**• W A R N I N G •**

**Please refer to the System Installation Manual for information on limitations regarding product use and function and information on the limitations as to liability of the manufacturer.**

# Long Range Radio Alarm Transmitter

DSC™ Security Products

# Installation Manual

Version 1.4W

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***This manual is for the LINKS2150 software version 1.4W.***

# Features

- Transmits alarm information to a long range radio network
- Varitech Transmission Format

  ***Note: If automatic SIA is used in the panel, the reporting codes that are to be sent by the LINKS2150 must still be programmed.***
- May be used with the following DSC alarm control panels:
  - PC5010 v1.0 and up
  - PC5015 v1.x and up
  - PC5008 v2.x and up
  - PC1580 v1.0 and up
  - PC1565 v2.x and up
  - PC1565-2P v2.2 and up
  - PC585 v2.x and up

### Programmable via Keypad or Downloading Software

The LINKS2150 is complete with a default program and will work with a minimum of programming. You can program the LINKS2150 at any system keypad or using DLS-1 v6.7 or higher.

### 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
- 4 LINKS2150 Trouble Reporting Codes and Test Transmission Reporting Code

# Specifications

- 2 negative triggered trouble inputs
  - negative voltage trigger: 0 to 0.8 VDC
- Required power supply: 11.5 to 14VDC at 1A
  A separate power supply must be used. Do not power the LINKS2150 from the keybus.
- Trouble Output: 50mA
- Radio transmitter frequency: as specified on transmitter
- Antenna (not supplied):
  - Larsen MHW-450, 50 Ω vertical antenna
  - 450 - 470 MHz
- LINKS2150 cabinet dimensions:
  - 11" high × 11.8" wide × 3.3" (279 mm × 300 mm × 84mm)
- Cabinet colour: light beige

# Installation

### Mounting the LINKS2150

Mount the LINKS cabinet in a convenient location next to the already installed security system control panel cabinet. As much as is reasonably possible, do not mount the LINKS2150 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, mount 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.***

***WARNING:*** *DO NOT connect both a PC5400DVACS and a LINKS2150 module to the same system.*

*You can connect both a PC5400 printer module and a LINKS2150 to the same system.*

## *Power Terminals + 12v –*

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

Connect the power terminals (+ 12V –) to the BELL+ and COM terminals or to a separate 11.5-14Vdc, 1A power supply. If you will be using a local bell or siren, use a separate power supply for the LINKS2150. Do not connect the LINKS2150 to the Keybus RED terminal.

***NOTE**: The current drawn by the LINKS2450 and the siren(s) connected to the Bell terminals must not exceed that specified by the rating of the control panel. Refer to your control panel's Intallation Manual for more information.*

The wiring between the LINKS2150 and the power supply should not be longer than indicated in the table below:

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

You can double the maximum wire length if you double the conductors and connect them in parallel. **Mount the LINKS2150 as close to the power supply 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 [10].

### 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 [10].

### OUT TRBL Output Terminal

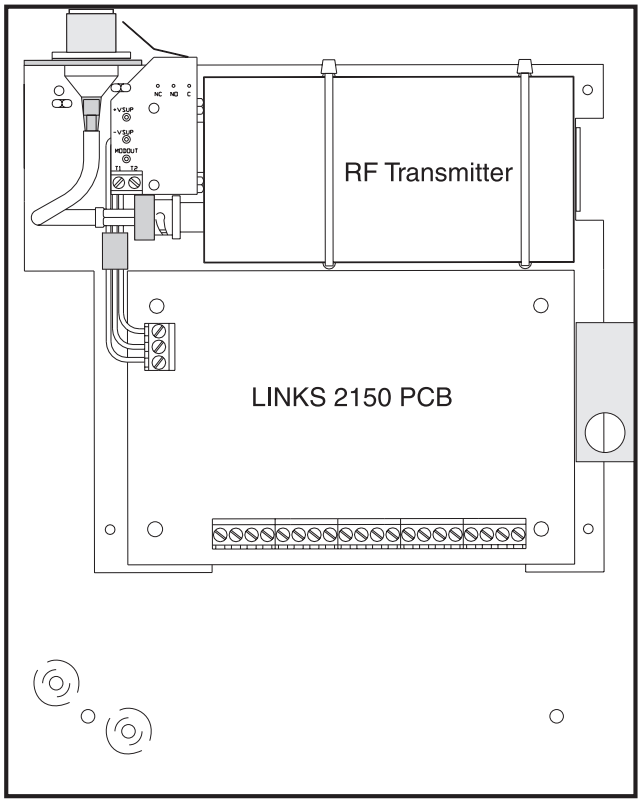
The OUT TRBL output terminal will switch to ground when the LINKS2150 detects a trouble condition. The OUT TRBL terminal may be connected to a control panel zone terminal to report LINKS2150 trouble conditions to the security system, or the OUT TRBL terminal may be used to activate a visual or audible trouble indicator.

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.

## *YEL and PGM PANEL Terminals*

The YEL PANEL terminal is used to connect the keybus yellow from the PANEL.

The PGM PANEL terminal is used as a tamper to clear tamper faults. This terminal must be shorted to the COM terminal.




**LINKS2150 shown mounted in cabinet**

## *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.

## *YEL and GRN KEYPAD Terminal*

The GRN KEYPAD terminal is used to connect the keybus green from the PANEL.

The YEL KEYPAD terminal is not used.

## *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.***

## *Keybus Connections*

| Panel | Module |
|---|---|
| Keybus Red | Not connected |
| Keybus Black | To AUX- |
| Keybus Green | To GRN KEYPAD |
| Keybus Yellow | To YEL PANEL |

***Note: Do not connect the Keybus RED wire to the LINKS2150.***

# Programming the LINKS2150

Program the LINKS2150 through Installer's Programming at a system keypad, or via DLS-1 v6.7 downloading software.

For instructions on using DLS-1 v6.7, please refer to your DLS-1 manual.

For instructions on keypad programming using Installer's Programming sections, please refer to section 4 "How to Program" in your control panel Installation Manual.

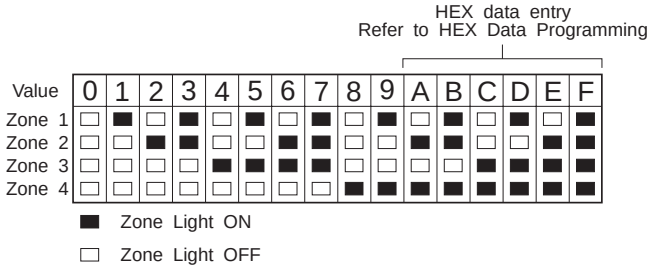
To enter Installer's programming:

1. Go to Installer's Programming by entering [*][8][Installer's code].
2. *For PC5015, PC5010, PC5008, PC1565, PC1565-2P and PC585:* Go to the LINKS2150 programming section by entering [803].
   *For PC1580:* Go to the LINKS2150 programming section by entering [86].

## 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, on LED keypads, zone 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 below.




If you wish to change the digit displayed, enter the new digit. If you wish to keep that digit unchanged, 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.

When you are done programing the section, enter the 2-digit number of the next section to be programmed.

## Reviewing Programmed Data

- Enter the 2-digit number of the section to be reviewed.
- LCD keypads will display the current data in the programming section.
- LED keypads will display the first digit of data in the section using zone lights 1 to 4 to represent the value, in binary format. To advance the display to the next digit, press the [F] key.
- 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. Press a number key from [1] to [6] to enter a HEX digit then press the [✻] key again to return to "decimal" values.

To enter HEX numbers:

A ..... Enter [✻][1][✻]

B ..... Enter [✻][2][✻]

C ..... Enter [✻][3][✻]

D ..... Enter [✻][4][✻]

E ..... Enter [✻][5][✻]

F ..... Enter [✻][6][✻]

# *LINKS2150 Programming Sections*

These sections will only be available if a LINKS2150 v1.4W is connected to the Keybus.

## *[86] LINKS2150 Programming Sections for PC1580 or [803] LINKS2150 Programming Section for PC5010, PC5015, PC5008, PC1565, PC1565-2P, PC585*

### [01] 2150 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 using only numbers from 0 to 9.

**Note:** An account number must be entered in this section before communications through the LINKS2150 can be used. Do not enter Hexadecimal numbers in this section.

### [10] Maintenance Alarm Reporting Codes

Program 2 digit reporting codes for each of the following reporting codes

- **Internal Low Voltage**
  This code will be sent when the voltage supplied to the LINKS2150 on the 12+ and 12 - terminals is less than 10.5 $V_{DC}$ for more than 4 minutes
- **External AC Trouble**
  This code will be sent when the AC TRBL input terminal is switched to ground.
- **External Low Battery Trouble**
  This code will be sent when the LB TRBL input terminal is switched to ground.
- **Control Panel Connection Trouble**
  This code will be sent when connection is lost to the panel on the Keybus for more than 60 seconds
- **Test Transmission**
  This code will be sent at the same interval as the test transmission of the panel.

### [11] Maintenance Restoral Reporting Codes

Program 2 digit reporting codes for each of the following reporting codes

- **Internal Low Voltage**
  This code will be sent when the voltage supplied to the LINKS2150 ion the 12+ and 12 - terminals is restored to more than 11.6 $V_{DC}$ for more than 4 minutes
- **External AC Trouble**
  This code will be sent when the AC TRBL input terminal is switched to ground.
- **External Low Battery Trouble**
  This code will be sent when the LB TRBL input terminal is switched to ground.
- **Control Panel Connection Trouble**
  This code will be sent when connection is restored to the panel on the Keybus for more than 60 seconds.

### [20] Module Configuration

Module configuration is set using Zone Lights as shown below. After you enter section [20], the options that are "on" will be shown either by the corresponding zone light being on (LED keypads) or the zone number being displayed (LCD keypads). Press the corresponding number key to turn an option ON or OFF. When finished, press [#].

**Zone Light 1**

ON - **Communications Enabled** - The LINKS2150 will initiate communications for all events that the panel has reporting codes programmed for.

OFF - **Communications Disabled** - The LINKS2150 will not initiate communications for events that the panel has reporting codes programmed for. Disable communications to test the system.

**Zone Light 2**

OFF - **TRBL OUT Normally High Impedence** - If there are no trouble conditions detected by the LINKS2150, the TRBL OUT terminal will be high-impedence. The TRBL OUT terminal will switch to ground when the LINKS2150 detects a trouble condition.

ON - **TRBL OUT Normally Low** - If there are no trouble conditions detected by the LINKS2150, the TRBL OUT terminal will be low (ground). The TRBL OUT terminal will switch to high-impedence when the LINKS2150 detects a trouble condition.

**Zone Light 3 to Zone Light 8** - For Future Use

### [30] Call Direction Options

Program which of the following reporting code types the LINKS2150 will send to the central station. Press the number corresponding the the appropriate option to turn the reporting type ON or OFF. When finished, press [#].

**Option**

1 Alarm/restore reporting
2 Tamper/restore reporting
3 Opening/closing reporting
4 System maintenance reporting
5 System test transmission reporting

In most installations, you should program the tranmission of alarm/restore reporting codes only. Your radio network has limited bandwidth and capacity. The more signals each LINKS2150 transmits, the fewer LINKS2150s you will be able to install on your network.

***NOTE: Sections [81] and [82] apply only to the PC1580 v1.x. All other panels will use the reporting codes that are programmed for these events in the panel.***

### [81] Miscellaneous Alarm Reporting Codes

Program 2 digit reporting codes for each of the following reporting codes

- **General Zone Fault Alarm**
  This code will be sent when the LINKS2150 receives a General Zone Fault Alarm event from the PC1580.
- **General System Tamper Alarm**
  This code will be sent when the LINKS2150 receives a General System Tamper Alarm event from the PC1580.
- **General System Supervisory Alarm**
  This code will be sent when the LINKS2150 receives a General System Supervisory Alarm event from the PC1580.

### [82] Miscellaneous Restoral Reporting Codes

Program 2 digit reporting codes for each of the following reporting codes

- **General Zone Fault Restoral**
  This code will be sent when the LINKS2150 receives a General Zone Fault Restoral event from the PC1580.
- **General System Tamper Restoral**
  This code will be sent when the LINKS2150 receives a General System Tamper Restoral event from the PC1580.
- **General System Supervisory Restoral**
  This code will be sent when the LINKS2150 receives a General System Supervisory Restoral event from the PC1580.

### [83] Miscellaneous Alarm Reporting Codes (PC1565 v2.0 and PC5008 v2.0 panels only)

Program 2 digit reporting codes for the following (see your Installation Manual for more information):

- **Police Code:** This code will be sent when the LINKS2150 receives a Police Code event from the PC1565 or PC5008.
- **Delinquency Code:** This code will be sent when the LINKS2150 receives a Delinquency event from the PC1565 or PC5008.

## *[96] [Installer Code] [96] Restore LINKS2150 Factory Default Programming for PC1580*

## *[993][Installer Code][993] Restore LINKS2150 Factory Default Programming for PC5010 v1.1 or later, PC5015, PC5008, PC1565, PC1565-2P, PC585*

When this section is successfully entered, all programming in the LINKS2150 will be returned to the factory defaults.

***NOTE: This command is unavailable on PC5010 v1.0. If v1.0 is used, a hardware default must be done.***

## *Hardware Reset*

On a PC5010 v1.0, a hardware reset must be done. There is no software equivalent for PC5010 v1.0.

1. Remove all power to the LINKS2150.
2. Disconnect all connections made to LB TRBL and TRBL OUT.
3. Use a jumper to short LB TRBL and TRBL OUT terminals.
4. Re-apply power.
5. Wait 10 seconds then remove the short.

***NOTE: This can also be done if connected to PC1580.***

## For The Record

**Client** _____

**Address** _____

_____

_____

_____

**Installer** _____ **Installation Date** _____

**Installer's Code** _____ **Installer's Lockout** ☐ **On** ☐ **Off**

**DSC Control Panel** _____ **Software Version** _____

### Notes

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# *LINKS2150 PROGRAMMING Worksheets*

## *[86] LINKS2150 Programming Sections for PC1580*

## *or*

## *[803] LINKS2150 Programming Section for PC5010, PC5015, PC5008, PC1565, PC1565-2P, PC585*

### *[01] RF Identification Code*

***Default***

| F | F | F | F | | | | |
|---|---|---|---|---|---|---|---|

### *[10] Maintenance Alarm Reporting Codes*

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

### *[11] Maintenance Restoral Reporting Codes*

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

### *[20] Module Configuration*

| *Default* | | *Option* | *Option ON* | *Option OFF* |
|---|---|---|---|---|
| ***ON*** | | ***1*** | Communications enabled | Communications disabled |
| ***OFF*** | | ***2*** | TRBL OUT Normally Low | TRBL OUT Normally High Impedence |
| ***OFF*** | | ***3-8*** | ***For Future Use*** | |

### *[30] Call Direction Options*

| *Default* | | *Option* | *ON* | *OFF* |
|---|---|---|---|---|
| ***ON*** | | ***1*** | Alarm/restore reporting enabled | Disabled |
| ***ON*** | | ***2*** | Tamper/restore reporting enabled | Disabled |
| ***OFF*** | | ***3*** | Opening/closing reporting enabled | Disabled |
| ***ON*** | | ***4*** | System maintenance reporting enabled | Disabled |
| ***ON*** | | ***5*** | System test transmission reporting enabled | Disabled |
| ***OFF*** | | ***6-8*** | For future use | |

### *[81] Miscellaneous Alarm Reporting Codes*

|___|___| General Zone Fault Alarm

|___|___| General System Tamper Alarm

|___|___| General System Supervisory Alarm

### *[82] Miscellaneous Restoral Reporting Codes*

|___|___| General Zone Fault Restore

|___|___| General System Tamper Restore

|___|___| General System Supervisory Restore

***Note: Sections 81 and 82 will be for 1580 v1.x only.***

### *[83] Miscellaneous Alarm Reporting Codes (PC1565 and PC5008 v2.0 panels only)*

***Default*** = FF

|___|___| Police Code

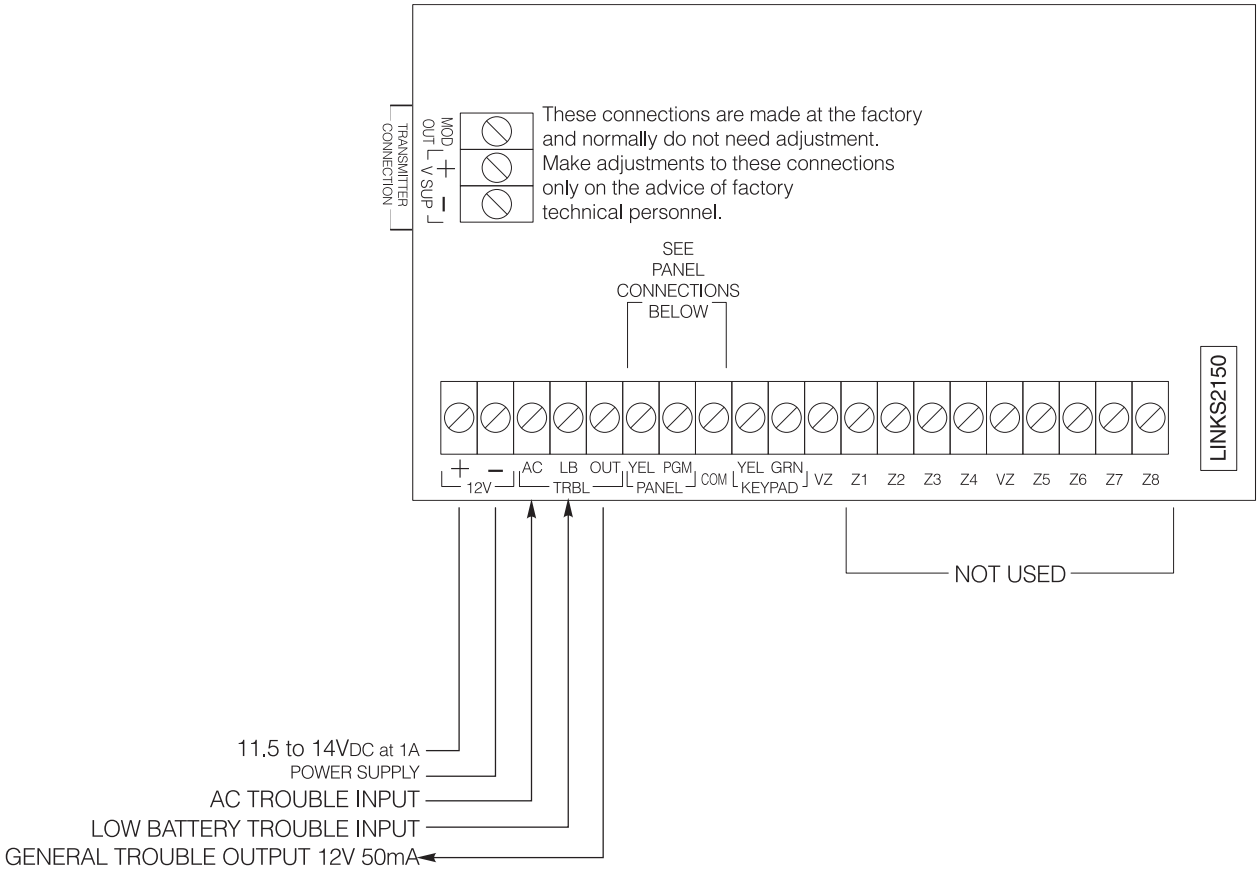
|___|___| Delinquency Code

## *[96] [Installer Code] [96]*
## *Restore LINKS2150 Factory Default Programming for PC1580*

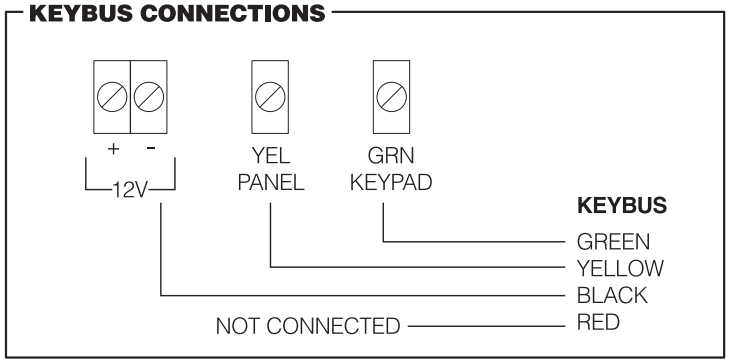
## *[993][Installer Code][993]*
## *Restore LINKS2150 Factory Default Programming for PC5010 v1.1 or later, PC5015, PC5008, PC1565, PC1565-2P, PC585*

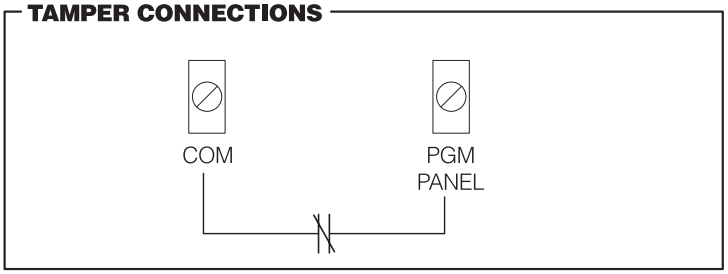
See page 5 for Hardware Reset procedure if using a PC5010 v1.0.

## Hook-up Diagram




***WARNING:***
***A separate power supply must be used. Do not power the LINKS 2150 from the keybus.***



## *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 fulfilment 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

© 1998 Digital Security Controls Ltd.
1645 Flint Road, Downsview, Ontario Canada M3J 2J6
Telephone: (416) 665 8460 Fax: (416) 665 7498

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