Single Reader Interface Module LNL-1300 Series 3
Quick Reference

The LNL-1300 Board

The LNL-1300 reader interface provides a solution to the host system integrator for interfacing to a TTL (D1/D0, Clock/Data), F/2F or RS-485 device, and door hardware. It also provides a tri-stated LED control and buzzer control. Two (2) Form-C contact relay outputs may be used for strike control or alarm signaling. Two (2) inputs are provided that can be used for monitoring the door contact and request to exit push button. Input circuits can be configured as unsupervised or supervised. Communication to the controller is accomplished via a 2-wire RS-485 interface. The LNL-1300 requires 12 to 24 VDC for power.

The LNL-1300 Board Callouts

Callout	Description
1	Status LEDs
2	Four (4) mounting holes (Ø0.156 [Ø4.0])
3	J2 - Tamper Input, Normally Open switch
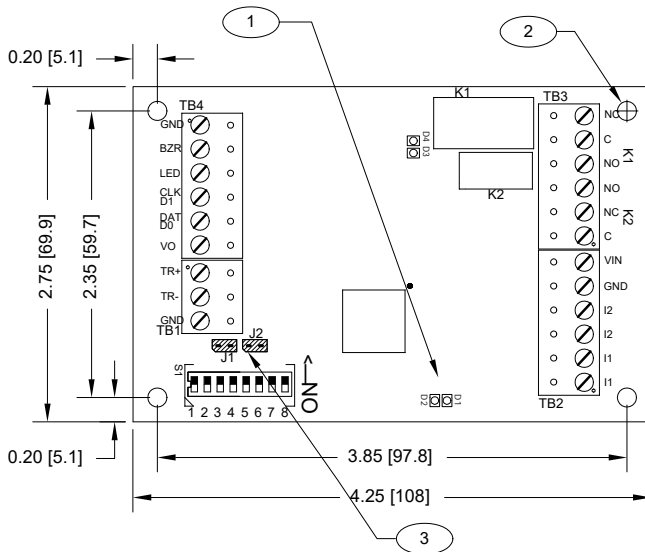
LNL-1300 Hardware

The LNL-1300 requires filtered 12 to 24 VDC ± 10% for power. Two (2) inputs are typically used for door contact and exit push button monitoring. End of line resistors are required input supervision, shown below.

Note: The input power is passed through to the reader terminal strip and is available for powering a reader. Readers that require different voltage requirements must be powered separately. Care must be taken to insure the input voltage is within the voltage range of the reader. The reader power output terminal, TB4-6 (VO), is not current-limited.
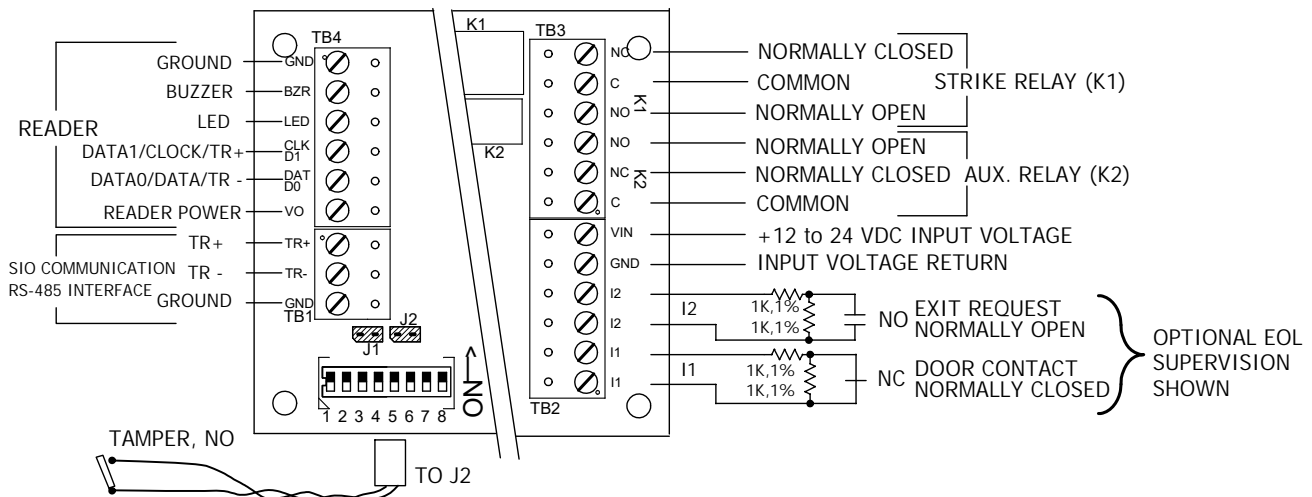
Reader Wring

The reader port supports a reader with TTL (D1/D0, Clock/Data), F/2F, or 2-wire RS-485 signaling. (Refer to the reader manufacture specifications for cabling requirements.) In the 2-wire LED mode the buzzer output is used to drive the second LED. Reader port configuration is set via the host software.
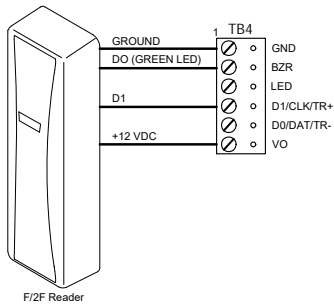
Typical D1/D0 or Clock/Data Reader
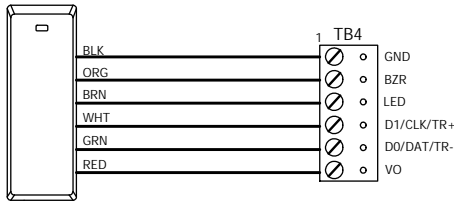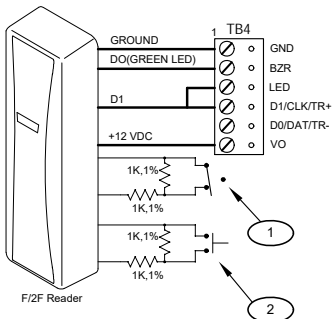

Typical RS-485 Device (such as OSDP Reader)
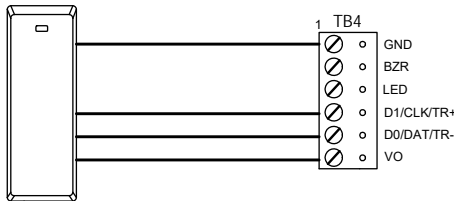
Typical Unsupervised F/2F Reader

Typical Supervised F/2F Reader

Note: Jumper D1 to LED on supervised F/2F readers.

Typical Supervised F/2F Reader Callouts

Callout	Description
1	Door monitor switch Normally Closed contact*
2	Request to Exit switch Normally Open contact*

*Inputs on supervised F/2F readers may be unsupervised or supervised. (Supervised is shown)

Door Strike Relay Wiring

Two (2) Form-C contact relays are provided for controlling door strike or other devices. See specifications section for the relay contact ratings. Load switching can cause abnormal contact wear and premature contact failure. Switching of inductive loads (strike) also causes EMI (electromagnetic interference) which may interfere with normal operation of other equipment. To minimize premature contact failure and to increase system reliability, a contact protection circuit must be used. The following two (2) circuits are recommended. Locate the protection circuit as close to the load as possible (within 12 inches [30 cm]), as the effectiveness of the circuit will decrease if it is located far away.

Typical DC Door Strike Wiring
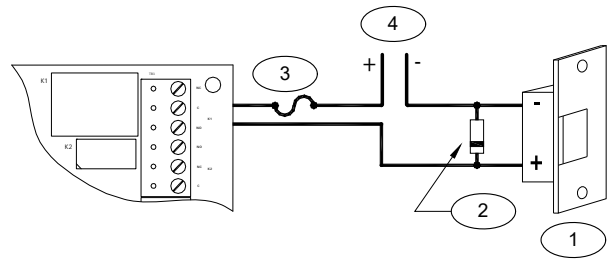
Door Strike Relay Wiring Callouts

Callout	Description
1	DC strike
2	Diode
3	Fuse
4	To DC power strike

Diode Selection: Diode current rating: 1x strike current. Diode breakdown voltage: 4x strike voltage. For 12 VDC or 24 VDC strike, diode 1N4002 (100V/1A) typical.

Communication Wiring

The LNL-1300 communicates to a Lenel intelligent controller (LNL-3300, for example) via a half-duplex, multi-drop 2-wire RS-485 interface. The total cable length is limited to 4000 feet (1219 m). A shielded cable of 24 AWG with characteristic impedance of 120 ohm is specified for the 2-wire RS-485 interface. The last device on each end of the communication line should have the terminator installed (install jumper J1).
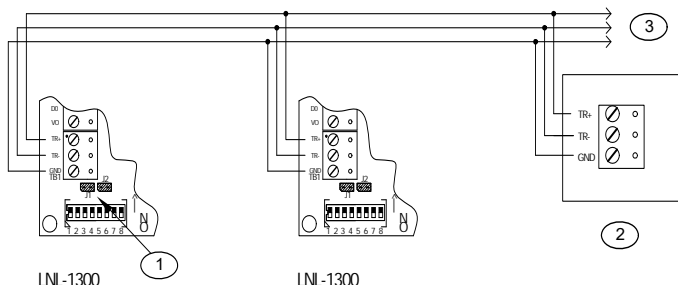
Communication Wiring Callouts

Callout	Description
1	J1 - RS-485 communication terminator jumper Install on last unit of the communication line.
2	Controller
3	To additional serial I/O units

Address, Baud Rate, and Encryption Configuration Switch

Switches 1 to 5 select the device address. Switches 6 and 7 select the communication baud rate. Switch 8 enables encrypted communication. All other configuration settings are set via the host software.

DIP switch(es)	Used to configure:
1, 2, 3, 4, 5	Device communication address (0-31)
6, 7	Communication baud rate
8	Downstream encryption (available with OnGuard® 2009 or later)

Device Address

Address	DIP switch				
	5:	4:	3:	2:	1:
0	off	off	off	off	off
1	off	off	off	off	ON
2	off	off	off	ON	off
3	off	off	off	ON	ON
4	off	off	ON	off	off
5	off	off	ON	off	ON
6	off	off	ON	ON	off
7	off	off	ON	ON	ON
8	off	ON	off	off	off
9	off	ON	off	off	ON
10	off	ON	off	ON	off
11	off	ON	off	ON	ON
12	off	ON	ON	off	off
13	off	ON	ON	off	ON
14	off	ON	ON	ON	off
15	off	ON	ON	ON	ON
16	ON	off	off	off	off
17	ON	off	off	off	ON
18	ON	off	off	ON	off
19	ON	off	off	ON	ON
20	ON	off	ON	off	off
21	ON	off	ON	off	ON
22	ON	off	ON	ON	off
23	ON	off	ON	ON	ON
24	ON	ON	off	off	off
25	ON	ON	off	off	ON
26	ON	ON	off	ON	off
27	ON	ON	off	ON	ON
28	ON	ON	ON	off	off
29	ON	ON	ON	off	ON
30	ON	ON	ON	ON	off
31	ON	ON	ON	ON	ON

Communication Baud Rate

Baud rate	DIP switch 6:	DIP switch 7:
38,400 bps	ON	ON
19,200 bps	off	ON
9600 bps	ON	off
115,200 bps	off	off

Bus Encryption

Bus communications	DIP switch 8: (OnGuard 2009 or later)	DIP switch 8: (prior to OnGuard 2009)
Encryption is not required	off	Normal operation
Encryption is required	ON	Not allowed

Status LEDs

Power-up: All LEDs OFF.

Initialization: Once power is applied, initialization of the module begins.

The **D1 LED** is turned **ON** at the beginning of initialization.

Run time: After the above sequence, the LEDs have the following meanings:

D1 LED: Heartbeat and On-Line Status:

- Off-line: 1 second rate, 20% **ON**, 80% OFF

- On-line:
    - Non-encrypted communication: 1 second rate, 80% **ON,** 20% **OFF**
    - Encrypted communication: 0.1 sec **ON**, 0.1 sec OFF, 0.1 sec **ON**, 0.1 sec OFF, 0.1 sec **ON**, 0.1 sec OFF, 0.1 sec **ON**, 0.3 sec OFF

D1 LED: Error Indication:
Waiting for application firmware to be downloaded: 0.1 sec **ON**, 0.1 sec OFF

D2 LED: Serial I/O Communication Port Status:
Indicates communication activity on the serial I/O communication port

Specifications

The LNL-1300 is for use in low voltage, class 2 circuit, only. These specifications are subject to change without notice.

- Primary power: 12 to 24 VDC ± 10%, 150 mA maximum (plus reader current)

- Outputs: Two (2) Form-C relays:
    - K1: Normally Open (NO) contact: 5 A @ 30 VDC resistive
      Normally Closed (NC) contact: 3 A @ 30 VDC resistive
    - K2: 1 A @ 30 VDC resistive

- Inputs:
    - Two (2) unsupervised/supervised, standard EOL, 1k/1k ohm, 1%, ¼ watt
    - One (1) unsupervised, dedicated for cabinet tamper

- Reader interface:
    - Reader power: 12 to 24 VDC ± 10% (input voltage passed through)
    - Reader LED output: TTL compatible, high > 3 V, low < 0.5 V, 5 mA source/sink maximum
    - Buzzer output: Open collector, 12 VDC open circuit maximum, 40 mA sink maximum
    - Data inputs: TTL compatible, F/2F or 2-wire RS-485

- Communication: 2-wire RS-485: 9600, 19200, 38400, or 115200 bps

- Cable requirements:
    - Power: 1 twisted pair, 18 AWG
    - RS-485 I/O devices: 1 twisted pair with drain wire and shield, 24 AWG, 120 ohm impedance, 4000 feet (1219 m) maximum
    - Alarm inputs: 1 twisted pair per input, 30 ohms maximum
    - Output: As required for the load
    - Reader data (TTL): 6-conductor, 18 AWG, 500 feet (150 m) maximum
    - Reader data (F/2F): 4-conductor, 18 AWG, 500 feet (150 m) maximum
    - Reader data (RS-485): 24 AWG, 120 ohm impedance, twisted pair with drain wire and shield, 2000 feet (610 m) maximum

Mechanical:

- Dimension: 4.25 x 2.75 x 1 in. (108 x 70 x 25.4 mm)
- Weight: 4 oz. (120 g) nominal

- Environmental:
    - Temperature: -55 to +85°C storage, -40 to +75°C operating
    - Humidity: 5% to 95% RHNC

UL 294, 7th edition Performance Levels:

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

Note: Outputs are Power limited/class 2 when powered by external power limited/class 2 power supply model LNL-AL400ULX or LNL-AL600ULX-4CB6.

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

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