LOBENN NETWORK INTERFACE 2000

LB200186

Installation Manual

April 2010

LB200302

Version 02.03.02

Table Of Contents

Notices

Notices throughout this manual inform the reader of practices and conditions, which will affect physical safety, occupant safety, equipment performance, and efficiency. Notices appear as warnings, cautions, and notes.

Warnings

Warnings appear whenever property damage, injury, or loss of life may occur through the neglect of safe practices and conditions. You will see warnings in the following format:

WARNING
A mounting screw coming in contact with a live electrical wire could result in serious injury or death, cause significant property damage, and/or bring about a circumstance that could, in the future, cause serious injury or death or serious property damage.

Cautions

Cautions alert you to practices that may damage equipment or software. You will see cautions in the following format:

CAUTION
Movement, contact with water, accidental contact with other live power sources and accidental disconnection of he LNI 2000 after installation could cause serious damage or malfunction to the unit.

Notes

Notes provide instructions to save time or avoid wasting it. For example, a note may inform of a system operation relevant to installation:

> **Note:** If all three LEDs (Power, IP Link and IP Monitoring) begin flashing, there is a firmware update in progress. Do not disconnect any wiring or power down until the update is complete.

Trademarks

Copyright

ULC COMPLIANT INSTALLATIONS

Overview

For any installation of an LNI 2000 to be a CAN/ULC-S559-04 and CAN/ULC S304-06 compliant installation, every part of the installation – including other equipment related to but not detailed in this installation manual – must meet with the appropriate standards specified in the CAN/ULC-S559-04 and CAN/ULC S304-06 specification, including those specifications referenced in the CAN/ULC-S559-04 and CAN/ULC S304-06 documents, such as ULC-S527-99, and others.

The LoBenn LNI/LNS 2000 series equipment is a component of a complete fire alarm system installation. They meet all the required standards if they are used in conjunction with properly installed CAN/ULC-S559-04 and CAN/ULC S304-06 listed equipment.

The installation instructions contained in this manual are intended to assist an installer with the portion of the fire alarm system specific to LoBenn and the LNI 2000 and is not intended to cover the installation instructions of a complete fire alarm system.

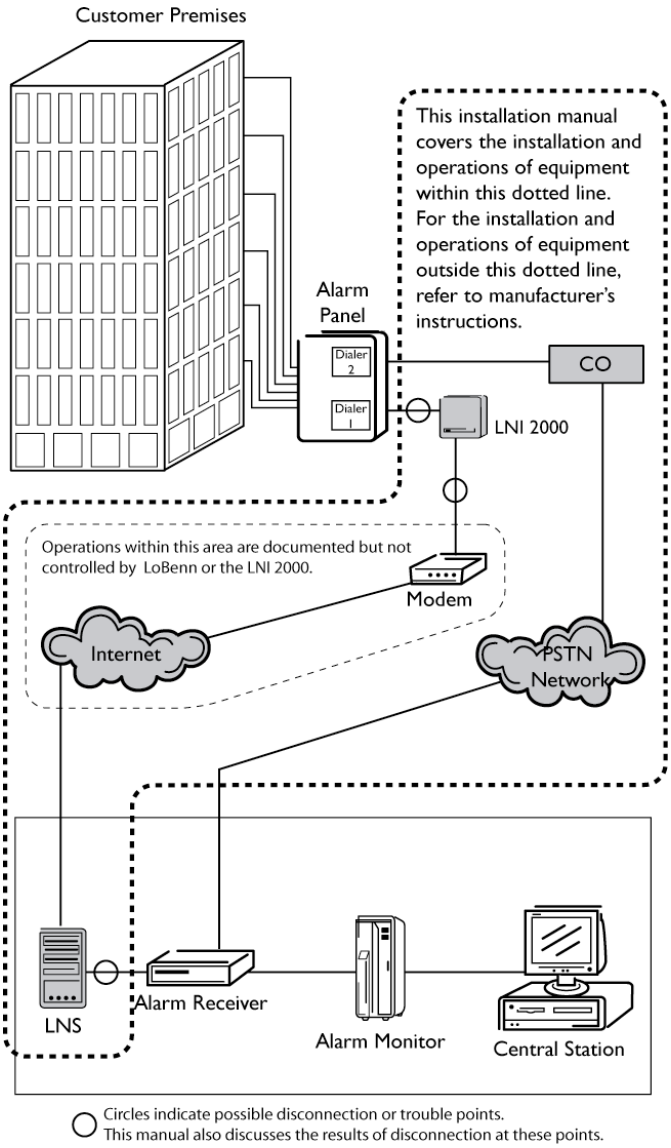
For installation instructions for the other components of an CAN/ULC-S559-04 and CAN/ULC S304-06 listed fire alarm system, refer to the install instructions supplied by the manufacturer of the equipment or by the system integrator.

Functionality

- Monitored Line Supervision
- 1-to-8 alarm receiver telephony interconnects with hunt groups
- Software downloadable . . . No truck roll required
- Email notification of problems
- Network status reports per area
- Intelligent upgrades, ensures proper software at installation.

Communications Security Level A2

This product meets the requirements for communication security level A2 (ULC CAN/ULC-S304-06: 11.4.3.2 and referenced clauses).



1. Scope of this Installation Manual and Functionality

Prerequisites, Specifications and Installation Options

General prerequisites

The following conditions must be met before installing the LNI 2000:

- A completed work order including, **at a minimum**, these settings:
  - Static IP address of LNS;
  - Receiver number;
  - LNS encryption passphrase;
  - Indication whether LNI 2000 will use DHCP or a static IP address, with DHCP as the default;
  - If static IP address is specified, the address, the subnet mask and gateway mask; and
  - Password to be used to configure the LNI.

CAN/ULC S559 prerequisites

- Compatible CAN/ULC-559-04 listed alarm panel.
- Compatible with all Dact/Receivers that use compatible data formats (see Compatible LoBenn Network Server (LNS) Data Formats)
- ULC listed enclosure, such as the GE MFC(A) Accessory Enclosure installed, with ULC listed mounting plate and ULC listed 12V DC voltage regulator. Shall use the GE 24DC12 compatible by voltage range (21 to 26VDc)
- ULC listed conduit between alarm panel and enclosure containing the LNI 2000 with appropriate cabling in place.
- Available Ethernet port on a router connected to high-speed modem.
- Active POTS telephone line from alarm panel (optional, for redundancy).
- A CAN/ULC S559 compliant 24-hour power supply.

CAN/ULC S304 prerequisites

- Compatible CAN/ULC-S304-06 listed alarm panel.
- Available Ethernet port on a router connected to high-speed modem.
- Router and modem protected by ULC listed enclosure, or inside burglary alarm panel enclosure.

- Conduit between enclosure housing the LNI 2000 and router with appropriate Ethernet cabling in place, may be same conduit as above.
- Active POTS telephone line from alarm panel (optional, for redundancy).
- The LNI must be powered by a ULC listed burglary alarm panel or a ULC listed UPS (Uninterruptible Power Supply).
- If LNI is connected to products or components of products, which perform communications functions only, these products or components shall comply with the applicable requirements specified in CAN/CSA-C22.2 No. 60950-1, Information Technology Equipment - Safety - Part 1: General Requirements. Such products include, but are not limited to:
  - A) hubs,
  - B) routers,
  - C) network interface devices,
  - D) third party communications service providers,
  - E) digital subscriber line (DSL) modems, and
  - F) cable modems.

Specifications

The table below lists the specifications for the 10-Mbps 10BaseT cable.

Parameter	RJ-45
Cable specification	Category 3 or Category 5 UTP with 22 to 24 AWG
Maximum segment length	100 m (328 ft.) for 10BaseT

Installation Options

There are several possible installation options.

These options range from a UL listed enclosure containing the alarm panel, LNI 2000, UPS, a 12V regulator such as the GE 24DC12 and router mounted on a ULC listed mounting plate (for example, for a new installation) to each component requiring on-site assembly (for example, for installation in an existing building with an existing fire alarm system.)

Materials List

Materials included in package

- LNI 2000
- Power Pak
- Two (2) CAT 5 cables
- Grommet
- 20K resistor + 2” heat shrink tube to protect resistor from accidental shorts
- Installation Poster
- Documentation Card listing web address of all required documentation

Not included

- Two (2) metal screws for mounting the LNI 2000.
  Minimum length: 1.25 inches. Recommended length: 1.5 inches
- Additional patch or alarm cabling.

Tools required for installation

- Small slotted screwdriver for terminal strip
- Phillips # 1 and # 2 screwdriver
- Tie wraps (cable ties)

Step One: Mount The LNI 2000

WARNING
A mounting screw coming in contact with a live electrical wire could result in serious injury or death, cause significant property damage, and/or bring about a circumstance that could, in the future, cause serious injury or death or serious property damage.

CAUTION
Improper removal of the terminal strip cover or knockout could cause serious, irreparable damage to the LNI 2000, including damage to the tamper switch.

CAUTION
Do not remove the LNI 2000's rubber feet prior to installation. Removal of these feet will make it very difficult to remove terminal strip access panel without damage to the terminal strip and tamper switch when the LNI is mounted.

Note: Mounting may be done after the wiring of the LNI 2000 is complete, depending on the enclosure configuration.

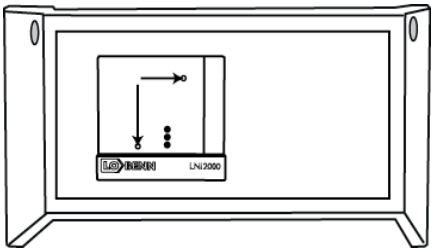
Refer to CAN/ULC-S559-04 specifications for more information.

1. Remove the knockout located to the right of the "Jack" port at the front of the LNI 2000. Insert the included grommet.

2. Mount the LNI 2000 to the mounting plate, using two (2) screws through the mounting holes as shown. The LNI 2000 is sized to accept #6 screws (maximum).

3. Remove the terminal strip by removing screw located at the rear of the cranberry terminal strip cover, and lifting cover straight up. For more information about removing the terminal strip cover, see **Removing and Replacing the Terminal Strip Cover** on page **57**.

4. Thread a tie-down through the loop inside the terminal strip.



2. Mounting the LNI 2000

Step Two: Connect To Power

Note: The **LNI 2000** uses approximately 100 milliamp while idle and 300 milliamp while transmitting, under maximum load, and is powered through the alarm panel.

Note: Use 2-conductor wire, not less than 22 AWG and not more than 16 AWG.

Note: All wiring shall be in accordance with C22.1 Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations.

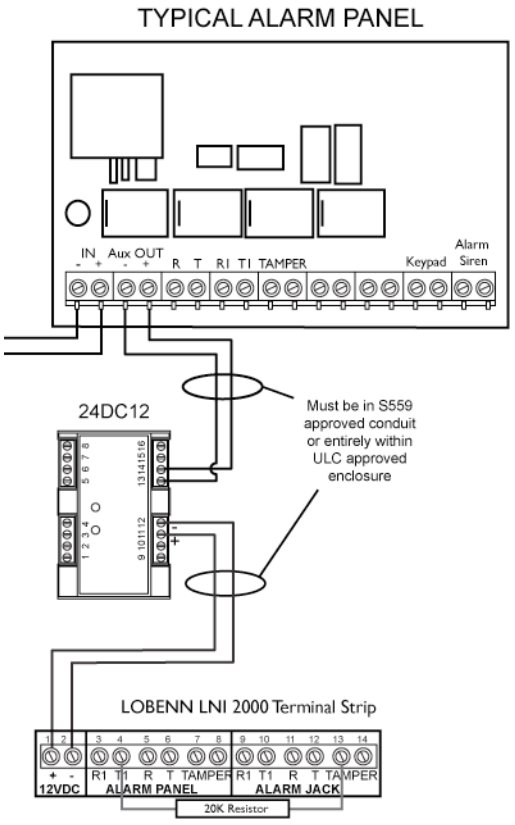
Note: LoBenn recommends powering the **LNI 2000** from the panel to take advantage of the standby power of the panel. LoBenn also recommends use of the terminal strip to reduce the possibility of accidental disconnection.

Note: To be ULC-S559 compliant the LNI must be powered directly by a listed fire alarm panel (typically 24 Vdc) or a ULC listed UPS (Uninterruptible Power Supply).

1. Make wiring connections as shown in the wiring diagram on the next page.
2. For ease of installation, connect the 20K resistor between pins #4 and #13 now. This resistor is required to establish a tamper circuit. For more information, see **Step Five: Connect To Panel** on page **22.** (This resistor may be pre-installed.)

   Note: The addition of a 20K resistor between terminals #4 and #13 in the LNI 2000 terminal strip will establish a line detection circuit for panels with line seizure capability. When the circuit between the alarm panel and the LNI 2000 is broken, the Tip/Ring circuit shorts to the T1/R1 state. The 20K resistor senses this short, triggering an alarm. This capability is necessary for ULC approval.
3. Replace the terminal strip cover.

   Note: Ensure polarity is correct. The LNI does not work if polarity is reversed.

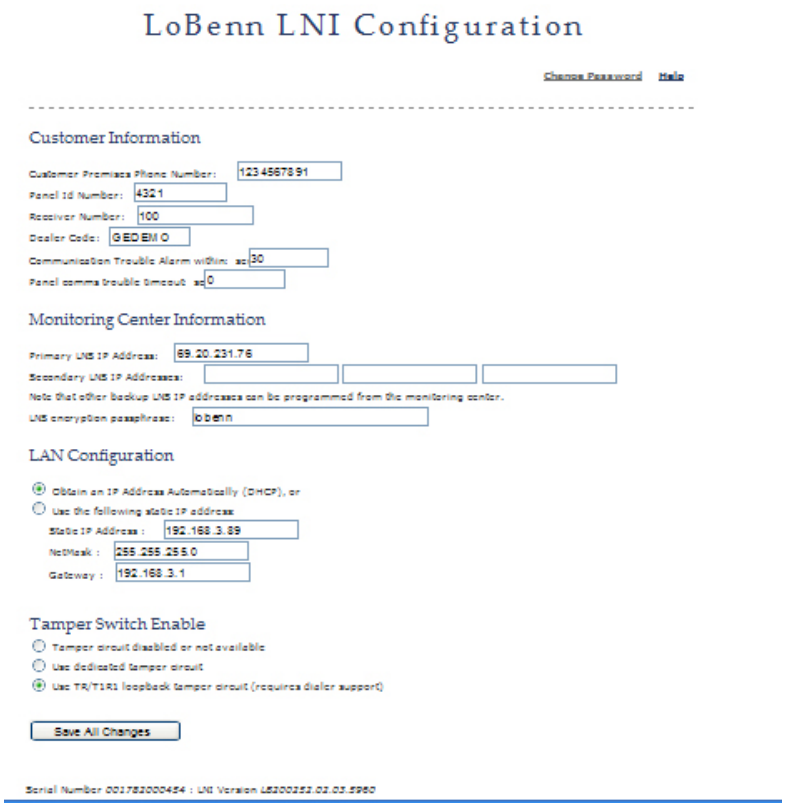


3. Connect to Power (CAN/ULC S559-04 compliant installation)

Step Three: Program the LNI 2000

Note: The LNI 2000 may be pre-programmed prior to installation. To pre-program, power the LNI 2000 with a listed 12V DC adapter plugged into the Power port on the front of the LNI 2000.

1. Connect the LNI 2000 to a PC through the “Local” port.
2. Open a web browser. Type 172.21.32.43 into the browser address bar. This IP address is shown on the LNI 2000 label on the underside of the LNI 2000. An initial password screen will display.
3. Enter the UserName “admin” and the Password “admin”.
4. The LoBenn LNI Configuration screen will display.



5. Configure the LNI 2000 by entering the values specified by the work order into the appropriate boxes on the LoBenn LNI Configuration screen. Save the settings by clicking "Submit." See pages 35-37 for more information.

   Note: To be ULC CAN/ULC-S559-04 compatible, the communication trouble alarm time programmed during this step must not exceed the **maximum** of 90 seconds. LoBenn recommends a setting of 90 seconds.

   Note: To be ULC CAN/ULC-S559-04 compatible, the Tamper Switch Enable must be set to use the Tip/Ring method. This is applicable for panels/dialers such as the GE Fireshield series which have the following characteristics:

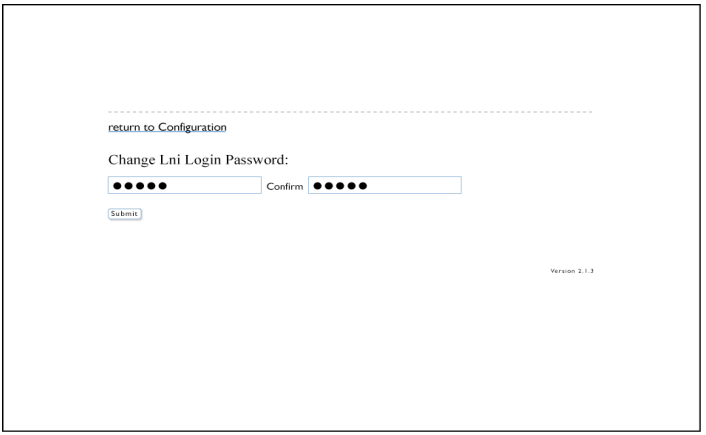
   - There is no dedicated tamper circuit between the panel/dialer and the LNI
   - The Tip/Ring wires are shorted to the T1/R1 leads respectively when the dialer is on hook.

6. To change the LNI 2000 password, click on Change Password on the upper right hand corner of the LoBenn LNI Configuration screen.

   Note: For security reasons, LoBenn Inc. recommends changing the password after the LNI has been configured.

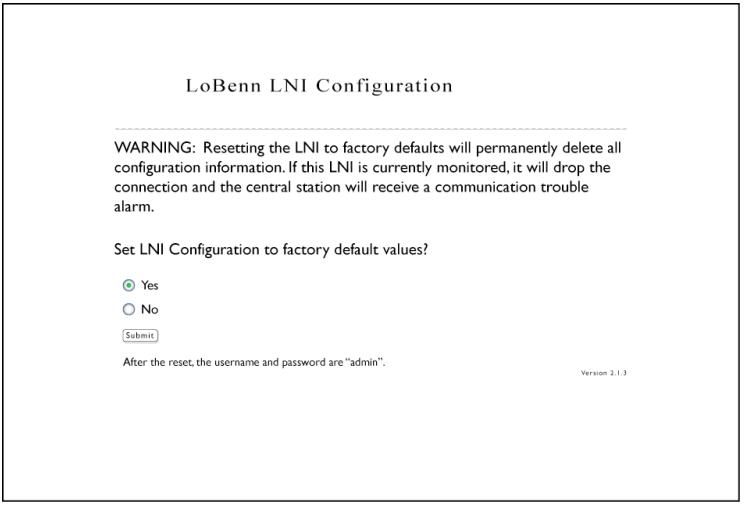
7. The Change LNI Login Password screen will display. Type your new password into the appropriate box. Retype the password to confirm it. Click Submit to submit the new password.

   Note: This new password should be specified on the work order. If the new password is not specified on the work order it should be reported to the appropriate personnel. LoBenn Inc. is not responsible for any loss, damage or inconvenience resulting from misplacing, mis-communicating or otherwise not recording this password.



To re-set the configurations on a legacy LNI 2000

1. To re-set the configurations on a legacy LNI 2000 with an unknown password, type 172.21.32.43/factoryreset.html into the address bar of a web browser once the LNI 2000 is connected to your PC.
2. A Factory Reset LoBenn LNI Configuration screen will display. Select Yes and click Submit**.**



3. After resetting the UserName and Password to the factory defaults, type 172.21.32.43 and proceed as described in Points 1 through 7 of this Step to re-configure the LNI 2000 to your new settings, as specified on the work order.

   Note: After resetting to the factory defaults, the UserName and Password are both “admin.”

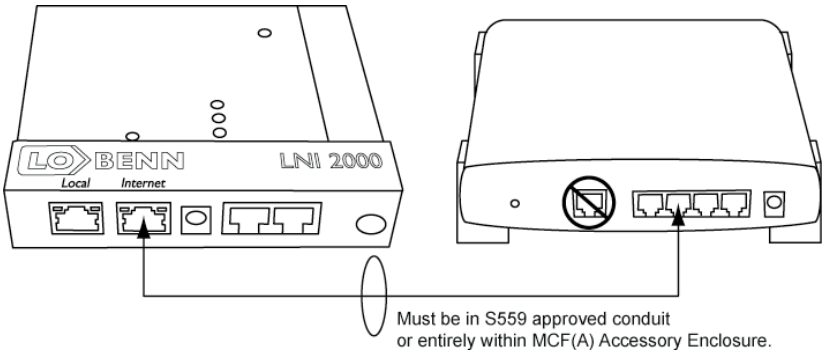
4. Disconnect cables when the programming is complete.

Step Four: Connect To Internet

	**CAUTION** Movement, contact with water, accidental contact with other live power sources and accidental disconnection of the LNI 2000 after installation could cause serious damage or malfunction to the unit. Accidental or intentional disconnection of the LNI 2000, modem, or router will trigger a fall back to the voice phone line, if present, and a communication trouble alarm at the monitoring centre.

Note: If the distance from the mounting location of the LNI 2000 to the network router is greater than the provided CAT 5 cable (6 feet), a longer CAT 5 cable (up to 100 metres/328 feet) may be used.

1. Connect the LNI 2000 to the router, using the LNI 2000 “Internet” port. Do not connect to the router’s “Internet” port. “
2. Once the cable is connected, verify that the LED on the “Internet” port and the IP Link LED are lit.



4. Connect to Internet

Note: To be ULC CAN/ULC-S304-06 compatible, network access and domain access policies shall be set to restrict unauthorized network access and “spoofing” or “denial of service” attacks.

Note: Use These Instructions for **ULC Installations**

Note: To be ULC CAN/ULC-S304-06 compatible, power for network equipment as hubs, switchers, routers, servers, modems, etc., shall be backed up or powered by a Listed UPS, stand-by battery or the control unit, capable of facilitating 24 h standby, compliant with Clauses 16.1.2 and 16.4.1 of CAN/ULC-S304-06.

Where such cannot be facilitated, the control unit shall support back-up communications for a secondary communications path, subject to the following:

A Low Risk and Medium Risk shall use a dialer as a minimum;
B High Risk shall use cellular control channel or long range radio as a minimum; and
C Very High Risk shall be equipped with 24h standby power. (ULC CAN/ULC-S304-06 : 11.4.2.9 and 11.4.3.3)

Note: To be ULC CAN/ULC-S S304-06 compatible, the Internet Service Provider (ISP) providing service must meet the following requirements:

- have redundant servers/systems,
- back-up power,
- routers with firewalls enabled and
- methods to identify and protect against “Denial of Service” attacks (for example, via “spoofing”).

Step Five: Connect To Panel

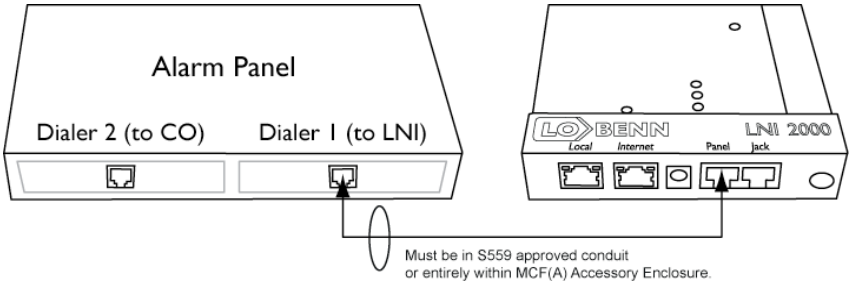
WARNING
This alarm cable is a live wire. Contact with a live electrical wire could result in serious injury, or death Use extreme care to avoid bringing the live wires in contact with any metal objects or your person.

Note: If the distance from the mounting location of the LNI 2000 to the alarm panel is greater than the provided cable (6 feet), a longer cable (up to 1000 feet) may be used.

Note: Standard 4 pair telephone cable with pin-to-pin RJ45 connectors, CAT3 or CAT5 cable may be used.

1. Using alarm cable with RJ45 connectors, connect the alarm panel to the LNI 2000, using the Dialer 1 jack on the alarm panel and the "Panel" port on the LNI 2000.
2. Once the cable is connected, verify that the IP Monitoring LED is lit.

Note: The prior installation of a 20K resistor between terminals #4 and #13 in the LNI 2000 terminal strip establishes a tamper circuit for panels with line seizure capability. This capability is necessary for ULC approval.



5. Connect to Panel

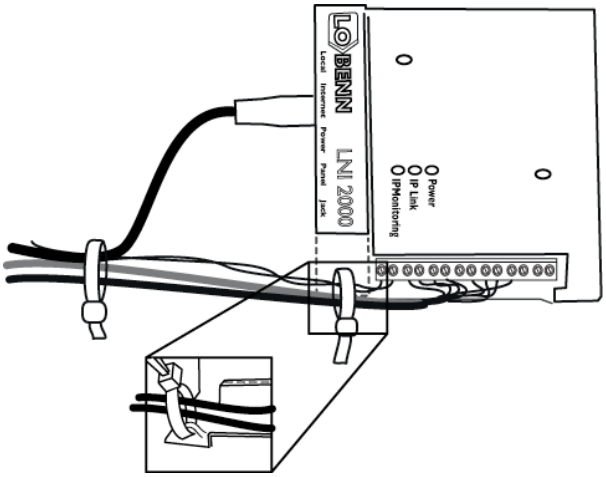
Step Six: Complete Installation

CAUTION
The terminal strip cover must be raised and lowered vertically (straight up or down) to avoid bending or breaking the tamper switch. If the tamper switch breaks, it cannot be fixed or replaced in the field. The entire LNI 2000 unit must be replaced. See **Removing and Replacing the Terminal Strip Cover** on page **57** for more information.

Securing an Installation with Terminal Strip Connections

Use this method of securing the installation before closing the enclosure if all cables except the Ethernet cable are connected to the terminal strip. See the illustration below.

1. Secure the tie-wrap inserted through loop inside terminal strip in **Step One** around both the power and RJ45 cable.
2. Replace the terminal strip cover.
3. Trim the tie wrap as specified in the relevant UL specifications.
4. Replace terminal strip cover.
5. To prevent easy removal or accidental disconnection of the Ethernet cable, wrap another tie-wrap around it and the already secured power and telephone cables.
6. Secure cover on UL listed enclosure.

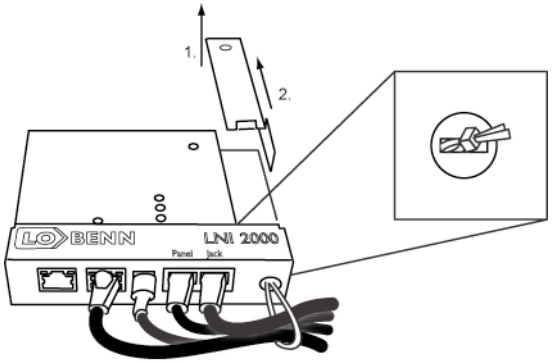


6. Securing Terminal Strip Cables

Securing an installation without Terminal Strip Connections.

Use this method of securing the installation before closing the enclosure where all the outside attachments and connections do not use the terminal strip. See illustration below.

1. Loop a small cable tie through the slot in the terminal access port.
2. Wrap this cable tie around all the cables, gently directing them towards the port of the enclosure.



7. Securing Outside or Port Connections

Note: The cable ties should be tightened and trimmed before closing the enclosure. They are shown loose and untrimmed in both these illustrations for clarity.

Note: LoBenn recommends that the LNI 2000 be wall mounted. LoBenn also recommends that there be a cable #4 strap placed, using a #6 ¾ inch screw, within nine (9) inches of the LNI supporting all cables and wires if conduit is not used.

Step Seven: Test The System

Verify that all LEDs are lit, indicating successful configuration and communication between LNI 2000 and LNS 2000 at the Central Station. The Power LED should be blinking on a one second OFF, three seconds ON cycle, while the IP Link and the IP Monitoring LEDs should be on.

> **Note**: If all the Power and IP Link LEDs begin flashing, there is a firmware update in progress. This flashing may continue for several minutes. The IP Monitoring LED flashes only during an alarm transmission.
>
> **Note**: To be ULC CAN/ULC- S304-06 compatible, the system must be tested at least once a year (CAN/ULC-S304-06: 4.2.B)

Testing the Internet Connection

1. Check that the "IP Link" and "IP Monitoring" LEDs are lit. These LEDs light when Step Four: Connect to Internet is completed.
2. Send at least one (1) test alarm from the alarm system keypad. See the panel operating manual for more information on how to send a test alarm.
3. Verify that the IP Monitoring LED is flashing and that the test alarm is correctly received at the central station

Communication Trouble Alarm Test One

1. Disconnect the LNI 2000 Internet connection by unplugging the RJ45 jack from the "Internet" port. The IP Link LED will flash and the IP Monitoring LED will go out.
2. After the programmed communication trouble alarm time (CTAT) has elapsed the central station will receive a communication trouble alarm. Note: To be ULC compliant, this CTAT must not be longer than 90 seconds. LoBenn recommends using a setting of 90 seconds.
3. If backup phone line is in place on second dialer send at least one (1) test alarm from the alarm system keypad. See the panel operating manual for more information on how to send a test alarm.
4. Verify that the test alarm (if applicable) and the "Communication Trouble Alarm" are received correctly at the central station.
5. Reconnect Internet cable removed in Step 1.

6. Check that IP Link and IP Monitoring LED are lit to verify that the alarm system has restored communication with the central station. These LEDs should re-light within seconds.
7. Verify that the IP Link and IP Monitoring LEDs relight and the central station has received a restoration alarm.

Communication Trouble Alarm Test Two

1. Disconnect the LNI 2000 from the alarm panel by unplugging the alarm cable from the “Panel” port.
2. After the programmed communication trouble alarm time has elapsed, the IP Monitoring LED will stay on and the central station will receive a communication trouble alarm.
   Note: To be ULC compliant, this CTAT must not be longer than 90 seconds. LoBenn recommends using a setting of 90 seconds.
3. Verify that the test alarm (if applicable) and the “Communication Trouble Alarm” are received correctly at the central station.
4. Reconnect the alarm cable removed in Step 1.
5. Verify that the IP Link and IP Monitoring LEDs are still on and that the central station has re-established connection and received a restoration alarm.

STANDARD INSTALLATIONS

Note: Use These Instructions for **Standard Installations**

Overview

Fast, reliable, secure communication is vital to every business, most especially the security business. The high-speed, encrypted and multiple redundancies offered by the Internet offers the kind of reliable communications that businesses, large and small, are looking for.

But many small and medium businesses – concerned that moving from PSTN-based communications to the Internet means expensive upgrades in equipment, new training for staff, and delays in implementation – have delayed their migration to these new technologies.

The LoBenn LNI 2000 / LNS 20xx devices provide security monitoring levels that were previously only affordable for large corporations. Once installed, the LNI 2000, transfers any existing security panel data – regardless of age, reporting format, manufacturer, or location – to the "Always On" world of High Speed Internet.

The LoBenn system immediately increases the base level of service by allowing any current dial-up alarm installation to be inexpensively upgraded to a fully monitored "leased or supervised line" level of service. The service increase is without the associated line costs and uses or sometimes replaces, existing data communication links.

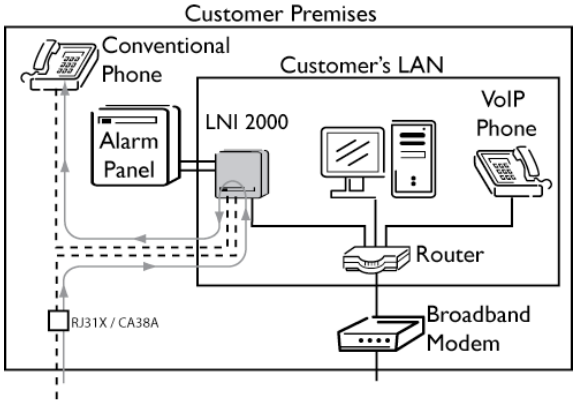
The installation instructions contained in this manual are intended to assist an installer add the LNI 2000 to an alarm system. For information about the other components of the alarm system, refer to the install instructions supplied by the manufacturer of the equipment or by the system integrator.

Functionality

- Monitored Line Supervision
- 1-to-8 alarm receiver telephony interconnects with hunt groups
- Software downloadable . . . No truck roll required.
- Remote control of LNI relays
- Email notification of problems
- Network status reports per customer and area
- Alarm discrimination. Pinpoints location of IP network failures
- Intelligent upgrades, ensures latest software at installation

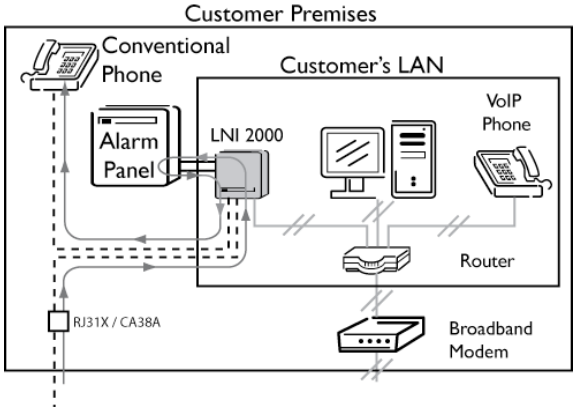
Modes of Operation

In normal operations, when the LNI 2000 is in "Internet" mode, conventional phone transmissions are looped back to the phone **before** going to the panel, as shown below. This allows normal phone use even if an alarm is being transmitted.



8. LNI 2000 Standard Installation Normal Operations

When any part of "Internet" mode fails, relays within the LNI 2000 bring the alarm panel back into the transmission loop, as shown below, and as would be the case in a phone-only alarm system. This allows the alarm panel to seize the conventional phone line if an alarm needs to be sent.



9. LNI 2000 Standard Installation Bypass or Internet Failure Operation

Note: Use These Instructions for **Standard Installations**

Materials List

Materials Included in package

- LNI 2000
- Power Pak
- Two (2) CAT 5 cables
- Grommet (required for metal case only.)
- Installation poster
- Documentation Card listing web address of all required documentation

Tools required for installation

- Slotted screwdriver
- Phillips # 1 and # 2 screwdriver
- Tie wraps (cable ties)

Not included

- Two (2) #6 screws for mounting the LNI 2000.
  Minimum length: 1.25 inches. Recommended length: 1.5 inches
- Additional patch or alarm cabling.

Note: Use These Instructions for **Standard Installations**

Installation Procedure

Installation of the LNI 2000 takes place **after** the Pre-Installation Site Survey and work order are completed. The Pre-Installation Site Survey compiles important information about both the customer's alarm system and the monitoring center that is necessary to carry out the installation.

Once the Pre-Installation Site Survey is completed, there are six basic steps to installing and connecting the LNI 2000 to a new or existing alarm system.

Installation options and implications

This manual describes several options for installing the LNI 2000. These options are described in the tables below. The implications of each installation option for monitoring and fail-safe features are noted in the "Notes" column.

Standard Recommended Installation	**Notes**
LNI 2000 connected to Internet via switch, router or high speed modem, LNI 2000 connected to telephone voice line, LNI 2000 power adapter plugged into UPS, and Customer switch, router or high-speed modem plugged into UPS.	Full coverage with back-up voice line alarm signaling if Internet fails. Full protection from power outages for backup period provided by the UPS.
ULC compliant Installation	**Notes**
LNI 2000 connected to Internet via switch, router or high speed modem, LNI 2000 connected to alarm panel dialer LNI 2000 powered through alarm panel, Entire installation protected by ULC listed conduit and/or enclosure	Full coverage with back-up alarm signaling if Internet fails. Continuous monitoring of connection, ready for software updates. See ULC Installation on pages **7** to **27** for more information.
- continued -	

Note: Use These Instructions for **Standard Installations**

Alternative Installation Conditions	**Notes**
Voice line not connected. Internet access fails.	Failure in the Internet system means premises will not be monitored**.** ▪ Alarms cannot be sent over a backup voice line, ▪ IP Link and IP Monitoring LEDs will go out on the LNI 2000, and ▪ A communication trouble alarm will be generated at the alarm center after a delay. The length of the delay is configurable on the LNI and LNS.
LNI 2000 power adapter plugged into wall outlet. Household power fails.	Power outage means the LNI will lose Internet connection. The system will fail-over to alarm panel voice line, if present. **If no voice line is present alarms cannot be sent.**
Customer modem and switch or router plugged into wall outlet. Household power fails.	The LNI will fail-over to alarm panel voice line, if present. **If no voice line is present alarms cannot be sent.**
VoIP installed, voice line not connected. Power to LNI 2000 fails.	LNI 2000 will lose Internet connection. System will try to fail-over to alarm panel voice line but VoIP may prevent alarm signaling. **Alarms may not be sent.** LoBenn Inc. recommends connecting the LNI to the VoIP line regardless of potential problems. The connection should be made just like other analog phones in the house; consult the VoIP installation guide for more information.

Note: Use These Instructions for **Standard Installations**

Step One: Program the LNI 2000

> **Note**: LoBenn Inc. strongly recommends that this programming step be done at the installer's or alarm center offices, before the installation visit to the customer's premises.

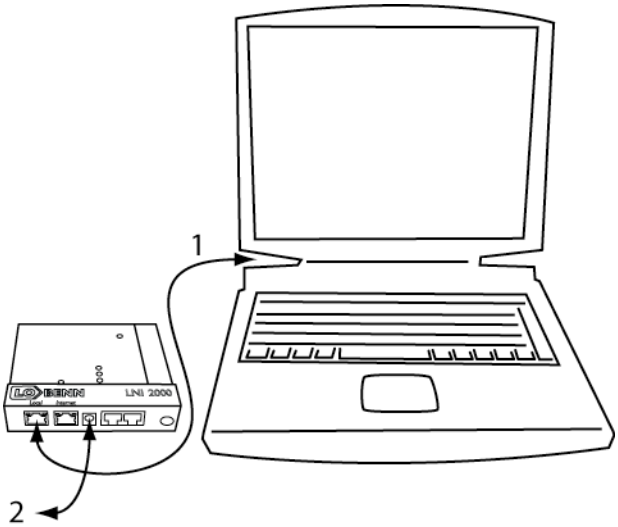
Programming may be done by the installer at a home or business office or by the contracting alarm company.

Programming requires a computer or laptop configured to obtain IP addresses automatically, information from the LNI Pre-Installation Site Survey and a web browser.

1. Connect the LNI 2000 to your PC with a CAT 5/RJ45 Ethernet cable from the programming port labeled "Local" to an Ethernet port on your PC.

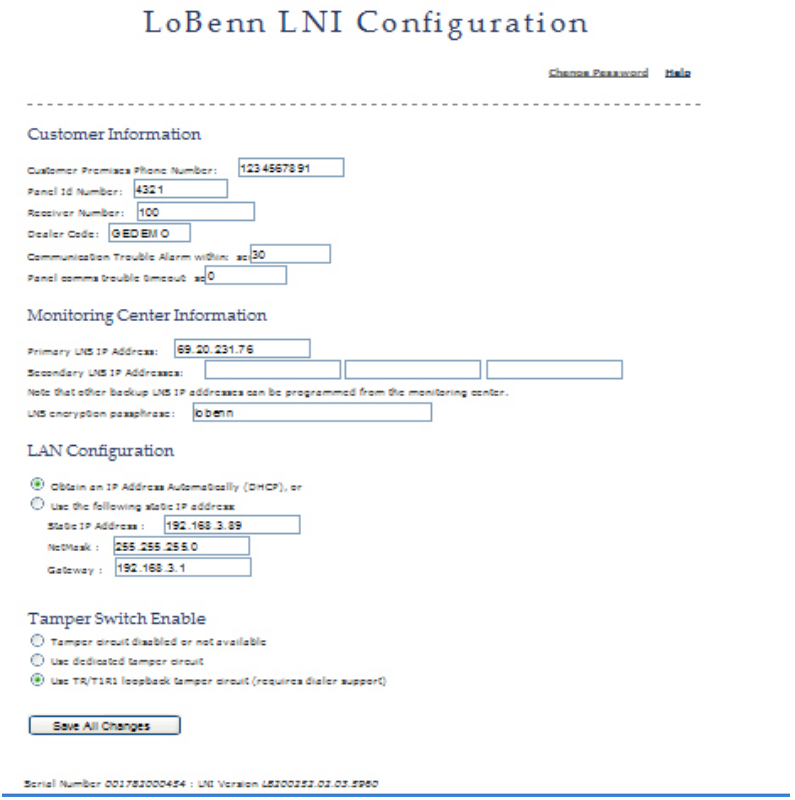
   Note: Your PC should be configured to obtain an IP address automatically (DHCP client).

2. Power the LNI 2000 by plugging a 12V DC adapter into the "Power" port on the LNI 2000. Plug the 12V DC adapter into any 120V socket. The green "Power" LED on the top of the LNI 2000 will light.



10. Connect to PC for Programming

3. Open a web browser such as Internet Explorer, Netscape or Firefox. Type 172.21.32.43 into the browser address bar. This IP address is shown on the LNI 2000 label on the underside of the LNI 2000. An initial password screen will display.
4. Enter the UserName “admin” and the Password “admin”.
5. The LoBenn LNI Configuration screen will display.



6. Configure the LNI 2000 by entering the values specified by the work order into appropriate boxes on “LoBenn LNI Configuration” screen:

A. Phone number of customer premise's alarm panel
The RJ31X (CA38A) jack used by the alarm panel also has this phone number.

B. Alarm panel ID
This is the number assigned by the alarm company to the customer's alarm panel. Alarm panel programming may also be required. See **Alarm Panel Programming May Be Required** on page **40** for more information.

C. Receiver Number; **THIS IS NOT A PHONE NUMBER**
This is the number of the unit at the Central Station that receives the alarms. The number programmed into the LNI web page **MUST** match the number used in the LNS set-up. See set "receiverid" in the LNS 2000 manual.

> **Note:** Alarm Panel programming may be required. See **Alarm Panel Programming May Be Required** on page **40** for more information.

D. Dealer code
This is the unique 6 ASCII character code assigned to an individual dealer by the monitoring center. The code can be any 0 to 6 digits or letters or any combination of 6 digits and letters. The dealer code identifies the security company responsible for the security account, and allows for targeted upgrades of specific LNI. This dealer code should also be reported to the appropriate personnel.

E. Communication trouble alarm time (CTAT).
Minimum and maximum values are 30 seconds and 48 hours, respectively. Regular polling between the LNI 2000 and the LoBenn Network Server (LNS) will ensure that a communication timeout alarm will be generated at the LNS within this specified time. The polling is a very short Internet communication between the LNI and LNS made at regular intervals.

F. Panel comms trouble timeout
This is for future use. The value must be set to zero (0).

Note: To be ULC CAN/ULC-S559-04 CAN/ULC S304-06 compatible, the communication trouble alarm time programmed during this step must not exceed a **maximum** of 90 seconds. LoBenn recommends using a setting of 90 seconds.

Note: To be ULC CAN/ULC-S559-04 and CAN/ULC S304-06 compatible, the Tamper Switch Enable must be set to use the Tip/Ring method. This is applicable for panels/dialers such as the GE Fireshield series which have the following characteristics:

- There is no dedicated tamper circuit between the panel/dialer and the LNI
- The Tip/Ring wires are shorted to the T1/R1 leads respectively when the dialer is on hook.

Note: To be ULC compatible tamper protection must be activated.

1. Enter the primary and secondary LNS IP addresses supplied by monitoring center. Refer to the work order for this information.

   Note: Only one address needs to be entered. If there are redundant or defunct addresses the LNS will update the LNI 2000 automatically.

   Note: Consult the monitoring center before adding additional addresses. Attempts to connect are made in order, using each address provided. The LNI will use the CTAT value before trying each address in sequence. Fall-back to the PSTN line will only occur after:

   - CTAT is exceeded and no connection can be made to a backup LNS; or
   - CTAT is not exceeded, but the alarm panel is attempting to send an alarm. If at that moment a connection cannot be established, the LNI will default to the PSTN line.

2. Enter the LNS encryption phrase in the space provided. LoBenn Inc. strongly recommends that the passphrase be copied from the license key file provided by the monitoring center and pasted into this field.

   Note: All communications with the LNI are always encrypted. Therefore the LNI satisfies ULC CAN/ULC-S304-06 which requires that the active communication channel must have security encryption enabled at all times (CAN/ULC-S304-06: 11.4.2.5).

3. Save these settings by clicking “Submit.”

4. To change the LNI 2000 password, click on Change Password on the upper right hand corner of the LoBenn LNI Configuration screen.

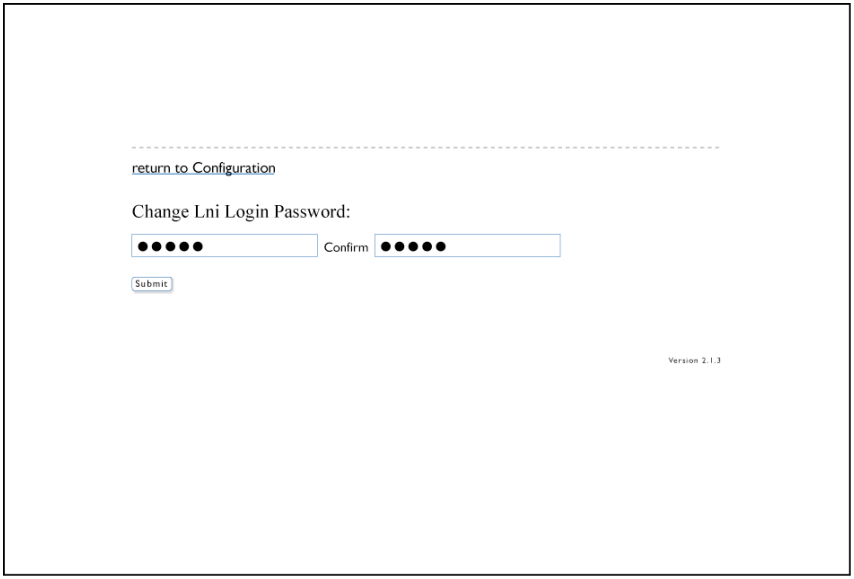
Note: For security reasons, changing the password after the LNI has been configured is recommended.

5. The Change LNI Login Password screen will display. Type your new password into the appropriate box. Retype the password to confirm it. Click Submit to submit the new password.

   Note: You may choose a new password for each LNI 2000 programmed or you may use the same password for every LNI 2000 programmed.

   Note: For security reasons, there is no reset of this password. LoBenn Inc. is not responsible for any loss, damage or inconvenience resulting from misplacing, mis-communicating or otherwise not recording this password.

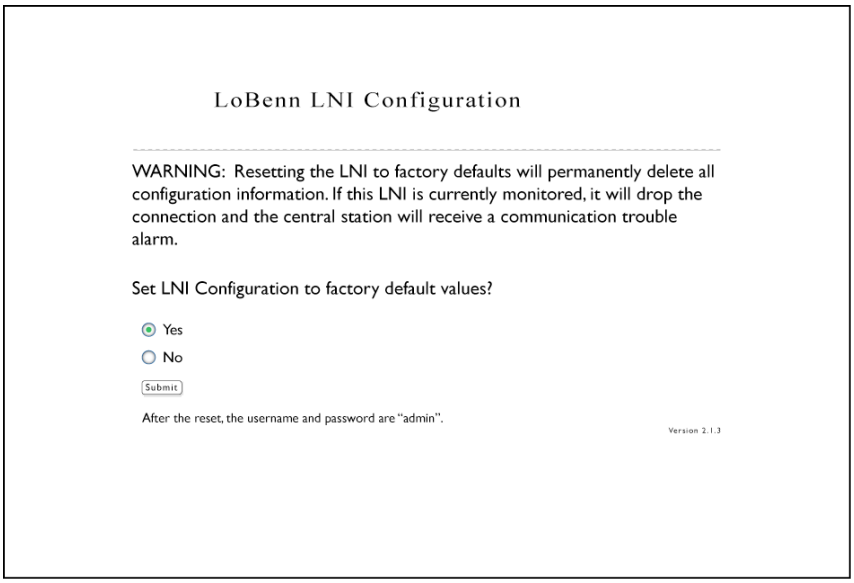
   Note: This User ID and the new password should be specified on the work order. If the new password is not specified on the work order it should be reported to the appropriate personnel.



Note: Use These Instructions for **Standard Installations**

6. To re-set the configurations on a legacy LNI 2000 with an unknown password, type 172.21.32.43/factoryreset.html into the address bar of a web browser once the LNI 2000 is connected to your PC.

7. A Factory Reset LoBenn LNI Configuration screen will display. Select Yes and click Submit**.**



8. After resetting the UserName and Password to the factory defaults, type 172.21.32.43 and proceed as described in Points 1 through 7 of this Step to re-configure the LNI 2000 to your new settings, as specified on the work order.

   Note: After resetting to the factory defaults, the UserName and Password are both "admin."

9. Disconnect cables when programming is complete. The LNI 2000 is now ready for repackaging and installation on the customer premises.

   Note: If all three LEDs (Power, IP Link and IP Monitoring) begin flashing, there is a firmware update in progress. Do not disconnect any wiring or power down until the update is complete and the LEDs have stopped flashing. This flashing may continue for several minutes.

Note: Use These Instructions for **Standard Installations**

About the LNI 2000 and IP Addresses

The LNI 2000 is designed both to **provide** and to **obtain** an IP address automatically.

The "Local" Ethernet port on the LNI provides an IP address to the PC used to program the unit.

The "Internet" port tries to obtain an IP address from the network. This setting can be changed to a static IP address during configuration of the LNI 2000.

Alarm Panel Programming May Be Required

Alarm panel ID:
This number may have to be re-programmed on the alarm panel if it has been changed as a part of this installation. See the LNI Pre-Installation Site Survey for more information.

Alarm center receiver phone number:
This number may have to be re-programmed on the alarm panel if has been changed as a part of this installation. Note that the alarm panel may have to be reconfigured for Dual Tone Multi-Frequency (DTMF) dialing because the LNI is not compatible with pulse dialing. See the LNI Pre-Installation Site Survey for more information.

Step Two: Mount the LNI 2000

WARNING
A mounting screw coming contact with a live electrical wire could result in:

- serious injury or death
- cause significant property damage, and/or
- bring about a circumstance that could, in the future, cause serious injury or death or serious property damage.

CAUTION
Movement, contact with water and accidental contact with other live power sources after Installation could cause serious damage or malfunction to the unit.
Accidental or intentional disconnection of the LNI 2000, modem or router will trigger a fall back to the voice phone line, if present, and a communication trouble alarm at the monitoring centre.

Note: Mounting can be done after the wiring of the LNI is complete. In some installations, it may be simpler to wire first, test, and then mount**.**

1. Once the LNI 2000 is programmed, it is ready to be installed in the customer's premises.

   Note: The LNI 2000 can be mounted on any flat surface or wall. There are two preferred locations for the LNI 2000: beside the alarm panel, or beside the customer's router[1]. The preferred location is near the alarm panel because, in that location, it is less likely to be disturbed. However, locating the LNI closer to the router may provide easier access to an already installed UPS.

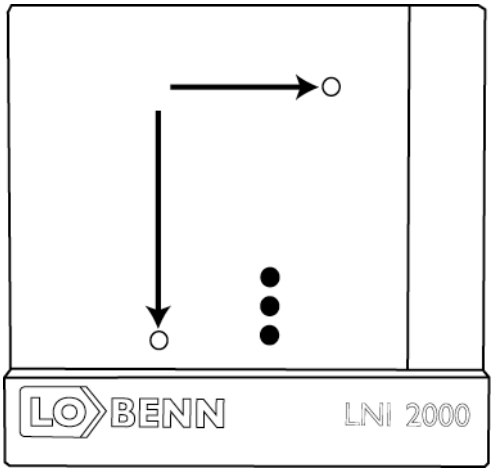
2. Decide the LNI 2000's location. There are several factors to consider. The LNI should be installed where:

   - It is convenient to connect the LNI directly to an Ethernet port on the router closest to the modem[2],
   - It will not be moved or otherwise disturbed,
   - There will be no accidental disconnection,

1 Some DSL and cable modems are internet sharing devices and act as both a modem and a router. If the modem is also a router you can connect the LNI directly to the modem.

2 Connecting directly to the high-speed modem or a port on a router closest to the modem reduces the number of points of failure in the system.

- It will stay dry,
- There will be no accidental contact with other live power sources.



11. Mounting Holes

1. To mount the LNI 2000 on a wall, use the mounting holes and two 1.5 inch #6 wood screws.

   Note: If wall mounting, ensure that there are no hidden live electrical wires that may come in contact with the mounting screws.

2. Place the first screw but do not tighten completely. Ensure that the LNI 2000 is level.

3. Place the second screw and tighten by hand to avoid over-tightening and damaging the LNI.

4. Finish tightening the first screw.

   Note: The LNI 2000 may also be placed in a secure location on a desk or shelf.

Note: Use These Instructions for **Standard Installations**

Note: LoBenn recommends that the LNI 2000 be wall mounted and that there be a cable #4 strap placed, using a #6 ¾ inch screw, within nine (9) inches of the LNI supporting all cables and wires if conduit is not used.

Step Three: Connect to Power

The LNI 2000 can be powered through the alarm panel. For a more secure and reliable power supply, however, LoBenn Inc. recommends that the unit be powered by the 120 V adapter supplied with the unit plugged into an Uninterrupted Power Supply (UPS.)

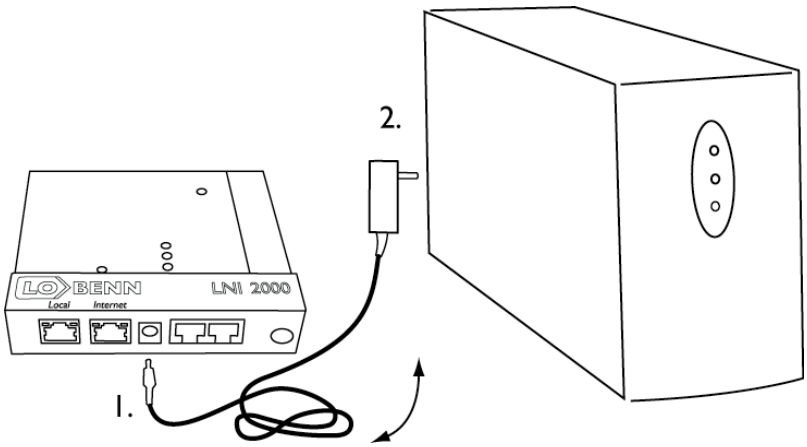
In addition, to protect the enhanced alarm system from power outages, the customer's modem and router should be powered through a UPS. The LNI Pre-Installation Site Survey should have determined whether a UPS was in place for the LNI 2000 and/or the customer's router and modem or if:

- The customer will install a UPS(s) prior to the Installation Visit, or
- The installer will install a UPS(s) as part of the Installation Visit.

Recommended Method: 12 V adapter plugged into UPS

1. Plug 12V DC adapter into 12 V DC "Power" port on the LNI 2000.
2. Plug other end into the battery back-up (UPS.)

   Note: Ensure that the adapter wire is secure from accidental contact with other live power sources and from accidental disconnection.



12. Powering with a Power Adapter

Alternate Method: Wired to alarm panel battery

CAUTION
Improper removal of the terminal strip cover or knockout could cause serious, irreparable Damage to the LNI 2000, including damage to the tamper switch in the LNI 2000.

Note: Before starting this step, determine if sufficient power is available from alarm panel power. Normally, the alarm panel supplies 600 milliamps. This should be verified in the alarm panel manual. The LNI 2000 uses approximately 300 milliamps. Calculate how much amperage is used by the alarm system sensors to determine if there is sufficient unused amperage to power the LNI 2000.

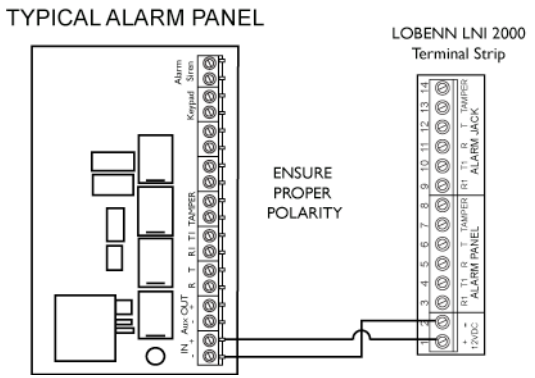
Note: To prepare the LNI for wiring, remove the terminal strip cover and knockout. See **Removing and Replacing the Terminal Strip Cover** on page **57** and **Removing the Knockout** on page **58**.

1. After having inserted the tie wrap through the tie wrap anchor, thread a length of electrical wiring through the knockout and connect it to the positive and negative 12V DC terminals on the LNI 2000 terminal strip.

   Note: Use 2-conductor wire, not less than 22 AWG and not more than 16 AWG.

2. Ensuring proper polarity, connect the other end to the 12 V DC terminals (Aux out) on the alarm panel.

   Note: The LNI does not work if polarity is reversed.



13. Connect to Power

Note: Use These Instructions for **Standard Installations**

3. Secure all wires with the tie wrap inserted when the terminal strip cover and knockout were removed. Trim the tie wrap before replacing the terminal strip cover.
4. Ensure that the power connection is secure from
   - accidental contact with other live power sources, and
   - accidental disconnection.

1. If there will be no other connections made on the terminal strip, replace the terminal strip cover. See **Removing and Replacing the Terminal Strip Cover** on page **57**.

Step Four: Connect to Internet

The alarm system's Internet connection must be made through a router or combined modem/router connected to the LNI 2000.

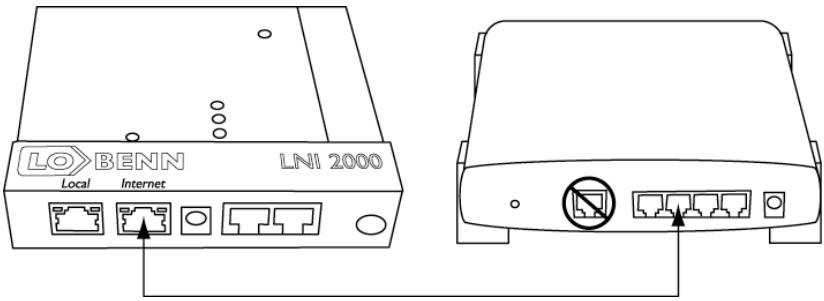
In most cases, there will be a pre-installed router and Local Area Network (LAN) on the customer's premises. The presence of a network and the availability of a router port are determined during the LNI Pre-Installation Site Survey.

Router and Network in Place; Port Available

1. Using the provided CAT 5 cable, plug one end's RJ45 connector into the LNI 2000 at the "Internet" port.
2. Plug the other end's RJ45 connector into a port on the customer's router.

   Note: Do not plug into the router's "Internet" port.

   Note: If the distance from the mounting location of the LNI 2000 to the network router is greater than the provided CAT 5 cable (5 feet), a longer CAT 5 cable (up to 100 feet) may be used. Note that standard CAT 5 cable cannot be used outdoors.



Connect to Internet

3. Verify that the LED on the "Internet" port and the IP Link LED are now lit.

Note: Use These Instructions for **Standard Installations**

No Network in Place

If there is no network in place, a router must be installed and a LAN set up before installation of the LNI 2000. The LNI Pre-Installation Site Survey should have determined whether:

1. The customer will install a router and set up a LAN prior to Installation Visit, or
2. The installer will install a router in consultation with the customer as part of the Installation Visit.

> **Note:** Routers can be purchased at any major office supply or computer store. The router should be installed and the network set up according to the manufacturer's instructions.

Router and Network in Place; No Ports Available

If a LAN exists but there are no ports available on its router, a switch must be installed to extend the router before installation of the LNI 2000.

The LNI Pre-Installation Site Survey should have determined whether:

1. The customer will install a switch prior to Installation Visit, or
2. The installer will install a switch in consultation with the customer as part of the Installation Visit.

> **Note:** Switches can be purchased at any major office supply or computer store. Install the switch and set up a LAN according to the manufacturer's instructions.

If Router is Wireless

Wireless routers with unsecured wireless connections create a security risk for your alarm system. LoBenn Inc. recommends that wireless security on the router be enabled. Please refer to the router's manual to setup a secure wireless connection.

Step Five: Connect to Telephone

WARNING
The disconnected alarm cable is a live wire. Contact with a live electrical wire could result In serious injury or death. Use extreme care to avoid bringing the live wires in contact with any metal objects or your person.

CAUTION
Improper removal of the terminal strip cover or knockout could cause serious, irreparable damage to the LNI 2000, including damage to the tamper switch in the LNI.

Telephone Line in Place

If there is still a conventional PSTN line in place with a dial tone then follow the instructions below. If there is no PSTN line with a dial tone in place, follow the instructions for "No Telephone Line."

Note: A VoIP system may provide dial tone to the alarm panel jack. If this is the case, a telephone connection may be made to this line following the "Recommended Method" below. However, the system will be unreliable when used as backup for PSTN calls from the alarm panel.

There are two methods of connecting the LNI 2000 to telephone service;

- Using RJ45 plugs (recommended), or
- Hardwiring.

Using a RJ45 plug to make the telephone connection avoids the additional step of removing the terminal strip cover, while ensuring a firm and reliable connection.

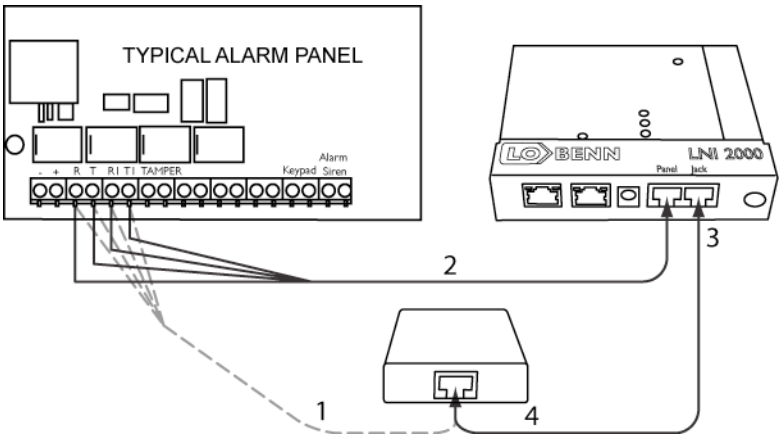
Recommended Method: RJ45 connection

1. Unplug the existing alarm cable from the RJ31X (CA38A) jack, leaving the other end connected (wired) to the alarm panel.
2. Connect the disconnected cable to the LNI 2000 by plugging it into the "Panel" port.

   Note: If the distance from the alarm panel to the mounting location of the LNI 2000 is greater than the existing alarm cable, fashion a new cable from a CAT 5 or other appropriate 4-conductor cable. In this case, the use of the terminal strips may be easier. See Alternate Method: Hardwire the Connection.

3. Plug one end of the CAT 5 cable into the “Jack” port.
4. Connect the other end of the CAT 5 cable into the RJ31X jack.

   Note: If the distance from the RJ31X to the mounting location of the LNI 2000 is greater than the provided CAT 5 cable (5 feet), a longer CAT 5 (up to 100 feet) or other appropriate cable may be used. In this case, the use of the terminal strips may be easier. See Alternate Method: Hardwire the Connection.



Connect to Telephone

Tamper Circuit

LoBenn Inc. recommends the use of tamper circuits in alarm systems.

If the installation makes use of the tamper circuit through the alarm panel jack then the LNI tamper circuit can be added in series to the circuit. This will ensure that the LNI and LNI cover are part of the tamper circuit.

To verify the presence of tamper remove the RJ31X cover and check that a resistor is in place between the tamper terminals.

Note: Use These Instructions for **Standard Installations**

If there is no resistor in place follow the alarm panel manufacturer's instructions to add a resistor and activate tamper alarm on the alarm panel. The value of the resistor will vary from panel to panel, consult the manufacturer's instructions for the correct value of resistor. Note that some panels do not require a resistor.

Alternate Method: Hardwire the Connection

Before starting this step, remove the terminal strip cover and knockout. See **Removing and Replacing the Terminal Strip Cover** on page **57** and **Removing the Knockout** on page **58**.

1. Disconnect the existing alarm cable from the terminals on the RJ31X (CA 38A) jack, leaving the other end of the cable connected (wired) to the alarm panel.

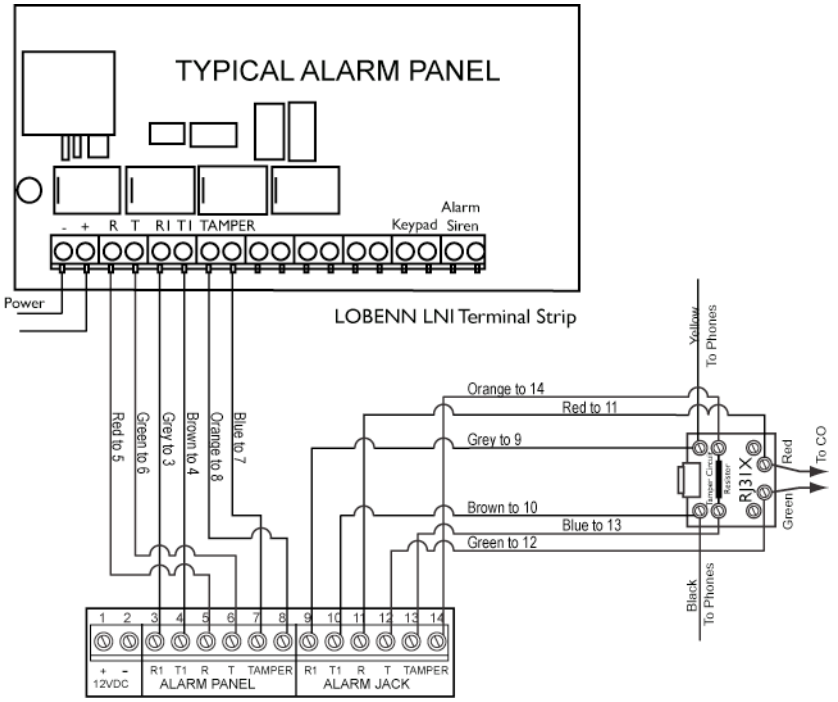
2. Thread the free end of this cable into the LNI 2000 through the knockout and connect it to the *corresponding terminals* in the "Alarm Panel" section of terminal strip on the LNI 2000.
(Connecting "R1" to "R1", "T1" to "T1", "R" to "R", "T" to "T", and the "Tamper" terminals to "Tamper" terminals.)

   Note: If the distance from the alarm panel to the mounting location of the LNI 2000 is greater than the existing alarm cable, fashion a new cable from regular 2 pair quad wire.

3. Next, thread one end of regular 2 pair quad through the knockout and connect it to the *correct terminals* in the "Alarm Jack" section of LNI 2000 terminal strip.
(To the "R1", "T1", "R", "T" and two "Tamper" terminals.)

4. Connect the free end of this cable to the *corresponding terminals* in the RJ31X (CA 38A).
(Connecting "R1" to "R1", "T1" to "T1", "R" to "R", "T" to "T" and the "Tamper" terminals to "Tamper" terminals.)
Note: If the distance from the mounting location of the LNI 2000 to the RJ31X is greater than the provided cable (5 feet), a longer standard two pair telephone cable (up to 100 feet) may be used.

5. Secure all wires with the tie wrap inserted when the terminal strip cover and knockout were removed. Trim the tie wrap before replacing the terminal strip cover.



14. Telephone Wiring Schematic

Alternate Method: No Tamper Circuit

Some alarm panels do not include a tamper circuit. In these cases, there are two options:

- Do not include a tamper circuit in this upgrade installation.
- Include a tamper circuit in the upgraded system by connecting a 20K resistor between terminal numbers #4 and #13 on the LNI 2000 terminal strip. See **Step Two: Connect To Power** on page **14** of the ULC Compliant Installation section of this manual.

No Telephone Line

There may be no PSTN line or RJ31X in place at the customer's premises, for example, in a newly built VoIP-only home or business.

Note: Use These Instructions for **Standard Installations**

If this installation of the LNI 2000 is part of the installation of an entire alarm system, a connection from the alarm panel telephone terminals to the LNI 2000 is still necessary.

1. Fashion an alarm cable from a standard multi-pair cable with an RJ45 connector on one end. This cable is generally provided with the alarm panel.
2. Connect the alarm cable to the alarm panel at the telephone terminals as per panel instructions.
3. Connect the free end of this cable to the LNI 2000, using one of the following two methods:

    A. If you have used the provided alarm cable plug it into the "Panel" port on the LNI 2000.

    B. If you have stripped both ends of multi-pair cable, or used 2 pair quad for this connection, thread this end through the knockout and connect it to the *corresponding terminals* in the "Alarm Panel" section of terminal strip on the LNI 2000. Connect "R1" to "R1", "T1" to "T1", "R" to "R", "T" to "T", and the "Tamper" terminals to "Tamper" terminals. The maximum gauge for the wire is 16 AWG and the minimum is 22 AWG.

    Note: Before starting Option B, remove the terminal strip cover and knockout. To remove the terminal strip cover and knockout without damaging the tamper switch, see **Removing and Replacing the Terminal Strip Cover** on page **57** and **Removing the Knockout** on page **58**.

1. Use the integral tie-down bracket to secure all wires before replacing the terminal strip cover. Trim the tie wrap before replacing the terminal strip cover.

Installing the Tamper Resistor and Verifying the Tamper Alarm

In order to protect the alarm system from malicious tampering, LoBenn Inc. recommends the installation of a tamper circuit.

Generally the installation of a tamper circuit involves inserting a 2.2 K resistor in the RJ31X and programming the alarm panel for tamper.

Details of programming and the resistor type used vary among the various types of alarm panel. Please refer to the manufacturer's installation manual for the alarm panel for more information.

Note: Use These Instructions for **Standard Installations**

Once tamper circuit has been enabled, test the tamper alarm by removing the LNI 2000 terminal strip cover and verifying that a tamper alarm is generated.

Step Six: Test The System

Verify that all LEDs are lit, indicating successful configuration and communication between LNI 2000 and LNS 2000 at the Fire Signal Central Station. The Power LED should be blinking on a one second OFF, three seconds ON cycle, while the IP Link and the IP Monitoring LED's should be on.

> **Note**: If all the Power and IP Link LEDs begin flashing, there is a firmware update in progress. This flashing may continue for several minutes. The IP Monitoring LED flashes only during an alarm transmission.

Testing the Internet Connection

1. Check that the “IP Link” and “IP Monitoring” LEDs are lit. These LEDs light when Step Four: Connect to Internet is completed.
2. Send at least one (1) test alarm from the alarm system keypad. See the panel operating manual for more information on how to send a test alarm.
3. Verify that the IP Monitoring LED is flashing and that the test alarm is correctly received at the central station

Communication Trouble Alarm Test One

1. Disconnect the LNI 2000 Internet connection by unplugging the RJ45 jack from the “Internet” port. The IP Link LED will flash.
2. After the programmed communication trouble alarm time has elapsed, the IP Monitoring LED will go out and the central station will receive a communication trouble alarm.
3. If backup phone line is in place on second dialer send at least one (1) test alarm from the alarm system keypad. See the panel operating manual for more information on how to send a test alarm.
4. Verify that the test alarm (if applicable) and the “Communication Trouble Alarm” are received correctly at the central station.
5. Reconnect Internet cable removed in Step 1.
6. Check that IP Link and IP Monitoring LED are lit to verify that the alarm system has restored communication with the central station. These LEDs should re-light within seconds.

7. Verify that the IP Link and IP Monitoring LEDs relight and the central station has received a restoration alarm.

Communication Trouble Alarm Test Two

1. Disconnect the LNI 2000 from the alarm panel by unplugging the alarm cable from the "Panel" port.
2. After the programmed communication trouble alarm time has elapsed, the IP Monitoring LED will stay on and the central station will receive a communication trouble alarm.
3. Verify that the test alarm (if applicable) and the "Communication Trouble Alarm" are received correctly at the central station.
4. Reconnect the alarm cable removed in Step 1.
5. Verify that the Link and IP Monitoring LEDs are still on and that the central station has re-established connection and received a restoration alarm.

   Note: The programmed Communication Trouble Alarm Time (CTAT) may be too long for a convenient testing of this capability. (ULC installations must not exceed a **maximum** CTAT of 90 seconds.) If this is the case, conduct Communication Trouble Alarm Tests One and Two as described but limit the required verifications to:

   1. Verify that the central station receives the test alarm from the alarm system keypad (if applicable).
   2. Verify that the central station has received a restoration alarm upon reconnection of the LNI 2000.

Note: Use These Instructions for **Standard Installations**

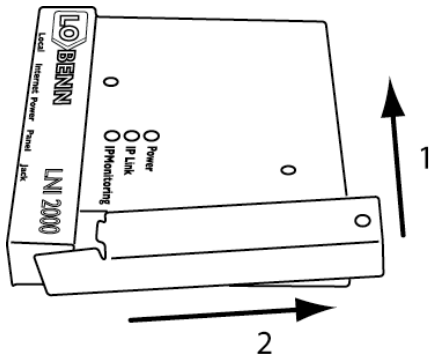
Removing and Replacing the Terminal Strip Cover

CAUTION
The terminal strip cover must be raised and lowered vertically (straight up or down) to avoid bending or breaking the tamper switch. If the tamper switch breaks, it cannot be fixed or replaced in the field. The entire LNI 2000 unit must be replaced.

To avoid damaging the tamper switch, which opens and closes the tamper circuit of the LNI 2000, the terminal strip cover must be removed and replaced with care. Please read these instructions carefully.

Removing the Cover

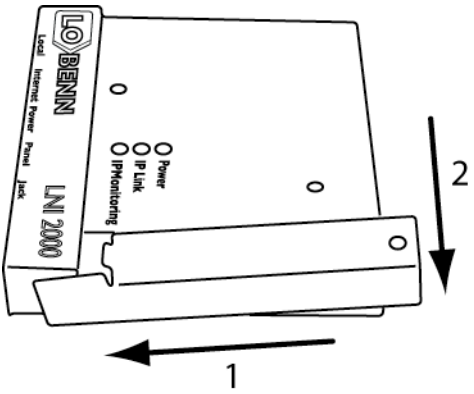
1. Unscrew the screw holding down the cranberry terminal strip cover. This screw is located at the rear of the terminal strip cover.
    - Metal case: remove screw and set it aside.
    - Plastic case: screw is not removable, loosen only.
1. Lift the screw end of the terminal strip cover slightly, lifting straight up.
2. Pull the terminal strip cover straight back to free it from the slot at the front of the LNI 2000.
3. When it is free, lift it off the body of the LNI 2000, revealing the terminal strips.
4. Notice that the terminal strip cover is shaped to depress and close the tamper switch when it is in place. Use extreme caution when replacing the terminal cover.
5. Thread a tie wrap through the tie wrap anchor just inside of the knockout. This will be used to secure wires running through the knockout.



Note: Use These Instructions for **Standard Installations**

Replacing the Terminal Strip Cover

1. Holding the terminal cover strip at a slight angle, slide the front end into the slot at the front of the LNI 2000 until it is fully inserted.
2. Gently lower the terminal strip cover straight down until it rests on the body of the LNI 2000.
3. Replace the screw holding the terminal strip cover down and gently tighten.



Removing the Knockout

Metal Case

To remove the knockout located to the right of the “Jack” port at the front of the LNI 2000:

1. Insert a screwdriver tip into the slot in the knockout.
2. Pry the knockout up.
3. Use pliers to twist the knockout off the LNI.
4. Insert the provided rubber grommet.

Plastic Case

To remove the knockout located to the right of the “Jack” port at the front of the LNI 2000:

1. Grasp removable tab with pliers.
2. Snap off and remove. A grommet is not required.

FOR ALL INSTALLATIONS

LED DISPLAY

The following table summarizes the significance of various combinations of lit, unlit, flashing and blinking Power, IP link, and IP Monitoring LEDs. It also includes the state of the smaller networking port LEDs that are found in the Local and Internet ports.

Power IP Link IP Monitoring Local Port Internet Port	● Off ● Off ● Off ● Off ● Off	➔No power. The LNI 2000 is not functioning. Verify that the unit is powered, and that the polarity of the power connection is correct. If unit is in fact powered and all LEDs are dark, replace the unit with a new LNI 2000.
Power IP Link IP Monitoring Local Port Internet Port	☼/● Blinking ☼/● Flashing ● Off ● Off ☼/● Active	➔Unit is powered. “Heartbeat” of 3 seconds on, 1 second off indicates normal operation. ➔Unit is acquiring an IP address from the router. ➔Unit is not connected to the alarm-central station. In some cases, acquiring an IP address may occur so quickly that the LED does not flash.
Power IP Link IP Monitoring Local Port Internet Port	☼ On ● Off ● On ● Off ☼Active	➔Boot phase. Unit is powered. The firmware is initializing the hardware. Remains in this state for approximately 30 seconds
Power IP Link IP Monitoring Local Port Internet Port	☼/● Blinking ● Off ● Off ● Off ☼/● Active	➔Unit is powered. “Heartbeat” of 3 seconds on, 1 second off indicates normal operation. ➔Unit has failed to establish a connection to the LNS in the alarm-central station. ➔Relays are set to fall back to the second dialer. Verify “central station Information” on the configuration screen. Re-enter the encryption passphrase.
- continued -		

Power IP Link IP Monitoring Local Port Internet Port	☼/● Blinking ☼ On ● Off ● Off ☼/● Active	➔Unit is powered. “Heartbeat” of 3 seconds on, 1 second off indicates normal operation. ➔Unit is properly configured to connect to the central station. ➔Relays are in the fall back to the regular phone line state. This can happen when the central station is not accepting LNI connections. This state is temporary; the central station will either accept the connection, or the LNI will switch to the Secondary LNS. If this state persists, contact the central station for instructions.
Power IP Link IP Monitoring Local Port Internet Port	☼/● Blinking ☼ On ☼ On ● Off ☼/● Active	➔**Normal operation.** “Heartbeat” of 3 seconds on, 1 second off indicates normal operation. . ➔Unit has acquired an IP address from the router. ➔Unit has established an IP connection to the alarm-central station. Relays are set to IP monitoring.
Power IP Link IP Monitoring Local Port Internet Port	☼/● Flashing ☼/● Flashing ☼/● Flashing ● Off ☼/● Active	➔Unit is downloading a new version of firmware. This process may take several minutes. Please wait until the flashing stops before disconnecting cables or powering down.
Power IP Link IP Monitoring Local Port Internet Port	☼/● Blinking ☼/● Flashing ● Off ☼/● Active ● Off	➔Unit is powered and connected to a PC for configuration. Programming the LNI on the Local Port can be performed in any state except power off and boot phase. However, it is recommended that programming be done initially without an Internet port connection (for example, without a connection to the local router).

LEDs — Detailed Descriptions

Power LED

This LED indicates that the LNI 2000 is powered. It will light when the unit is plugged into a 120 VAC outlet or is powered from the 12 V DC alarm panel feed. The blinking “heartbeat” of three seconds on, one second off indicates normal operation.

If the power LED remains dark even though the unit is powered, or continuously on for more than two minutes, replace the LNI 2000 with a new one.

IP Link LED

This LED indicates the presence of a valid connection between the LNI 2000 and the central station LNS over the Internet.

Automatically obtained an IP address

When the LNI 2000 first starts up, this LED will flash on a 1 second flash cycle until the unit has obtained an IP address from the customer’s network.

The LED will then turn on and stay lit. This signifies that the LNI is connected to the LNS at the central station. If the LED fails to light, the unit is improperly configured to connect to the central station, or there is a problem with the network/Internet connection preventing connection to the LNS.

If the LED flashes for more than 30 seconds, it has been unable to obtain an IP address automatically from the customer’s router.

Static IP Address

If the LNI 2000 is configured with a static IP address, the IP Link LED will light signaling that a successful connection to the LNS at the central station was made, or stay unlit signaling that it has failed to connect.

No connection to central station

If the IP Link LED stays off for more than 10 seconds, the LNI 2000 was not able to connect to the central station LNS. There are four possible reasons for this failure.

- An incorrect destination IP address may have been entered while programming the LNI 2000;

- The wrong encryption passphrase may have been used to program the LNI 2000;
- The monitoring station may be “down”; or
- The customer’s Internet connection may be down.

IP Monitoring LED

This LED indicates that the LNI 2000 alarm relays are set to communicate an alarm to the central station over the Internet.

This LED will light after the connection to the LNS is established (see IP Link LED above) and relays in the LNI 2000 are set for Internet alarm monitoring.

This LED will flash every time the panel sends Alarm/Restore Alarm.

Port LEDs

The “Local” and “Internet” ports have paired LEDs (one pair for each port) that indicate Ethernet transmission activity. These LEDs will be on when there is a physical connection to the modem/router and both devices are on.

Troubleshooting

My PC isn't set to "Automatically obtain an IP address"

These instructions will allow Windows XP users to re-configure their PC's for obtaining an IP address automatically from the LNI 2000.

Open "Network Connections"

1. Click **Start**.
2. Click **Control Panel**.
3. Double-click **Network Connections**. The "Network Connections" window will open. You must be logged on as the administrator to complete this procedure.

Open Connection Properties

1. Right-click the network connection you want to configure. A pull-down menu will appear.
2. Click **Properties**. The "Connection Properties" window will open.

Change Connection Settings

1. On the General tab (if you have selected a local area connection) or the Networking tab (if you have selected a Dial-up or other connection), click Internet Protocol (TCP/IP) then click the **Properties** button. The "Internet Protocol (TCP/IP) Properties" window will open.
2. Select "Obtain and IP address automatically" and "Obtain DNS server address automatically" then click **OK**.
3. Click **OK** to close the "Connection Properties" window.
4. Close the " Network Connections" window.

There is no UPS

LoBenn Inc. recommends that all components of the customer's alarm system be protected by a battery back-up power supply, also known as a Uninterrupted Power Supply (UPS.)

- A UPS should be in place at the mounting location of the LNI 2000. If this mounting location is beside the alarm panel, the LNI 2000 may be run off the alarm panel power and UPS. (See Step Three: Connect to Power for more information.)
- An additional UPS should be in place to protect the customer's LAN; the modem, the router and the LNI 2000 (if installed near the router.)
- It is the customer's responsibility to protect any computers and other hardware not directly related to the alarm system with a UPS.

The LNI Pre-Installation Site Survey should have determined whether or not one or more UPS were required and when they would be installed; either prior to or during the Installation Visit.

If this information is missing and there is no UPS(s) in place, **the installation should not be considered complete.** A return trip to install a UPS(s) may be necessary.

There is no router

The alarm system's Internet connection must be made through a combined modem/router or router via the LNI 2000.

Installation cannot be completed without a high-speed modem/router or a router.

The LNI Pre-Installation Site Survey should have determined whether or not a router was required and when the router would be installed; either prior to or during the Installation Visit.

LoBenn Inc. recommends that the installation of a router and creation of a home network be completed before the Installation Visit. This will ensure that the network is working reliably and consistently.

There are no ports available on the router

As stated in the previous section, the alarm system communicates with the monitoring center through the Internet. This Internet connection is made through a combined modem/router or router via the LNI 2000.

If there are no ports available on the customer's modem/router or router, then an additional switch must be installed to provide additional ports.

Installation cannot be completed without an available port.

The LNI Pre-Installation Site Survey should have determined whether or not an additional router switch was required and when this equipment would be installed; either prior to or during the Installation Visit. LoBenn Inc. recommends that installation of a switch be completed before the Installation Visit. In very simple terms, a switch is the Ethernet equivalent of an extension cord or power bar. It adds “outlets” to the network without changing its operation.

The Internet port LEDs are not lit

There are several reasons why the paired LEDs of the Internet port may not be lit. The following tests will establish the reason.

1. Verify that the unit is powered, and that the LNI is connected to the router via an Ethernet CAT5 cable.

2. Verify that the router is powered.

3. Verify that the CAT5 cable is connected to one of the numbered port on the router. On the router, the cable must NOT be connected to the “WAN” or “Internet” port.

Should the LED still fail to light, try another cable; there may be a fault in the cable.

There is a small chance that the LED is defective. To determine this, continue the installation procedure, and configure the LNI with the IP address of the monitoring center. If the IP Link LED fails to light as well, then the unit is probably defective. Replace with a new LNI 2000, and return unit for repair or replacement.

There is no PSTN phone line

If there is no PSTN telephone line in the customer’s home and all telephone service is through the VoIP system, a telephone connection still needs to be made from the alarm panel to the LNI 2000. See **No Telephone Line** on page **52** for more information.

The Internet Connection Test was Unsuccessful

There are a variety of reasons why the Internet connection test as described on page 55 may be unsuccessful. If either of the IP Link or IP Monitoring LED is not lit continuously, then see the appropriate section below.

If the Power, IP Link and IP Monitoring LEDs are lit continuously, and the alarm test fails:

1. Verify that the panel is properly connected to the LNI. When armed the panel should recognize the phone line provided by the LNI.

2. Verify that the panel is armed and recognizes the phone line. If it does not, verify the connections from the panel to the LNI.

The IP Link LED Flashes for More than 30 Seconds

If the IP Link LED flashes for more than 30 seconds, it has been unable to obtain an IP address automatically from the customer's router. There are a variety of reasons why this may happen.

1. Check that the wiring to the customer's LAN is installed correctly.

2. Check that the LEDs on the "Internet" jack are lit.

3. If the LEDs are not lit, check that the RJ45 is fully inserted at both ends; in the LNI and in the router. Ensure that the router is powered. In very rare cases, it is possible that the CAT5 cable is faulty. Replace with another cable.

4. If the LED is lit, the customer's LAN is not allowing the LNI to obtain an IP address automatically. A static address must be used. To configure the LNI 2000 with a static address:

5. Obtain a static IP address from the customer Set up the LNI 2000 on the customer's network with this address.

The IP Link LED fails to light

This LED indicates that the LNI has been able to establish and Internet connection to the LNS. If the LED fails to light, check all of the following:

1. There may be a mistake in installation, or a connection made incorrectly. Verify that all installation steps have been followed and that all connections have been made correctly.

2. The customer's network or Internet connection is "down." Using a PC connected to the customer's LAN, verify the network and Internet connection. (For example, by opening a browser and doing a search at google.com .)

3. The “Monitoring Center Information” in the LNI configuration is incorrect. It is possible that the wrong destination IP address or encryption passphrase for the monitoring center was used in programming the LNI 2000. If the customer’s Internet connection is active, contact the monitoring center to verify the IP address and encryption passphrase of the LNS.

4. The alarm company monitoring center is “down.” Contact the monitoring center to verify its status.

The IP Monitoring LED fails to light

This LED indicates that the LNI 2000 has been successfully configured to communicate with the monitoring center through the Internet and that the LNS is ready to accept alarms from this LNI. If it fails to light, some part of this configuration is incorrect, for example, the “Customer Information” on the LNI configuration page may be wrong.

Verify that the Panel ID number and the Receiver number are correct. Contact the monitoring center to verify these values. It is also possible that the monitoring center LNS is not currently accepting connections from an LNI. This is rare, and temporary.

This should resolve itself within the “Communication Trouble Alarm Time” set in “Step One: Program the LNI 2000”. If it does not, the LNI will switch to the secondary LNS, if one was configured.

While the IP Monitoring LED is off, the unit’s relays are in the telephone line fallback position. An alarm will not be transmitted through the LNI; they will be transmitted through the backup phone line, if such a line is present.

The monitoring center also has the capability to remotely control the LNI to set the relays back to fallback mode. This would be used to allow remote access to the panel via the phone lines. During this time, the LED will be turned off.

The Alarm Panel is programmed for “Pulse Dialing”

Signals from an alarm panel programmed for pulse dialing will not transmit reliably over a broadband connection. The alarm panel must be re-programmed for Dual Tone Multi-Frequency (DTMF) dialing. Refer to the alarm panel manual for instructions.

Technical Specifications LNI 2000

Size	4.75 x 4.75 x 1 inches (12.1 x 12.1 x 2.5 cm)
Weight	Metal case: 1.02 lbs (463 grams) Plastic case: 0.76 lbs (345 grams)
Power Voltage range Current	10 VDC to 14 VDC 300 mA Maximum
Operating temperature	32 to 120ºF (0 to 49ºC)
Humidity	93% Non-condensing
IP Connection	10, 100 BaseT
Ethernet Cable	Category 3 or better (10 baseT) Category 5 or better (100 BaseT) 100 m (328ft) maximum
Wire gauge for terminal strip	Minimum 22 AWG Maximum 16 AWG
Recommended wire gauge for terminal strip	22 AWG

Support and Contact Information

Support

Please contact your local supplier of the LoBenn LNI 2000 if you encounter problems and need technical support. Your supplier will be able to respond to most issues that might arise when installing the LoBenn LNI 2000.

LoBenn Inc. global support can be reached in North America at:

Phone: 1-866-599-1415

World Wide Web: http://www.lobenninc.com/support.php

General Contact Information

LoBenn Inc.
105 Willowlea Road,
Ottawa, ON. K0A 1L0

Phone: (613) 599-1415
Toll-free: (866) 599-1415
Fax: (613) 599-2091

General Information: info@lobenninc.com

Sales: sales@lobenninc.com

Web: www.lobenninc.com

Certifications and Approvals

Compliance LNI-2000

FCC and ICES Compliance

The LoBenn Network Interface 2000 (LoBenn Network Server 2004 and LoBenn Network Server 2008) complies with the FCC Part 15 Class B and the Canadian ICES-003.

Note: FCC: 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:

- Reorient or relocate 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/TV technician for help.

Notes: ICES: This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

UL Compliance

For the equipment an its installation to comply with the applicable UL requirements (UL 864 and UL 1610), this product **MUST** be installed in a UL certified Signal Receiving Centre that provides this product with standby supply from both of the following sources.

1. A standby generator that complies with the applicable UL requirements associated with a Signal Receiving Centre, AND
2. An uninterruptible power supply (UPS) that is capable of maintaining operation for 4 hours and that is listed to the applicable UL requirements.

UL 864 and UL 1610

This equipment is UL listed to UL 864 and UL 1610.

Communications Basic Line Security

This product meets the requirement for communication basic line security level.

Other UL Compliance Requirements

Receiver

To be UL 864 and UL 1610 compatible, the system must be used with a listed receiver.

Network and Domain Access

To be UL 1610 compatible, network access and domain access policies shall be set to restrict unauthorized network access and “spoofing” or “denial of service” attacks.

Encryption

All communications with the LNI and LNS are always encrypted. Therefore the LNI and the LNS satisfy UL 1610 which requires that the active communication channel must have security encryption enabled at all times.

Backup Power

To be UL 864 and UL 1610 compatible, power for network equipment as hubs, switchers, routers, servers, modems, etc., shall be back up or powered by a Listed UPS, stand-by battery or the control unit, capable of facilitating 24 hour standby. Where such cannot be facilitated, the control unit shall support back-up communications for a secondary communications path, subject to the following:

A) Low Risk and Medium Risk shall use a dialer as a minimum;

B) High Risk shall use cellular control channel or long range radio as a minimum; and

C) Very High Risk shall be equipped with 24 hr standby power.

ULC Compliance

For the equipment and its installation to comply with the applicable ULC requirements (CAN/ULC-S559-04, CAN/ULC-S561-03 and/or CAN/ULC-S304-06), this product **MUST** be installed in a ULC certified Signal Receiving Centre that provides this product with standby supply from both of the following sources.

1. A standby generator that complies with the applicable ULC requirements associated with a Signal Receiving Centre, **AND**
2. an uninterruptible power supply (UPS) that is capable of maintaining operation for 4 hours and that is listed to the applicable ULC requirements.

CAN/ULC S559-04 and CAN/ULC-S304-06

This equipment is ULC listed to CAN/ULC-S559-04 and CAN/ULC-S304-06.

Communications Security Level A2f

This product meets the requirements for communication security level A2 (CAN/ULC-S304-06 : 11.4.3.2 and referenced clauses).

Other ULC Compliance Requirements

Testing

To be ULC CAN/ULC-S559-04 and CAN/ULC-S304-06 compatible, the system must be tested at least once a year (CAN/ULC-S559-04: 4.2.B and CAN/ULC-S304-06).

Receiver

To be CAN/ULC-S304-06 compatible, the system must be used with a listed receiver.

Network and Domain Access

To be CAN/ULC-S304-06 compatible, network access and domain access policies shall be set to restrict unauthorized network access and “spoofing” or “denial of service” attacks.

Encryption

All communications with the LNI and LNS are always encrypted. Therefore the LNI and the LNS satisfy ULC CAN/ULC-S304-06 which requires that the active communication channel must have security encryption enabled at all times (CAN/ULC-S304-06: 11.4.2.5).

No other Software

The LNS shall be used only as receiving centre server (receiver accessory). Customers must not load other Linux-based applications on the LNS that may breach security (CAN/ULC-S304-06: 11.4.2.7).

Backup Power

To be ULC CAN/ULC-S559-04 and CAN/ULC-S304-06 compatible, power for network equipment as hubs, switchers, routers, servers, modems, etc., shall be backed up or powered by a Listed UPS, stand-by battery or the control unit, capable of facilitating 24 hour standby, compliant with Clauses 16.1.2 and 16.4.1 of CAN/ULC-S304-06.

Where such cannot be facilitated, the control unit shall support back-up communications for a secondary communications path, subject to the following:

A Low Risk and Medium Risk shall use a dialer as a minimum;
B High Risk shall use cellular control channel or long range radio as a minimum; and
C Very High Risk shall be equipped with 24h standby power (CAN/ULC-S304-06 : 11.4.2.9 and 11.4.3.3).

Internet Service Provider

To be CAN/ULC-S304-06 compatible, the Internet Service Provider (ISP) providing service must meet the following requirements:

- have redundant servers/systems,
- back-up power,
- routers with firewalls enabled and
- methods to identify and protect against “Denial of Service” attacks (for example, via “spoofing”).

Connection to Communication Components

If the LNI is connected to products or components of products, which perform communications functions only, these products or components shall comply with the applicable requirements specified in UL 864 and UL 1610, Information Technology Equipment = Safety - Part 1: General Requirements. Such products include, but are not limited to:

A) hubs,

B) routers,

C) network interface devices,

D) third party communication service providers,

E) digital subscriber line (DSL) modems, and

F) cable modems.

Other approvals and certifications

- Industry Canada CS-03CNS14336
- Pika telephony card: CSA C22.2 no. 950 NRTL/C
- CNS14336
- CNS13438
- EN55022-B,
- EN61204-3,
- EN61000-3-2,3,
- EN61000-4-2,3,4,5,6,8,11

Compliance, LNI-2000 Power supply

- UL60950-1
- CSA 22.2
- TUV EN60950-1

European Union

The LNI complies with:

- TBR 21,
- EU 55022:1998 Class B,
- EU 55024:1998,
- EU 60950:1992.

RoHS

This equipment complies with the Restriction of Hazardous Substances (RoHS) directive 2002/95/EC.

Compatible LoBenn Network Server (LNS) Data Formats

Radionics Modem IIe, II and IIIa2	Radionics BFSK	SIA Bell 103, 110 & 300 baud
Yes	Yes	Yes

Table 3: Compatible Radionics and SIA Bell Formats

Pulse			DTMF		
3/1	3/1 Checksum	4/2	Contact ID	ADEMCO High Speed	ADEMCO 4/2 Express
No	No	No	Yes	Yes	Yes

Table 4: Compatible Pulse and DTMF Formats

Glossary of Terms

The Webopedia Computer Dictionary (http://www.webopedia.com) and Wikipedia (http://www.wikipedia.org/) are useful resources for more information about the Internet, VoIP and related topics.

ADSL

Asymmetric Digital Subscriber Line, a technology that is growing in popularity as more areas around the world gain access. ADSL allows increased data rates over existing copper telephone lines (POTS), supporting data rates of from 1.5 to 9 Mbps when receiving data (known as the downstream rate) and from 16 to 640 Kbps when sending data (known as the upstream rate). ADSL requires a special modem.

Broadband

A broadband connection is a type of data transmission in which a single medium (wire) can carry several channels at once. Another word for high-speed access to the Internet.

CA38A

A surface or wall mounted telephone jack, containing simple screw terminals USOC color-coded for compatibility with standard telephone systems. The CA38A is installed in the line between the CO and the house phones, allowing a security system to have separate connections to the inside phones and the CO line. Identified in the United States as RJ31X.

Cable Modem

Modem for high-speed Internet access over a cable TV connection. Central Station Also known as a “Monitoring Centre.” A common term used to refer to a company that provides services to monitor burglar, fire and residential alarm systems. The central-station may also provide watchman and supervisory services. Central-stations use special telephone lines, computers and trained staff to monitor their customers’ security systems and call the appropriate authorities in the event an alarm signal is received. The ability of the alarm panel to communicate back to the Central Station is crucial to the concept of monitoring.

DHCP

Dynamic Host Configuration Protocol is a protocol that assigns “dynamic” (versus static) IP addresses to devices (individual equipment) on a network. With dynamic addressing, a device may be assigned a different IP address every time it connects to the network. This makes setting up and maintaining a network simpler since the software keeps track of the IP addresses. In addition, a new device can be easily added to a network since its IP address is assigned automatically.

DSL

Digital Subscriber Line, a technology that uses sophisticated modulation schemes to pack data onto copper wires. DSL is sometimes referred to as a last-mile technology because it are used only for connections from a telephone switching station to a home or office, not between switching stations.

Gateway

A gateway is a router or computer that connects two dissimilar networks (for example, that use different communication protocols, data formatting, or organizational structures). When networks are divided into subnets, gateways are often used to isolate one subnet from another to control network traffic. On TCP/IP networks, each network device is often configured with the IP address of the nearest gateway. If there are no gateways on the network, the IP address of your computer is typically used.

Internet

The Internet is a global network connecting millions of computers. The Internet is the epitome of decentralization. Each Internet computer, called a host, is independent. Its operators can choose which Internet services to use and which local services to make available to the global Internet community. In addition, when information is sent over the Internet its path is completely random. Each data packet, even within the same transmission, may take a different route. There are a variety of ways to access the Internet. Most often access is provided through online services, such as America Online, or through a commercial Internet Service Provider (ISP). The Internet is not synonymous with World Wide Web.

IP Address

Internet Protocol address, an address that uniquely identifies each device on a TCP/IP network and is assigned by a network administrator. This may be software or a person. An IP address consists of a four-component number in the form n.n.n.n, where n represents a number from 0 to 255 and each component is separated by a period.

ISP

Internet Service Provider, a company that provides access to the Internet for a monthly fee. Typically, the service provider gives you a software package, username, password and access phone number. Equipped with a modem, you can then “log on” to the Internet and browse the World Wide Web, send and receive e-mail.

LAN

Local Area Network, a network in which the computers and other devices, such as modems, routers and printers, are geographically close together, typically in the same building.

LNI

LoBenn Network Interface

LNS

LoBenn Network Server

Modem

Modulator-demodulator. A modem is a device (or program) that enables a computer to transmit digital data through the World Wide Web to another computer. The modem converts the data from the sender into a format that first, can be sent and second, can be reliably received. This conversion depends on the configuration of the computer sending information, the type of line the modem is sending over and the receiving devices. Modems can work on standard PSTN lines, DSL lines or cable. A cable modem is designed to operate over cable TV lines. Because the coaxial cable used by cable TV provides much greater bandwidth than telephone lines, a cable modem can be used to achieve extremely fast access to the World Wide Web.

Monitoring Centre

Also known as a "Central-Station." A common term used to refer to a company that provides services to monitor burglar, fire and residential alarm systems. The central-station may also provide watchman and supervisory services. Central-stations use special telephone lines, computers and trained staff to monitor their customers' security systems and call the appropriate authorities in the event an alarm signal is received. The ability of the alarm panel to communicate back to the Monitoring Center is crucial to the concept of monitoring.

Network

A group of two or more devices or computer systems linked together.

Obtain IP Address Automatically

Equipment such as PCs and the LNI 2000 can be set to obtain an IP address automatically, usually from a router, on the customer's LAN. PCs can also be set to get or provide an IP address automatically. (See DHCP)

POTS

Plain Old Telephone Service; also known as PSTN.

PSTN

Public Switched Telephone Network, the international telephone system based on copper wires carrying analog voice data. Newer telephone networks are based on digital technologies, such as ISDN and FDDI. Also often called plain old telephone service (POTS).

RJ31X

A surface or wall mounted telephone jack, containing simple screw terminals USOC color-coded for compatibility with standard telephone systems. The RJ31X is installed in the line between the CO and the house phones, allowing a security system to have separate connections to the inside phones and the CO line. Identified in Canada as CA38A.

Router

Device that routs IP (usually Ethernet) transmissions. In most home or small business situations, the router performs two related tasks. First, it provides the homeowner's LAN, managing communication between all the devices on that network. Second, the router communicates with the modem and through it with the Internet. The place where two or more networks connect is called a gateway. A router is located at a gateway and by communicating with the other devices on the networks determines the best path for forwarding the data packets.

Server

A server is a computer or device on a network that stores and manages the network's resources. There are several different types or functions of servers. For example:

- A file server is a computer and storage device dedicated to storing files. Users on the network can store and retrieve files on the server.
- A print server is a computer that manages one or more printers. A network server is a computer that manages network traffic.
- A database server is a computer system that processes database queries.
- Internet servers store and serve the specially formatted documents viewed by web browsers; the addresses for these documents include the IP address of the server.
- LoBenn Network Server stores the monitoring information for a number of individual LNIs. When an LNI signals an alarm or communication failure, the LNS relays that information to the monitoring center.

Switch

Device that routs IP (usually Ethernet) transmissions.

In networks, the switch filters and forwards packets between devices on a LAN. Unlike a router, a switch does not communicate with other networks; it simply provides more physical connections (ports) to the LAN.

Subnet

A subnet is the portion of a network sharing a common address component. On TCP/IP networks, subnets consist of all the devices in the network whose IP addresses have the same prefix. Subnets are used to improve both the security and performance of a network. IP networks are divided using a subnet mask.

Subnet Mask

The subnet mask is the method used to divide a TCP/IP network into subnets. The form of a subnet mask is similar to an IP address: n.n.n.n where n is a number from 0 to 255. If a subnet mask has not been assigned, the subnet mask assigned to your computer is typically used. When applied to an IP address, the subnet mask specifies the portion of the four-component IP address that identifies the network/subnet, and the portion that identifies the individual host nodes.

TCP/IP

Transmission Control Protocol/Internet Protocol, the accepted standard communications protocols for transmitting data over networks, including the Internet. TCP/IP uses several protocols, the two main ones being TCP and IP.

VoIP

Voice over Internet Protocol, a technology that uses the Internet as the transmission medium for telephone calls by sending voice data in packets using IP rather than by traditional circuit transmissions of the PSTN. VoIP is a system of both hardware and software.

This Internet telephony is gaining in popularity because, with free or fixed price Internet access through an ISP, it eliminates the need for a separate, dedicated voice phone line and provides extremely low cost telephone calls to anywhere in the world.

Disadvantages to VoIP include some loss of quality in voice transmissions and the interruption or disabling of systems, such as alarm systems, that use PSTN technologies to communicate through the phone lines.

World Wide Web

The World Wide Web is a system or arrangement of Internet servers supporting specially formatted documents. Applications called “web browsers” read these documents to display text, graphics, audio and video files on user’s computers. The documents also contain “links”, the addresses of other documents, so that a user can move from one to the other easily.

Not all Internet servers are part of the World Wide Web.

Parts Numbers and Descriptions

Part Number	*Description*
LB100186	12 volt LNI unit
LB200225	Complete Install Kit: • 12 volt LNI unit (LB100186) • Power Pak (LB200022) • 2 CAT5 cables • 2 grommets • Quick Install poster • Quick reference card to web addresses of all documentation
LB200291	Basic Install Kit • Basic 12 volt LNI unit • 2 CAT5 cables • 2 grommets • Quick Install poster • Quick reference card to web addresses of all documentation
LB200022	12 volt DC Power Pak
LB200335	24 volt LNI unit
LB200337	• 24 volt LNI unit (LB200335) • Power Pak (LB200336) • 2 CAT5 cables • 2 grommets • Quick Install poster
LB200336	24 VDC Power Pak

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