LP2500 Intelligent Controller

Installation and Specifications

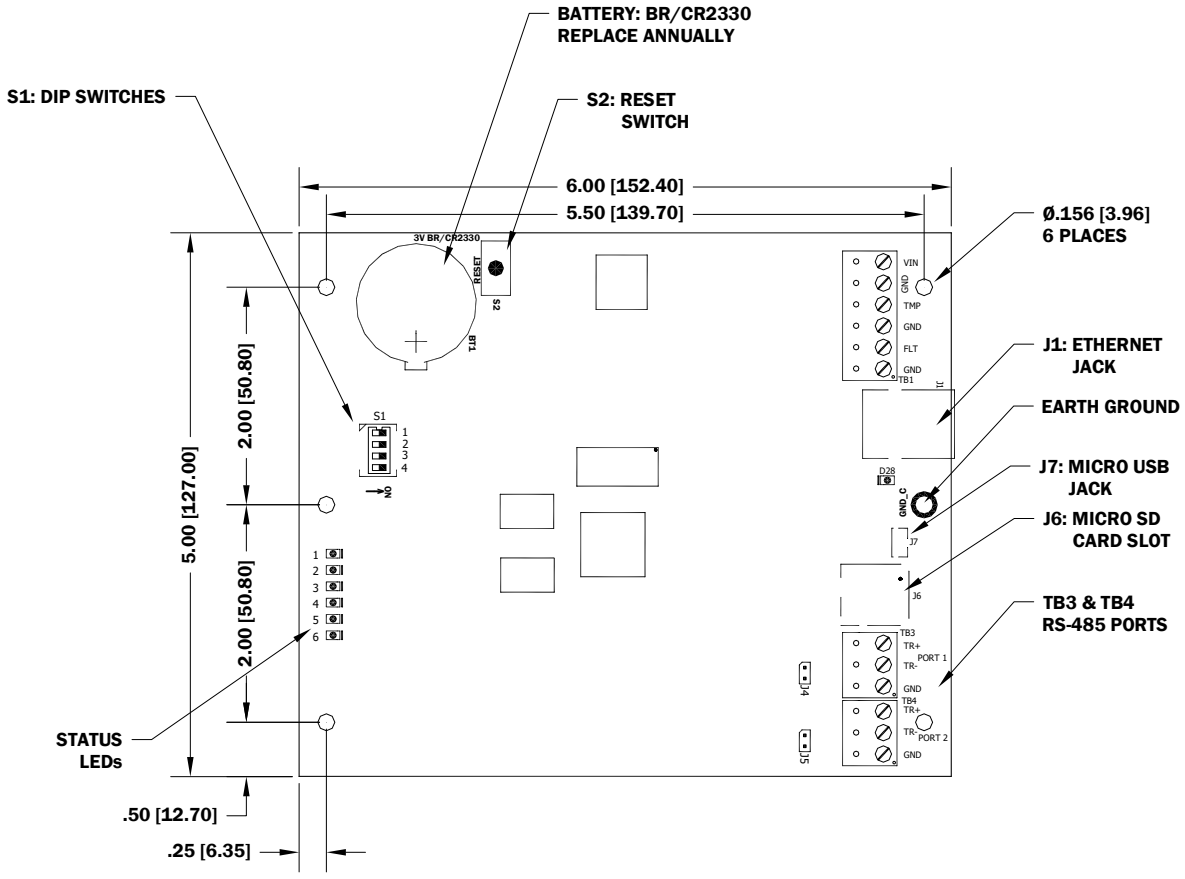
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

General

The LP2500 intelligent controller provides decision-making, event reporting, and database storage for the Mercury hardware platform.

The LP2500 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 busses. The LP2500 requires 12 to 24 Vdc for power.

LP2500 Hardware:



LP2500 Layout

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Compatibility:

The LP2500 is only compatible with the following AccessNsite UL Listed Commercial Proprietary Burglar Alarm and Access Control subassemblies:

- E2M LifeSafety Power 20” x 16” x 4.5” Enclosure
- E4M LifeSafety Power 24” x 20” x 6.5” Enclosure
- E8M LifeSafety Power 36” x 30” x 6.5” Enclosure
- FPO75 LifeSafety Power 6A/12V or 3A/24V 75W Power Supply
- FPO150 LifeSafety Power 12A/12V or 6A/24V 150W Power Supply
- FPO250 LifeSafety Power 20A/12V or 10A/24V 250W Power Supply
- C8P LifeSafety Power, Power Controller Module
- D8P LifeSafety Power, Power Distribution Module
- MR62e Mercury OSDP Reader Interface
- MR50 Mercury Single Reader Interface
- MR52 Mercury Dual Reader Interface
- MRDT Display Terminal
- MR16IN Mercury Input Processor (16 input)
- MR16OUT Mercury Output Processor (16 output)
- MUX8 Mercury 8/1 RS-485 Multiplexer

Terminal Blocks:

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

Note 1: Terms A & B are from the RS-485 standard

CONNECTION		
TB3-1	SIO Port 1 (2-wire RS-485)	GND
TB3-2		TR- (B) See note 1
TB3-3		TR+ (A) See note 1
TB4-1	SIO Port 2 (2-wire RS-485)	GND
TB4-2		TR- (B) See note 1
TB4-3		TR+ (A) See note 1

Jumpers and Jacks:

The LP2500 controller hardware interface is configured using jumpers to setup the port interface and end of line termination.

JUMPERS	SET AT	DESCRIPTION
J1	N/A	10-BaseT/100Base-TX Ethernet port
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)

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DIP Switches:

The four switches on S1 DIP switch are used to configure the operating mode of the LP2500 controller. DIP switches are read on power-up except where noted. Pressing reset switch S2 causes the LP2500 to reboot.

1	2	3	4	Definitions
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 reboot. See IT security section for additional information
OFF	ON	OFF	OFF	Use factory default communication parameters.
ON	ON	OFF	OFF	Use OEM default communication parameters. Contact system manufacture for details. See Bulk Erase below.
ON	ON	OFF	OFF	Bulk Erase prompt mode at power up. See Bulk Erase below.
X	X	X	ON	Makes the LP2500 report and function like an EP2500. To be used in situations where the host software has not been updated to support the LP series product line.

All other switch settings are unassigned and reserved for future use. X = don't care.

In the factory or OEM 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, 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 LP2500 board to continuously reboot

If clearing the memory does not correct the initialization problem, contact technical support.

Bulk Erase Steps: **Do not remove power during steps 1-8.**

1. Set S1 DIP switches to: 1 & 2 "ON", 3 & 4 "OFF".
2. Apply power to the LP2500 board. LED 1 on for about 15 seconds while LP2500 boots up.
3. After the LP2500 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 LP2500 board will power up using the OEM default communication parameters.
5. LED 2 will flash indicating that the configuration memory is being erased.
6. Full memory erase takes up to 60 seconds, usually a lot less.
7. When complete, only LEDs 1 & 4 will flash for about 3 seconds.
8. The LP2500 board will complete its initialization in 2 seconds after LEDs 1 & 4 stop flashing.

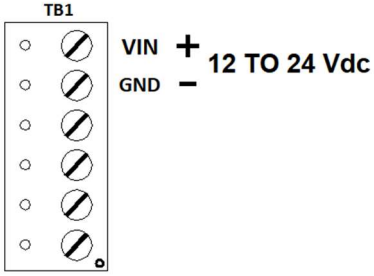
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Board Installation and Power:

A qualified service person, complying with all applicable codes, should perform all required hardware installation. For UL installations, install the unit in accordance with National Electrical Code NFPA 70 and install the board in a UL 294/1076 listed enclosure. If installing in Canada, install the unit according to Part 1 of the Canadian Electrical code CSA C22.1. It is recommended that the LP2500 be mounted 0.50" above any conductive surface. The LP2500 accepts 12 to 24Vdc for power. The power source must be filtered. Locate the power source as close to the unit as possible. Connect power with a minimum of 18AWG wire. Keep a minimum of ¼" spacing between power limited outputs and non-power limited wiring. **Connect the GND signal to earth ground in only ONE LOCATION within the System. Multiple earth ground connections may cause ground loop problems and is not advised. Observe POLARITY on the 12-24Vdc input.**

UL Note: The LP2500 module has been evaluated for use with the LifeSafety Power FPO75, FPO150, and FPO250 power supplies or any UL Listed Power Supply evaluated to UL 603 (Power Supplies for use with Burglar –Alarm Systems). It must be a power limited power supply of suitable ratings, with a minimum of 4 hours of standby power



Cable Routing and Connection:

All low power input cables (sensor input cables, controller communication cables, etc.) should be shielded and should preferably be run in grounded conduit or be run at least two feet from AC power, fluorescent lights, or other high energy sources. If conduit is used, do not run data cables in the same conduit as power cables.

Communication Wiring:

The LP2500 controller communicates to the host via an on-board Ethernet 10-BaseT/100Base-TX port and/or the USB port (2.0) with an optional Micro USB to Ethernet adapter. The LP2500 communicates downstream to subcontrollers using RS-485.

Ethernet Host Connection:

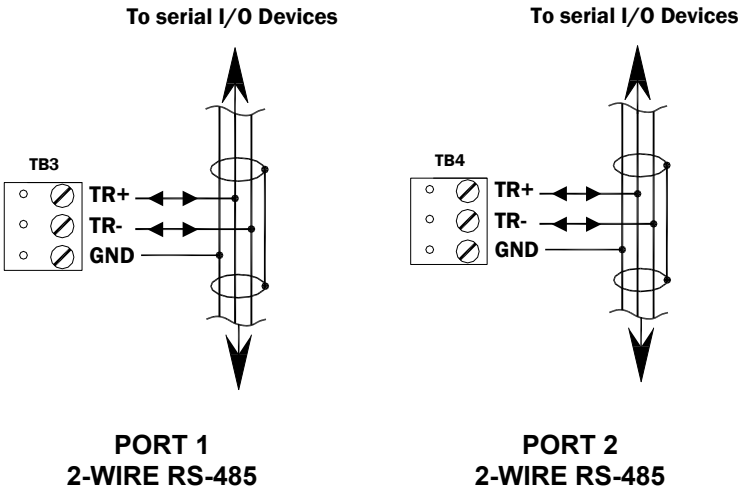
An on-board 8P8C (RJ45) modular jack is available for an Ethernet connection. The cable used for the connection should be no longer than 328 feet. To configure the LP2500 for first time use on the network, refer to the Controller Web Configuration Tool manual for information about how to setup the LP2500 to communicate on the network.

RS-485 Subcontroller Connection (Ports 1 and 2):

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.

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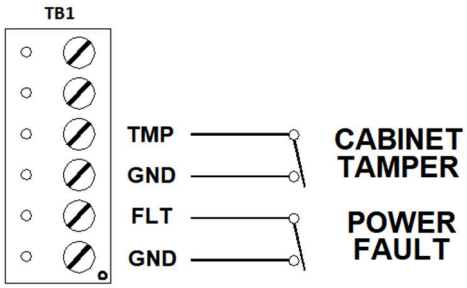


IMPORTANT NOTE! Install the termination jumper ONLY on the panel at each end of the RS-485 bus. Failure to do so will compromise the proper operation of the communication channel!

Cabinet Tamper and UPS Fault Input Wiring:

Inputs TMP and FLT are dedicated for monitoring cabinet tamper and power failure, respectively. The normal (safe) condition is a closed contact. These two inputs are for contact closure monitoring only and do not use EOL resistor(s). If these inputs are not used, install a short piece of wire at the input to indicate a safe condition.

For UL Applications a listed UL 634 Tamper Switch must be employed to monitor the door of the enclosure containing the LP2500. Wire the tamper switch to the tamper input of the LP2500.



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 is not rechargeable and 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.

When the LP2500 is shipped from the factory, it has a plastic tab insulating the battery from the battery socket. The battery is not connected until the insulation tab is removed. While installing the LP2500, remove the insulation tab for proper function of the battery backup feature. The LP2500 may report a low battery indication to the host software after the battery has been initially connected or replaced until it has been power cycled. Battery type: BR2330 or CR2330.

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Status LEDs:

Power-up: All LED's **OFF.**

Initialization: After power is applied or reset switch pushed, LED 1 is ON for about 15 seconds, then LED's 2 through 6 are flashed once at the beginning of initialization. LEDs 3 and 4 are turned 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 will add about 2 seconds to the application initialization. When LED's 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 the bulk erase procedure.

Running:

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 = 10Mb/S, ON = 100Mb/S (Yellow LED)
GRN	OFF = No Link, ON = Good Link (Green LED), Flashing = Ethernet Activity

IT Security

When installing the LP2500, it is important to ensure that it is done in a secure manner.

Upon installation, the user accounts on the web configuration page should be created with secure passwords. You should also ensure that all DIP switches are in the off position for the normal operating mode. The LP2500 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 LP2500 is commissioned. It is also highly recommended not to configure the LP2500 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 page itself. Additionally, data encryption can also be enabled over the host communication port.

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 electronic codes.

Primary Power:	12 to 24 Vdc ± 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:	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

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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, shield, 120 ohm impedance, 24 AWG. 4,000 ft. (1,219 m) maximum cable length

Environmental:

Temperature:	-55 to +85 °C, storage 0 to +70 °C, operating
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

UL294, 6th edition Performance Levels:

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

These specifications are subject to change without notice.

Warranty

AccessNsite warrants the product is free from defects in material and workmanship under normal use and service with proper maintenance for one year (30 days for repaired or replaced products) from the date of shipment. AccessNsite assumes no responsibility for products damaged by improper handling or installation. This warranty is limited to the repair or replacement of the defective unit. Returns must be accompanied by a Return Material Authorization (RMA) number obtained from customer service, and prepaid postage and insurance. AccessNsite's obligation under this warranty shall not arise until Buyer returns the defective product to AccessNsite's facility or another specified location.

There are no expressed warranties other than set forth herein. AccessNsite does not make, nor intends, nor does it authorize any agent or representative to make any other warranties, or implied warranties, and expressly excludes and disclaims all implied warranties of merchantability or fitness for a particular purpose.

Liability

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. AccessNsite is not liable under any circumstances for loss or damage caused by or partially caused by the misapplication or malfunction of the product. AccessNsite’s liability does not extend beyond the purchase price of the product.

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