

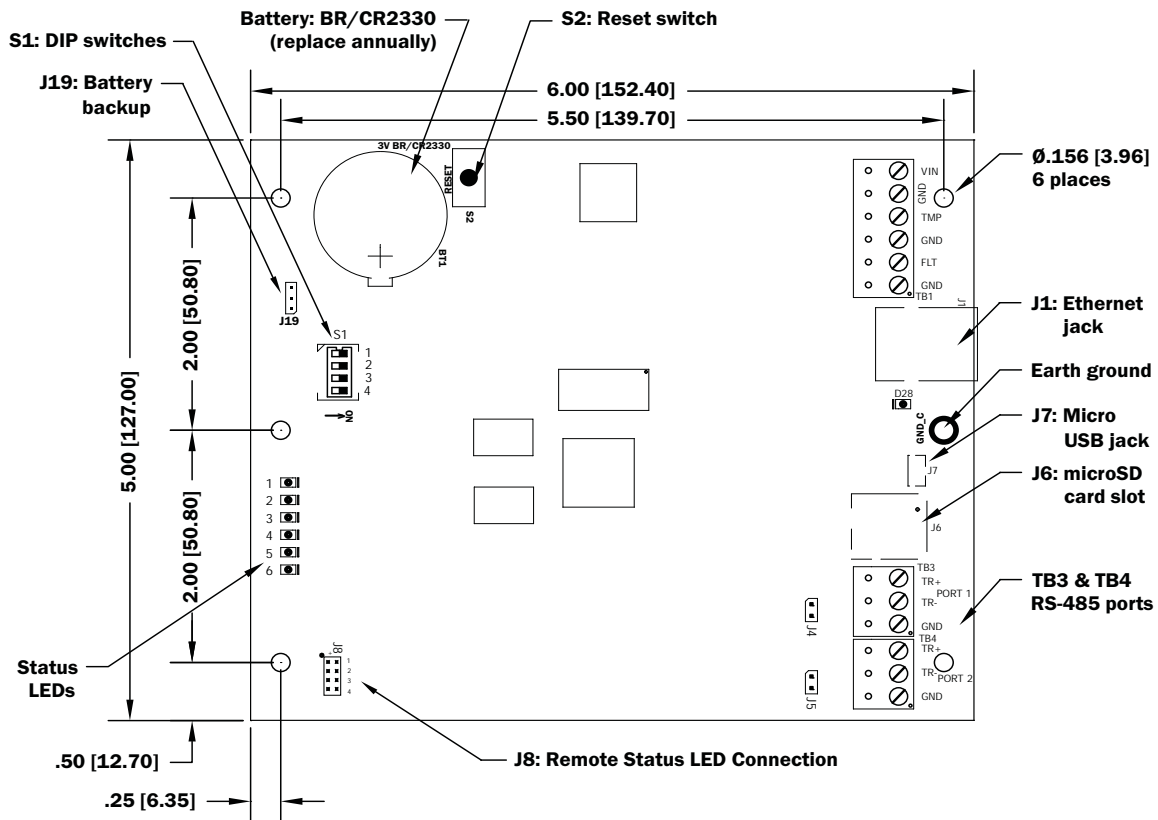
# Intelligent Controller LNL-X3300 Quick Reference

## General

The LNL-X3300 intelligent controller provides decision-making, event reporting, and database storage for the LenelS2 hardware platform.

The LNL-X3300 communicates with the host via on-board 10-BaseT/100Base-TX Ethernet port or the Micro USB port (2.0) with an optional Micro USB to Ethernet adapter. Sub controllers are connected via ports 1 and 2 using 2-wire RS-485 multi-drop communication buses. The LNL-X3300 requires 12 to 24 VDC for power.

## LNL-X3300 Hardware



## LNL-X3300 Wiring and Setup

Connection		
TB1-1	Power Fault Input	GND
TB1-2		FLT
TB1-3	Cabinet Tamper Input	GND
TB1-4		TMP
TB1-5	Power Input	GND
TB1-6		VIN: 12 to 24 VDC
TB2	N/A	Not Used
TB3-1	SIO Port 1 (2-wire RS-485)	GND
TB3-2		TR- (B) *
TB3-3		TR+ (A) *
TB4-1	SIO Port 2 (2-wire RS-485)	GND
TB4-2		TR- (B) *
TB4-3		TR+ (A) *

\* Terms A & B are from the RS-485 standard.

### Jumpers and Jacks

The LNL-X3300 controller hardware interface is configured using jumpers to set up the port interface and end of line termination.

Jumpers	Set at	Description
J1	N/A	10-Base-T/100Base-Tx Ethernet Connection (Port 0)
J2	N/A	Factory Use Only
J3	N/A	Factory Use Only
J4	OFF	Port 1 RS-485 EOL Terminator is Off
	ON	Port 1 RS-485 EOL Terminator is On
J5	OFF	Port 2 RS-485 EOL Terminator is Off
	ON	Port 2 RS-485 EOL Terminator is On
J6	N/A	microSD Card
J7	N/A	USB Port (2.0)
J8-1	N/A	Remote Status LED #1 *
J8-2	N/A	Remote Status LED #2 *
J8-3	N/A	Remote Status LED #3 *
J8-4	N/A	Remote Status LED #4 *
J19	OFF	Backup battery is OFF
	ON	Backup battery is ON. Refer to <a href="#">Memory and Real Time clock Backup Battery</a> on page 4.

\*Observe polarity connection to LED. External current limiting is not required.

## DIP Switches

The four switches on S1 DIP switch configure the operating mode of the LNL-X3300 controller. DIP switches are read on power-up except where noted.

Pressing reset switch S2 causes the LNL-X3300 to reboot.

1	2	3	4	Definition
OFF	OFF	OFF	OFF	Normal operating mode.
ON	X	OFF	OFF	After initialization, enable default User Name (admin) and Password (password). The switch is read on the fly, no need to re-boot. For more information refer to <a href="#">IT Security</a> on page 5.
OFF	ON	OFF	OFF	Use factory default communication parameters. *
ON	ON	OFF	OFF	Use LenelS2 default communication parameters. * Contact system manufacturer for details. See <a href="#">Bulk Erase Configuration Memory</a> on page 3.
ON	ON	OFF	OFF	Bulk Erase prompt mode at power up. See <a href="#">Bulk Erase Configuration Memory</a> on page 3.
X	X	X	ON	Makes the LNL-X3300 report and function like an LNL-3300. To be used in situations where the host software has not been updated to support the LNL-X series product line.

X = ON or OFF. All other switch settings are unassigned and reserved for future use.

\* In the factory or LenelS2 default modes, downloaded configuration/database is not saved to flash memory.

### Factory Default Communication Parameters

Interface 1 (NIC1)

- Network: static IP address: 192.168.0.251
- Subnet Mask: 255.255.0.0
- Default Gateway: 192.168.0.1
- DNS Server: 192.168.0.1
- Primary Host port: IP server, Data Security: TLS if Available, port 3001, communication address: 0
- Alternate Host Port: Disabled

## Bulk Erase Configuration Memory

The bulk erase function can be used for the following purposes:

- Erase all configuration and cardholder database (sanitize board, less third party applications)
- Update OEM default parameters after OEM code has been changed
- Recover from database corruption causing LNL-X3300 board to continuously reboot

If clearing the memory does not correct the initialization problem, contact LenelS2 OnGuard Technical Support.

### Bulk Erase Steps

**Important:** Do not remove power during steps 1-6.

1. Set S1 DIP switches to: 1 & 2 "ON," 3 & 4 "OFF."
2. Apply power to the LNL-X3300 board. LED 1 on for about 15 seconds while LNL-X3300 boots up.
3. After the LNL-X3300 boots up, watch for LEDs 1 & 2 and 3 & 4 to alternately flash at a 0.5 second rate.

4. Within 10 seconds after the above pattern starts, change switches 1 or 2 to "OFF." If these switches are not changed, the LNL-X3300 board will power up using the OEM default communication parameters.
5. LED 2 will flash indicating that the configuration memory is being erased. Full memory erase takes up to 60 seconds, usually a lot less.  
When complete, only LEDs 1 & 4 will flash for about 3 seconds.
6. The LNL-X3300 board will complete its initialization in 2 seconds after LEDs 1 & 4 stop flashing.

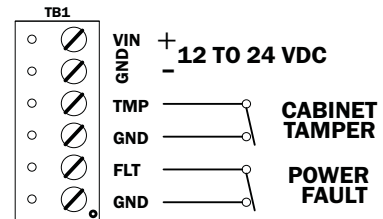
## Input Power, Cabinet Tamper, and UPS Fault Input Wiring

The LNL-X3300 requires 12 to 24 VDC power. Locate power source as close to the unit as possible. Connect power with minimum of 18 AWG wire.

**Connect the GND signal to earth ground in ONE LOCATION within the system. Multiple earth ground connections may cause ground loop problems and is not advised.**

**Observe POLARITY on 12 to 24 VDC input.**

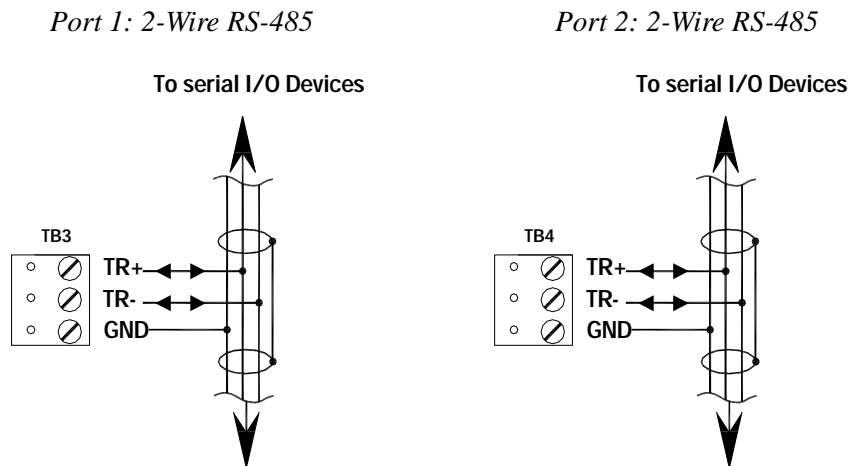
There are two dedicated inputs for cabinet tamper and UPS fault monitoring. Normal (safe) condition is a closed contact. If these inputs are not used, install a jumper wire.



## Communication Wiring

The LNL-X3300 controller communicates to the host via the on-board Ethernet 10-BaseT/100Base-TX port and/or the USB port (2.0) with an optional Micro USB to Ethernet adapter.

Ports 1 and 2 utilize 2-wire RS-485 interface. The interface allows multi-drop communication on a single bus of up to 4,000 feet (1,219 m). Use 1-twisted pair, shielded, 120 ohm impedance, 24 AWG. 4,000 ft. (1,219 m) maximum cable length.



**Important:** Install the termination jumper **ONLY** on the panel at each end of the RS-485 bus. Failure to do so will compromise the proper operation of the communication channel.

## Memory and Real Time clock Backup Battery

The static RAM and the real time clock are backed up by a lithium battery when input power is removed. This battery should be replaced annually. If data in the static RAM is determined to be corrupt after power up, all data, including flash memory, is considered invalid and is erased. All configuration data must be re-downloaded.

During installation and while the unit is not powered, change the jumper (J19) position from **OFF** to **ON** to enable the battery backup.

Battery type: BR2330 or CR2330.

## IT Security

When installing the LNL-X3300, it is important to ensure that it is done in a secure manner.

Upon installation, the user accounts to the web configuration page should be created with secure passwords, and all DIP switches set in the OFF position for the normal operating mode.

The LNL-X3300 is shipped from the factory with a default login account, which is enabled when DIP 1 is moved from OFF to ON. The default login user name and password will be available for five minutes once enabled.

Therefore, it is important that at least one user account is defined, and the DIP switches are set to OFF before the LNL-X3300 is commissioned.

It is highly recommended **not** to configure the LNL-X3300 with an IP address that is accessible from the public Internet.

To further enhance network security, options are available to disable SNMP, Zeroconf discovery, as well as the web configuration module itself. Additionally, data encryption can be enabled over the host communication port.

## Status LEDs

**Power-up:** All LEDs OFF.

**Initialization:** After power is applied or the reset switch is pressed, LED 1 is ON for about 15 seconds, then LEDs 2 through 6 are flashed once at the beginning of initialization.

LEDs 3 and 4 turn ON for approximately 1 second after the hardware initialization has completed, then the application code is initialized. The amount of time the application takes to initialize depends on the size of the database, about 1 second without a card database. Each 10,000 cards adds about 2 seconds to the application initialization.

When LEDs 1 through 4 flash at the same time, data is being read from or written to flash memory; do not cycle power when in this state.

If the sequence stops or repeats, perform [“Bulk Erase Steps”](#) on page 3.

**Running:** After initialization is complete, the LEDs have the following meanings:

LED	Description
1	Off-line / On-line and battery status
	Off-line = 20% ON, On-line = 80% ON
	Double flash if battery is low
2	Host Communication Activity (Ethernet)
3	Port 1 Communication Activity
4	Port 2 Communication Activity
5	Unassigned
6	Unassigned
D28	Ethernet Activity (Ethernet Port 0)
YEL	On-board Ethernet Speed: OFF = 10 Mb/S, ON = 100 Mb/S
GRN	OFF = No Link, ON = Good Link, Flashing = Ethernet Activity

## Specifications

The interface is for use in low voltage, Class 2 circuits only.

The installation of this device must comply with all local fire and electrical codes.

Primary Power:	12 to 24 VDC $\pm$ 10%, 250 mA maximum (USB port current not included)
Micro USB Port:	5 VDC, 500 mA maximum (add 270 mA to primary power current)
Memory and Clock Backup Battery:	3 Volt Lithium, type BR2330 or CR2330
microSD Card	Format: microSD or microSDHC; 2GB to 8GB
Host Communication:	Ethernet: 10-BaseT/100Base-TX and Micro USB port (2.0) with optional adapter: pluggable model USB2-OTGE100
Serial I/O Device	Two each: 2-wire RS-485, 2,400 to 115,200 bps, asynchronous, half-duplex, 1 start bit, 8 data bits, and 1 stop bit
Inputs:	Two unsupervised dedicated for cabinet tamper and UPS fault monitoring
Cable Requirements:	
Power:	1 twisted pair, 18 AWG
Ethernet:	CAT-5, minimum
RS-485:	1 twisted pair, shielded, 120 ohm impedance, 24 AWG, 4,000 ft. (1,219 m) maximum cable length
Environmental:	
Temperature:	Storage: -55 to +85 °C (-67° to 185° F) Operating: 0 to +70 °C (32° to 158° F)
Humidity:	5 to 95% RHNC
Mechanical:	
Dimension:	5 in. (127 mm) W x 6 in. (152.4 mm) L x 1 in. (25 mm) H
Weight:	4.1 oz. (115 gm) nominal

UL 294, 7th edition Performance Levels:

Feature	Level
Standby Power	I
Endurance	IV
Line Security	I
Destructive Attack	I

These specifications are subject to change without notice.

### UL Listed Installations

- For access control-only installations using DC power, power shall be provided by a UL 294 or UL 603, class 2 power supply with appropriate ratings.
- For burglar alarm installations, backup power is not provided. A UL 603 listed, class 2 power supply with appropriate ratings shall be used that provides a minimum four hours of standby power after notification of loss of AC power.
- Locations and wiring methods shall be in accordance with the National Electrical Code, ANSI/NFPA 70.

## Regulatory Information

### FCC Compliance

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

### Liability

It is expressly understood and agreed that the interface should only be used to control exits from areas where an alternative method for exit is available. This product is not intended for, nor is rated for operation in life-critical control applications. LenelS2 is not liable under any circumstances for loss or damage caused by or partially caused by the misapplication or malfunction of the product. LenelS2's liability does not extend beyond the purchase price of the product.

### Certifications

For certification information, refer to the hardware documentation for the host application.

### Product Warnings and Disclaimers

THESE PRODUCTS ARE INTENDED FOR SALE TO, AND INSTALLATION BY, AN EXPERIENCED SECURITY PROFESSIONAL. LENEL S2 CANNOT PROVIDE ANY ASSURANCE THAT ANY PERSON OR ENTITY BUYING ITS PRODUCTS, INCLUDING ANY "AUTHORIZED DEALER", IS PROPERLY TRAINED OR EXPERIENCED TO CORRECTLY INSTALL SECURITY RELATED PRODUCTS.

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