

Intelligent Controller LNL-M3300 Quick Reference

General

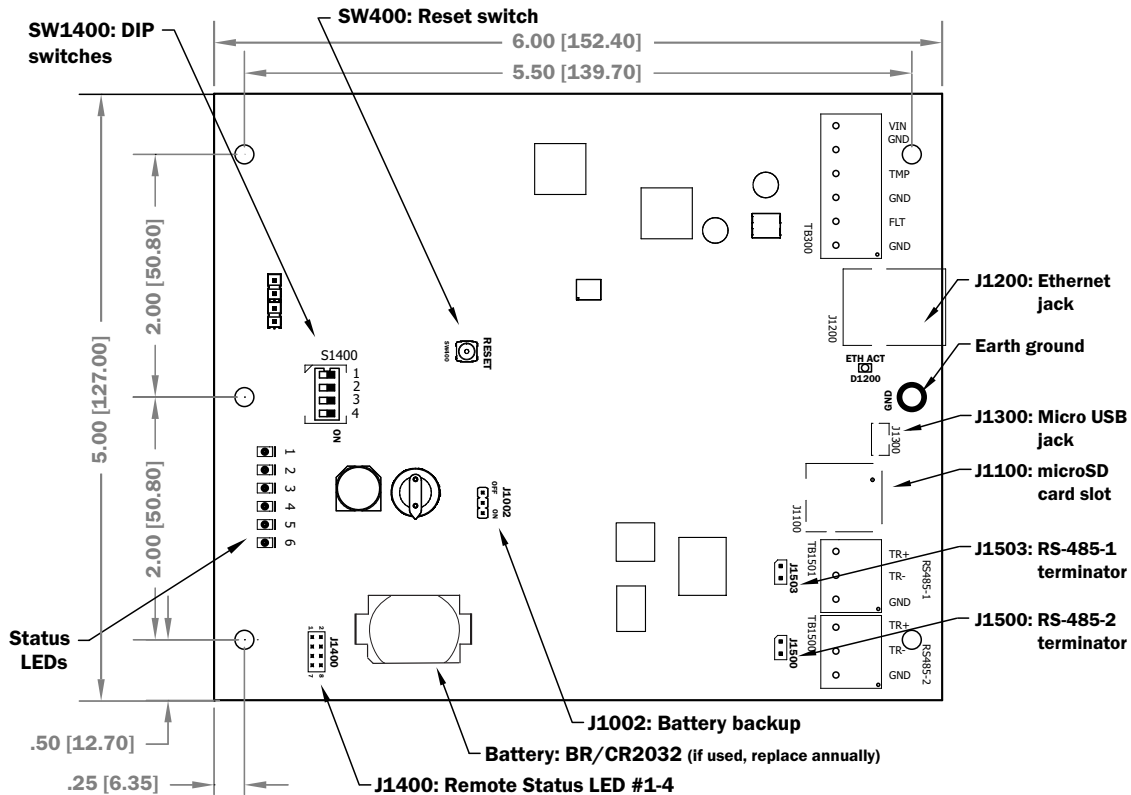
The LNL-M3300 intelligent controller provides decision-making, event reporting, and database storage for the LenelS2 hardware platform.

The LNL-M3300 communicates with the host via on-board 10Base-T/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-M3300 requires 12 to 24 VDC for power.

LNL-M3300 Hardware



LNL-M3300 Wiring and Setup

Connection		
TB300-1	Power Fault Input	GND
TB300-2		FLT
TB300-3	Cabinet Tamper Input	GND
TB300-4		TMP
TB300-5	Power Input	GND
TB300-6		VIN: 12 to 24 VDC
TB1501-1	SIO Port 1 (2-wire RS-485)	GND
TB1501-2		TR- (B) *
TB1501-3		TR+ (A) *
TB1500-1	SIO Port 2 (2-wire RS-485)	GND
TB1500-2		TR- (B) *
TB1500-3		TR+ (A) *

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

Jumpers and Jacks

The LNL-M3300 controller hardware interface is configured using jumpers to set up the port interface and end of line termination.

Jumpers	Set at	Description
J1200	N/A	10Base-T/100Base-Tx Ethernet port
J1503	OFF	Port 1 RS-485 EOL Terminator is Off
	ON	Port 1 RS-485 EOL Terminator is On
J1500	OFF	Port 2 RS-485 EOL Terminator is Off
	ON	Port 2 RS-485 EOL Terminator is On
J1100	N/A	microSD Card
J1300	N/A	USB Port (2.0)
J1400-1	N/A	Remote Status LED #1 *
J1400-2	N/A	Remote Status LED #2 *
J1400-3	N/A	Remote Status LED #3 *
J1400-4	N/A	Remote Status LED #4 *
J1002		Super capacitor or battery backup real time clock
	OFF	Backup battery is OFF
	ON	Backup battery is ON. Default J1002 link 1 and 2 for super capacitor real time clock backup. Link 2 and 3 for battery backup. Refer to Memory and Real Time clock Backup Battery on page 4.

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

DIP Switches

The four switches on SW1400 DIP switch configure the operating mode of the LNL-M3300 controller. DIP switches are read on power-up except where noted.

Pressing reset switch SW400 causes the LNL-M3300 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 IT Security 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 Bulk Erase Configuration Memory on page 3.
ON	ON	OFF	OFF	Bulk Erase prompt mode at power up. See Bulk Erase Configuration Memory on page 3.
X	X	X	ON	Makes the LNL-M3300 report and function like an LNL-X3300. To be used in situations where the host software has not been updated to support the LNL-M 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-M3300 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 1-5.

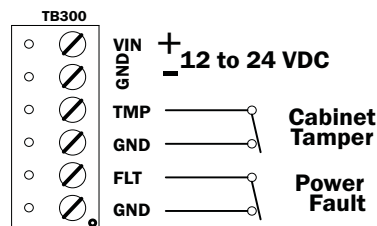
1. Set SW1400 DIP switches to: 1 & 2 "ON," 3 & 4 "OFF."
2. Apply power to the LNL-M3300 board. LED 1 will flash during boot up.
3. After boot up, LEDs 1 & 2, and 3 & 4 start to alternately flashing at a 0.5 second rate. Within 10 seconds, change switch 1 to "OFF."
4. When complete, only LEDs 1 and 4 will flash for about three (3) seconds.
5. The LNL-M3300 reboots and will be available at the default IP address (192.168.0.251).

Input Power, Cabinet Tamper, and UPS Fault Input Wiring

The LNL-M3300 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.

Important: **Incorrect connection may result in damage. 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.

Note: For UL compliance, only 12 VDC was evaluated.

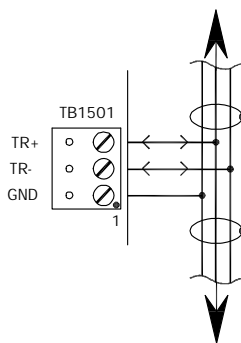
Communication Wiring

The LNL-M3300 controller communicates with the host via the on-board Ethernet 10Base-T/100Base-TX port and/or the USB port (2.0) with an optional Micro USB to Ethernet adapter.

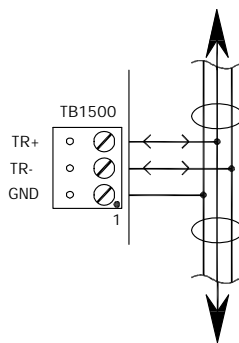
Ports 1 and 2 use a 2-wire RS-485 interface. The interface allows multi-drop communication on a single bus of up to 4,000 feet (1,219 m). Use 1-twisted pair, shielded, 120 ohm impedance, 24 AWG. 4,000 ft. (1,219 m) maximum cable length.

Important: Install the termination jumper ONLY on the panel at each end of the RS-485 bus. If the LNL-M3300 is at one end of the RS-485 bus, jumper J1503 (Port 1) or J1500 (Port 2) can be installed for termination.

Port 1: 2-Wire RS-485



Port 2: 2-Wire RS-485



Memory and Real Time clock Backup Battery

The real time clock is backed up by a super capacitor or optional lithium battery when input power is interrupted. All other data is stored in non-volatile flash memory.

Note: If using an optional lithium battery, replace it annually.

The super capacitor is selected by default (J1002 jumper link 1 and 2).

To change to battery back up, install jumper link 2 and 3 and install the lithium coin cell.

Battery type: Panasonic BR2032 or CR2032.

Note: Data is stored in flash memory to prevent loss of data in the case of power interruption.

IT Security

When installing the LNL-M3300, 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-M3300 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 (admin) and password (password) will be available for five minutes once the DIP switch is toggled. Therefore, it is important that at least one user account is defined, and the DIP switches are set to OFF before the LNL-M3300 is commissioned.

It is highly recommended **not** to configure the LNL-M3300 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

NIC LED blinks and all other LEDs are off.

Initialization

The initialization process has several stages, each stage is represented by a different LED pattern in the following sequence:

- LED 1 is on for about 10 seconds.
- LED 2 is on for 25 seconds.
- LED 3 flashes slowly for 15 seconds.
- LED 3 flashes quickly for 1 second. LED 3 may continue flashing for an additional 60 seconds if the controller firmware is being updated.
- LED 1, LED 2, and LED 3 are off as the application starts.
- LED 4 is then on for 15 seconds indicating a successful 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

LED	Description
6	Unassigned
D1200	Ethernet Activity (Ethernet Port 0)
YEL	On-board Ethernet Speed: OFF = 10 Mb/S, ON = 100 Mb/S (Yellow LED)
GRN	OFF = No Link, ON = Good Link (Green LED), Flashing = Ethernet Activity

Specifications

The interface is for use in low voltage, Class 2 circuits only. All output circuits are Class2/Power Limited. The installation of this device must comply with all local fire and electrical codes. Units are to be installed in accordance with NFPA 70. The unit is to be powered with a UL-listed UL 294 approved power supply with a class 2 power limited output.

Note: Only 12 VDC input was evaluated by UL by connection to the separately UL Listed power supplies.

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) Not Evaluated by UL
Memory and Clock Backup Battery:	Super capacitor or optional 3 Volt Lithium, type Panasonic BR2032 or CR2032
microSD Card	Format: microSD or microSDHC; 2GB to 8GB
Host Communication:	Ethernet: 10Base-T/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

These specifications are subject to change without notice.

UL 294 Performance Levels Indoor use:

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

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.
- Only 12 VDC input was evaluated by UL by connection to the separately UL Listed power supplies.

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.

FOR MORE INFORMATION ON PRODUCT WARNINGS AND DISCLAIMERS, SEE THE "LENEL S2 PRODUCT WARNINGS AND DISCLAIMERS" KNOWLEDGE BASE ARTICLE IN THE LENEL S2 KNOWLEDGE BASE. THIS INFORMATION IS SUBJECT TO CHANGE WITHOUT NOTICE.

