

SKYROUTETM *ut* UNIVERSAL TRANSCEIVER



**SG SECURITYTM
COMMUNICATIONS**
A Division of Sur-Gard Security Systems Ltd.

Installation Manual





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Introducing the Skyroute UT

The Skyroute UT offers a new wireless method of communication for the transmission of event information using the Cellemetry service. Events are transmitted from the Skyroute transceiver via the Cellemetry network to the Clearing House and then to the Central Station in a fast and reliable manner. Skyroute has been designed for simple and straightforward installation.

1.1 Specifications

Communication Method

- AMPS Control Channel

Downloading Software Support

- PC580 v2.3 uses DLS-1 v6.7 and up.

Flexible Zone Configuration

- Four fully programmable zones
- 27 zone types; 8 programmable zone attributes
- Normally closed, single EOL

Audible Alarm Output

- 700mA Supervised Bell Output (current limited at 3 amps), 12Vdc
- Steady or Pulsed Output

EEPROM Memory

- Does not lose programming or system status on complete AC and Battery failure

Programmable Outputs

- Two programmable outputs; 18 programmable options
- PGM1 = 50mA; PGM2 = 50mA

Powerful 1.5 Amp Regulated Power Supply

- 550 mA Auxiliary Supply, 12 Vdc
- Positive Temperature Coefficient (PTC) components replace fuses
- Supervision for loss of AC power, low battery
- Internal clock locked to AC power frequency

Power Requirements

- Transformer = 16.5 V_{AC}, 40VA
- Battery = 12 volt 7 Ah minimum rechargeable sealed lead acid battery

Programmer

- The Skyroute ut can be programmed using any Power keypad
PC5500, PC5508, PC5516, PC5532, PC1555RK and the PC580RK



System Supervision Features

The system continuously monitors a number of possible trouble conditions including:

- AC power failure
- Low battery condition
- AUX Power Supply Trouble
- Bell output trouble
- Fault by zone
- Tamper by zone

Additional Features

- An event buffer which records the past 128 events with both the time and date at which they occurred; buffer can be printed using PC5400 serial interface module, or viewed with the LCD5500Z keypad and DLS-1 software
- Uploading and downloading capability

Antenna

- 3 – 5 dB gain, TNC connector
- Extension Kits available:
 - LAE – 3 The 3 Foot Antenna Kit for Skyroute Transceiver
 - LAE – 15 The 15 Foot Antenna Kit for Skyroute Transceiver
 - LAE – 25 The 25 Foot Antenna Kit for Skyroute Transceiver

RF Power Output

- 3.0 Watts

Power Consumption (Skyroute)

- 12 V_{DC} @30mA, from Panel Keybus
- 12 V_{DC}, from Bell Circuit
 - Current in Standby 90mA
 - Current when Receiving 135mA
 - Current when Transmitting 1.3A

Dimension

211mm x 234mm x 77mm



1.2 Out of the Box

Please verify that the following components are included in your system:

- one Skyroute module
- one PC1-OUT module
- one antenna
- one PC5003C main control cabinet
- one PC580 main control circuit board
- one Installation Manual with programming worksheets
- one hardware pack consisting of:
 - four plastic circuit board standoffs
 - ten 5600Ω (5.6KΩ) resistors
 - one 2200Ω (2.2KΩ) resistors
 - one 1000Ω (1KΩ) resistors
 - ground connection assembly
 - one cabinet door plug

Getting Started

Read this section completely before you begin. Once you have an overall understanding of the installation process, carefully work through each step.

2.1 Installation Steps

Step 1: Mounting the Unit

Mount the panel in a dry area close to an unswitched AC power source. Before attaching the cabinet to the wall, be sure to press the four circuit board mounting studs into the cabinet from the back.

NOTE: You must complete all wiring before connecting the battery, or applying AC to the panel.

Step 2: Mounting the Skyroute Transceiver

The Skyroute Transceiver can be mounted in the upper right hand corner of the panel cabinet through the knock out. The Skyroute Transceiver case attaches to the panel cabinet through the use of clips.

Step 3: Mounting the Antenna

NOTE: The antenna should always be attached to the Skyroute Transceiver for proper operation. The unit will not function properly if the antenna is not installed.

The antenna attaches to the TNC connector of the Skyroute Transceiver. The antenna should be mounted as high above ground level as possible while at the same time taking care not to place the antenna under a Radio frequency shield of any kind. For example do not mount the antenna directly below a metal roofing over-hang. The Skyroute Transceiver functions best when installed in an unobstructed "line of sight" to the cellular antenna site.

Step 4: Panel Wiring

Install the 1kΩ resistor (brown, black, red) across the Bell+ and Bell- terminals. Connect all the zone inputs using the 5.6kΩ resistors (violet, blue, red). **Follow connection diagram on page 20** for different configurations.



Step 5: Skyroute Wiring

• Keybus Connection

The Skyroute transmitter has 4 terminals marked red, black, yellow and green. Connect these four terminals to the 4 terminals on the main control panel marked KEYBUS (aux+, aux-, yellow and green).

• Bell IN Terminal

This terminal is used to power the cellemetry modem. This connects to the BELL + on the control panel. No other wire should be connected to the Bell+ of the control panel or to this terminal.

Step 6: Power up the Control

Once all zone and Keybus wiring is complete, power up the control panel. First, connect the red battery lead to the positive terminal and the black lead to negative. Then, connect the AC.

NOTE: Connect the battery before connecting the AC. You must apply AC power to the panel for at least 10 seconds, or the panel will not function. The panel will not power up on the battery connection alone.

Step 7: Programming the System

Utilize any Power keypad to program the system. Simply connect the keypad (R, B, Y, G,) terminals to the keybus (Aux+, Aux-, Yel, Green) on the control panel.

Fill out the Programming Worksheets completely before attempting to program the system.

Step 8: Testing the System

Test the panel thoroughly to ensure that all features and functions are operating as programmed.

2.2 Terminal Descriptions

Battery Connection

A 12V 7Ah rechargeable battery is used as a backup source of power in the event of an AC power failure. The battery also provides additional current when the panel's demands exceed the power output of the transformer, such as when the Skyroute module is transmitting.

NOTE: Do not connect the battery until all other wiring is complete. Connect the battery before connecting the AC.

Connect the RED battery lead to the positive battery terminal; connect the BLACK lead to negative.

AC Terminals – AC

The panel requires a 16.5V_{AC}, 40VA transformer. Connect the transformer to an unswitched AC source and connect the transformer to these terminals.

NOTE: Do not connect the transformer until all other wiring is complete.

Auxiliary Power Terminals – AUX+ and AUX-

These terminals provide up to 550 mA of additional current at 12 V_{DC} for devices requiring power. Connect the positive side of any device requiring power to the AUX+ terminal, the negative side to AUX- (ground). The AUX output is protected. This means that if too much current is drawn from these terminals (such as wiring short), the panel will temporarily shut off the output until the problem is corrected.

Keybus Terminals – AUX+, AUX-, YEL, GRN

The Keybus is used by the panel to communicate with the Skyroute transceiver, the programming keypad and other modules. Each module has four Keybus terminals that must be connected to the four Keybus terminals on the panel.



Programmable Output Terminals – PGM1 and PGM2

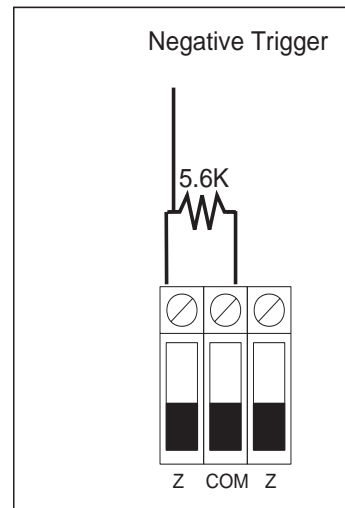
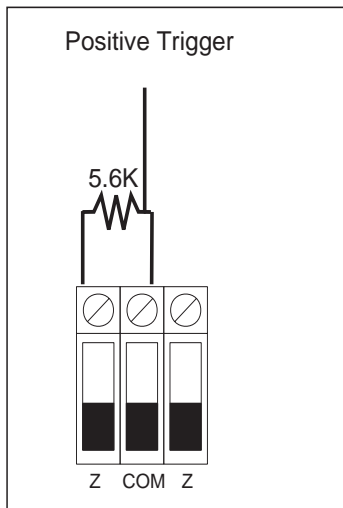
Each PGM output is designed so that when activated by the panel, the terminal will switch to ground.

PGM1 can sink up to 50mA of current. Connect the positive side of the LED or buzzer to AUX+, the negative side to PGM1.

PGM2 operates similarly to PGM1. If more than 50 mA of current are required, a relay must be used.

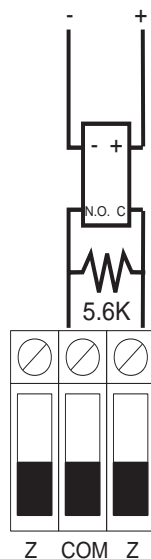
For a list of the programmable output options, please see section the “PGM Output Options” Section.

Zone Input Terminals – Z1 to Z4

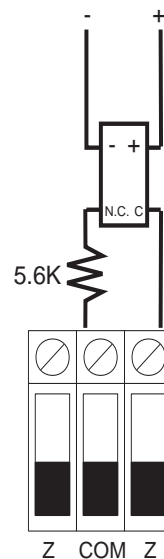


Relay Trigger or Dry Contact Trigger

Normally Open Contact



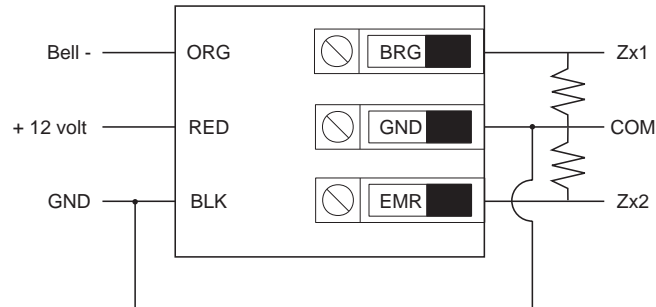
Normally Closed Contact





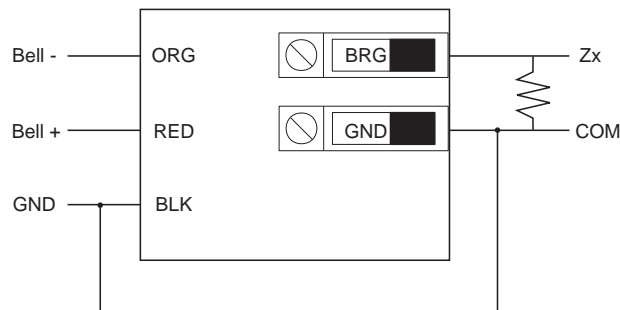
Siren Trigger Use PC1OUT Module Included

Negative Siren Trigger
(Bell + always active and Bell - switch to ground on alarm)



With this configuration, Zx1 will be trigger on steady Bell and Zx2 will be trigger on pulsed Bell

Positive Siren Trigger
(Bell - always to ground and Bell + switch to + on alarm)



With this configuration, Zx1 will be trigger every time the Bell is activated

Telephone Connection Terminals – TIP, RING, T-1, R-1

If a telephone line is required for central station communication or downloading, connect an RJ-31X telephone jack in the following manner:

NOTE: Please ensure that all plugs and jacks meet the dimension, tolerance and metallic plating requirements of 47 C.F.R. Part 68, SubPart F. For proper operation, no other telephone equipment should be connected between the control panel and the telephone company facilities. Do not connect the alarm panel communicator to telephone lines intended for use with a fax machine. These lines may incorporate a voice filter, which disconnects the line if anything other than fax signals are detected, resulting in incomplete transmissions.



Secure Installation

For a secure installation, the Skyroute UT must be in a secure, locked, and protected area via sensors. All entry points must be protected. An instant trip IR sensor would be the most appropriate for supervision of the panel. A cabinet tamper switch connected to the TMP terminal of the Skyroute Transceiver is also required.

Relocating the Antenna

If a suitable location is not available for proper Cellemetry coverage, obtain an Antenna Extension Bracket kit from your DSC/Sur-Gard supplier. Each kit contains an extension cable, a mounting bracket, instructions, and all required hardware. Three lengths of extension cable are available:

Extension Kit	Length of cable
LAE-3	3 feet (0.91 m)
LAE-15	15 feet (4.57 m)
LAE-25	25 feet (7.62 m)

Only use the Extension Kits to extend the mounting range of the antenna. Do not cut or splice the extension cable. The maximum distance between the Skyroute transceiver and the antenna is 25 feet (7.62 m) as obtained by using the LAE-25 Extension Kit. Make sure the antenna is in a physically secured location to avoid tampering.

Secure the TNC connector from the Extension Kit to the mounting bracket, ensuring that the star washers make solid electrical contact with the mounting bracket.

Remove the antenna from the Skyroute module and connect the extension cable to the TNC connector on the module. Secure the antenna to the TNC connector mounted on the Extension Kit Mounting Bracket. Locate the mounting bracket and antenna away from possible sources of electrical interference. Moving the antenna just a short distance will likely be adequate. Temporarily secure the mounting bracket in the new location and proceed with testing. If the test is successful, permanently secure the mounting bracket and antenna at the new location.

How to Program

The following section of the manual describes the Installer's Programming function and how to program the various sections.

NOTE: Read the following section of the manual very carefully before you begin programming. We also recommend filling out the Programming Worksheets section before you program the panel.

3.1 Installer's Programming

Installer's Programming is used to program all communicator and panel options. The Installer's Code is [0580] by default but should be changed to prevent unauthorized access to programming.

Installer's Code Section [006]

From an LED Keypad:

1. Enter [*][8][Installer's Code].

The Program light (or System light on the PC1555RKZ) will flash to indicate that you are in programming mode. The Armed light will turn on to indicate that the panel is waiting for the three-digit programming section number.



2. Enter the three-digit section number corresponding to the section you wish to program.
The Armed light will turn off. The Ready light will turn on to indicate that the panel is waiting for the information required to complete programming the selected section.
3. Enter the information required to complete section programming (i.e.: numbers, HEX data, or ON/OFF options).

NOTE: If the three-digit section number entered is invalid, or if the module that pertains to the section is not present, the keypad will sound a two second error tone.

From an LCD Keypad:

1. From any keypad, enter [*][8][Installer's Code]. The Keypad will display 'Enter Section' followed by three dashes.
2. Enter the three-digit number corresponding to the programming section number you wish to program. The keypad will now display the information required to complete programming the selected section.
3. Enter the information required to complete section programming (i.e.: numbers, HEX data, or ON/OFF options).
If you enter information into a section and make a mistake, press the [#] key to exit the section. Select that section again and re-enter the information correctly.

NOTE: There must be one digit in each box in the programming section in order for the change to be valid.

3.2 Programming Decimal Data

A set number of programming boxes are allotted for each section requiring decimal data (e.g.: codes, telephone numbers). If a digit is entered for each program box, the panel will automatically exit from the selected programming section. The Ready light will turn OFF and the Armed light will turn ON.

On the PC1555RKZ and PC5508Z keypads, you can also press the [#] key to exit a programming section without entering data for every box. This is handy if you only need to change digits in the first few programming boxes. All other digits in the programming section will remain unchanged.

3.3 Programming HEX Data

On occasion, hexadecimal (HEX) digits may be required. To program a HEX digit press the [*] key. The panel will enter HEX programming and Ready light will begin to flash.

The following are the numbers that should be pressed to enter the appropriate HEX digit:

1 = A 2 = B 3 = C 4 = D 5 = E 6 = F

Once the correct HEX digit has been entered, the Ready light will continue to flash. If another HEX digit is required, press the corresponding number. If a decimal digit is required, press the [*] key again. The Ready light will turn on and the panel will return to regular decimal programming.

Example:

To enter 402C for your SID number, you would enter:[4][0][2][*][3]:

[4][0][2] to enter digit 4-0-2 (ready light is solid),

[*] to enter Hexadecimal mode (Ready light flashes)

[3] to enter C

NOTE: If Ready light is flashing, any number you enter will be programmed as the HEX equivalent.



3.4 Programming Toggle Option Sections

Some programming sections contain several toggle options. The panel will use zone lights 1 through 8 to indicate if the different options are enabled or disabled. Press the number corresponding to the option to turn it ON or OFF. Once all the toggle options have been selected correctly, press the [#] key to exit the section and save the changes. The Ready light will turn OFF and the Armed light will turn ON.

Refer to the Programming Worksheets in this manual to determine what each option represents and whether the light should be ON or OFF for your application.

3.5 Viewing Programming

LED Keypads

Any programming section can be viewed from an LED keypad. When a programming section is entered, the keypad will immediately display the first digit of information programmed in that section.

The keypad displays the information using a binary format, according to the following chart:

Press any of the Emergency Keys (Fire, Auxiliary or Panic) to advance to the next digit. When all the digits in a section have been viewed, the panel will exit the section; the Ready Light will turn OFF and the Armed light will turn ON, waiting for the next three-digit programming section number to be entered. Press the [#] key to exit the section.

LCD Keypad

When a programming section is entered, the keypad will immediately display all the information programmed in that section. Use the arrow keys (< >) to scroll through the data being displayed. Scroll past the end of the data displayed or press the [#] key to exit the section.

Program Descriptions

The following section explains the operation of all programmable features and options and provides a summary of all corresponding programming locations.

4.1 Zone Programming Section [001]

The zone definitions describe how each of the zones you use will operate. Program a two-digit code describing the zone definition in sections [001]. Enter either **00** if the zone is not used or **11** if the zone is used.

Zone Definitions

[00] Null Zone

The zone is vacant. Unused zones should be programmed as Null zones.

[11] 24hr Zone: If the zone is violated, the unit will report to the Central Station, and will log the event to the buffer. This zone will follow the programmed number of alarms for swinger shutdown.

4.2 Telephone Line Monitor (TLM)

TLM Enable/Disable Section [015]: Toggle option [7]

4.3 Swinger Shutdown

The swinger shutdown feature is designed to prevent a “runaway” communicator from tying up the central station. After the panel has communicated the programmed number of transmissions for an event, it will no longer report that event until the swinger shutdown is reset. Different swinger shutdown levels can be set for zone alarms, zone tampers and maintenance signals.

By default, each **Swinger Shutdown** limit is set to [003]. The panel will not send more than three signals for each zone until the swinger shutdown is reset.



There will be no communication on zones that have exceeded the limit of alarms set in the Swinger Shutdown counter. **Swinger shutdown will be reset every day at midnight or when the panel is armed. Once reset, the panel will again communicate normally.**

Swinger Shutdown Section [370]

4.4 Skyroute Programming Sections....[803]

All programming on the Skyroute transceiver is done in the installer's programming mode. Once in programming mode, enter section [803] to access Skyroute programming.

Zone Definition.....Sub-Section [01]

This section will determine which "event code" will be sent to the Central Station for each zone.

Configuration Options.....Sub-Section [06]

Channel B enable/disable.....option[2]

This option must be selected when the Cellemetry provider is a "B" side carrier. Must be on in Canada.

Home System only enable/disable.....option[3]

This option must be programmed to ensure that the Skyroute transceiver is communicating using the proper carrier. When selected, the transceiver will only use towers with the same SID. (As programmed in section [07]).

Skyroute Transceiver SID (System ID).....Sub-Section [07]

The chart below lists the different System ID for each of the territories. For proper activation of the Skyroute Transceiver the correct SID for the territory that you are in must be entered into section [07] in Hex.

SID Table

System ID in		Memco	System ID in		Memco
Decimal	HEX		Decimal	HEX	
16420	4024	Bell Mobility (Ont.)	16390	4006	MT & T Mobility
16418	4022	TB Tel Mobility	16408	4018	NBTel Mobility
16420	4024	Bell Mobility (Quebec)	16414	401E	NewTel Mobility
16458	404A	Quebec Tel Mobilité	16430	402E	Island TelMobility
16422	4026	BCTEL Mobility	16410	401A	SaskTel Mobility
16428	402C	MTS Mobility	16384	4000	TELUS Mobility

Skyroute Test Time.....Sub-Section [10]

Enter in this section the time of the day (Military Time) that you want the test transmission to be sent.

Test Transmission Day Mask.....Sub-Section [11]

Select in this section the day of the week you want the test transmission to be sent.

Skyroute Transceiver Test Rates.....Sub-Section [13]

Default	Option ON	Option OFF
OFF ____ Option 1	Industrial	Disabled
OFF ____ Option 2	Commercial and Business	Disabled
ON ____ Option 3	Residential and Retail	Disabled
OFF ____ Option 4	Keybus Tests Enabled	Keybus Tests Disabled
OFF ____ Options 5 to 8	For Future Use	



Activating the Skyroute Transceiver

Before activating the Skyroute transceiver, ensure that the control panel is correctly wired and programmed and operating properly. Make sure that the Skyroute transmitter is properly connected to the keybus and to the bell positive circuit. When power is applied to the system, the Skyroute will go in initializing mode for few seconds and then give a visual feedback by indicating signal strength on LED1, LED2 and LED3.

Calling Connect24

Once the Skyroute transceiver is indicating the signal strength of the network and that the status indicator (LED5) is blinking 6 times (not connected to the clearing house) you are ready to call the Voice Response Unit of Connect 24. Follow the voice prompt and when asked to perform a test, press on SW1 on the Skyroute transceiver to transmit a test signal. When transmitting, LED4 blink once. If the test is successful, the VRU will give you a confirmation and LED5 will then blink steady every half-second. Refer to Connect24 information package for more information on the activation process.

NOTE: The confirmation of a successful test from Connect24 does not guarantee proper transmission of event activity to your central station. You must perform normal test with your monitoring station after activation with Connect 24.

Skyroute Transceiver Trouble Supervision

The Skyroute Transceiver automatically monitors its operation and indicates trouble conditions by flashing LED5 on the circuit board. LED5 normally flashes once every second when the Skyroute Transceiver is on stand-by (ready to transmit) mode. Troubles are indicated when LED5 flashes more than once every second. Shown below is the number of flashes used to indicate each trouble condition in order of importance.

- (2) Radio not connected/Radio not responding: Skyroute Transceiver initialization of Cellemetry modem has failed.
- (4) Service not available: The Cellemetry modem has failed to register with the cellular network.
- (6) Not connected to Clearinghouse: The Skyroute Transceiver has not been activated.
- (5) Failure to communicate: A signal has not been successfully communicated to the central station.
- (3) Failed self-test: A self-test of the Cellemetry module has failed.
- (1) Radio is operating normally: Skyroute Transceiver is ready to transmit.

Skyroute Transceiver Trouble Shooting

If Skyroute Transceiver will not communicate to the clearinghouse, check the following before calling Sur-Gard technical support.

1. Check all wiring
 - A. Make sure all the keybus connections are correct.
 - B. Make sure Bell + is connected.
 - C. Make sure the GND of the Skyroute Transceiver is connected to a zone common or AUX – of the control panel.
2. Check the LED5
 - A. Check number of flashes on LED5. If LED flashes more than once every half a second refer to table 2
 - B. 6 flashes means not connected to the Clearinghouse. A failed activation attempt. Re-activate.
3. If intermittent failure to communicate is seen (5 flashes), number of attempts (option 23) should be increased to 10 and/or response wait time should be increased to 60 (option 24 = 60).
4. If LED5 flashes once every half a second, yet Skyroute Transceiver does not communicate to clearinghouse call Sur-Gard Technical support at 1-800-503-5869 ext.1 or 416-665-4494 ext.1.



4.5 PGM Output Options....[009]

Program the programmable outputs PGM1 and PGM2 on the main board by selecting one of the output options listed below (exceptions noted).

Main Board PGM OutputsSection [009]

NOTE: PGM outputs cannot be completely disabled in installer's programming. To disable a PGM output completely, you must remove all wiring from the output.

[01] Alarm Output

The output will activate when the alarm output is active and will deactivate when the alarm output is silenced. If the alarm output is pulsing, the PGM output will pulse as well. This output will follow the activation of the alarm output (pre-alert).

[09] System Trouble Output

The PGM output will activate when any of the selected trouble conditions are present. It will deactivate when all the selected trouble conditions are cleared.

The PGM attributes for this option, programmed in Sections [141] and [142], differ from the standard selection of attributes.

Program which trouble conditions will activate the output by selecting some or all of the following attributes:

Attribute

- [1] **Service Required** (battery, bell, general trouble, general tamper, general supervisory)
- [2] **AC Failure**
- [3] **Telephone Line Trouble**
- [4] **Failure to Communicate**
- [5] **Fire Trouble / Zone Fault**
- [6] **Zone Tamper**
- [7] **Zone Low Battery**
- [8] **Loss of Clock**

[11] System Tamper (All Sources)

The PGM output will activate when any tamper condition is present and will deactivate when all tampers are restored.

[21]-[24] For future use



PGM Output Attributes

In addition to programming the output type, you must also program the PGM output attributes for each output.

PGM output options [09] "System Trouble" and [10] "System Event" have their own unique set of attributes listed below the description of each output type.

PGM output options [01], [03], [05]-[08], [11]-[20] have the following attributes:

Attribute	ON	OFF
[1]	PGM Enable	PGM Disable
[3]	True Output	Inverted Output
	Attribute ON: the output energizes when activated	
	Attribute OFF: the output de-energizes when activated	
[4]	Output Pulsed	Output ON/OFF
	Attribute ON: the output will activate once for the amount of time programmed in section [164] when initiated by the user	
	Attribute OFF: the output will toggle ON or OFF when initiated by the user.	
	(Only applicable to options [19]-[20].)	

PGM attributes return to their default settings when you change PGM output options. Please see the programming worksheets for a list of the default settings for each PGM output type.

Be careful when selecting the normal and active states of each PGM output to ensure that an undesirable output state does not occur after a loss and restore of AC power.

NOTE: If you program more than one PGM output as the same output type (e.g. if PGM1 and PGM2 are both programmed as [19] Command Output 1), the settings for output attributes [1], [2] and [5] must be the same. This does not apply to outputs programmed as types [09] and [10].

PGM Output AttributesSection [141]-[142]

4.6 Event Buffer

The panel will store the last 128 events which occurred on the system. The **Event Buffer** will contain the name, time and date of each event, along with the zone number, access code number or any other information pertaining to the event.

If the Event Buffer Follows Swinger Shutdown option is enabled, the event buffer will not store events after the Swinger Shutdown level has been reached. This will prevent the panel from overwriting the entire buffer if a problem exists.

The event buffer can be viewed in three different ways: from an LCD keypad printed on-site using the PC5400 printer module, or it can be uploaded using DLS software.

Event Buffer Follows

Swinger Shutdown ..Section [013]: [7]

4.7 Resetting Factory Defaults

On occasion, it may be necessary to default the main control panel.

To default the main control panel (hardware), perform the following:

1. Remove AC and battery from the panel.
2. Remove all wires from the Zone 1 and PGM1 terminals.
3. With a piece of wire short the Zone 1 terminal to the PGM1 terminal.



4. Apply AC power to the main panel.
5. When Zone Light 1 is lit on the keypad the default is complete.
6. Remove AC power from the control .
7. Reconnect all original wiring and power up the control.

NOTE: AC power must be used to power the panel. The panel will not default if only the battery is used.

To default the main control panel software and other modules, perform the following:

1. Enter the Installer's Programming mode.
2. Enter the appropriate programming section [999].
3. Enter the Installer's Code.
4. Re-enter the appropriate programming section [999].

The panel will take a few seconds to perform the default. When the keypad is again operational the default is complete.

Restore Panel to Default Programming Section [999]

4.8 Installer's Lockout *[Installer code]

If **Installer's Lockout** is selected, a hardware default cannot be performed. If a software default is performed, all programming will restore to factory default.

If **Installer's Lockout Disable** is selected, the panel will restore all programming to factory defaults when a hardware or software default is performed on the main control panel.

To enable or disable Installer's Lockout, perform the following:

1. Enter the Installer's Programming mode.
2. Enter the appropriate programming section: [990] or [991].
3. Enter the Installer's Code.
4. Re-enter the appropriate programming section: [990] or [991].

Installer Lockout Enable Section [990]

Installer Lockout DisableSection [991]



Programming Work Sheets

Basic Interface Programming

Zone Definitions

00 Null Zone (Not Used)

11 24 Hour

[001] Zone 1-8 Definitions

Default

01 |_____| |_____| Zone 1

03 |_____| |_____| Zone 2

04 |_____| |_____| Zone 3

04 |_____| |_____| Zone 4

Default

00 |_____| |_____| Zone 5

00 |_____| |_____| Zone 6

00 |_____| |_____| Zone 7

00 |_____| |_____| Zone 8

[006] Installer's Code

Default

0580 [][][][]

[009] PGM Output Programming (PGM 1 and 2)

Programmable Output Options

01 Burglary and Fire Bell Output

09 System Trouble Output (with Trouble options)

10 System Event [Strobe (with Event options)]

11 System Tamper (all sources: zones, kpd, modules)

12 TLM and Alarm

13 Kissoff Output

14 Ground Start Pulse

15 Remote Operation (DLS-1 Support)

Default

19 |_____| |_____| PGM 1

10 |_____| |_____| PGM 2

[015] Third System Option Code

Default Option ON

ON |_____| 7 TLM Enabled

OFF Section

TLM Disabled

[370] Communication Variables

Default

003 |_____| |_____| Swinger Shutdown (Alarms and Rest) (001-014 Transmissions, 000=disabled)

003 |_____| |_____| Swinger Shutdown (Tampers and Rest) (001-014 Transmissions, 000=disabled)

003 |_____| |_____| Swinger Shutdown (Maint and Rest) (001-014 Transmissions, 000=disabled)

000 |_____| |_____| Transmission Delay (001-255 seconds)

030 |_____| |_____| AC Failure Communication Delay (001-255 minutes)

003 |_____| |_____| TLM Trouble Delay (No. of checks required - valid entries 003 - 255)

030 |_____| |_____| Test Transmission Cycle (land line) (001-255 minutes/days) (not used)

030 |_____| |_____| Test Transmission Cycle (001-255 days) (not used)

007 |_____| |_____| Zone Low Battery Transmission Delay (000-255 days)

030 |_____| |_____| Delinquency Transmission Cycle (001-255 days / hours)



Downloading Options

[499] [Installer's Code] [499] Initiate PC-Link (Local Downloading)

[803] Skyroute Programming

- 08 Fire
- 09 Supervisory
- 11 Burglary
- 12 Hold-up
- 13 Gas
- 14 Heat
- 15 Medical
- 16 Panic
- 17 Emergency

[01] Zone 1-4 Reporting Codes

Default

00 | | | Zone 1
 00 | | | Zone 2
 00 | | | Zone 3
 00 | | | Zone 4

Default

00 | | | Zone 5 (not used)
 00 | | | Zone 6 (not used)
 00 | | | Zone 7 (not used)
 00 | | | Zone 8 (not used)

[06] Skyroute Configuration Options (1-8)

Default

OFF | | | Option 1
 ON | | | Option 2
 OFF | | | Option 3
 OFF | | | Options 4 to 8

Option ON

A Channel Selected
 B Channel Selected
 Home System Only
 For Future Use

Option OFF

A Channel Not Selected
 B Channel Not Selected
 Not in Home System Operation

[07] Home SID Number

0000 | | | |

This is the SID (in Hex) of the cellular service that is available on the current channel.

[10] Skyroute Test Time

9999 | | | | 0000-2359 (in Military Time)

[11] Test Transmission Day Mask

Default

OFF | | | Option 1
 OFF | | | Option 2
 OFF | | | Option 3
 OFF | | | Option 4
 OFF | | | Option 5
 OFF | | | Option 6
 OFF | | | Option 7
 OFF | | | Option 8

Option ON

Test on Sunday
 Test on Monday
 Test on Tuesday
 Test on Wednesday
 Test on Thursday
 Test on Friday
 Test on Saturday
 For Future Use

Option OFF

Disabled
 Disabled
 Disabled
 Disabled
 Disabled
 Disabled
 Disabled



[13] Skyroute Test Rates

OFF	__	Option 1	Industrial	Disabled
OFF	__	Option 2	Commercial and Business	Disabled
ON	__	Option 3	Residential and Retail	Disabled
OFF	__	Option 4	Keybus Tests Enabled	Disabled
OFF	__	Options 5 to 8	For Future Use	

[22] Transmission Options

ON	__	Option 1	Alarms/Restores	Disabled
ON	__	Option 2	Tamper Restoral/Restores	Disabled
ON	__	Option 3	Supervisory/Restores	Disabled
ON	__	Option 4	Low Battery/Restores	Disabled
OFF	__	Option 5	Opening/ Closing	Disabled
ON	__	Option 6	Maintenance	Disabled
OFF	__	Options 7 & 8	For Future Use	

[23] Number of attempts

03 |__|__| 00 – FF (in HEX)

[24] Response Wait Time

19 |__|__| 00 – FF (in HEX) x10 seconds

Sections [30] to [78], if '00' is entered, then that reporting code is disabled. If 'FF' is in the section, then the reporting code is enabled. 'FF' is the default value.

[30] Alarm Reporting Codes, Zones 1-8

Default		Default	
FF	__ __	Zone 1 Alarm	FF __ __ Zone 5 Alarm
FF	__ __	Zone 2 Alarm	FF __ __ Zone 6 Alarm
FF	__ __	Zone 3 Alarm	FF __ __ Zone 7 Alarm
FF	__ __	Zone 4 Alarm	FF __ __ Zone 8 Alarm

[34] Alarm RestoralReporting Codes, Zones 1-8

FF __ __	Zone 1 Alarm Restoral	FF __ __	Zone 5 Alarm Restoral
FF __ __	Zone 2 Alarm Restoral	FF __ __	Zone 6 Alarm Restoral
FF __ __	Zone 3 Alarm Restoral	FF __ __	Zone 7 Alarm Restoral
FF __ __	Zone 4 Alarm Restoral	FF __ __	Zone 8 Alarm Restoral

[48] Miscellaneous Tamper Reporting Codes

FF __ __	General System Tamper	FF __ __	Keypad Lockout
FF __ __	General System Tamper Rest.		



[75] Maintenance Alarm Reporting Codes

Default

FF |____|____| Battery Trouble Alarm
FF |____|____| AC Failure Trouble Alarm
FF |____|____| Bell Circuit Trouble Alarm
FF |____|____| Fire Trouble Alarm

Default

FF |____|____| Aux Power Supply Trouble Alarm
FF |____|____| TLM Trouble Code
FF |____|____| General System Trouble
FF |____|____| General System Supervisory

[76] Maintenance Restoral Reporting Codes

FF |____|____| Battery Trouble Restoral
FF |____|____| AC Failure Trouble Restoral
FF |____|____| Bell Circuit Trouble Restoral
FF |____|____| Fire Trouble Restoral

FF |____|____| Aux Power Supply Trouble Restoral
FF |____|____| TLM Restoral
FF |____|____| General System Trouble Restore
FF |____|____| General System Supervisory
Restore

[77] Miscellaneous Maintenance Restoral Reporting Codes

FF |____|____| Phone #1 FTC
FF |____|____| Phone #2 FTC
FF |____|____| Phone #1 FTC Restore
FF |____|____| Phone #2 FTC Restore

FF |____|____| Event Buffer 75% Full
FF |____|____| DLS Lead IN
FF |____|____| DLS Lead OUT
FF |____|____| Delinquency Reporting Code

[78] Test Transmission Reporting Codes

FF |____|____| Periodic Test Transmission
FF |____|____| System Test

FF |____|____| Skyroute Test TX Code

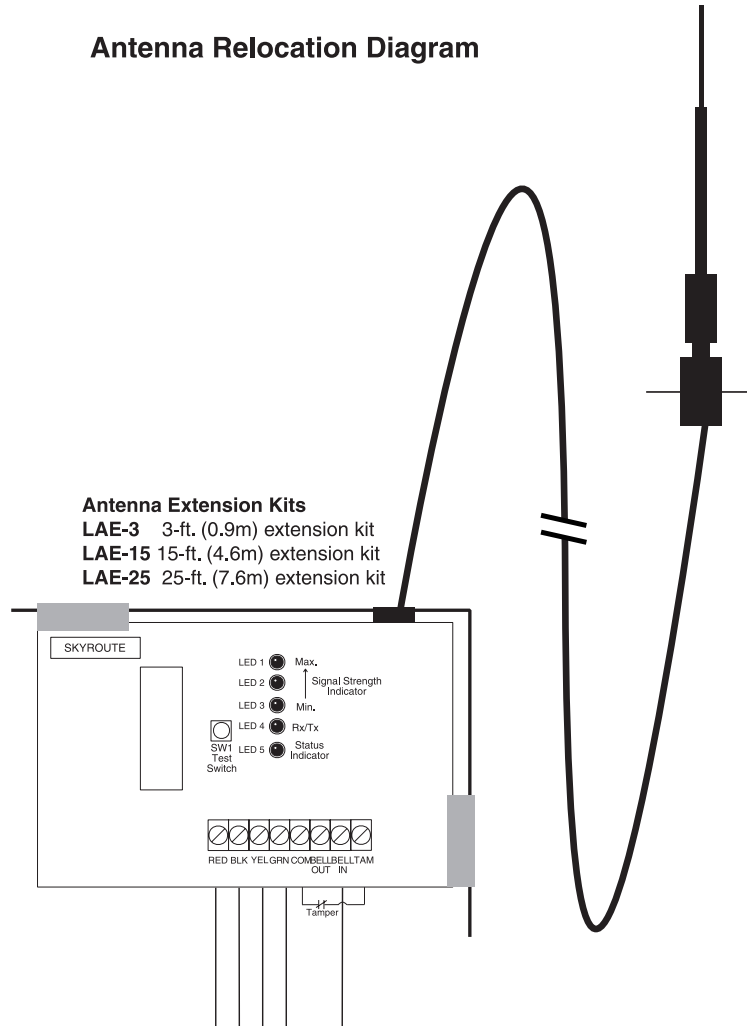
[99] Section [99] is for software defaulting of the Skyroute

10 |____|____|

Entering 00 will cause software default of the Skyroute. Entering FF will cause restart of the Skyroute Transceiver. Entering any other value will not cause default or a restart.



Antenna Relocation Diagram

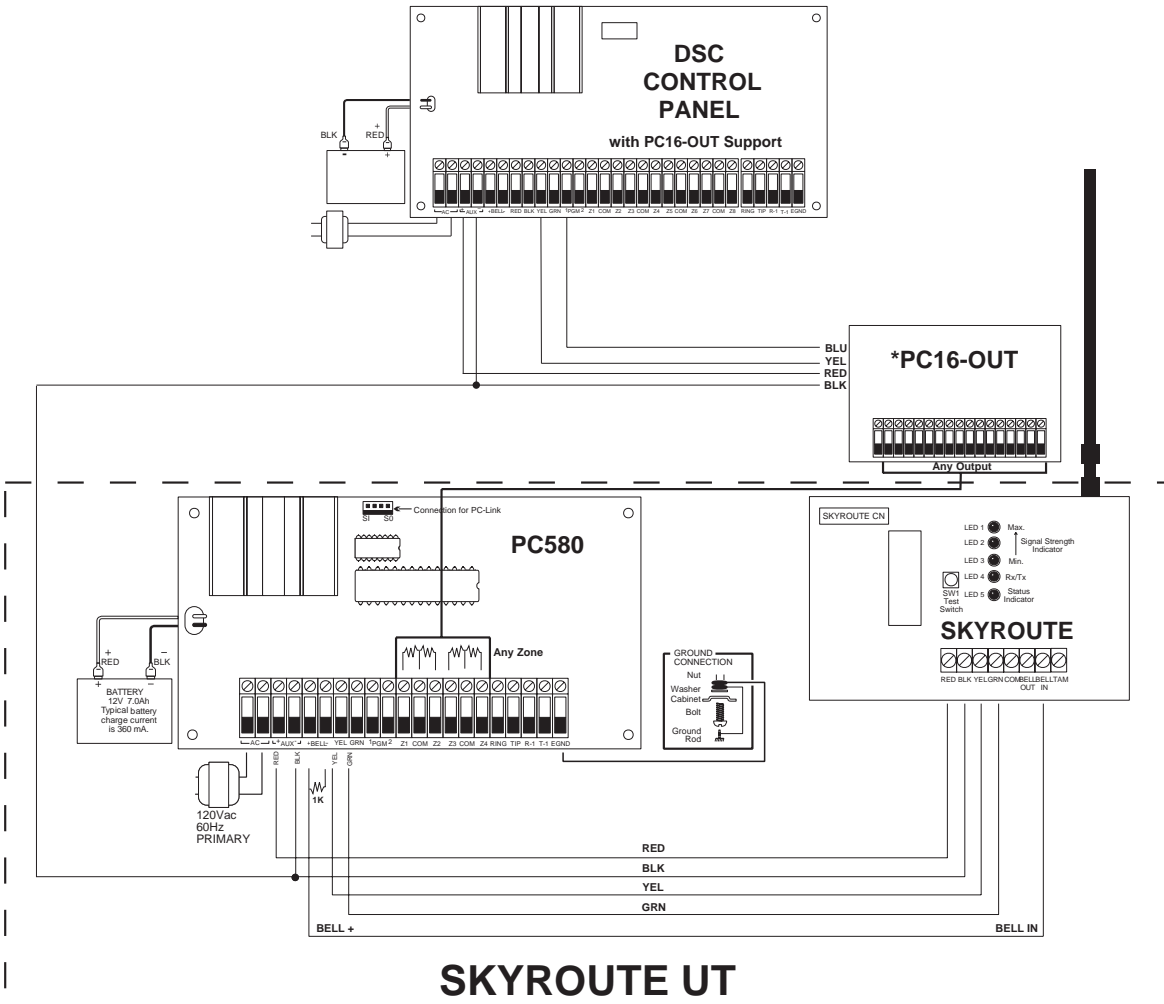


Skyroute UT Antenna Cable Installation

- Power down the Skyroute **UT** module, by removing both AC and DC power from the control panel.
- Attach one end of the extension cable to the Skyroute unit, and attach the bracket and antenna to the other end.
- Reapply the AC and DC power to the Skyroute unit. No reprogramming is necessary.
- Move the antenna and bracket around until you get good signal strength.
- Mount the antenna extension bracket at that location.



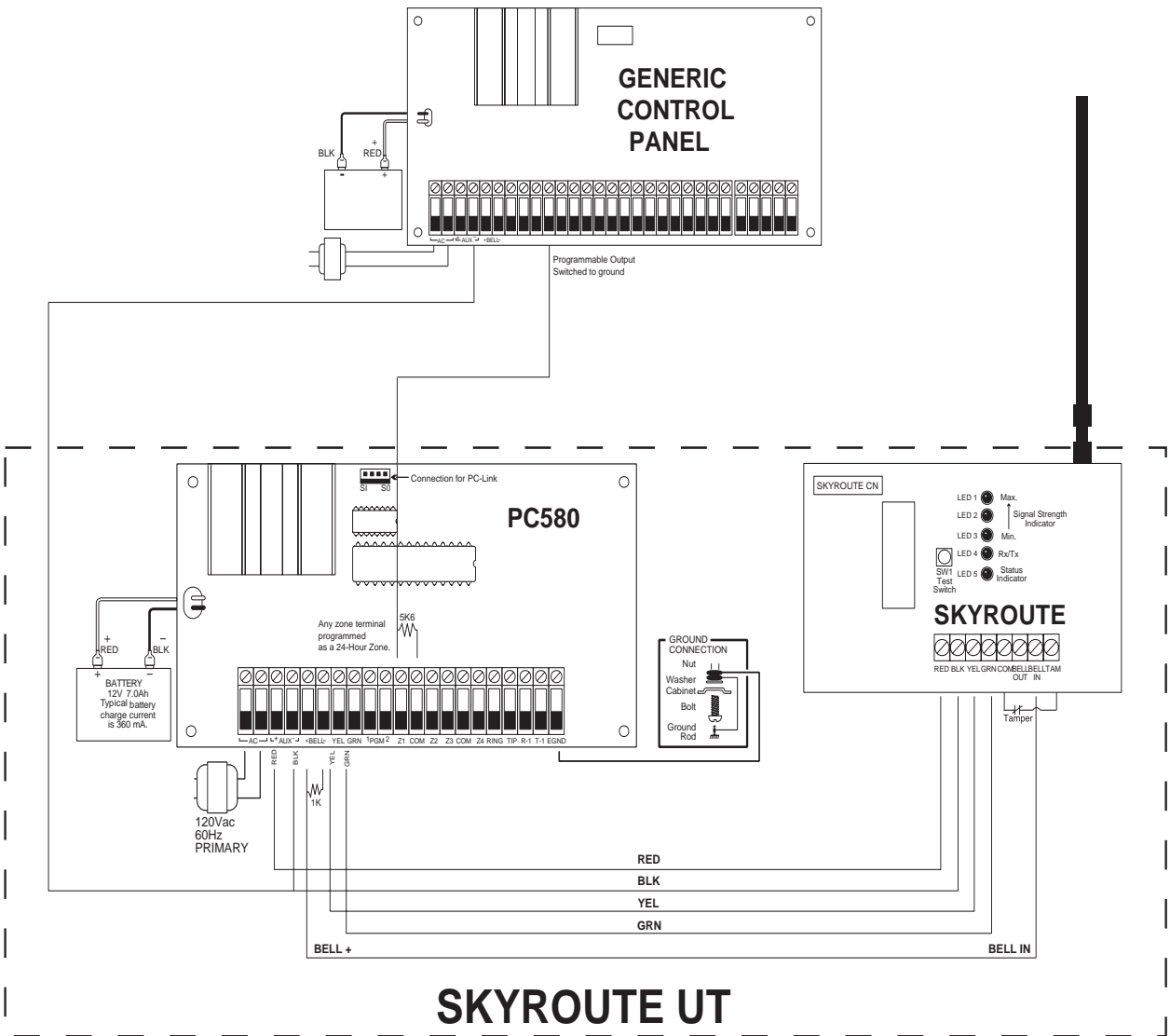
PC16-OUT* with a Skyroute UT Transceiver



*Optional device not included with the Skyroute UT

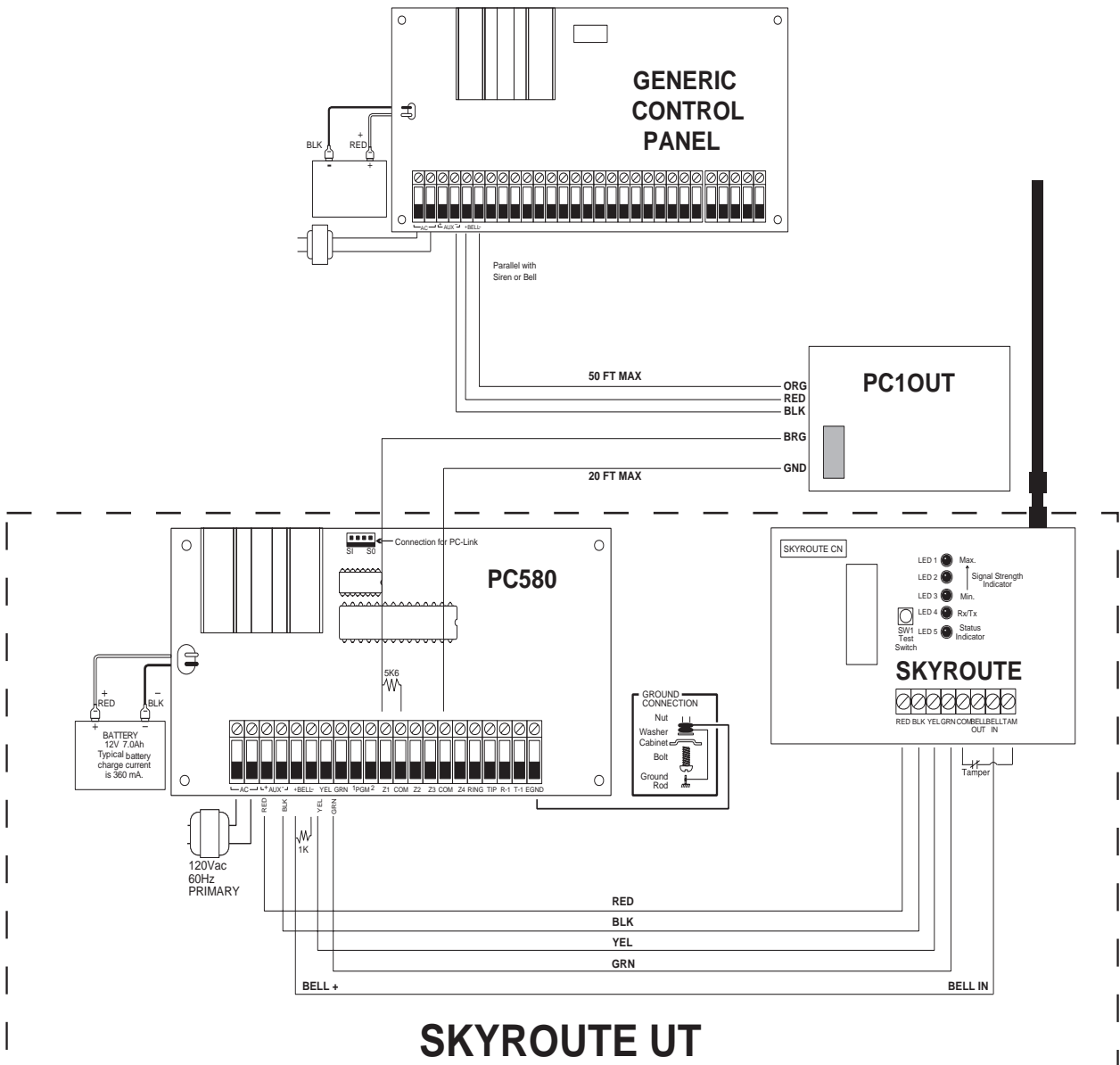


Skyroute UT Transceiver (With low voltage output from Alarm Panel)



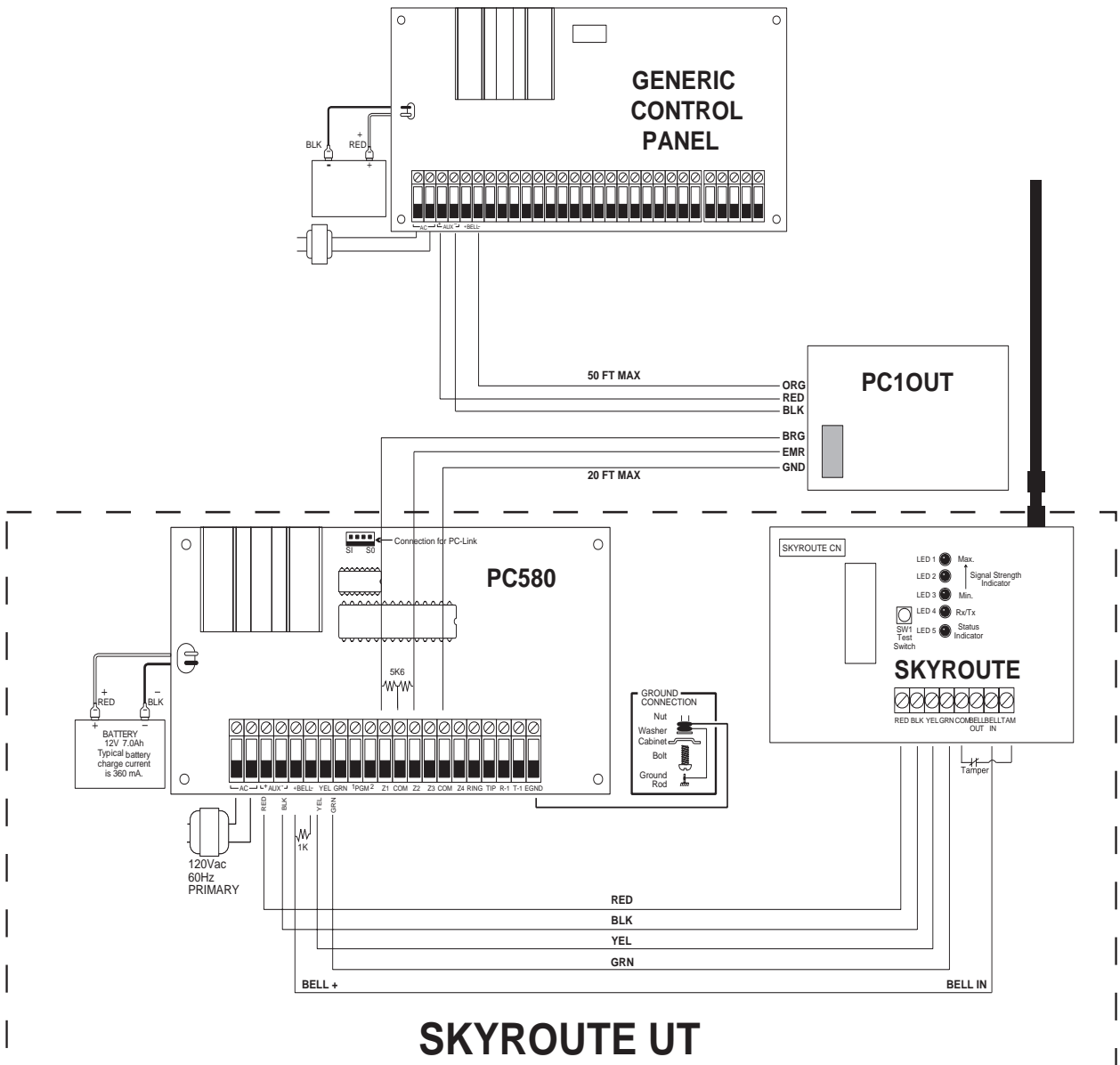


Existing Alarm Control with a Skyroute UT Transceiver (Switched Positive Bell)



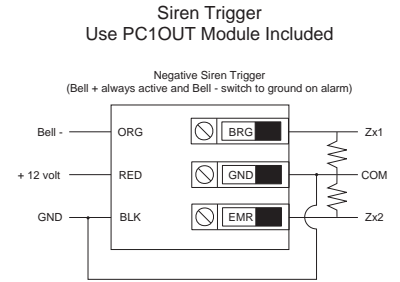
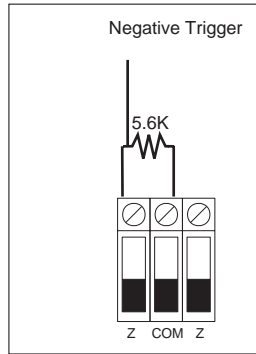
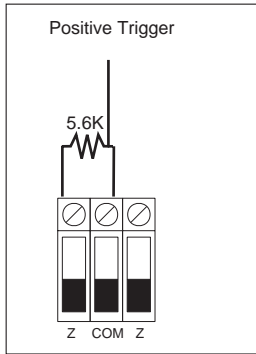


Existing Alarm Control with a Skyroute UT Transceiver (Switched Negative Bell)





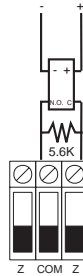
Skyroute UT Transceiver



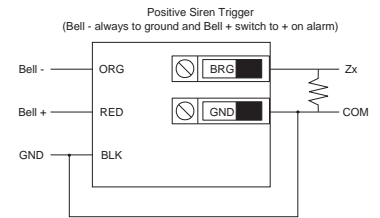
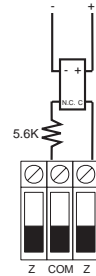
With this configuration, Zx1 will be trigger on steady Bell and Zx2 will be trigger on pulsed Bell

Relay Trigger or Dry Contact Trigger

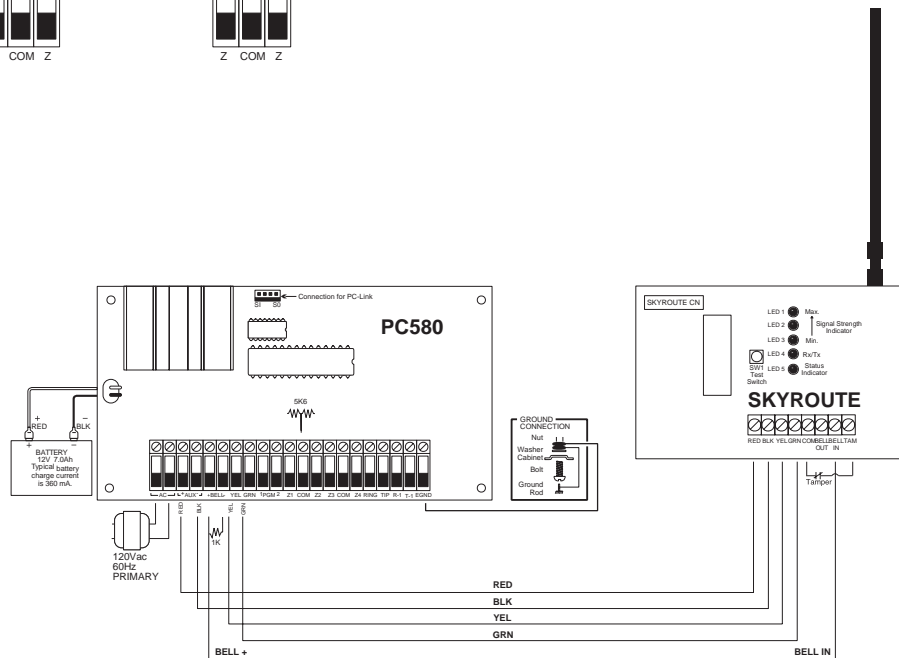
Normally Open Contact



Normally Closed Contact



With this configuration, Zx1 will be trigger every time the Bell is activated



SKYROUTE UT



Appendix A

SIA Communications For Skyroute

SIA Communication Format:

The SIA communication format used in this product follows the Level 2 specifications of the SIA Digital Communication Standard - February 1993. This format will send the Account Code along with its data transmission. Below are the Zone Alarms & Alarm Restores (Zones 01-32) as well as any additional codes that can be transmitted;

Terms:

<u>Code</u>	<u>Description</u>
—	Not used
zz	Zone #
us	User #
ln	Line
ex	Expander #

Alarms:

<u>Event Description</u>	<u>SIA Message</u>	<u>Zone# Identified</u>
Null Zone (Not used)	_____	_____
Delay 1	BAzz/BHzz	Yes
Delay 2	BAzz/BHzz	Yes
Instant	BAzz/BHzz	Yes
Interior	BAzz/BHzz	Yes
Delay H.A.	BAzz/BHzz	Yes
Interior H.A.	BAzz/BHzz	Yes
24 Hr Burglary	BAzz/BHzz	Yes
Standard Fire	FAzz/FHzz	Yes
Delayed Fire	FAzz/FHzz	Yes
24 Hour Supervisory (LINKS)	UAzz/UHzz	Yes
24 Hr Supervisory Buzzer	UAzz/UHzz	Yes
24 Hr Supervisory	USzz/URzz	Yes
24 Hr Medical	MAzz/MHzz	Yes
24 Hr Panic	PAzz/PHzz	Yes
24 Hr Hold-up	HAzz/HHzz	Yes
24 Hr Gas	GAzz/GHzz	Yes
24 Hr Heat	KAzz/KHzz	Yes
24 Hr Emergency	QAzz/QHzz	Yes
24 Hr Sprinkler	SAzz/SHzz	Yes
24 Hr Water	WAzz/WHzz	Yes
24 Hr Freeze	ZAzz/ZHzz	Yes
24 Hr Latching Tamper	BAzz/BHzz	Yes
Momentary Keyswitch Arm	BAzz/BHzz	Yes
Maintained Keyswitch Arm	BAzz/BHzz	Yes



SIA Communications For Skyroute(continued)

<u>Event Description</u>	<u>SIA Message</u>	<u>Zone# Identified</u>
Duress Alarm	HA00	
Opening After Alarm	OR00	
Keypad [F]ire	FAzz/FHzz	Yes
Keypad [A]uxiliary	MAzz/MHzz	Yes
Keypad [P]anic	PAzz/PHzz	Yes
PGM2:		
2 Wire Smoke	FA99/FH99	
Audible 24 Hour	UA99/UH99	
Silent 24 Hour	UA99/UH99	
Zone Tamper (1-32)	TAzz	Yes
Zone Tamper Restorals (1-32)	TRzz	Yes
General System Tamper / Restore	TA00/TR00	
Closing by Access Codes (1-32,33,34,40,41,42)	CLus	Yes
Partial Closing	CGus	Yes (using UBzz)
Opening by Access Codes (1-32,33,34,40,41,42)	OPus	Yes
Battery Trouble	YT00/YR00	
AC Failure Trouble	AT00/AR00	
Bell Circuit Trouble	UT99/UJ99	
Fire Trouble	FT00/FJ00	
Auxiliary Power Supply Trouble	YP00/YQ00	
TLM Trouble Code (via Skyroute)	LT00	
General System Supervisory / Restore	ET00/ER00	
General System Trouble / Restore	YX00/YZ00	
TLM Restoral	LR00	
FTC Fail / FTC Restoral	YC00/YK00	
Event Buffer 75% Full Since Last Upload	JL00	
Periodic Test Transmission	RP00	
System Test	RX00	
Skyroute Test Transmission Code	TX00	Signal Strength
Zone Fault Alarm/Restoral	UTzz/UJzz ¹	Yes
Burglary Verified	BV00	
Delinquency Code	CD00	
Zone Low Battery	XTzz/XRzz ²	Yes
Recent Closing	CR00	User NOT Identified
Zone Expander Supervisory	UA00/UH00	
Keypad Lockout	JA00	
Special Closing (DLS, Keys, Maint, Quick)	CLus	Yes (User)
Special Opening (DLS, Keys, Maint)	OPus	Yes (User)
DLS Lead In	RB00	
DLS Lead Out (Successful)	RS00	
Auto-Arm Cancellation	CE00	
Late to Close	CI00	
Skyroute Tamper Cut	TAzz/TRzz	Yes
Keybus Cut	USzz/URzz	Yes
Telephone Line Cut	LTIn/LRIn	
Expansion Device	ETex/ERex	

FCC COMPLIANCE STATEMENT

CAUTION: Changes or modifications not expressly approved by Digital Security Controls Ltd. could void your authority to use this equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, 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 instructions, 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 or more of the following measures:

- Re-orient the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

The user may find the following booklet prepared by the FCC useful: "How to Identify and Resolve Radio/Television Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington D.C. 20402. Stock # 004-000-00345-4.

Important Information

This equipment complies with Part 68 of the FCC Rules. On the side of this equipment is a label that contains, among other information, the FCC registration number of this equipment.

NOTIFICATION TO TELEPHONE COMPANY The customer shall notify the telephone company of the particular line to which the connection will be made, and provide the FCC registration number and the ringer equivalence of the protective circuit.

FCC Registration Number: F53CAN-32394-A1-II

Ringer Equivalence Number: 0.0B

USOC Jack: RJ-31X

TELEPHONE CONNECTION REQUIREMENTS Except for the telephone company provided ringers, all connections to the telephone network shall be made through standard plugs and telephone company provided jacks, or

AVIS: L'étiquette de l'industrie Canada identifie le matériel homologué. Cette étiquette certifie que le matériel est conforme à certaines normes de protection, d'exploitation et de sécurité des réseaux de télécommunications. Industrie Canada n'assure toutefois pas que le matériel fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer ce matériel, l'utilisateur doit s'assurer qu'il est permis de le raccorder aux installations de l'entreprise locale de télécommunication. Le matériel doit également être installé en suivant une méthode acceptée de raccordement. L'abonné ne doit pas oublier qu'il est possible que la conformité aux conditions énoncées ci-dessus n'empêchent pas la dégradation du service dans certaines situations.

Les réparations de matériel homologué doivent être effectuées par un centre d'entretien canadien autorisé désigné par le fournisseur. La compagnie de télécommunications peut demander à l'utilisateur de débrancher un appareil à la suite de réparations ou de modifications effectuées par l'utilisateur ou à cause de mauvais fonctionnement.

Pour sa propre protection, l'utilisateur doit s'assurer que tous les fils de mise à la terre de la source d'énergie électrique, les lignes téléphoniques et les canalisations d'eau métalliques, s'il y en a, sont raccordés ensemble. Cette précaution est particulièrement importante dans les régions rurales.

AVERTISSEMENT: L'utilisateur ne doit pas tenter de faire ces raccordements lui-même; il doit avoir recours à un service d'inspection des installations électriques, ou à un électricien, selon le cas.

L'indice de charge (IC) assigné à chaque dispositif terminal indique, pour éviter toute surcharge, le pourcentage de la charge totale qui peut être raccordée à un circuit téléphonique bouclé utilisé par ce dispositif. La terminaison du circuit bouclé peut être constituée de n'importe quelle combinaison de dispositifs, pourvu que la somme des indices de charge de l'ensemble des dispositifs ne dépasse pas 100.

L'indice de charge de ce produit est 0.1B.

équivalent, in such a manner as to allow for easy, immediate disconnection of the terminal equipment. Standard jacks shall be so arranged that, if the plug connected thereto is withdrawn, no interference to the operation of the equipment at the customer's premises which remains connected to the telephone network shall occur by reason of such withdrawal.

INCIDENCE OF HARM Should terminal equipment or protective circuitry cause harm to the telephone network, the telephone company shall, where practicable, notify the customer that temporary disconnection of service may be required; however, where prior notice is not practicable, the telephone company may temporarily discontinue service if such action is deemed reasonable in the circumstances. In the case of such temporary discontinuance, the telephone company shall promptly notify the customer and will be given the opportunity to correct the situation.

ADDITIONAL TELEPHONE COMPANY INFORMATION The security control panel must be properly connected to the telephone line with a USOC RJ-31X telephone jack.

The FCC prohibits customer-provided terminal equipment be connected to party lines or to be used in conjunction with coin telephone service. Interconnect rules may vary from state to state.

CHANGES IN TELEPHONE COMPANY EQUIPMENT OR FACILITIES The telephone company may make changes in its communications facilities, equipment, operations or procedures, where such actions are reasonably required and proper in its business. Should any such changes render the customer's terminal equipment incompatible with the telephone company facilities the customer shall be given adequate notice to the effect modifications to maintain uninterrupted service.

RINGER EQUIVALENCE NUMBER (REN) The REN is useful to determine the quantity of devices that you may connect to your telephone line and still have all of those devices ring when your telephone number is called. In most, but not all areas, the sum of the RENs of all devices connected to one line should not exceed five (5.0). To be certain of the number of devices that you may connect to your line, you may want to contact your local telephone company.

EQUIPMENT MAINTENANCE FACILITY If you experience trouble with this telephone equipment, please contact the facility indicated below for information on obtaining service or repairs. The telephone company may ask that you disconnect this equipment from the network until the problem has been corrected or until you are sure that the equipment is not malfunctioning.

Digital Security Controls Ltd. 160 Washburn St., Lockport, NY 14094

NOTICE: The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. Industry Canada does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

User should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

CAUTION: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

The Load Number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device, to prevent overloading. The termination on a loop may consist of any combination of devices subject only to the requirement that the total of the Load Numbers of all the devices does not exceed 100.

The Load Number of this unit is 0.1B.

Limited Warranty

Sur-Gard Ltd. warrants that for a period of sixty months from the date of purchase, the product shall be free of defects in materials and workmanship under normal use and that in fulfillment of any breach of such warranty, Sur-Gard Ltd. shall, at its option, repair or replace the defective equipment upon return of the equipment to its repair depot. This warranty applies only to defects in parts and workmanship and not to damage incurred in shipping or handling, or damage due to causes beyond the control of Sur-Gard Ltd., such as lightning, excessive voltage, mechanical shock, water damage, or damage arising out of abuse, alteration or improper application of the equipment.

The foregoing warranty shall apply only to the original buyer, and is and shall be in lieu of any and all other warranties, whether expressed or implied and of all other obligations or liabilities on the part of Sur-Gard Ltd. This warranty contains the entire warranty. Sur-Gard neither assumes, nor authorizes any other person purporting to act on its behalf to modify or to change this warranty, nor to assume for it any other warranty or liability concerning this product.

In no event shall Sur-Gard Ltd. be liable for any direct, indirect or consequential damages, loss of anticipated profits, loss of time or any other losses incurred by the buyer in connection with the purchase, installation or operation or failure of this product.

Warning

Sur-Gard Ltd. recommends that the entire system be completely tested on a regular basis. However, despite frequent testing, and due to, but not limited to, criminal tampering or electrical disruption, it is possible for this product to fail to perform as expected.

How to contact us:

Sales

For information about additional products, please call our sales number: 1-800-418-7618, or e-mail us at sales@sur-gard.com.

Technical Support

If you have questions or problems when using Sur-Gard products, you can call technical support. If you are within the United States, Puerto Rico, the U.S. Virgin Islands or Canada, you can get support by dialing 1-800-503-5869 ext.1. If you are outside these areas, please call (416) 665-4494 ext.1, or e-mail us at support@sur-gard.com.

Internet

Visit our Sur-Gard site. You will be able to search the Sur-Gard technical information database and read information about new products. You will also be able to send us your questions. Our World Wide Web address is <http://www.sur-gard.com>.



**SG SECURITY
COMMUNICATIONS**

A Division of Sur-Gard Security Systems Ltd.

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401 Magnetic Drive, Unit 24-28,

Downsview, Ontario, M3J-3H9

Phone: 416-665-4494

Sales: 1-800-418-7618

Technical Support: 1-800-503-5869

www.sur-gard.com

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