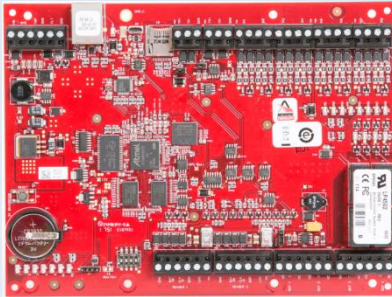
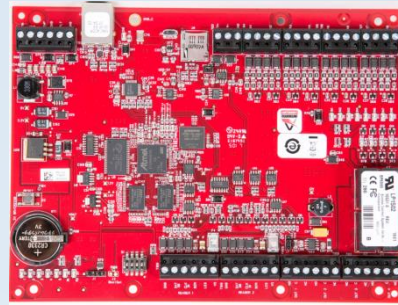


LP Series



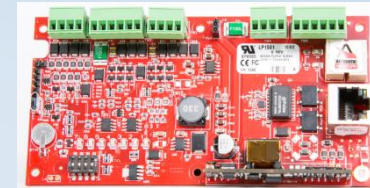
LP4502



LP1502



LP2500



LP1501

LP Series- Benefits

- Regional IO supported by all LP controllers
- Security Improvements
 - TLS1.2
 - Certificate Improvements
 - FIPS 140-2 use of OpenSSL
 - 802.1X
 - SNMP v3
 - Crypto Memory Chip
 - Strong password enforcement
- LP1501 now supports PoE+ versus PoE (1.25A for Lock and Reader)
- Reader firmware and configuration download (OSDP file transfer)
- Additional applications integrations (LP4502 only)
 - Elevator destination dispatch with Otis Compass and KONE
 - Strong Authentication with pivCLASS and Entrypoint
 - BACnet IP
- USB-to-Ethernet to redundant host IP connection (supported on all LP boards!)

LP Series- Move to Linux Platform

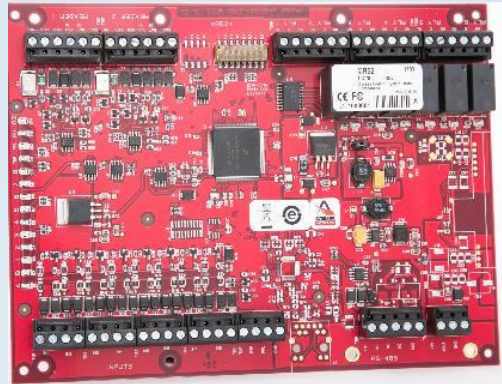
- Leverage a universally used OS
- Better acceptance by IT departments
- Many standard libraries for enhancement
 - Enables faster time to market
 - Up-to-date cyber security
 - Certified OpenSSL libraries for FIPS 140-2
- Enables third-party application development
 - Faster time to market for device integration
 - Potential for non-Mercury application development

Mercury Controllers - Comparison Chart

	LP4502	LP2500	LP1501	LP1502	MR50-S3	MR52-S3	MR62e	MR16IN-S3	MR16OUT-S3
Open Architecture	x	x	x	x	x	x	x	x	x
Capabilities									
Number of Openings Managed MAX	64	64	17	64	1	2	2	0	0
Number of Readers Managed MAX	64	64	17	64					
Number of Readers Directly Connected MAX	4	0	2	4	2	4	4 (OSDP only)	0	0
Cardholder MAX	2,000,000	600,000	240,000	240,000					
Access levels per cardholder	255	255	255	255					
Inputs Managed MAX	1024	1024	130	520					
Outputs Managed MAX	1024	1024	130	516					
Number of On-Board General Purpose Inputs	8	0	2	8	2	8	6	16	0
Number of On-Board General Purpose Outputs	4	0	2	4	2	6	4	2	16
Reader Power Draw per Port MAX	300mA		300mA	300mA	300mA	300mA	300mA		
Relay Rating MAX @ 30VDC	5A		2A	5A	5A/2A	5A	2A	5A	5A
Lock/Reader Power MAX using PoE+			1.25A				1.5A		
Edge-mountable in 3-gang box			x				x		
Micro USB Port	x	x	x	x					
microSD Card (2GB to 8GB)	x	x	x	x					
Security and Network									
Ethernet Speed (Mbps)	10/100	10/100	10/100	10/100			10/100		
Internet Protocol	v4/v6	v4/v6	v4/v6	v4/v6			v4/v6		
Dual IP Connectivity (using adapter)	x	x	x	x					
OSDP Secure Channel for On-Board Reader Ports	x	N/A	x	x	x	x	x		
Upstream Encryption	TLS, AES	TLS, AES	TLS, AES	TLS, AES	AES	AES	AES	AES	AES
Peer Certificate Loading	x	x	x	x			x		
Port Based Access Control using 802.1X	x	x	x	x					
IP Device Management using SNMP	x	x	x	x			x		
IP Device Discovery using Zeroconf (mDNS)	x	x	x	x			x		
NIST Certified Encryption (FIPS 140-2)	x	x	x	x			x		
Crypto Memory Chip	x	x	x	x	x	x	x	x	x
Data Encryption at Rest	x	x	x	x					
3rd Party Integrations and Applications									
Elevator Destination Dispatch	x								
Building Control Integration	x								
US Gov't FICAM Strong Authentication	x								
Wireless Lock Hub Support	x	x	x	x					
Power Supply Alerts and Events	x	x	x	x					

Series 3 Sub-Controllers

MR52-S3



MR50-S3



MR16in-
S3



MR16out-
S3



Series 3 Sub-Controllers

- Next generation SIO modules (aka – “Series 3” SIO)
 - Includes: MR50, MR52, MR16in, and MR16out
- Upgrade to existing platform – processor and memory
- Allows support for new features and applications
- Enhanced Cyber Security capabilities
- Low impact for partner and channel adoption
- Ideal platform for customers seeking to future proof their Mercury based deployments

Series 3 Sub-Controllers- Features and Benefits

- Improved processor and memory platform
- Full OSDP Support ([SIA Link](#))
 - OSDP Secure channel
 - FICAM Application support ([Link](#))
 - OSDP Biometrics
 - OSDP Passthrough (ie, manufacturer specific commands via OSDP)
 - OSDP File transfer
 - In/Out OSDP reader support (ie, 4 readers on MR52)
- Cyber Security enhancements
 - SAM Chip – Encrypted storage of data and keys
 - RS485 communications (MSP1) encrypted by default
 - AES256 encryption (LP series controllers)

Series 3 Sub-Controllers- Features and Benefits

- Identical footprint as existing Series 2 modules
 - Allows for seamless migration for customers seeking an upgrade
- MR52 reader current increased from 180mA to 300mA
- Relay rating updates
 - 5A for Normally Open
 - 3A for Normally Closed
- Lifetime relay activation counts estimate
- Backwards compatible with Series 1 and 2 deployments on EP controllers
- New “Mercury Red” PCB to differentiate in the field



OSDP Reader Security

The Mercury controller family supports secure communications from the reader/peripherals to the controller by employing the secure version of the open serial data protocol (OSDP) over a RS485 two-wire, multi-dropped, serial communication channel.

This protocol is supported over other media, such as TCP/IP. When combined with the Mercury secure network communications, the user is provided an encrypted channel from the card to the OEM host software.



IP Client Support

Controller initiated communication requires the controller to be configured to talk to a specific host.
Host does not need to be aware of controllers' firewall.

Double Card

The ability to generate a transaction on the presentation of a card twice within a short period of time (5 seconds) has been added to controller firmware (EP series controllers starting with version 1.17.8). The transactions that are generated can then be used in triggers to perform actions.



Keri NXT Controller Support

Mercury has worked with Keri to create firmware that can be loaded into the Keri NXT controller to make it Mercury powered. NXT units with this firmware can communicate with the Mercury driver. This document will provide details on how this can be accomplished.

KONE Elevators Support

A KONE protocol was created so that the LP controllers can manage access for the KONE Elevator Group Controller. Mercury will support configuration for Destination Operation Panels (DOPs), Car Operation Panels (COPs), and turnstiles.

This feature is supported on the LP4502, and EP4502. The support for KONE Elevators was added in firmware 1.25.5 and DLL 4.6.1.227.

Supported KONE Elevator Modes:

- DCS Traditional Basic Set – Supports ELI protocol commands for DOPs.
- DCS Traditional Extended Set – Supports ELI protocol commands for DOPs with optional calltypes support.
- DCS Hybrid Basic Set – Supports ELI protocol commands for DOPs and COP.
- DCS Hybrid Extended Set – Supports ELI protocol commands for DOPs and COPs with optional calltypes support.
- Conventional Elevator – Supports ELI protocol commands for COPs.
- Turnstile Integration– Supports RCGIF protocol commands for turnstiles.

Otis Elevator Compass Destination Dispatching

An Otis Elevator Compass Destination Dispatching System mode was created so that the EP4502 can inform a DEC (Destination Entry Computer, E.g. touch screen or keypad) allowed and authorized floors for a cardholder. This feature is only supported on the EP4502. The support for Otis Elevator Compass Destination Dispatching was added in EP4502 firmware 1.24.1 and Driver 4.6.1.212.

The Compass Destination Dispatching System Modes:

- Mode 1 Default Floors – User presents cardholder credentials to the EP4502 Reader. The default floor assigned to the cardholder is checked for authorization. This mode will ONLY authorize the cardholder's default floor. The DEC will inform the user if the cardholder is authorize to access the default floor.
- Mode 2 Access to Authorized Floors – User presents cardholder credentials to the EP4502 Reader. If the cardholder contains active access levels, the DEC will allow the user to select a floor. The DEC will inform the user if the selected floor is accessible.
- Mode 3 User Entry of Destination – The user will select a floor on the DEC. Next, the user presents cardholder credentials to the EP4502 reader. The DEC will inform the user if the selected floor is authorized.
- Mode 4 Default Floor or Entry of Destination – User presents cardholder credentials to the EP4502 Reader. Within a timeout period set on the DEC, the user may select a floor. If a floor is not selected, the DEC will inform the user if the cardholder is authorize to access the default floor. If a floor is selected, the DEC will inform the user if the cardholder is authorize to access the selected floor.



Keltron Dialer Support

The Keltron Autodialer uses specially formatted SIA codes for central station notification. The codes and state information need to be specified in the API.

Other Supported Protocols

- Schlage PIM
- SALTO SALLIS
- Virtual SIO
- PSIA Client
- Simon Voss
- Vanderbilt
- Kone

Optimized Polling (LP Series Controller)

The optimized polling was implemented slightly different on the LP series controllers and also allows a poll_delay greater than 5 seconds to be used. On the LP series controllers they will respond to a poll immediately instead of holding on to the response for a period of time. This allows the host/driver side to be able to send out commands whenever necessary and no need to interrupt the poll that is progress. The driver will then delay for the poll_delay if there are no other commands to be sent. If the controller does have a transaction or other information to report back, it will send out a short message to indicate to the driver that a poll is necessary and the driver will then send the standard poll.

Optimized Poll Interruption (EP Series)

If a command is issued during the delayed period of an optimized poll, the poll may be aborted to allow the command to proceed immediately without needing to wait for the poll_delay time to expire. This allows for commands to be executed without having to wait a period of time.



EP Controller Ports

The following are the ports that are used by the EP1501, EP1502, and EP2500. See the LP controllers section for details on the EP4502.

Port #	Port Type	Usage	Can Be Disabled	Can be Changed
67	UDP	DHCPS	No	No
68	UDP	DHCPC	No	No
80	TCP	HTTP	Yes – Use the "Disable Web Server" option on the Users web configuration page	No
161	UDP	SNMP	Yes – Use the "Disable SNMP" option on the Users web configuration page	No
443	TCP	HTTPS	Yes – Use the "Disable Web Server" option on the Users web configuration page	No
3001	TCP	Mercury Host Protocol (MSP2)	Yes – Setting the "Connection Type" on the Host Comm page to an option that isn't IP	Yes – Configured on the Host Comm page
4001	TCP	PSIA	Yes – Starting in firmware 1.20.4, the port is disabled if no PSIA users are defined	No
5353	UDP	Zeroconf (Discovery)	Yes – Use the "Disable Bonjour" option on the Users web configuration page	No



LP Controller Ports

The following are the ports that are used by the LP1501, LP1502, LP2500, LP4502 and EP4502.

Port #	Port Type	Usage	Can Be Disabled	Can be Changed
67	UDP	DHCPS	No	No
68	UDP	DHCPC	No	No
80	TCP	HTTP	Yes – Use the "Disable Web Server" option on the Users web configuration page	No
161	UDP	SNMP	Yes – Use the "Disable SNMP" option on the Users web configuration page	No
443	TCP	HTTPS	Yes – Use the "Disable Web Server" option on the Users web configuration page	No
3001	TCP	Mercury Host Protocol (MSP2)	Yes – Setting the "Connection Type" on the Host Comm page to an option that isn't IP	Yes – Configured on the Host Comm page
4001	TCP	PSIA	Yes – Starting in firmware 1.20.4, the port is disabled if no PSIA users are defined	No
5353	UDP	Zeroconf (Discovery)	Yes – Use the "Disable Bonjour" option on the Users web configuration page	No
47808	UDP	BACnet	Yes – BACnet is disabled by default.	Yes – Configured via the 2250 command for setting up BACnet user.
47307	UDP	OTIS	Yes – Only used when the OTIS integration is enabled	No
48307	UDP	OTIS	Yes – Only used when the OTIS integration is enabled	No
45303	UDP	OTIS	Yes – Only used when the OTIS integration is enabled	No
46303	UDP	OTIS	Yes – Only used when the OTIS integration is enabled	No
46308	UDP	OTIS	Yes – Only used when the OTIS integration is enabled	No
45308	UDP	OTIS	Yes – Only used when the OTIS integration is enabled	No
10200	TCP	pivCLASS Embedded	Yes – Only used when the pivCLASS Embedded application is installed	Yes – Configured via the pivCLASS Embedded web configuration page

LP Controller Ports (Continued...)

The following are the ports that are used by the LP1501, LP1502, LP2500, LP4502 and EP4502.

5555	TCP	EntryPoint	Yes – Only used when the EntryPoint integration is used	
2005	TCP	KONE Elevator	Yes – Only used when KONE integration is enabled	Yes – Configured through 128 command
2004	TCP	KONE Elevator	Yes – Only used when KONE integration is enabled	Yes – Configured through 128 command
1883	TCP	Overwatch	Yes – Only enabled with Overwatch	Yes – Configured via Overwatch web configuration page
2101	TCP	SimonsVoss	Yes – Only used when SV integration is enabled	Yes – Configured through the 128 command
2153	TCP	SimonsVoss	Yes – Only used when SV integration is enabled	Yes – Configured through the 128 command