

LINKS 2150™

Long Range Radio
Alarm Transmitter

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 LINKS 2150 must still be programmed.**
- Interfaces with PC1575 v1.00 and PC5010 v1.00

Keypad Programmable

The LINKS 2150 is complete with a default program and is operational with a minimum of programming. The LINKS 2150 is completely programmable via the Keybus.

EEPROM Memory

The LINKS 2150 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 LINKS 2150 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 LINKS 2150 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 LINKS 2150 from the keybus.
- Trouble Output: 50mA
- 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 LINKS 2150

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 LINKS 2150 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 LINKS 2150 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 LINKS 2150 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 LINKS 2150 in the mounted cabinet. Locate the antenna connection in the hole at the top of the cabinet and press the LINKS 2150 onto the nylon mounting studs. Insert all cables into the cabinet and prepare them for connection.

Secure the antenna to the LINKS 2150 antenna connector. Tighten the antenna "finger tight" only.

NOTE: An antenna should always be connected to the LINKS 2150 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.

NOTE: Downloading DLS-1 v6.2c or later must be used to program the LINKS 2150 v1.3w.

WARNING: A PC5400 **OR** a LINKS 2150 module can be connected to a panel, but both **MUST NOT** be used on the same system.

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 7. If a local bell/siren is to be used, it must have a separate power source. The LINKS 2150 must be powered from a separate power supply. Do not connect to KEYBUS RED.

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 LINKS 2150 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 LINKS 2150 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 LINKS 2150 will transmit the External AC Trouble reporting code programmed in Section [10].

LB TRBL Input Terminal

The LB TRBL input terminal is used 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 LINKS 2150 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 LINKS 2150 detects a trouble condition. The OUT TRBL terminal may be connected to a control panel zone terminal to report LINKS 2150 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.

COM Terminal

When using the LINKS 2150 with a security system, connect the COM terminal to the negative DC power supply terminal of the security system control panel.

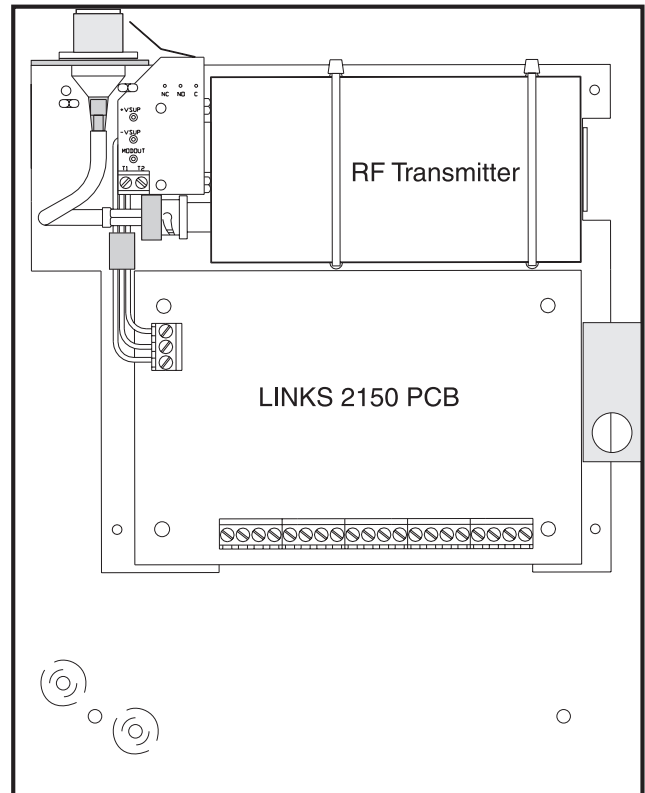
YEL and GRN KEYPAD Terminal

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 LINKS 2150 to the radio transmitter. **These connections are made at the factory and should not be altered.**



LINKS 2150 shown mounted in cabinet

PROGRAMMING THE LINKS 2150

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 in the Installation Manual for instructions on programming hex data.

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.

Reviewing Programmed Data

- Enter the section to be programmed by entering the 2-digit section number.
- Zone lights 1 to 4 for a LED keypad or on a LCD keypad the actual data will displayed will represent the value, in binary format, of the current 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. 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][*]

Keybus Connections

Keybus Red	Not connected
Keybus Black	To AUX
Keybus Green	To GRN KEYPAD
Keybus Yellow	To YEL PANEL

Note: A separate power supply must be used to power the LINKS 2150. Do not connect the keybus RED wire to the LINKS 2150.

LINKS 2150 PROGRAMMING SECTIONS

These sections will only be available if a LINKS 2150 V1.3W is connected to the Keybus.

[86] LINKS 2150 Programming Sections for PC1575

or

[803] LINKS 2150 Programming Section for PC5010

[01] 2150 Account Code

This 4-digit code is used to identify the system and is transmitted when the LINKS 2150 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 LINKS 2150 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 LINKS 2150 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 whenever the LINKS 2150 is told to transmit a Test Transmission code from the panel. The LINKS 2150 will send its test signal in the rounds right after the panels Test TX is sent.

Note: The panel test transmission must be transmitted before the LINKS test will be sent.

[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 LINKS 2150 on 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 AC 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 in the table below. Once section [20] is entered, 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)

- | | |
|---------------------|--|
| Zone Light 1 | ON - Communications Enabled - The LINKS 2150 will initiate communications for all events that the panel has reporting codes programmed for. |
| | OFF - Communications Disabled - The LINKS 2150 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 LINKS 2150, the TRBL OUT terminal will be high-impedence and will switch to ground when a trouble condition detected. |
| | ON - TRBL OUT Normally Low - If there are no trouble conditions detected by the LINKS 2150, the TRBL OUT terminal will be low (ground) and will switch to high-impedence when a trouble is detected. |

Zone Light 3 to Zone Light 8 - For Future Use

[80] 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 LINKS 2150 receives a General Zone Fault Alarm event from the PC1575.
- **General System Tamper Alarm**
This code will be sent when the LINKS 2150 receives a General System Tamper Alarm event from the PC1575.
- **General System Supervisory Alarm**
This code will be sent when the LINKS 2150 receives a General System Supervisory Alarm event from the PC1575.

[81] 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 LINKS 2150 receives a General Zone Fault Restoral event from the PC1575.
- **General System Tamper Restoral**
This code will be sent when the LINKS 2150 receives a General System Tamper Restoral event from the PC1575.
- **General System Supervisory Restoral**
This code will be sent when the LINKS 2150 receives a General System Supervisory Restoral event from the PC1575.

Note: Sections [80] and [81] apply only to the PC1575 V1.00 all other panels will use the reporting codes that are programmed for these events in the panel.

[96] [Installer Code] [96]

Restore LINKS 2150 Factory Default Programming for PC1575

[993][Installer Code][993]

Restore LINKS 2150 Factory Default Programming for PC5010 v1.1 or later

When this section is successfully entered, all programming in the LINKS 2150 will be returned to the factory defaults.

NOTE: This command is unavailable on PC5010 v1.00. If v1.00 is used, a hardware default must be done.

Hardware Reset

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

1. Remove all power to the LINKS 2150.
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 PC1575.

LINKS 2150 PROGRAMMING WORKSHEETS

[86] LINKS 2150 Programming Sections for PC1575

or

[803] LINKS 2150 Programming Section for PC5010

[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

ON **Option 1** Communications enabled
OFF **Option 2** TRBL OUT Normally Low
OFF **Option 3** **For Future Use**
OFF **Option 4** **For Future Use**
OFF **Option 5** **For Future Use**
OFF **Option 6** **For Future Use**
OFF **Option 7** **For Future Use**
OFF **Option 8** **For Future Use**

Option ON

Option OFF

Communications disabled
TRBL OUT Normally High Impedence

[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 1575 V1.00 only.

[96] [Installer Code] [96]

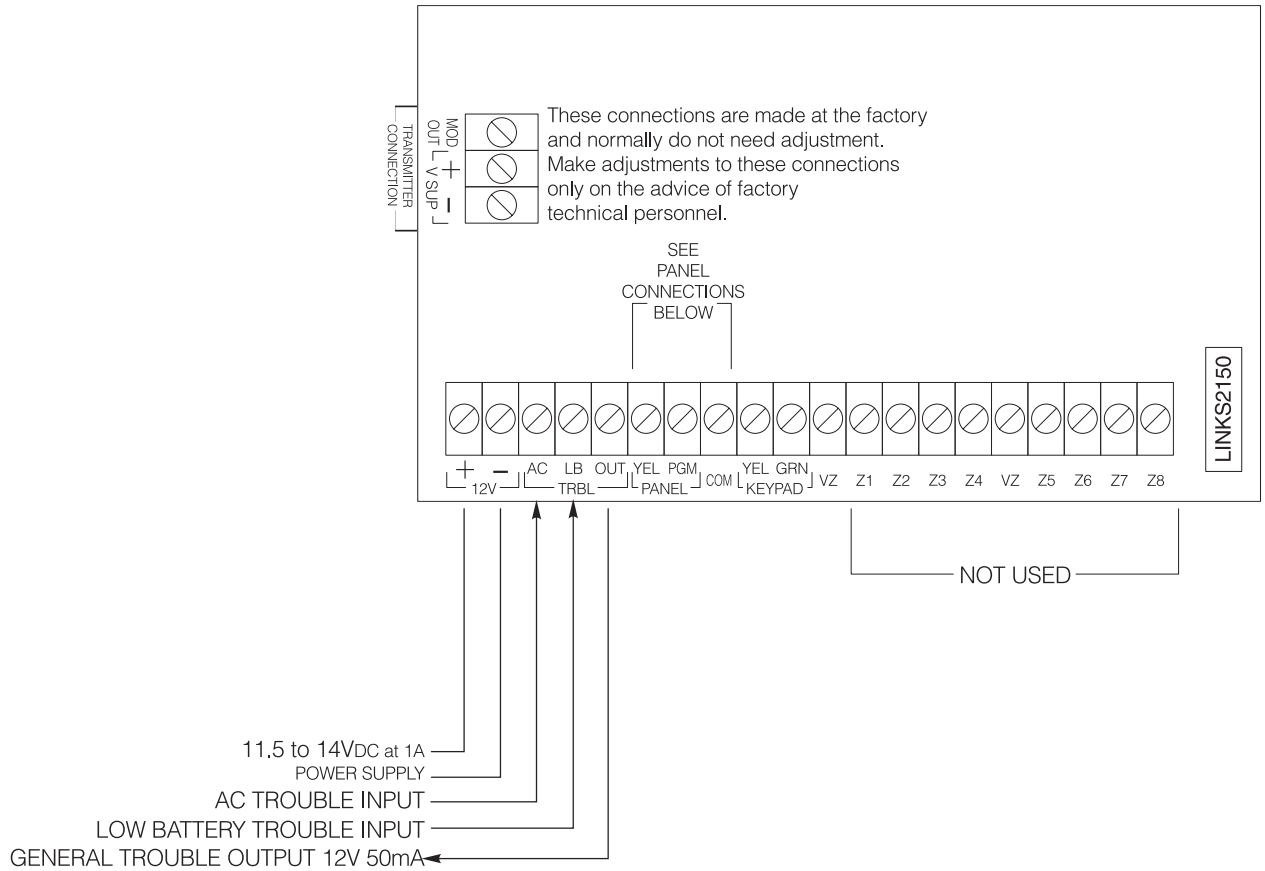
Restore LINKS 2150 Factory Default Programming for PC1575

[993][Installer Code][993]

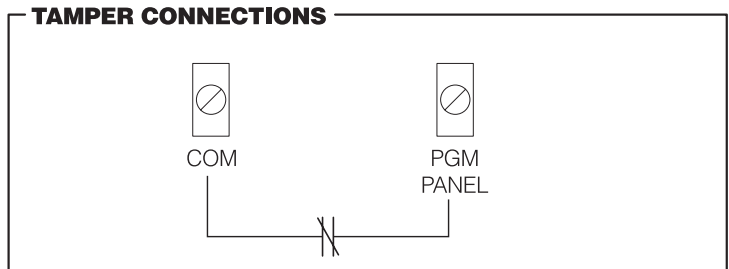
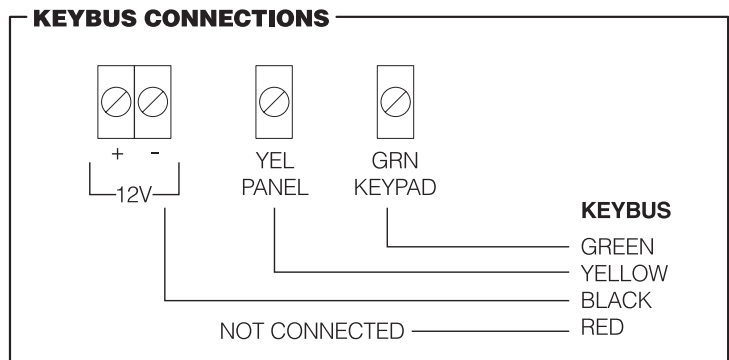
Restore LINKS 2150 Factory Default Programming for PC5010 v1.1 or later

See page 5 for Hardware Reset procedure if using a PC5010 v1.00.

HOOK-UP DIAGRAM



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



FOR THE RECORD

Client _____

Address _____

Installer _____ Installation Date _____

Installer's Code _____ Installer's Lockout On Off

DSC Control Panel _____ Software Version _____

Notes

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

TABLE OF CONTENTS

FEATURES	1
Keypad Programmable	1
EEPROM Memory	1
Static/Lightning Protection	1
Supervision	1
Operation	1
SPECIFICATIONS	1
INSTALLATION	1
Locating the LINKS 2150	1
Mounting the Cabinet	1
Power Terminals + 12v -	2
TRBL Trouble Terminals	2
YEL and PGM PANEL Terminals	2
COM Terminal	2
YEL and GRN KEYPAD Terminal	2
MOD OUT and V SUP Terminals	2
PROGRAMMING THE LINKS 2150	3
Programming Data	3
Reviewing Programmed Data	3
HEX Data Programming	3
Keybus Connections	3
LINKS 2150 PROGRAMMING SECTIONS	4
[86] LINKS 2150 Programming Sections for PC1575	4
[803] LINKS 2150 Programming Section for PC5010	4
[01] 2150 Account Code	4
[10] Maintenance Alarm Reporting Codes	4
[11] Maintenance Restoral Reporting Codes	4
[20] Module Configuration	4
[81] Miscellaneous Alarm Reporting Codes	5
[81] Miscellaneous Restoral Reporting Codes	5
[96] [Installer Code] [96] Restore LINKS 2150 Factory Default Programming for PC1575	5
[993] [Installer Code] [993] Restore LINKS 2150 Factory Default Programming for PC5010	5
LINKS 2150 PROGRAMMING WORKSHEETS	6
[86] LINKS 2150 Programming Sections for PC1575	6
[803] LINKS 2150 Programming Section for PC5010	6
[01] RF Identification Code	6
[10] Maintenance Alarm Reporting Codes	6
[11] Maintenance Restoral Reporting Codes	6
[20] Module Configuration	6
[81] Miscellaneous Alarm Reporting Codes	6
[82] Miscellaneous Restoral Reporting Codes	6
[96] [Installer Code] [96] Restore LINKS 2150 Factory Default Programming for PC1575	6
[993] [Installer Code] [993] Restore LINKS 2150 Factory Default Programming for PC5010	6
HOOK-UP DIAGRAM	7
FOR THE RECORD	8