

LINKS 2150™

Long Range Radio
Alarm Transmitter

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FEATURES

- Transmits alarm information to a long range radio network
- Features 8 alarm zones
- Varitech Transmission Format option
- Interfaces with DSC Control Panels and transmits reporting codes for PC16-OUT events
- Supports DSC Control Panels' Serial Output Option

Keypad Programmable

The LINKS2150 is complete with a default program and is operational with a minimum of programming. The LINKS2150 is completely keypad programmable.

EEPROM Memory

The LINKS2150 uses EEPROM memory which will retain all program information even if AC and battery power is removed. The EEPROM memory can be reprogrammed thousands of times.

Static/Lightning Protection

The LINKS2150 has been carefully designed and tested to provide reliable protection against static and lightning induced transients. Our special "Zap-Trac" circuit board design catches high voltage transients right at the wiring terminals, and transient protection devices are placed in all critical areas to further reduce damaging voltages.

Supervision

- Low or disconnected external battery
- Loss of external AC power
- Security control panel connection supervision

Operation

- Long-range radio alarm transmitter
- Compatible with PC16-OUT functions on the PC1500, PC1550, PC2525, PC2550, PC3000
- Compatible with serial output functions on the PC2525 v1.1 or later, PC2550 v1.31 or later, PC3000 v7.71 or later and the PC4020CF V2.1 or later. **Ensure that the control panel is equipped with the proper software version; refer to Section [10] on page 10 for information**
- 8 zone inputs for stand-alone operation
- Capable of reporting PC16-OUT Output Module events
- 4 LINKS2150 Trouble Reporting Codes and Test Transmission Reporting Code
- Programmable Test Transmission Time
- Programmable zone response time
- Inputs for external power supply trouble indications
- System Clock and Date
- Installer Lockout feature
- Programmed with the DSC PC2550RK LED Keypad

SPECIFICATIONS

- 8 positive or negative triggered zone inputs
 - positive voltage trigger: 4 to 14 Vdc
 - negative voltage trigger: 0 to 0.8 Vdc
 - input impedance: 10 k Ω
 - maximum zone loop resistance: 100 Ω
- 2 negative triggered trouble inputs
 - negative voltage trigger: 0 to 0.8 Vdc
- Required power supply: 11.5 to 14Vdc at 1A
- Trouble Output: 50mA
- Programmable with the DSC PC2550RK Keypad
- Radio transmitter frequency: as specified on transmitter unit
- Antenna (not supplied):
 - Larsen MHW-450, 50 Ω vertical antenna
 - 450 - 470 MHz
- Cabinet dimensions:
 - 11" high \times 11.8" wide \times 3.3" (279 mm \times 300 mm \times 84mm)
- Cabinet colour: light beige

INSTALLATION

Locating the LINKS2150

Locate the LINKS cabinet in a convenient location next to the already installed security system control panel cabinet. As much as is reasonably possible, the LINKS2150 should not be located near sources of interference. These include sources of electrical noise such as computers, televisions and electric motors in appliances and heating and air conditioning units, as well as large metal objects like heating ducts and plumbing which may shield the antenna. If the cabinet must be located near such items, the LINKS antenna may have to be mounted on a remote bracket away from the cabinet.

Whenever possible, locate the LINKS2150 as close as possible to the security system alarm control panel.

Mounting the Cabinet

If it is not already installed, install and test the security system according to the instructions found in the security system's Installation Manual.

Remove the LINKS2150 and mounting hardware from the cardboard packaging. Before attaching the cabinet to the wall, press the supplied mounting studs into the raised mounting holes from the back of the cabinet.

Mount the cabinet securely to the wall. It is recommended that appropriate wall anchors be used when securing the panel to drywall, plaster, concrete, brick or other similar surfaces.

Install the LINKS2150 in the mounted cabinet. Locate the antenna connection in the hole at the top of the cabinet and press the LINKS2150 onto the nylon mounting studs. Insert all cables into the cabinet and prepare them for connection.

Secure the antenna to the LINKS2150 antenna connector. Tighten the antenna "finger tight" only.

NOTE: An antenna should always be connected to the LINKS2150 whenever it is operated. The unit will not function properly and may be damaged if an antenna is not installed.

Do not connect the power supply until all other wiring, including the antenna connection, has been completed and checked to ensure that it is correct. Incorrect wiring connections may cause the LINKS unit to operate improperly, or may damage the LINKS unit.

Power Terminals + 12v -

Connect the power terminals (+ 12V -) to the BELL+ and COM terminals of the control panel as shown in the diagram on page 18. If a local bell/siren is to be used, it must have a separate power source. The LINKS 2150 must be powered from the BELL/COM terminals and as well must be the only device powered by the BELL output.

Do not apply power to the unit until all wiring connections are completed and the antenna is attached to the unit.

The connections between the LINKS2150 and the control panel should not be greater than the lengths specified in the table shown below:

Wire Gauge AWG	Maximum Wire Length feet / metres
22	15' / 4.5m
20	25' / 7.5m
18	40' / 12.0m

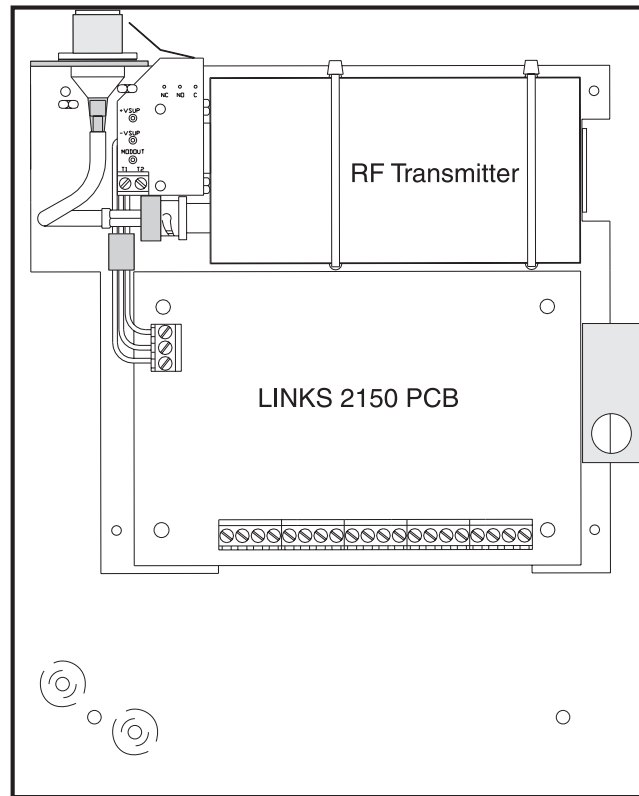
The maximum wire length may be doubled if the conductors are doubled and connected in parallel.

Whenever possible, locate the control panel as close to the LINKS2150 as possible.

TRBL Trouble Terminals

AC TRBL Input Terminal

The AC TRBL input terminal is used to report AC failure troubles. If the power supply being used has an AC failure trouble output, connect the output to the AC TRBL terminal. When the AC TRBL terminal is shorted to ground, the LINKS2150 will transmit the External AC Trouble reporting code programmed in Section [08].



LINKS 2150 shown mounted in cabinet

LB TRBL Input Terminal

The LB TRBL input terminal is to report low back-up battery trouble. If the power supply being used has a low battery trouble output, connect the output to the LB TRBL terminal. When the LB TRBL terminal is shorted to ground, the LINKS2150 will transmit the External Low Battery Trouble reporting code programmed in Section [08].

OUT TRBL Output Terminal

The OUT TRBL output terminal will switch to ground when the LINKS2150 detects a trouble condition; refer to Trouble Display in the Operation section of this manual for information on the trouble conditions monitored by the LINKS2150. The OUT TRBL terminal may be connected to a control panel zone terminal to report LINKS2150 trouble conditions to the security system, or the OUT TRBL terminal may be used to activate a visual or audible trouble indicator.

YEL and PGM PANEL Terminals

If the LINKS2150 is being used for stand-alone operation, do not connect these terminals.

If the LINKS2150 is being used with the PC16-OUT option enabled (see Programming Section [10]), connect the YEL and PGM terminals to the KEYPAD YEL and PGM terminals of the DSC control panel being used with the LINKS2150. Refer to the Hook-up Diagram in the back of this manual for instructions on making the control panel connections.

If the LINKS2150 is being used with the Serial Input option enabled (see Programming Section [10]), connect the PGM terminal to the PGM terminal of the DSC control panel being used with the LINKS2150. When using the Serial Input option, do not connect the YEL terminal. Refer to the Hook-up Diagram in the back of this manual for instructions on making the control panel connections.

COM Terminal

When using the LINKS2150 with a security system, connect the COM terminal to the negative DC power supply terminal of the security system control panel.

The COM terminal is also used for making zone connections. Refer to the Hook-up Diagram for instructions on making zone connections to the LINKS2150.

YEL and GRN KEYPAD Terminal

The LINKS2150 is programmed with a DSC PC2550RK Keypad; the keypad is not intended to be permanently connected to the LINKS2150. A PC2550RK Keypad with a short length of 4-conductor cable and alligator clips or test leads will be convenient for programming and testing LINKS2150 units.

Connect the YELLOW and GREEN leads from the PC2550RK Keypad to the YEL and GRN KEYPAD terminals. Connect the RED keypad lead to the VZ terminal, and the BLK keypad lead to the COM terminal. **Note that the PC2550RK keypad connected to the LINKS2150 will only perform functions on the LINKS2150; the security system connected to the LINKS2150 cannot be operated from the keypad connected to the LINKS2150.**

NOTE: An alarm may be generated when connecting or disconnecting the keypad from the COM and VZ terminals.

VZ and Z1 to Z8 Terminals

The VZ terminals are 12Vdc outputs used for the LINKS2150 zone connections. Z1 through Z8 are the terminals for Zones 1 through 8. Refer to the Hook-up Diagram in the back of this manual for instructions for making zone connections.

MOD OUT and V SUP Terminals

These terminals connect the LINKS2150 to the radio transmitter. **These connections are made at the factory and should not be altered.**

OPERATION

The PC2550RK keypad provides complete system status operation, including LINKS2150 zone status and trouble condition information. The keypad is also used to program the LINKS2150 reporting codes and system options.

The keypad's 8 zone lights provide alarm and status indication for the alarm circuits. When the [*] Key is pressed, the zone lights are used to display trouble conditions.

Note that the keypad connected to the LINKS2150 is only used to operate and display information from the LINKS2150 unit. The keypad connected to the LINKS2150 cannot operate or display system information from an alarm control panel connected to the LINKS2150. If the LINKS2150 is connected to a security system, the keypad should be removed once the LINKS2150 has been programmed.

Normal Operation

During normal operation, the PC2550RK keypad will be in the Ready mode with the "Ready" light illuminated. Activity on the LINKS2150 zone terminals (terminals Z1 through Z8) will be indicated on the Zone Lights; when a zone is activated, the Zone Light will come ON.

If a LINKS2150 trouble condition is detected, the "Trouble" light will come ON. Press [*] to view trouble conditions.

Note that the zones on the LINKS2150 are "armed" at all times.

Trouble Display

The LINKS2150 continuously monitors for four trouble conditions. If one of these conditions occurs, the keypad "Trouble" light will come ON and the keypad will sound two short beeps every 10 seconds. To silence the buzzer, press the [#] key; the sounder will be silenced but the "Trouble" light will remain ON until the trouble condition is cleared. Trouble conditions may be reported to the monitoring station by programming alarm and restoral reporting codes in Sections [08] and [09].

To view the trouble condition, press [*]. Trouble conditions will be indicated on the keypad Zone Lights:

Zone Light

- [1] **Internal Low Voltage Trouble:** If the DC supply to the LINKS2150 drops below 10.9 Vdc for more than 4 minutes, this trouble will be indicated. This trouble condition will only be cleared after the DC supply voltage returns to 11.6 Vdc or higher for more than 4 minutes.
NOTE: The LINKS2150 will not power up with a low voltage from the power supply. Ensure that a 12Vdc supply is connected to the LINKS2150.
- [2] **External AC Trouble:** If the AC TRBL terminal is switched to ground, the LINKS2150 will generate an External AC Trouble. This trouble is used to report AC trouble conditions generated by an "intelligent" power supply.
- [3] **External Low Battery Trouble:** If the LB TRBL terminal is switched to ground, the LINKS2150 will generate an External Low Battery Trouble. This trouble is used to report low battery trouble conditions generated by an "intelligent" power supply.
- [4] **Control Panel Connection Trouble:** If the connection between the LINKS2150 and the security control panel is interrupted for more than 90 seconds, this trouble will be generated. This trouble will only be displayed if either the PC16-OUT or Serial Input options in Section [10] are enabled. This trouble condition will be automatically cleared when wiring or programming errors are corrected.
- [8] **Loss of Time Trouble:** This trouble condition will be displayed when the LINKS2150 is powered up after having lost power. This condition will only be displayed if a Test Transmission time is programmed in Section [12]. This trouble will be cleared after trouble conditions are displayed and the display mode is exited, or after the system clock is reset in Section [13].

To exit the trouble display mode, press the [#] key.

If [9] is pressed while in the trouble display mode, the most recent trouble will be displayed on the zone lights. This trouble memory is useful as a diagnostic tool when installing and servicing the LINKS2150.

OUT TRBL Terminal

When a trouble condition is generated, the OUT TRBL terminal will switch to ground and will remain switched until the trouble condition is cleared. This output may be used to activate a trouble indicator, such as an LED indicator, a low current sounder, or an RM-1 relay connected to another device. The OUT TRBL terminal may also be connected to a zone terminal on a security control panel to report LINKS trouble conditions to the security system.

PROGRAMMING THE LINKS2150

Enter the Installer's Code. The default Installer's Code is [2150]; the code may be changed in Programming Section [11].

When the Installer's Code is entered, the "Armed" light will come ON and the "Program" light will FLASH. The LINKS2150 is now ready to be programmed. To exit the programming mode and return to the "Ready" mode, press the [#] key.

NOTE: If no key is pressed for more than two minutes, the LINKS2150 will return to the Ready mode and the Installer's Code will have to be entered again.

With the "Armed" light ON steady, enter two digits for the section to be programmed. Programming sections range from [01] to [14], and special sections [90], [91] and [99]. Each Section may be programmed individually.

Once the desired Section has been entered, the "Armed" light will be shut OFF, the "Ready" light will be ON, and the "Program" light will FLASH. The keypad will also beep 3 times. Programming data may now be entered.

Programming Data

Most Sections contain groups of 2-digit entries. The keypad will beep twice after each 2-digit group is entered.

When a Section is entered, Zones Lights 1 through 4 will indicate, in binary format, the value of the first digit in the Section; refer to the Binary Data Display chart.

If you wish to change that digit, simply enter the new digit. If you wish to keep that digit unchanged, you can enter the same number or skip over the digit by pressing the [F] Key. Hexadecimal numbers may also be entered in most Sections. Refer to Hexadecimal Data Programming for instructions on programming hex data.

When the first digit has been entered or skipped, the Zone Lights will display the value of the next digit. After each digit is entered or skipped, the Zone Lights show the value of the next digit.

When all data for a Section is entered or reviewed, the keypad will beep several times and the "Armed" light will come ON and the "Ready" light will be shut OFF.

At this point, you will still be in the program mode. Enter the 2-digit number of the next Section to be programmed.

It is not necessary to program all 2-digit pairs in a Section. A Section can be entered and selectively programmed by going only to the digit or digits you wish to change, and then pressing [#] to return to the programming mode.

For 2-digit numbers, both digits must be programmed before pressing the [#] key. Only the data entered before pressing the [#] key will be changed.

Section [10] System Configuration

Section [10] allows system options to be enabled or disabled. Section [10] uses the Zone Lights to indicate which options are selected; press the corresponding number keys to turn the options ON and OFF. When Section [10] is entered, Zone Lights 1 to 8 will display which options are selected. Pressing the number key corresponding to the option's Zone Light will alternately turn light ON and OFF. All lights can be turned OFF at once by pressing [0]. When the option selections have been made, press [#] to save the selections in memory and return to the program mode.

Binary Data Display

Zone lights 1 through 4 are used to display the binary value of the data as shown in the table below.

HEX data entry
Refer to HEX Data Programming

Value	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Zone 1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Zone 2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Zone 3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Zone 4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Zone Light ON
 Zone Light OFF

Reviewing Programmed Data

- Enter the section to be programmed by entering the 2-digit section number.
- Zone Lights 1 through 4 will represent the value, in binary format, of the first digit in the section.
- Press the [F] key to advance the display to the next digit.
- At the end of the section, the keypad will beep several times and then return to the Program Mode so that another section can be selected for review or programming.

HEX Data Programming

Certain Programming Sections may require the entry of data in HEX (hexadecimal, or base 16) format. HEX numbering uses the numbers 0 through 9 and the letters A through F.

The letters A through F are represented by the number keys 1 through 6. To enter data in HEX format, first press the [*] key; the "Ready" light will FLASH. Press a number key from [1] to [6] to enter a HEX digit. The "Ready" light will stop flashing, indicating that the next keypress will enter a decimal value.

To enter HEX numbers:

A	Enter [*][1]
B	Enter [*][2]
C	Enter [*][3]
D	Enter [*][4]
E	Enter [*][5]
F	Enter [*][6]

When the "Ready" light is ON STEADY: data is entered in decimal

When the "Ready" light is FLASHING: data is entered in HEX

If the [*] key is pressed accidentally while entering data, press the [*] key a second time to exit the HEX data entry mode.

LINKS2150 PROGRAMMING SECTIONS

[01] 2150 Radio Account Code

This 4-digit code is used to identify the system and is transmitted when the LINKS2150 initiates communications. Program a 4-digit code in this section. Enter the code using numbers from 0 through 9 only. **An account code must be entered before communications through the LINKS2150 can be used. Do not enter hexadecimal numbers in this section.**

[02] Alarm Reporting Codes, Zones 1 to 8

Enter eight 2-digit codes for the Alarm Reporting Codes for the LINKS2150 zones. These codes are used to report alarms on zones 1 through 8.

[03] Restoral Reporting Codes, Zones 1 to 8

Enter eight 2-digit codes for the Restoral Reporting Codes for the LINKS2150 zones. These codes are used to report restorals on zones 1 through 8.

[04] PC16-OUT Event Activation Reporting Codes 1 to 8

The LINKS2150 is designed to transmit reporting codes when PC16-OUT events occur on a connected DSC control panel. Programming Sections [04] through [07] contain the reporting codes that will be transmitted to report PC16-OUT events and restorals. To use this feature, be sure to enable the PC16-OUT function in Programming Section [10]. If the PC16-OUT reporting feature is not to be used, do not program reporting codes in these sections and do not enable the feature in Section [10].

NOTE: A PC16-OUT Module is not required to report PC16-OUT events. Refer to the Hook-up Diagram in the back of this manual for instructions on connecting a control panel to the LINKS2150.

To use the PC16-OUT reporting feature, ensure that the PC16-OUT option is enabled in the DSC control panel connected to the LINKS2150:

Control Panel	Enable PC16-OUT Operation in...
PC1500 / PC1550	Section [13] Light 4
PC2525	Section [08] Light 6
PC2550	Section [16] Light 4
PC3000	Section [19] Light 4

In the LINKS2150 Programming Section [04], enter eight 2-digit codes for PC16-OUT events 1 through 8. These codes will be transmitted when PC16-OUT events 1 through 8 occur. The chart below describes PC16-OUT events 1 through 8.

Event	PC1500 / PC1550	PC2525	PC2550	PC3000
1	Zone 1	Zone 1	Zone 1	Zone 1
2	Zone 2	Zone 2	Zone 2	Zone 2
3	Zone 3	Zone 3	Zone 3	Zone 3
4	Zone 4	Zone 4	Zone 4	Zone 4
5	Zone 5	Zones 5-8	Zones 5-8	Zones 5-8
6	Zone 6	Not Used	Not Used	Zones 9-16
7	Not Used	Not Used	AUX Input	AUX Input
8	Fire	Fire	Fire	Fire

NOTES:

- On the **PC1500, PC1550 and PC2525**, the Reporting Code for Event 8 is transmitted along with the Reporting Code for the zone programmed as the Fire Zone.
- On the **PC2550**, if the AUX Input is programmed for Momentary Key Arming or Forced Answer in Section [30], Event 7 AUX Input will not be reported
- On the **PC3000**, if the AUX Input is programmed for Momentary Key Arming or Forced Answer in Section [28], Event 7 AUX Input will not be reported
- **For all systems, Event 8 will not be transmitted until the security system's 30-second warning delay has expired.**

NOTE: PC4020 does not support PC16-OUT operation mode.

[05] PC16-OUT Event Activation Reporting Codes 9 to 16

Enter eight 2-digit codes for the activation of PC16-OUT events 9 through 16. These codes will be transmitted when PC16-OUT events 9 through 16 occur. The chart below describes PC16-OUT events 9 through 16.

Event	PC1500 / PC1550	PC2525	PC2550	PC3000
9	Trouble	Trouble	Trouble	Trouble
10	Bypass	Bypass	Bypass	Bypass
11	Armed	Armed	Armed A	Armed A
12	Armed	Armed	Armed B	Armed B
13	[P]anic Key	[P]anic Key	[P]anic Key	[P]anic Key
14	[A]uxiliary Key	[A]uxiliary Key	[A]uxiliary Key	[A]uxiliary Key
15	[F]ire Key	[F]ire Key	[F]ire Key	[F]ire Key
16	PGM Output	PGM Output	PGM Output	PGM Output

NOTES:

- The Event 9 Reporting Code (Trouble) is a general system trouble report which will be transmitted whenever there is a trouble condition on the control panel connected to the LINKS2150. **The Event 9 Reporting Code cannot specify which trouble condition is present on the control panel.**
- The Event 10 Reporting Code (Bypass) is transmitted at the end of the security system's Exit Delay if the security system is armed with manually bypassed zones. Five seconds after the end of the Exit Delay, the Event 10 Restoral Code will be transmitted. **Note that Event 10 reports manually bypassed zones only; it does not indicate Home-Away bypass status.**
- If the security system does not use Split-Arming, reporting codes do not need to be programmed for both Events 11 and 12.
- When using the **PC1500 or PC1550**, note that the factory default settings for these control panels cause the PGM output to be normally active. **This will cause the Event 16 PGM Output reporting code to be transmitted if one is programmed.**
- The Event 16 Reporting Code (PGM Output) is used to indicate the activation of the PGM Output on the security system connected to the PC16-OUT. PGM Output options for each DSC system are programmed in the following programming sections:

Control Panel	Program PGM Option in...
PC1500 and PC1550	Section [24]
PC2525	Section [06]
PC2550	Section [30]
PC3000	Section [28]

Refer to the security system Installation Manual for instructions on programming the PGM Output options and for explanations of the output options. **Note: PC4020 does not support PC16OUT operation mode.**

[06] PC16-OUT Event Restoral Reporting Codes 1 to 8

Enter eight 2-digit codes for the restoral of PC16-OUT events 1 through 8. These codes will be transmitted when PC16-OUT events 1 through 8, as described in Section [04], are restored.

NOTES:

- Transmission of the Restoral Codes for Events 1 through 6 is dependent upon the Zone Restoral Option programmed in the DSC security system connected to the LINKS2150. Restorals may be programmed to be transmitted on Bell Timeout, or they may be programmed to be transmitted when the zone is restored to a non-alarm state. **When the security system is disarmed, restoral codes for 24-hour Zones will be transmitted when the detection device connected to the zone is restored to a non-alarm state. When the security system is armed, the restoral codes for 24-hour Zones will be transmitted according to the setting of the zone restoral option.** The chart below indicates where the zone restoral option is programmed in each of the DSC control panels compatible with the LINKS2150:

Control Panel	Program Zone Restoral Option in...
PC1500 and PC1550	Section [31] Light 6
PC2525	Section [46] Light 2
PC2550	Section [15] Light 2
PC3000	Section [18] Light 2

- The Restoral Codes for Events 7 and 8 are transmitted as soon as the zone is restored.

-
- For the **PC2550**, if the AUX Input is programmed for Momentary Key Arming or Forced Answer in Section [30], Event 7 AUX Input will not be reported
 - For the **PC3000**, if the AUX Input is programmed for Momentary Key Arming or Forced Answer in Section [28], Event 7 AUX Input will not be reported
 - The Event 16 Reporting Code (PGM Output) is used to indicate the deactivation of the PGM Output on the security system connected to the PC16-OUT. Refer to Section [05] for information on where to program the security system's PGM Output options. Also, refer to the security system's Installation Manual when programming output options.

Note: PC4020 does not support PC16OUT operation mode.

[07] PC16-OUT Event Restoral Reporting Codes 9 to 16

Enter eight 2-digit codes for the restoral of PC16-OUT events 9 through 16. These codes will be transmitted when PC16-OUT events 9 through 16, as described in Section [05], are restored.

NOTE: The Restoral Codes for Events 13, 14 and 15 are transmitted approximately 4 seconds after the Event Activation Reporting Code is transmitted. If this operation is not desired, do not program reporting codes for Events 13, 14 and 15.

Note: PC4020 does not support PC16OUT operation mode.

[08] Maintenance Alarm Reporting Codes

Program 2-digit alarm reporting codes for the following trouble conditions and the test transmission:

- **Internal Low Voltage Trouble**

This code will be transmitted when the voltage supplied to the LINKS2150 at the +12V and -12V terminals drops to 10.9 Vdc or less for more than 4 minutes. This trouble will be restored when the voltage returns to 11.6 Vdc or higher for more than 4 minutes.

- **External AC Trouble**

This code will be transmitted when the AC TRBL input terminal is switched to ground. The AC TRBL input terminal is connected to the AC trouble output of an "intelligent" power supply.

- **External Low Battery Trouble**

This code will be transmitted when the LB TRBL input terminal is switched to ground. The LB TRBL input terminal is connected to the low battery trouble output of an "intelligent" power supply.

- **Control Panel Connection Trouble**

This code will be transmitted when one of the connections between the LINKS2150 and the security control panel is interrupted for 90 seconds or more. The trouble condition will be cleared automatically once the wiring or programming errors are corrected.

NOTE: This trouble condition will only be generated if either the PC16-OUT or Serial Input options are enabled in Section [10].

- **Test Transmission**

This code will be transmitted at the time and at the interval programmed in Section [12]. Enable the Test Transmission function in Section [10].

[09] Maintenance Restoral Reporting Codes

Program 2-digit restoral reporting codes for the following trouble conditions:

- Internal Low Voltage Trouble Restoral
- External AC Trouble Restore
- External Low Battery Restore
- Control Panel Connection Trouble Restore

Refer to Section [08] for information on the maintenance alarm reporting codes and the conditions that will cause them to be transmitted.

[10] System Configuration

The System Configuration is set using the Zone Lights as shown in the table below. Once Section [10] is entered, the 8 Zone Lights will indicate the status of each option. Press the number key corresponding to the Zone Light to turn an option ON and OFF. Press [0] to turn all the Zone Lights OFF.

Zone Light 1	ON	Communications Disabled. The LINKS2150 will not initiate long range radio communications when alarm events occur or when data is received from the control panel. Disable communications to test the system and monitor zone activity on the keypad.
	•OFF	Communications Enabled. The LINKS2150 will initiate radio communications when alarm events occur or when data is received from the control panel.
Zone Light 2	ON	60 second Zone Bypass on Power-up. The alarm zones on the LINKS2150 (terminals Z1 through Z8) will be temporarily bypassed for 60 seconds after power is applied to the system. This allows time for the detection devices to “settle” after power is applied, and is intended to prevent false alarms.
	•OFF	Zones Active on Power-up. The alarm zones on the LINKS2150 will be active immediately when power is applied to the system.
Zone Light 3	ON	Test Transmission Disabled. The test transmission function will not operate.
	•OFF	Test Transmission Enabled. The LINKS2150 will transmit the RF Identification Code and the Test Transmission Reporting Code at the time and interval programmed in Section [12]. NOTE: A Test Transmission Code in Section [08] and a Test Transmission Time and Interval in Section [12] must be programmed to enable the Test Transmission.
Zone Light 4	ON	PC16-OUT Enabled. When enabled, the LINKS2150 is to be used with a security system that supports the PC16-OUT Output option. NOTE: It is not necessary to program security system reporting codes for PC16-OUT events unless telephone communications are required in addition to LINKS2150 communications.
	• OFF	PC16-OUT Disabled. The LINKS2150 is to be used in a stand-alone application, or with a DSC security system without PC16-OUT Output support.
Zone Light 5	ON	Negative Trigger Zone Inputs. All zone inputs require a negative trigger to activate. Refer to the Hook-up Diagram for instructions on connecting negative trigger zones.
	• OFF	Positive Trigger Zone Inputs. All zone inputs require a positive trigger to activate. Refer to the Hook-up Diagram for instructions on connecting positive trigger zones.
Zone Light 6	ON	For Future Use.
	• OFF	For Future Use.
Zone Light 7	ON	PC4020 Connection Enabled. PC4020 connected to the panel's PGM terminal.
	• OFF	PC4020 Connection Disabled. Panel's PGM terminal is connected to PC1500/1550, PC2525, PC2550, or PC3000.
Zone Light 8	ON	Serial Input Option Enabled. When enabled, the LINKS2150 will receive data from the security system control panel as serial input. When an event is to be reported, the security system will send the reporting code for the event to the LINKS2150 through the serial input; the LINKS2150 will then transmit the reporting code. Refer to “Serial Output and Input Option” on page 11 for additional information. Ensure that the LINKS2150 PC16-OUT Option is disabled when using the Serial Input Option. If both the PC16-OUT and Serial Input Options are enabled, serial input will not be recognized. When using the Serial Input option, note that the YEL PANEL terminal on the LINKS2150 does not need to be connected. Refer to the Hook-up Diagram at the back of this manual for wiring instructions.
	• OFF	Serial Input Option Disabled. When OFF, the Serial Input option is disabled. Disable this option is using the PC16-OUT option enabled with Light 4, or if the LINKS2150 is being used in a stand-alone application.
	• Factory default setting	

Serial Output and Input Option

The LINKS2150 Serial Input Option allows the LINKS to receive alarm information from the security system as serial data. To use this function, the LINKS2150 Serial Input Option must be enabled in Section [10], and the security system's Serial Output Option must be enabled. The Serial Output Option is supported by the following DSC control panels:

Control Panel	Software Version
PC2525	v1.1 or later
PC2550	v1.31 or later◆
PC3000	v7.71 or later◆
PC4020CF	v2.1 or later

◆ **Ensure that the control panel is equipped with the proper software version.** Look for the following chips on the control panel circuit board:



If the control panels have software versions earlier than those noted above, contact your DSC distributor to obtain the proper software version.

Ensure that PC16-OUT operation is disabled for the control panel when using the Serial Output option. The PC16-OUT Option is disabled in the following programming sections:

Control Panel	Disable PC16-OUT Operation in...
PC2525	Section [08]: Turn OFF Light 6 to disable
PC2550	Section [16]: Turn OFF Light 4 to disable
PC3000	Section [19]: Turn OFF Light 4 to disable

Security system Reporting Codes must be programmed for all events that are to be reported through the LINKS2150.

If a reporting code is not programmed, that event will not be reported through the LINKS2150. Refer to the security system's Installation Manual for instruction on programming reporting codes.

Program the security system's communicator call directions. The reporting codes can be programmed to:

- use the First Telephone Number only
- use the Second Telephone Number only
- use both telephone numbers
- not communicate.

When the control panel's Serial Output Option is enabled, reporting codes programmed to use the First Telephone Number only will be communicated through the serial output and will not call the First Telephone Number. Reporting codes programmed to use the Second Telephone Number only will still call the Second Telephone Number and will not be communicated through the serial output.

Program the control panel's call directions in the following programming sections:

Control Panel	Call Direction Programming Section
PC2525	Section [45]
PC2550	Section [35]
PC3000	Section [33]
PC4020	Links 2150 [(0) ► (04) ► (5)]

For the PC2525, PC2550 and PC3000, in the Call Direction Programming Section, enter a number from [0] to [3] for the following functions:

Enter	Call Direction Option Selected
[0]	No transmission
[1]	Serial Output Communications Only
[2]	Second Telephone Number use for telephone communications only
[3]	The reporting codes are communicated to both the Serial Output and the Second Telephone Number

For the PC4020, in the LINKS2150 section, the following Call direction options for communications using the LINKS2150 are available:

Alarm/Restore	Yes	Alarm and Restoral reporting codes are sent to the monitoring station by the LINKS 2150.
	No	Alarm and Restoral reporting codes are not sent to the LINKS 2150.
Open/Close	Yes	Opening and Closing reporting codes are sent to the monitoring station by the LINKS 2150.
	No	Opening and Closing reporting codes are not sent to the LINKS2150.
All Others	Yes	All Others reporting codes are sent to the monitoring station by the LINKS2150.
	No	All Others reporting codes are not sent to the LINKS2150.

These Call Direction options are used to select groups of reporting codes that are always transmitted using the LINKS2150. If the Group of reporting codes is not to be communicated through the LINKS2150, set the Call Direction for the appropriate group to NO. The Dialer Direction options for each of the PC4020's 3 phones are used to select the phone number(s) to be used for telephone communications.

Refer to the PC4020 Programming Manual for more instructions on programming the Dialer Direction options and for LINKS 2150 related programming.

Ensure that communications are enabled for the security system. Even if the control panel is programmed only for serial output communications, communications must be enabled in the following programming sections:

Control Panel	Enable Communications in...
PC2525	Section [46]; Light 1 must be OFF
PC2550	Section [15]; Light 1 must be OFF
PC3000	Section [18]; Light 1 must be OFF
PC4020	Comms Toggles section (0) ► (04) ► (1); 'Communications Enabled' must be YES

Enable the control panel's Serial Output Option in the following programming sections:

Control Panel	Programming Section
PC2525	Section [08]: Turn ON Light 8 to enable
PC2550	Section [48]: Turn ON Light 1 to enable
PC3000	Section [49]: Turn ON Light 1 to enable
PC4020	Links2150 section (0) ► (04) ► (5); 'LINKS2150' must be YES

[11] Installer's Code

Program a 4-digit code in this Section. Only use digits 0 through 9 as numbers in the code. If an error is made entering the code, complete entry of the 4 digits then enter the section number again to enter the correct code.

[12] System Times

Program the following times in this section; all times are programmed in the range from "00" to "99".

- **Test Transmission (hours).** Program the hour of the Test Transmission in the 24-hour clock format. Enter a time from "00" to "23", where "00" is 12:00 midnight, and 23 is 11:00 pm.
- **Test Transmission (minutes).** Program the minutes of the Test Transmission time. Enter a time from "00" to "59" minutes.
- **Test Transmission Interval (days).** Program the interval, in days, at which test transmissions will be performed. The default setting is 30 days.
- **Zone Response Time (x 10 ms).** This value determines the zone response time in milliseconds (ms). The response time is programmed in increments of 10 milliseconds, from a minimum of 0.02 seconds (20 milliseconds) to a maximum of 0.99 seconds (990 milliseconds). The default zone response time is 500 ms.

[13] System Clock

Enter the time of day using the 24-hour clock format. Enter "00" to "23" for the hour, and "00" to "59" for the minute. If this section is not programmed, the LINKS2150 will automatically set its clock as "00:00".

The system time is transmitted along with all event transmissions. It is recommended that the system clock always be programmed with a correct time.

NOTE: The system clock will need to be reprogrammed whenever power is removed from the LINKS2150, or if the LINKS2150 is reset to the factory default programming.

[14] System Date

Enter the current date as MMDDYY, where MM is the month (“01” to “12”), DD is the date (“01” to “31”), and YY is the year (“00 to “99”). If this section is not programmed, the LINKS2150 will automatically set its date as “00:00:00”.

The system date is transmitted along with all event transmissions. It is recommended that the system date always be programmed with the correct date.

NOTE: The system date will need to be reprogrammed whenever power is removed from the LINKS2150, or if the LINKS2150 is reset to the factory default programming.

[90] Installer Lockout Enable

When this feature is enabled, performing a hardware or software reset to restore the system’s factory programming will not reset the Installer’s Code. To enable the Installer’s Lockout, enter Section [90]. After entering Section [90], the keypad will beep 6 times.

To indicate that the Installer Lockout feature has been enabled, the LINKS2150 will beep the keypad sounder 10 times when power is applied to the unit. If the Installer Lockout feature is not enabled, the keypad will beep 6 times when power is applied to the LINKS2150.

Ensure that the new Installer’s Code has been entered correctly before enabling the Installer’s Lockout. Without the correct Installer’s Code, there is no way of entering the Programming Mode.

[91] Installer Lockout Disable

Entering Section [91] while in the installer’s Programming Mode will disable the Installer Lockout feature described in Section [90]. To disable the Installer’s Lockout, enter Section [91]. After entering Section [91], the keypad will beep 6 times.

NOTE: Units returned to DSC with the Installer Lockout feature enabled and no other apparent problems will be subject to an additional service charge.

[99] Restore Factory Default Programming

Enter this section to reset the system’s programming to the factory default settings.

To enable this feature, enter Section [99]. After entering Section [99], the keypad will beep 6 times and the “Program” light will come on briefly. The keypad will then beep 6 or 10 times to indicate if the Installer’s Lockout feature has been disabled or enabled. The LINKS2150’s factory programming has now been restored.

Hardware Reset

If the Installer’s Code has been forgotten, the LINKS2150 may be reset using the following method:

- 1 Disconnect the power supply
- 2 Disconnect any connections made to the LB TRBL and TRBL OUT terminals
- 3 Use a jumper to short the LB TRBL and TRBL OUT terminals
- 4 Apply power to the LINKS2150
- 5 Wait for 10 seconds, then remove the jumper
- 6 The LINKS2150 programming will now be restored to the factory default settings

If the Installer’s Lockout has been enabled, resetting the LINKS2150 to the factory programming will not restore the default Installer’s Code.

[01] 2150 Radio Account Code

Do not enter hexadecimal numbers in this section. An Account Code must be entered before communications through the LINKS2150 can be used.

[02] Alarm Reporting Codes, Zones 1 to 8

____ Zone 1 Alarm

____ Zone 2 Alarm

____ Zone 3 Alarm

____ Zone 4 Alarm

____ Zone 5 Alarm

____ Zone 6 Alarm

____ Zone 7 Alarm

____ Zone 8 Alarm

To disable any reporting code, enter [00] or [*][6][*][6] (hexadecimal FF).

[03] Restoral Reporting Codes, Zones 1 to 8

____ Zone 1 Restoral

____ Zone 2 Restoral

____ Zone 3 Restoral

____ Zone 4 Restoral

____ Zone 5 Restoral

____ Zone 6 Restoral

____ Zone 7 Restoral

____ Zone 8 Restoral

[04] PC16-OUT Event Activation Reporting Codes 1 to 8

____ PC16-OUT Event Activation: 1

____ PC16-OUT Event Activation: 2

____ PC16-OUT Event Activation: 3

____ PC16-OUT Event Activation: 4

____ PC16-OUT Event Activation: 5

____ PC16-OUT Event Activation: 6

____ PC16-OUT Event Activation: 7

____ PC16-OUT Event Activation: 8

[05] PC16-OUT Event Activation Reporting Codes 9 to 16

- PC16-OUT Event Activation: 9
- PC16-OUT Event Activation: 10
- PC16-OUT Event Activation: 11
- PC16-OUT Event Activation: 12
- PC16-OUT Event Activation: 13
- PC16-OUT Event Activation: 14
- PC16-OUT Event Activation: 15
- PC16-OUT Event Activation: 16

To disable any reporting code, enter [00] or [*][6][*][6] (hexadecimal FF).

[06] PC16-OUT Event Restoral Reporting Codes 1 to 8

- PC16-OUT Event Restoral: 1
- PC16-OUT Event Restoral: 2
- PC16-OUT Event Restoral: 3
- PC16-OUT Event Restoral: 4
- PC16-OUT Event Restoral: 5
- PC16-OUT Event Restoral: 6
- PC16-OUT Event Restoral: 7
- PC16-OUT Event Restoral: 8

[07] PC16-OUT Event Restoral Reporting Codes 9 to 16

- PC16-OUT Event Restoral: 9
- PC16-OUT Event Restoral: 10
- PC16-OUT Event Restoral: 11
- PC16-OUT Event Restoral: 12
- PC16-OUT Event Restoral: 13
- PC16-OUT Event Restoral: 14
- PC16-OUT Event Restoral: 15
- PC16-OUT Event Restoral: 16

[08] Maintenance Alarm Reporting Codes

- Internal Low Voltage Trouble
- External AC Trouble
- External Low Battery Trouble
- Control Panel Connection Trouble
- Test Transmission

[09] Maintenance Restoral Reporting Codes

- Internal Low Voltage Trouble Restore
 External AC Trouble Restore
 External Low Battery Restore
 Control Panel Connection Trouble Restore

[10] System Configuration

Default	Light	ON	OFF
<u>OFF</u> <input type="checkbox"/>	1	Communications disabled	Communications enabled
<u>OFF</u> <input type="checkbox"/>	2	60-second bypass on power-up	Zones active on power-up
<u>OFF</u> <input type="checkbox"/>	3	Test transmission disabled	Test transmission enabled
<u>OFF</u> <input type="checkbox"/>	4	PC16-OUT enabled	PC16-OUT disabled
<u>OFF</u> <input type="checkbox"/>	5	Negative trigger zone inputs	Positive trigger zone inputs
<u>OFF</u> <input type="checkbox"/>	6	For Future Use	For Future Use
<u>OFF</u> <input type="checkbox"/>	7	PC4020 Connection Enabled	PC4020 Connect Disabled
<u>OFF</u> <input type="checkbox"/>	8	Serial Input enabled	Serial Input disabled

IMPORTANT NOTE: The PC16-OUT and Serial Input options cannot be used at the same time. If both are enabled, only the PC16-OUT option will be used; enable only one or the other when using the LINKS2150 with a security system.

[11] Installer's Code*Default*2 1 5 0

Program a 4-digit code using the numbers [0] through [9].

[12] System Times*Default*

- 9 9 Test Transmission (hours)
9 9 Test Transmission (minutes)
3 0 Test Transmission Interval (in days)
5 0 Zone Response Time (× 10 ms)

Test Transmission Interval must not be programmed as [00].

Zone Response Time must be in the range of [02] to [99]; **do not program [00] or [01]**.

[13] System Clock

Enter the time in the 24-hour clock format (HHMM)

[14] System Date

Enter the date as 2 digits each for the Month, Day and Year (MMDDYY)

[90] Installer's Lockout Enable**[91] Installer's Lockout Disable****[99] Restore Factory Default Programming**

FOR THE RECORD

Client _____

Address _____

Installer _____

Installation Date _____

Installer's Code _____

Installer's Lockout On Off

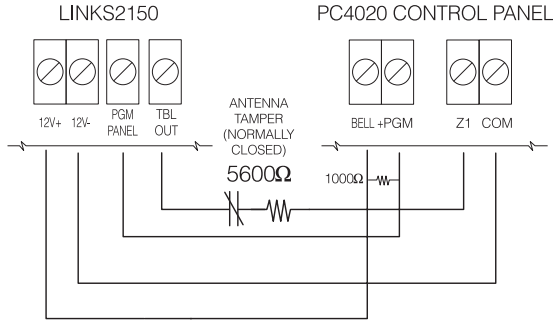
DSC Control Panel _____

Software Version _____

Notes

HOOK-UP DIAGRAM

CONTROL PANEL CONNECTIONS FOR PC4020

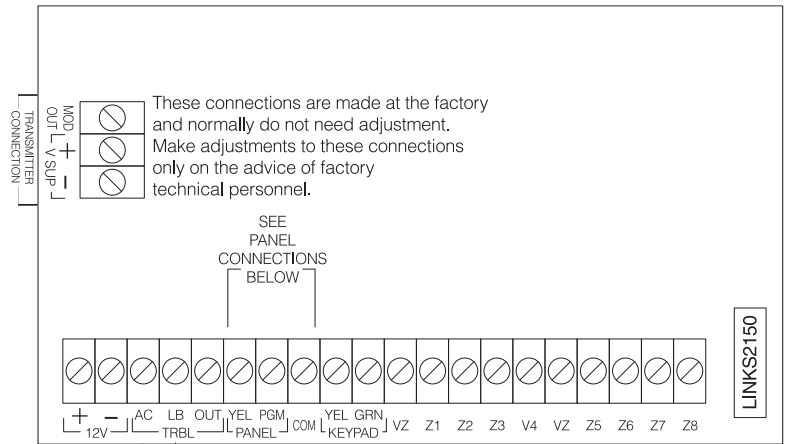


In section [10], enable serial input light 8 and PC4020 connection light 7.

Z1 programmed as a Links Supervisory

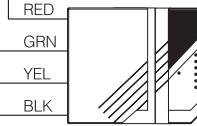
Note In the PC4020, to enable Zone 1 as a 'LINKS Supervisory' zone, enter the following: (0) ► (04) ► (4) ► (4); 'ZONE 1 SUP' must be YES.

Note: When using Links 2150 and the supervised Bell output of the control panel, a self-powered bell must be used.



11.5 to 14Vdc at 1A
POWER SUPPLY
AC TROUBLE INPUT
LOW BATTERY TROUBLE INPUT
GENERAL TROUBLE OUTPUT 12V 50mA

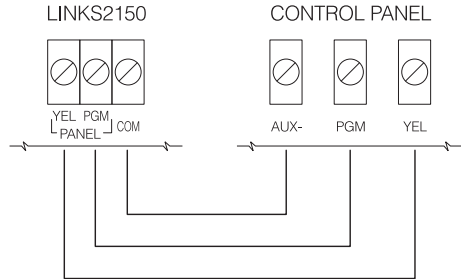
SEE ZONE CONNECTIONS BELOW



NOTE: AN ALARM MAY BE GENERATED WHEN CONNECTING OR DISCONNECTING THE KEYPAD FROM THE COM AND VZ TERMINALS.

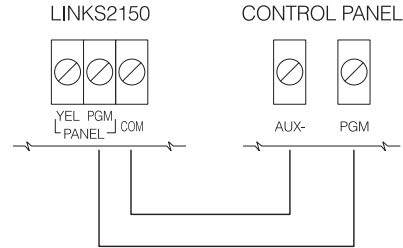
PC2550RK KEYPAD
KEYPAD USED FOR PROGRAMMING ONLY

CONTROL PANEL CONNECTIONS FOR PC16-OUT INPUT



ENABLE PC-16OUT
IN SECTION [10]
LIGHT 4

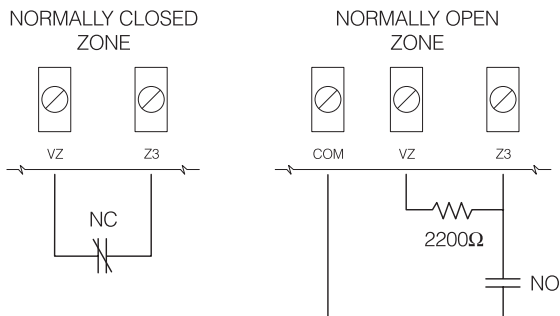
CONTROL PANEL CONNECTIONS FOR SERIAL INPUT



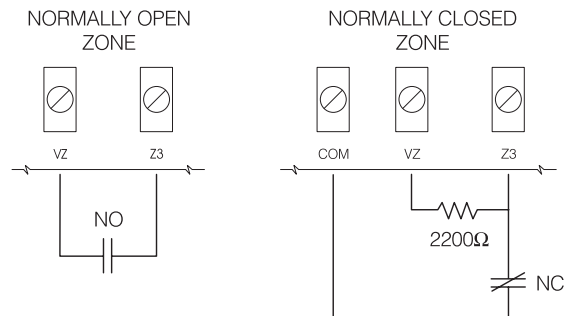
ENABLE SERIAL INPUT
IN SECTION [10] LIGHT 8.

NOTE: ALSO DISABLE PC-16OUT
IN SECTION [10] LIGHT 4

ZONE CONNECTIONS FOR NEGATIVE TRIGGER INPUTS



ZONE CONNECTIONS FOR POSITIVE TRIGGER INPUTS



Select POSITIVE or NEGATIVE TRIGGER ZONE INPUTS in Programming Section [10] Light 5

LIMITED WARRANTY

Digital Security Controls Ltd. warrants that for a period of twelve months from the date of purchase, the product shall be free of defect in materials and workmanship under normal use and that in fulfillment of any breach of such warranty, Digital Security Controls 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 Digital Security Controls 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 Digital Security Controls Ltd. This warranty contains the entire warranty. Digital Security Controls Ltd. 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 Digital Security Controls 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: Digital Security Controls 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.

FCC Compliance

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

