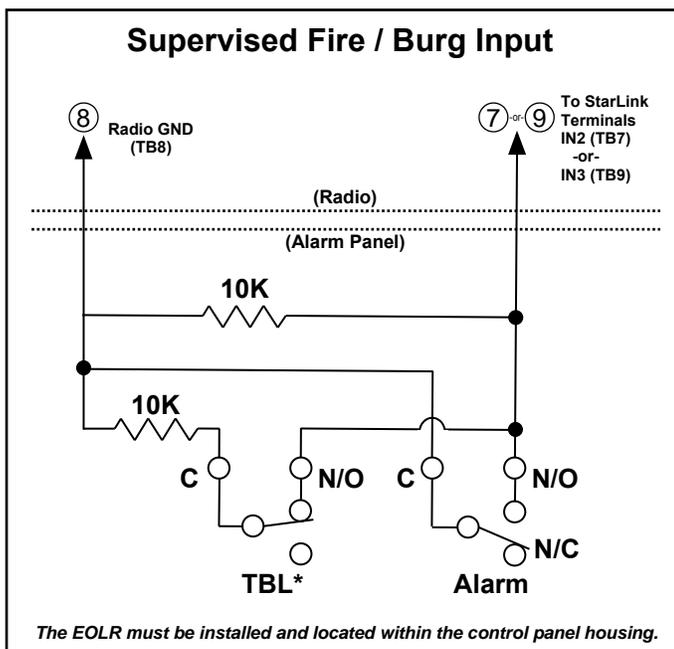
## LED DESCRIPTIONS

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

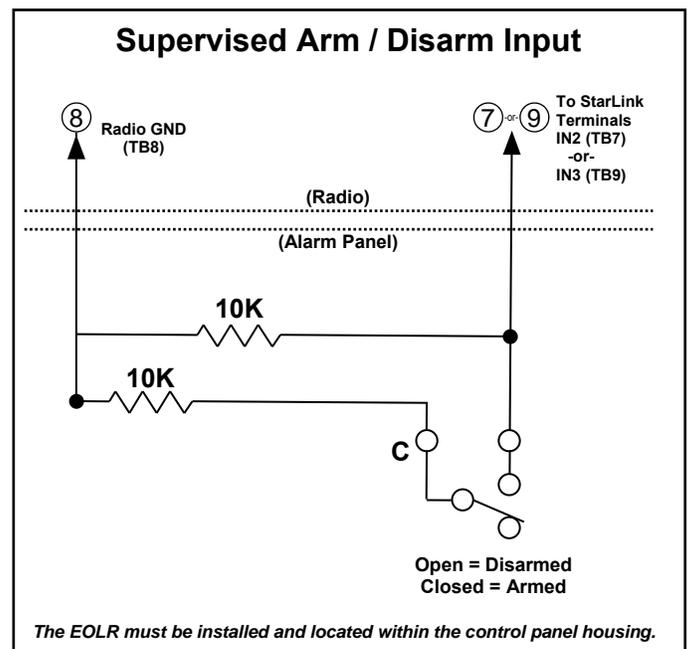
### GREEN RF SIGNAL STRENGTH LED

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 signal strength detected, it will blink the Signal Strength LED from 1 to 8 times, providing a signal strength indicator that is updated constantly and is always displayed.



\*Reverse polarity / energized state.



Refer to Coverage Table below.

**Green LED Operation**

Signal strength (as received by the radio) is displayed by this LED blinking 1 to 8 times at a constant rate (with a short delay between blink cycles). Acceptable power level is greater than or equal to -91dBm (minimum 4 blinks at the mounting location).

GREEN RF SIGNAL STRENGTH LED RADIO RECEIVER COVERAGE TABLE								
LED Blinks	8	7	6	5	4	3	2	1
Power (dBm)	-55	-65	-75	-85	-91	-95	-99	-105
	Stronger ..... Weaker							

**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 standby current 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 for selecting the required handshake / kissoff frequency in the NOC ([www.NapcoNOC.com](http://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.

**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](http://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](http://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 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 primary antenna.** Temporarily connect power to the radio from a fully charged 12V (4AH minimum) battery. DO NOT mount the StarLink radio at this time. Press **Tamper** switch to send a signal.
  - b. Position the unit in the desired mounting location,

STARLINK RADIO RELATED EVENT REPORT CODES (Contact ID by default)				
EVENT	AREA	CONTACT ID		PULSE 4/2
		CODE	ZONE #	
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.

#### Cover Tamper

The SLE-LTE series radios in the plastic housings are provided with a front tamper switch. **Note:** The tamper switch on the radio PC board is always functional and requires no programming.

## SIGNALS ORIGINATED AT THE NOC

NOC Originated Alarms	Contact ID Event Data Sent	Pulse Format Event Code Sent	Initiated By	Comments
Supervisory Fail	E356 A00 Zn000	99	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	98	Manually by dealer from the Management Center <b>Signal Log</b> screen (located at <a href="http://www.napconoc.com">www.napconoc.com</a> ). Sends test into CS receiver.	Same comment as above.
Press to Send Radio Test	Not Applicable Nothing sent to CS receiver	Not Applicable	Manually by dealer from the Management Center <b>Checkins</b> screen (located at <a href="http://www.napconoc.com">www.napconoc.com</a> ). Sends a command to the StarLink radio to force a check-in to the NOC.	----

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 LTE 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 4 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:** Model **SLE-LTEV-FIRE** is 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 15 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 15 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.

- 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 to the radio). **Do NOT** connect the StarLink radio terminals TB10-13 to house telephone lines (RJ31X modular plug wires, etc.).

### Wiring Methods

- Include a description of proper wiring methods (e.g. strip wire carefully to avoid exposed conductors after installation, etc.)
- Use of 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 NFPA70, 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). (**Note:** 80mA with peak RF transmission current of 200mA for model SLE-LTEV-8D).

### STEP 5: SIGNAL VERIFICATION

After triggering channels, use the StarLink radio Signal Verification to ensure that the StarLink radio Network has properly received the signals.

- **Verify Online:** To verify that the signals have been received by the StarLink radio LTE Network online, go to [www.napconoc.com](http://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**.

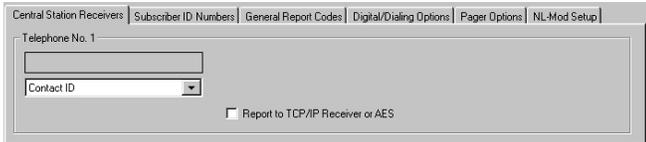
**IMPORTANT:** Verify that the signals transmitted by the StarLink radio have been properly received by your central station before leaving the premises.

**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.

## 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:



The radio can transmit to any central station capable of receiving SIA Contact ID via DACR technology or the DSC Sur-Gard Model System II via TCP/IP.

**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 page 5. **Note:** These event codes and zone numbers can be changed from the Management Center screen (located at [www.napconoc.com](http://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.

## 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 control panel, there are several methods, some of them are configurable at the Management Center screen ([www.napconoc.com](http://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 radio models 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.

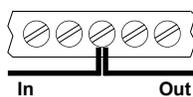
You can also wire to the positive terminal of the dedicated zone on a GEMC-EZM8. Thus when a radio trouble is detected, the radio PGM activates the control panel zone, and the control panel generates a trouble that is sent to the central station.

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.

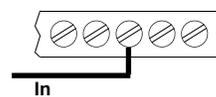
## IMPORTANT WIRING METHODS



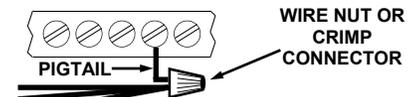
For single-conductor terminal blocks (like the type shown at left), to terminate more than one conductor to a terminal, use the wiring methods shown at right:



Incorrect



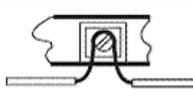
Correct -- Single incoming and/or pigtail with wire nut / crimp connectors



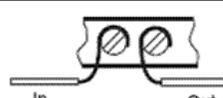
WIRE NUT OR CRIMP CONNECTOR



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:



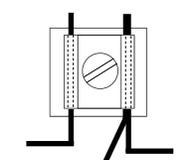
Incorrect



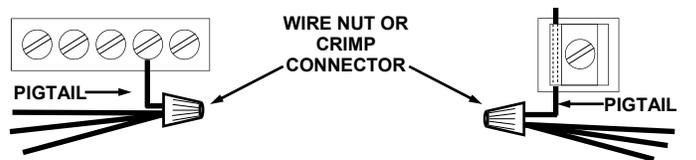
Correct -- Separate incoming and outgoing conductors



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

Correct -- Use pigtail and wire nut / crimp connector

## 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](http://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.***

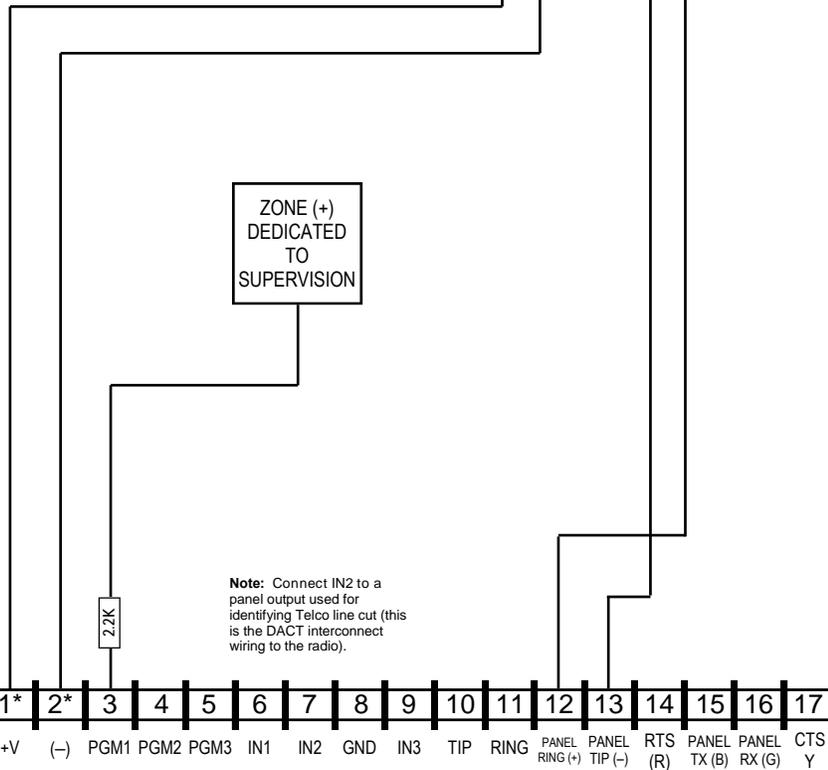
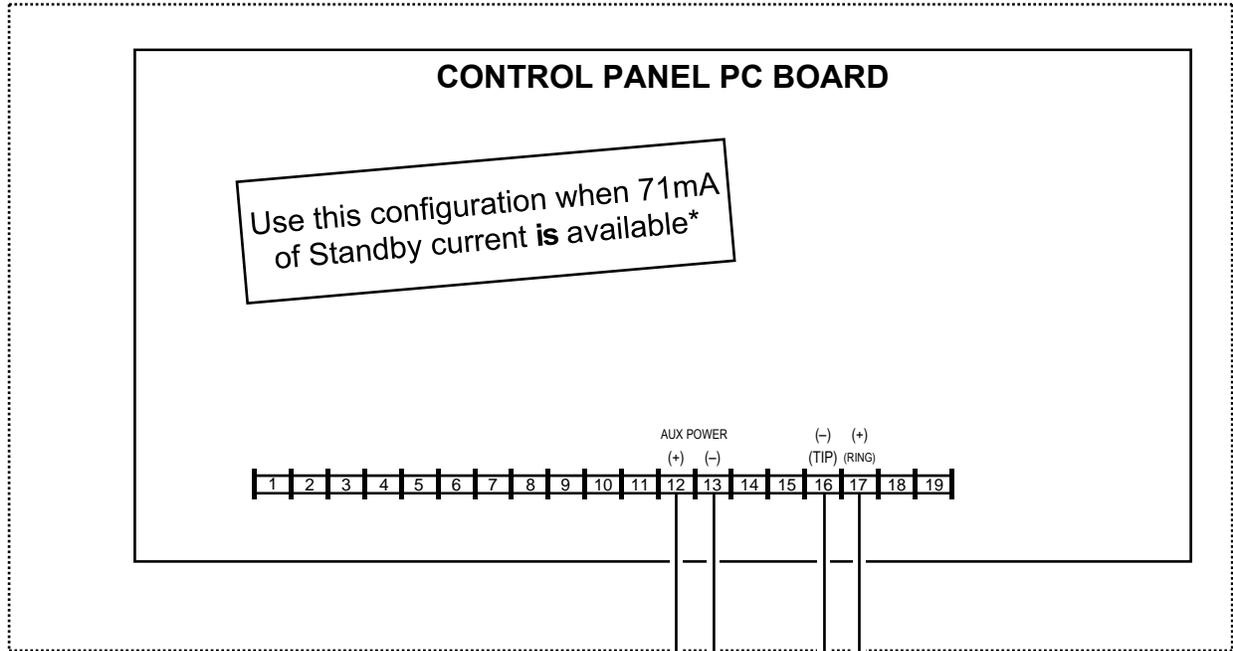
For Residential installations jumper 1 may be removed to permit uploading and downloading without a technician on site, however, the dealer is responsible for ensuring the system is operating correctly after any downloads or changes to the system.

## 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.

# Wiring Diagram for PRIMARY Reporting Configuration GEM-P400 / GEM-P800 / Express XP-400 / Express XP-600 Control Panels (Use when telephone line is NOT available)

(CONTROL PANEL HOUSING)



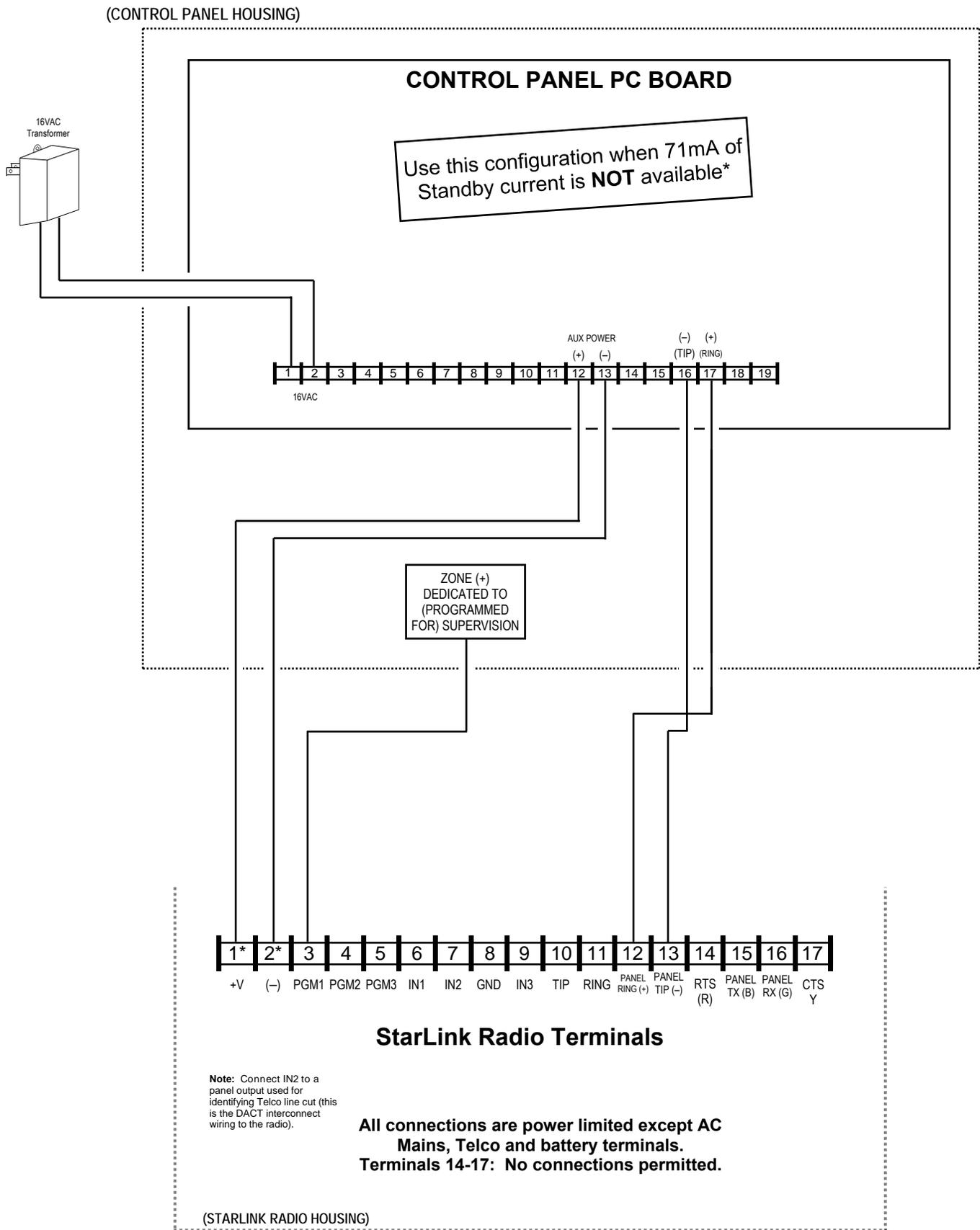
### StarLink Radio Terminals

**All connections are power limited except AC Mains, Telco and battery terminals.  
Terminals 14-17: No connections permitted.**

\*Refer to section "SUPPLYING POWER".

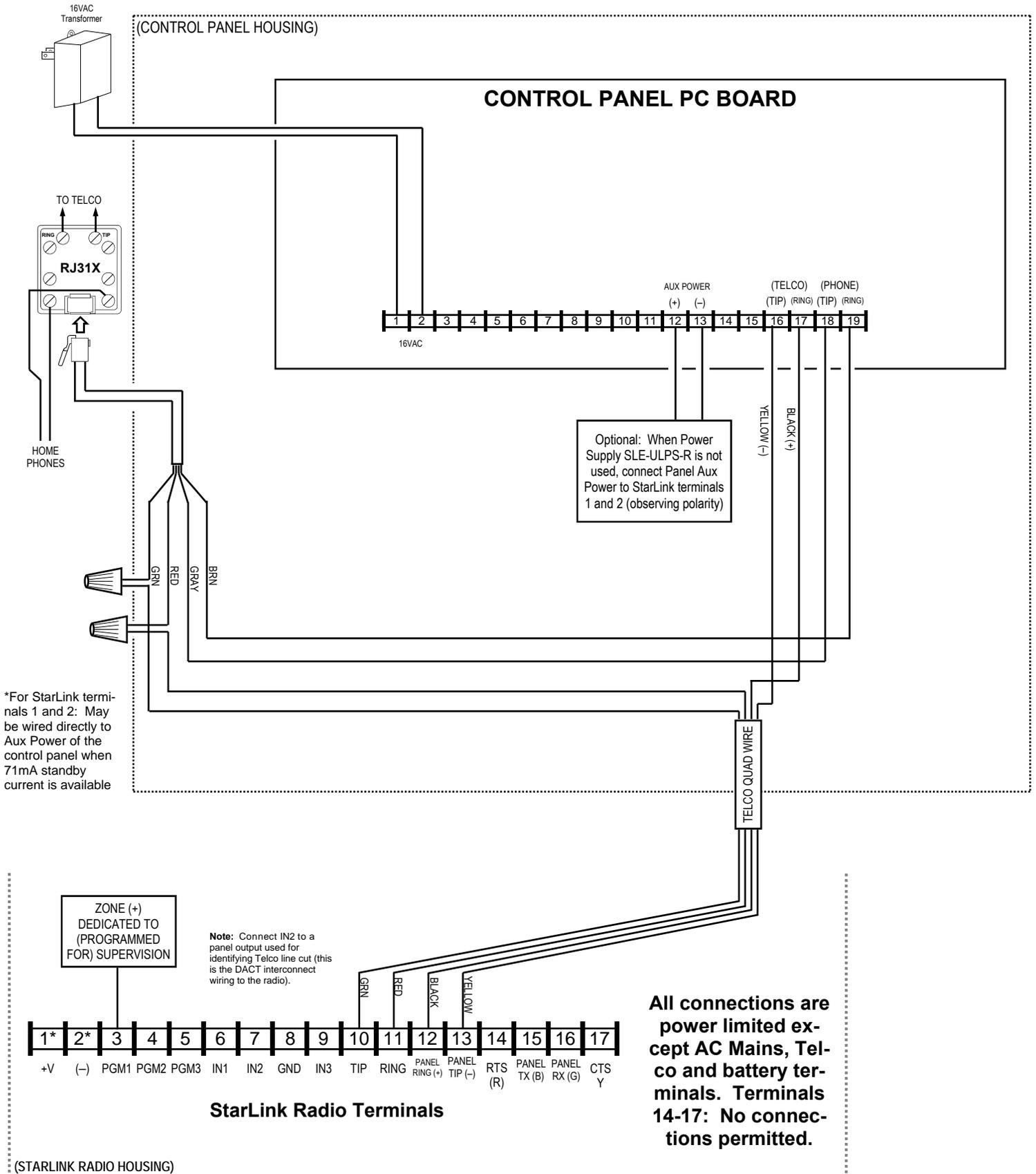
STARLINK RADIO HOUSING

# Wiring Diagram for PRIMARY Reporting Configuration GEM-P400 / GEM-P800 / Express XP-400 / Express XP-600 Control Panels (Use when telephone line is NOT available)



\*Refer to section "SUPPLYING POWER".

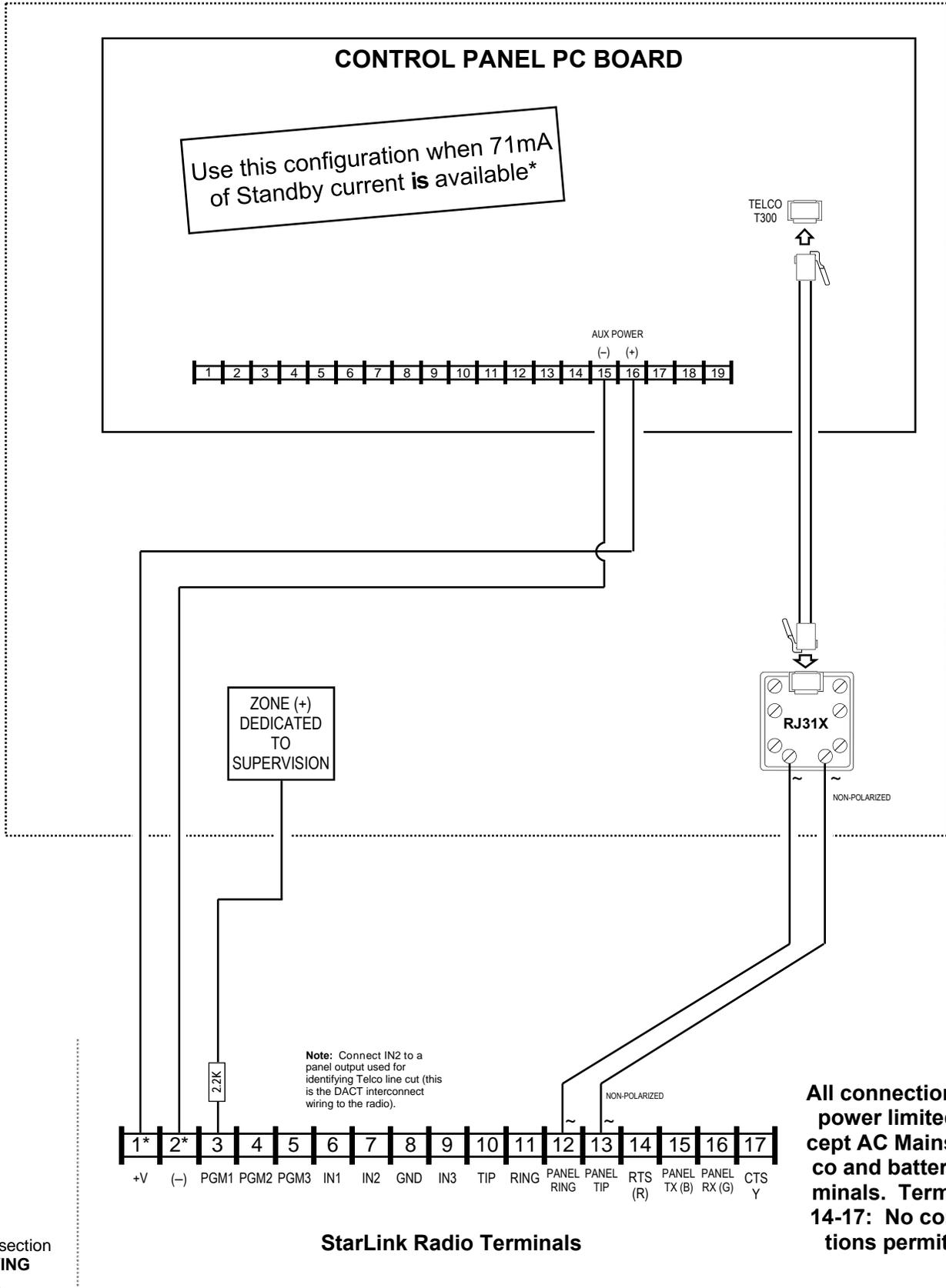
# Wiring Diagram for BACKUP Reporting Configuration GEM-P400 / GEM-P800 / Express XP-400 / Express XP-600 Control Panels



\*Refer to section "SUPPLYING POWER".

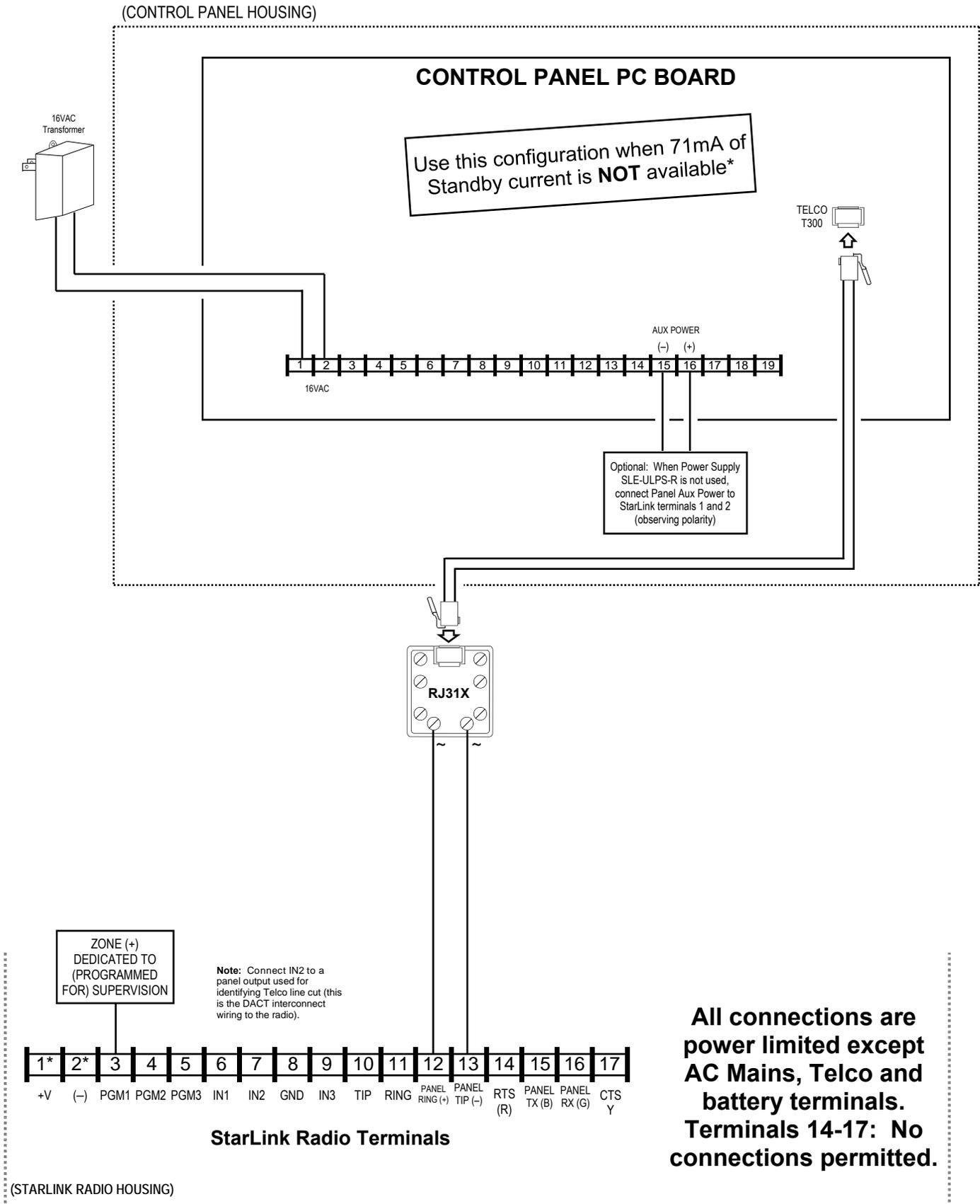
# Wiring Diagram for PRIMARY Reporting Configuration GEM-P801 Control Panel (Use when telephone line is NOT available)

(CONTROL PANEL HOUSING)



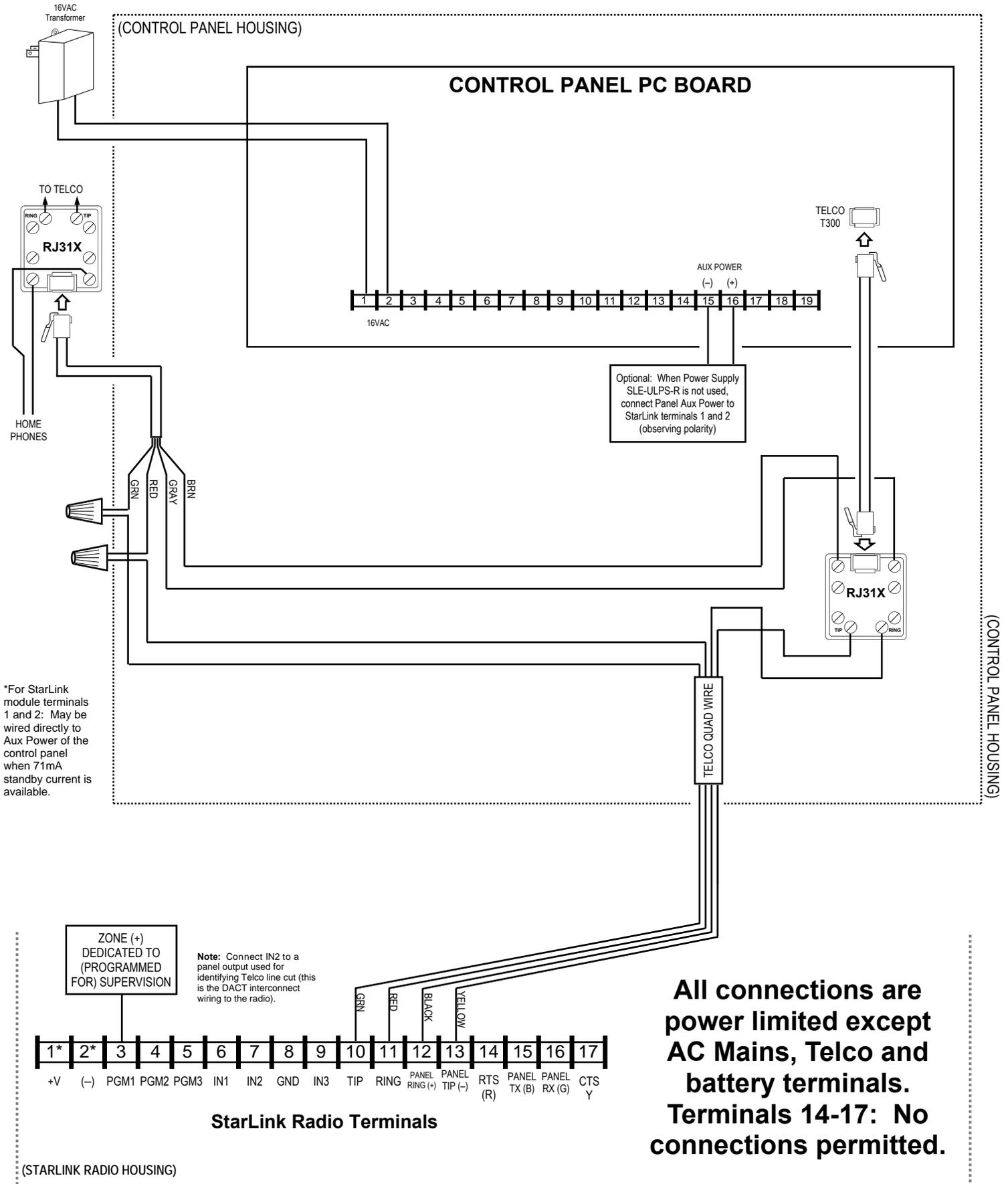
\*Refer to section "SUPPLYING POWER".

# Wiring Diagram for PRIMARY Reporting Configuration GEM-P801 Control Panel (Use when telephone line is NOT available)



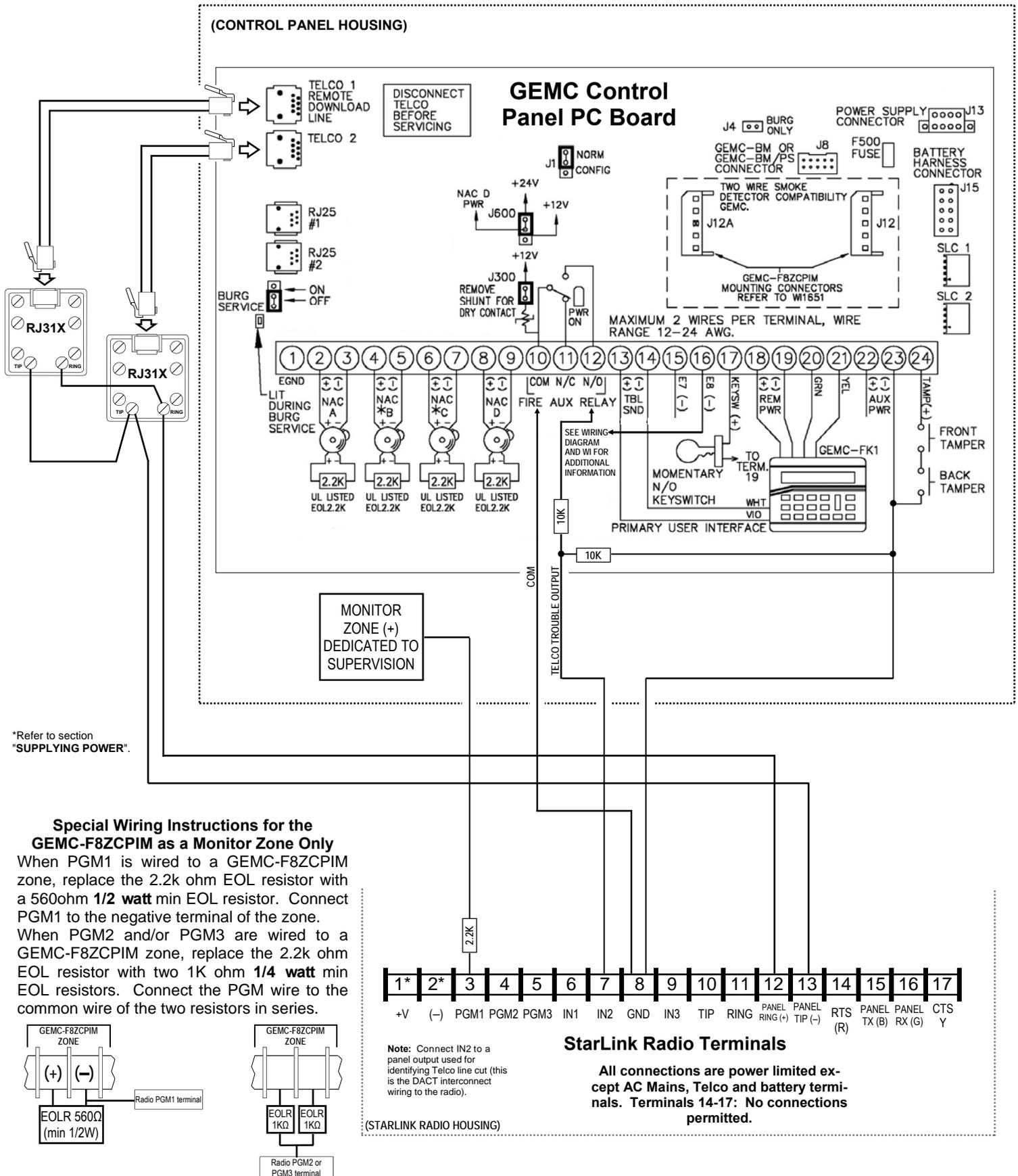
\*Refer to section "SUPPLYING POWER".

# Wiring Diagram for BACKUP Reporting Configuration GEM-P801 Control Panel

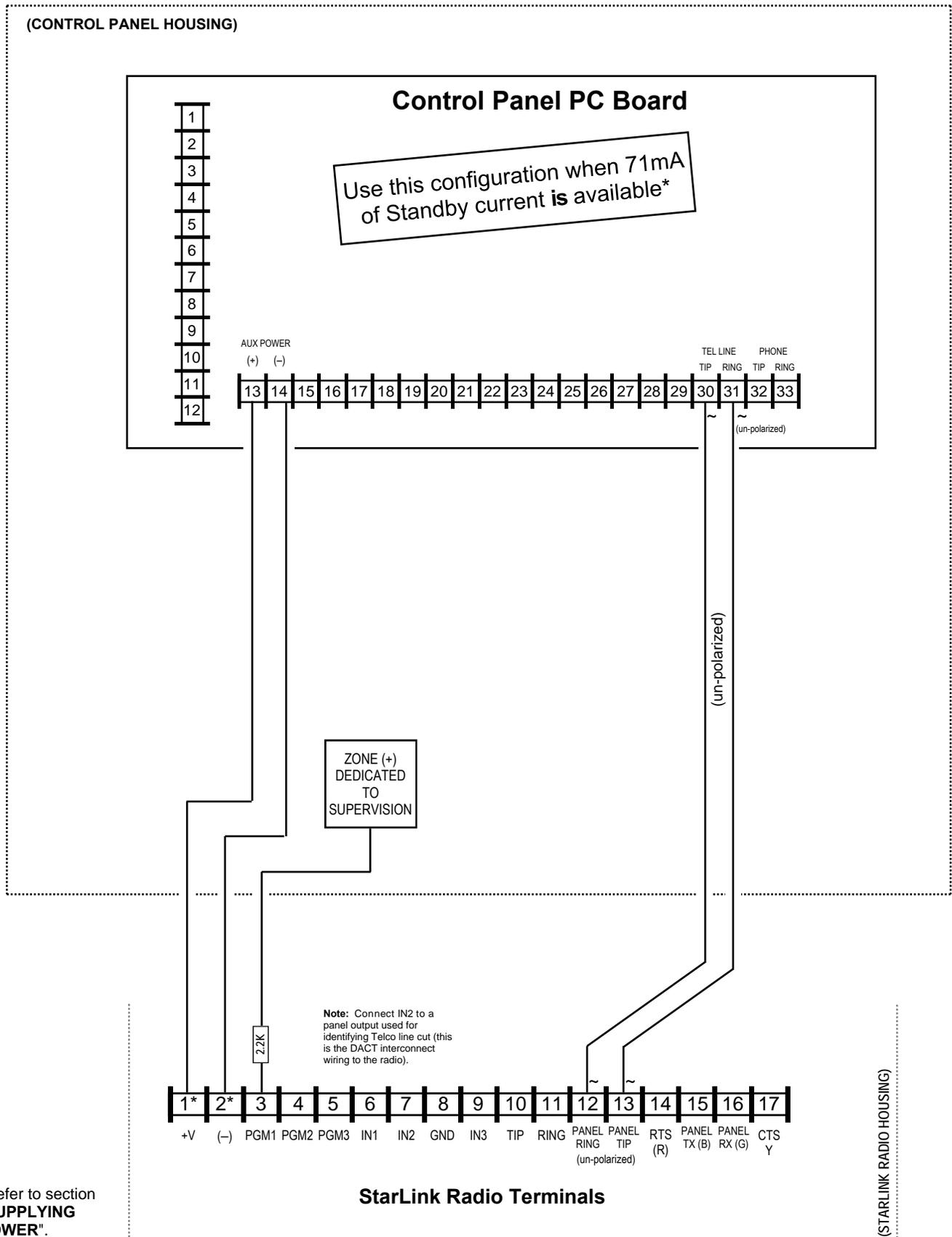


\*Refer to section "SUPPLYING POWER".

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

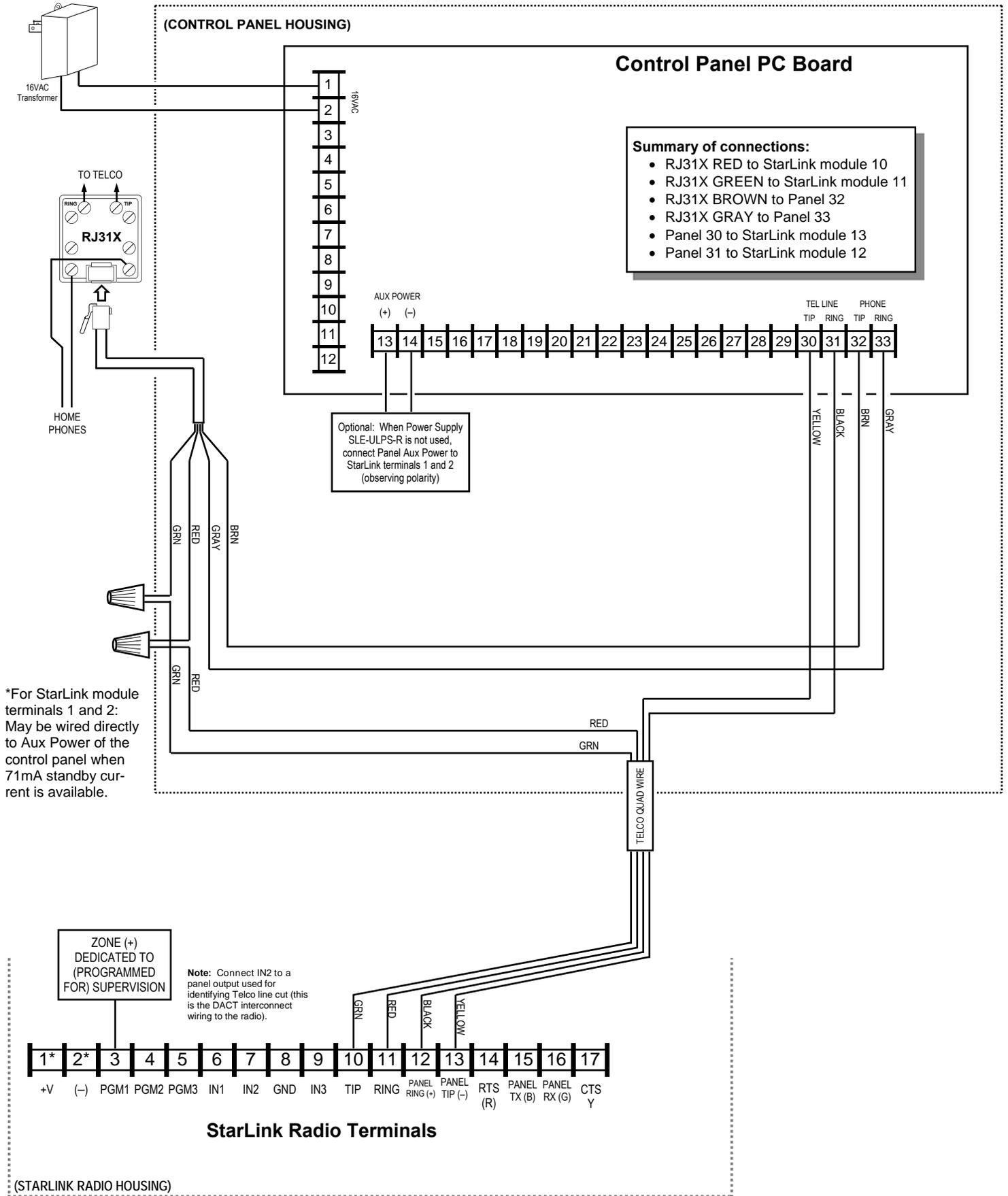


# Wiring Diagram for PRIMARY Reporting Configuration GEM-X255 / GEM-P9600 / GEM-P3200 Control Panels (Use when telephone line is NOT available)



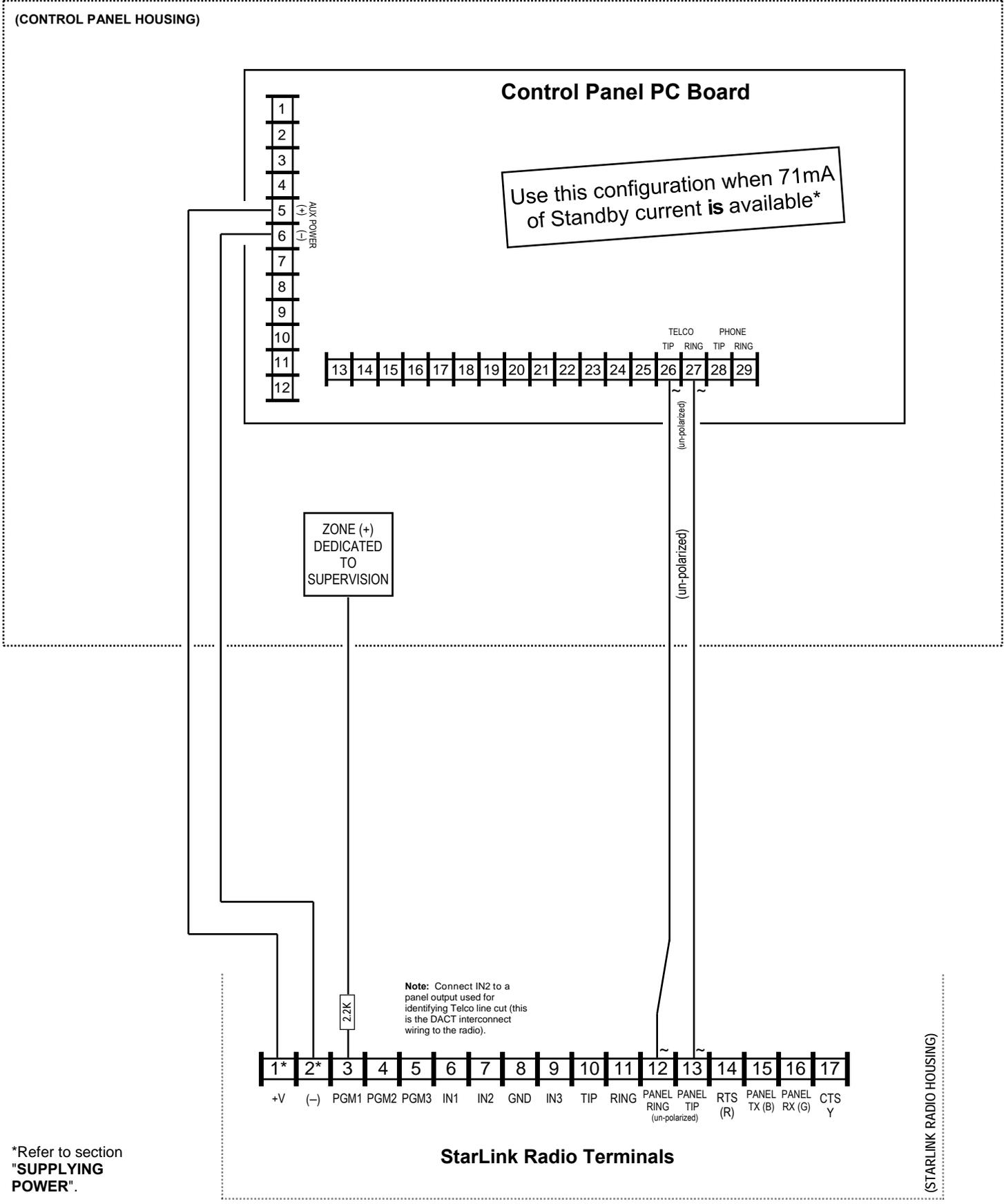
\*Refer to section "SUPPLYING POWER".

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



\*Refer to section "SUPPLYING POWER".

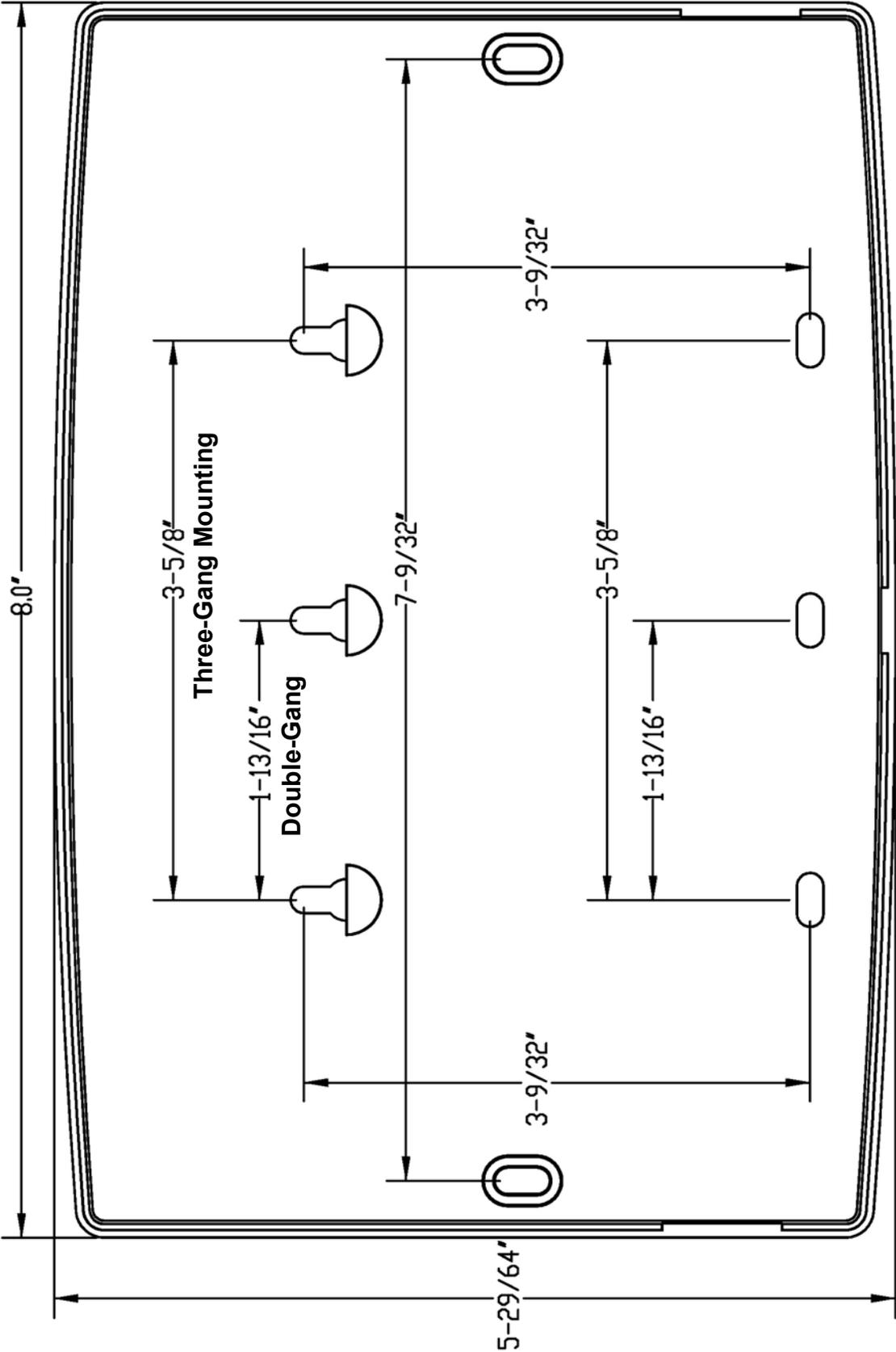
# Wiring Diagram for PRIMARY Reporting Configuration GEM-816 / GEM-P1632 / GEM-P1664, Freedom F-64 Control Panels (Use when telephone line is NOT available)



\*Refer to section "SUPPLYING POWER".



# Housing Template (1:1 Scale)



# 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 <i>with</i> 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 <i>with</i> 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)
3	FACP <i>without</i> 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 <i>with</i> DACT Use IN2 or IN3 for only trouble reporting. Panel reports via dialer capture but Linecut for DACT interconnection wiring to 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 <i>without</i> 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 <i>without</i> 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 **RENs** of all the devices not exceed five (5).

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

# Notes

# Notes

# NAPCO LIMITED WARRANTY

NAPCO SECURITY SYSTEMS, INC. (NAPCO) warrants its products to be free from manufacturing defects in materials and workmanship for *thirty-six months* following the date of manufacture. NAPCO will, within said period, at its option, repair or replace any product failing to operate correctly without charge to the original purchaser or user.

This warranty shall not apply to any equipment, or any part thereof, which has been repaired by others, improperly installed, improperly used, abused, altered, damaged, subjected to acts of God, or on which any serial numbers have been altered, defaced or removed. Seller will not be responsible for any dismantling or reinstallation charges.

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. THERE IS NO EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR A WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. ADDITIONALLY, THIS WARRANTY IS IN LIEU OF ALL OTHER OBLIGATIONS OR LIABILITIES ON THE PART OF NAPCO.

Any action for breach of warranty, including but not limited to any implied warranty of merchantability, must be brought within the six months following the end of the warranty period. IN NO CASE SHALL NAPCO BE LIABLE TO ANYONE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES FOR BREACH OF THIS OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, EVEN IF THE LOSS OR DAMAGE IS CAUSED BY THE SELLER'S OWN NEGLIGENCE OR FAULT.

In case of defect, contact the security professional who installed and maintains your security system. In order to exercise the warranty, the product must be returned by the security professional, shipping costs prepaid and insured to NAPCO. After repair or replacement, NAPCO assumes the cost of returning products under warranty. NAPCO shall have no obligation under this warranty, or otherwise, if the product has been repaired by others, improperly installed, improperly used, abused, altered, damaged, subjected to accident, nuisance, flood, fire or acts of God, or on which any serial numbers have been altered, defaced or removed. NAPCO will not be responsible for any dismantling, reassembly or reinstallation charges.

This warranty contains the entire warranty. It is the sole warranty and any prior agreements or representations, whether oral or written, are either merged herein or are expressly cancelled. NAPCO neither assumes, nor authorizes any other person purporting to act on its behalf to modify, to change,

or to assume for it, any other warranty or liability concerning its products.

In no event shall NAPCO be liable for an amount in excess of NAPCO's original selling price of the product, for any loss or damage, whether direct, indirect, incidental, consequential, or otherwise arising out of any failure of the product. Seller's warranty, as hereinabove set forth, shall not be enlarged, diminished or affected by and no obligation or liability shall arise or grow out of Seller's rendering of technical advice or service in connection with Buyer's order of the goods furnished hereunder.

NAPCO RECOMMENDS THAT THE ENTIRE SYSTEM BE COMPLETELY TESTED WEEKLY.

**Warning:** Despite frequent testing, and due to, but not limited to, any or all of the following; criminal tampering, electrical or communications disruption, it is possible for the system to fail to perform as expected. NAPCO does not represent that the product/system may not be compromised or circumvented; or that the product or system will prevent any personal injury or property loss by burglary, robbery, fire or otherwise; nor that the product or system will in all cases provide adequate warning or protection. A properly installed and maintained alarm may only reduce risk of burglary, robbery, fire or otherwise but it is not insurance or a guarantee that these events will not occur. CONSEQUENTLY, SELLER SHALL HAVE NO LIABILITY FOR ANY PERSONAL INJURY, PROPERTY DAMAGE, OR OTHER LOSS BASED ON A CLAIM THE PRODUCT FAILED TO GIVE WARNING. Therefore, the installer should in turn advise the consumer to take any and all precautions for his or her safety including, but not limited to, fleeing the premises and calling police or fire department, in order to mitigate the possibilities of harm and/or damage.

NAPCO is not an insurer of either the property or safety of the user's family or employees, and limits its liability for any loss or damage including incidental or consequential damages to NAPCO's original selling price of the product regardless of the cause of such loss or damage.

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