Mercury Installation Guide

This document is a guide to successful integration of Mercury panels with Brivo Access in two steps: a set of pre-installation procedures and associating the panel with Brivo Access. If you have Mercury panels currently integrated with a legacy access control system, instructions on how to convert a panel can be found in Appendix C.

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BEFORE YOU BEGIN...

What are the minimum requirements for a Mercury Panel?

- Ethernet / LAN
- Internet Connectivity to LAN
- Port 3001 on firewall open for outbound HTTPS traffic
- Hub set to Ethernet 10Mbps; half duplex or auto-negotiate
- Proxy server allows outbound HTTPS traffic

If using DHCP...

The panel's MAC address is printed on the label that came with the control panel

If using Static IP...

Be prepared with the following:

- Assigned device IP address
- Network Mask (AKA Subnet Mask)
- Broadcast IP
- Gateway IP
- DNS Server IP address

If changing other Network Parameters...

- Ethernet cable is required
- Default IP address (See the Factory Default Communication Parameters section)
- Default username and password (See the Pre-Configuration Steps section)

How many panels will I need?

To determine the number of panels you need, count the number of doors in your facility and divide by 2. This is the total number of Mercury panels (combination of System Control Processors (SCPs) and Serial Input/Output boards (SIOs)) you will need to manage these doors.

Note: For installations where the panels are connected to a legacy access control system, this may involve adding new panels. For more information on adjusting the connections between existing panels and readers, see the Door/Reader Capacity section.

If you need assistance, contact Brivo Customer Care at customercare@brivo.com or 1.866.274.8648

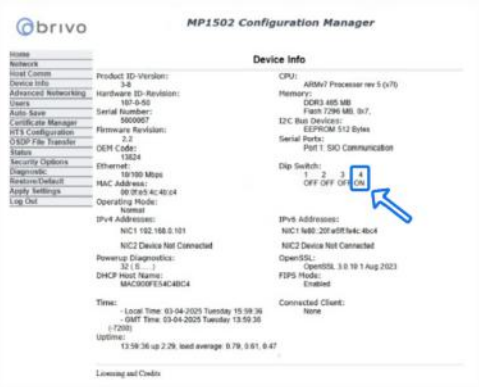
Brivo Mercury Solutions - Plug and Play Provisioning - MP Series

Overview

Brivo OEM Mercury controllers are available, pre-configured to self-provision with Brivo. Note that this only applies to MP series controllers that are purchased from Brivo. If controllers were not purchased through Brivo or are existing, you will need to follow the takeover/ provisioning process using MOCA or the manual Provisioning steps in this guide.

Before You Get Started

Before you attempt to connect your MP series controller to Brivo Mercury Solutions, you will need to verify that the Legacy Mode switch is on. This is off by default so the boards are ready for future releases where legacy mode will not be required. Legacy mode can be verified by looking at switch 4 or by looking in the Webcli for the controller. If legacy mode is on, it should look like this:



Getting Started

The only thing that you will need to do in order to get your controller online is configure the network and your local panel administrator login. Follow the panel startup and network configuration steps in the guide. It is recommended that panels are either on a reserved static address or use DHCP. DHCP will ensure that minor changes in the customer's network configuration does not .

Brivo Mercury OEM

Brivo Mercury OEM panels are panels that are ordered through Brivo. These panels are the only ones that can be expected to have the configuration set. Also, these panels will already be whitelisted for Brivo Mercury Services.

MP Series panels that are in legacy mode will show up in Brivo Access as an LP Series. This will not cause any issues. This can also be changed later once the MP Series is supported in Native Mode

Note that if any step fails during the network process, you may need to default the panel and re-provision. Therefore, it is a good idea to be familiar with the steps needed for Factory Default and Provisioning of panels.

If any of the steps above do not result in a successful connection, please contact Brivo Technical Support for assistance.

Testing

Once the panel is connected to Brivo Mercury Services, and a door is associated with the panel, you should see a connection status in the Brivo Access Device Manager and a Last Contact. If you are not seeing this, Retrace the steps to bring the panel online. Also verify that the network has an outbound connection to TCP Port 3001.

Site Assessment & Other Planning Information

The first step is to evaluate and fully document the current installation.

Characteristics that should be recorded are:

- Doors
- Inputs
- Outputs
- Access Groups
- Access Permissions
- Time Schedules
- Holiday Schedules
- Elevator cab and floor configuration
- Wiegand card data format(s)
- Anti-Passback Settings
- Number of SIOs connected to each SCP
- Location of all SCPs and SIOs

Brivo Customer Care maintains documents to assist in the documentation of existing installations. The forms shown in Appendix A can be used to help document the existing installation.

Card Readers

Card readers designed for use with the Wiegand electrical interface protocol standard are generally supported. However, approval by Brivo Customer Care is required to ensure system compatibility and support. No RS-485 readers are currently supported.

Note: Refer to Appendix B to assist with compiling the information needed by Brivo Customer Care for a reader evaluation.

Door/Reader Capacity

When associating with a Brivo Access account, SCPs can only accommodate 14 downstream SIOs at a time. Setups with 15+ SIOs will require additional controllers. Figure 1 below shows the proper method for modifying the wiring for the panel to support this configuration change.

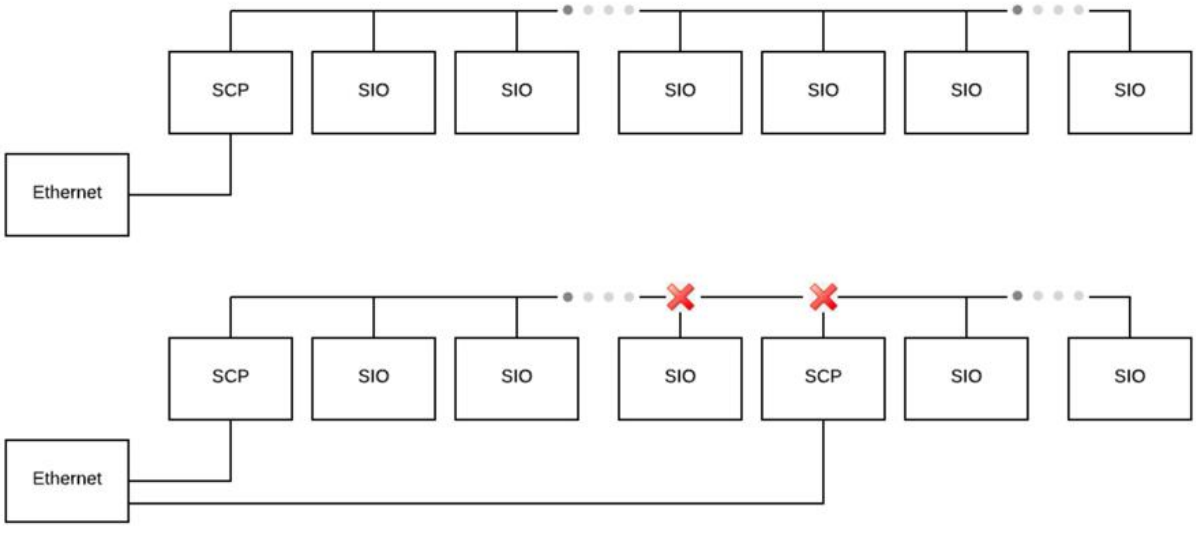


Figure 1 - SIO Panel Replacement

Both the SIO and the SCP have been designed with the same mounting layout, but different cable termination

layouts. When replacing an SIO panel with an SCP controller, the same mounting hardware can be used to mount the SCP, but modifications to wiring harnesses used with the SIO are likely. The RS-485 communication cable with the uplink controller must be severed at the new SCP location and the previous SIO panel in the communication path must have its termination set, as well as the downlink cable severed and preferably removed between the new SCP and the previous SIO as illustrated in Figure 1 (previous page).

Once the new SCP controller(s) are wired to the SIO panels, all downstream panels must be configured with new link addresses starting at Address 1. In addition, a new Internet ready Ethernet cable must also be installed at the new SCP controller location.

If more than 4 outputs are being used by the selected SIO, a new SCP controller must be inserted as opposed to replacing the SIO. Alternatively, a different SIO configured with 4 outputs or less up the link must be selected instead. For instance, if SIO panel 15 is configured to use 5 outputs, and panel 14 is only using 4 outputs, SIO panel 14 would be a good candidate for an SCP replacement. In this circumstance, the severed RS-485 cable will be between SIO panel 13 and panel 14 (the new SCP location).

Systems using the Mercury MUX8, 8-port multi-device interface modules must ensure there are no more than 14 SIO panels connected to any one SCP controller. RS-485 networks using MUX8 modules can be complex, therefore care must be taken to ensure a proper configuration of each SCP and connected SIOs. Proper insertion or replacement of SIOs with SCPs is critical to ensure correct configuration.

Input Supervision

While Mercury SCPs have the ability to utilize custom resistance values, Brivo Access currently only accepts dual 1K end of line value, or no supervision at all.

A thorough assessment of all existing input connections should be completed to mitigate any issues that might arise during the transformation from the existing system. The diagram at right illustrates an example of proper wiring on an SCP controller for both supervised and unsupervised inputs. Wiring for an SIO dual reader board follows similarly (Figure 2).

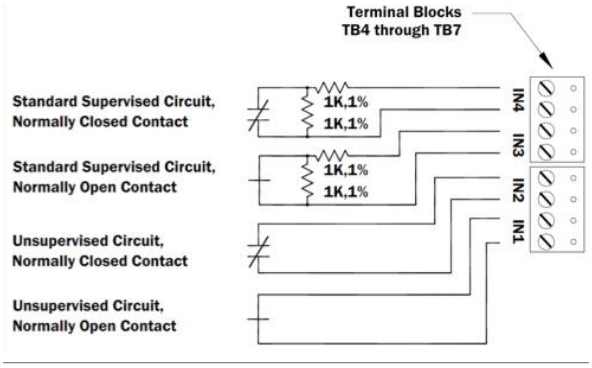


Figure 2 - Input Wiring, Supervised and Unsupervised

Credential Structures

Existing installations using an SCP controller require a thorough assessment of all card formats in use, and a mandatory verification of compatibility with existing Brivo Access formats through Brivo Customer Care. While the Mercury SCP controller will only support card values up to 64-bits in length, combinations of other card database fields may allow for card structures up to or exceeding 128-bits. Although these constraints will affect new installations with higher security requirements, migrating to the Brivo Access platform using the same credential criterium may fit within the credential binary ranges compatible with Brivo Access.

Formats currently supported are as follows:

- Wiegand standard 26-bit
- Wiegand 37-bit HID (with and without facility codes)
- Corporate 1000 35-bit (no parity) and 48-bit (no parity with and without facility codes)

Note: Formats not compatible with Brivo Access require custom implementation from Brivo Customer Care.

Importing Credential Database

Most systems provide import/export utilities that are typically used for connections to HR or other authoritative or backup sources. Collaboration with Brivo Customer Care will provide the necessary assistance and guidance with credential data transformations.

Elevator Control

The Brivo Access Mercury SCP integration supports the capability to control up to 88 floors. Sites with floors greater than 88 will require a second reader in the cab connected to a second SCP with the appropriate number of SIOs to access another (typically higher) range of floors.

Alarm Panel Interface

Direct communication with an Intrusion Alarm Panel is not supported, although a hardwired interface is possible as illustrated in Figure 3.

Outputs energized on the Mercury hardware cause input activations on the Alarm Panel, providing a level of automation necessary to achieve the desired results. Additionally, output activations on an alarm panel can provide input signals to Brivo Access allowing for a greater level of automation.

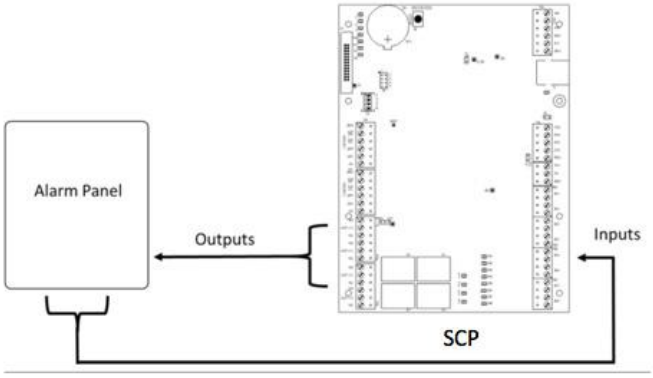


Figure 3 - Alarm Panel Interface

Pre-Installation Procedures

Before you begin installing the Mercury panel, perform the following tasks to ensure a safe, speedy, and successful installation.

Hardware Setup and Wiring

The following section will walk through the hardware setup process. These steps are required prior to getting the Mercury panels associated with a Brivo Access account.

Hardware Setup

Input Power, Cabinet Tamper and UPS Fault Input Wiring (see Figure 4):

- The SCP requires 12 to 24 VDC power. Locate power source as close to the unit as possible. Connect power with minimum of 18 AWG wire. Observe POLARITY on 12 to 24 VDC input.
- 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.

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.

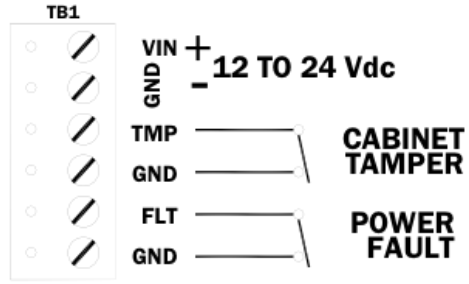


Figure 4

Wiring Recommendations

Wiring recommendations are in the table below.

Signal	Belden # or Equivalent	AWG / mm	Twisted Pair	Shielded	Conductor	Max Length (ft / m)
RS-485 Comm (two wire)	9841	24 / .511	Yes	Yes	2	4000 ft / 1220 m
Power (18 gauge)	6300UE	18 / 1.024	No	No	2	500 ft / 150 m
RJ45-Ethernet	N/A	Cat5e or greater	Yes	No	8	328 ft / 100 m
CAN Bus	N/A	Cat5e or greater	Yes	No	5	1500 ft / 450 m
Fire Alarm Relay	6300FK	18 / 1.024	No	No	2	1500 ft / 450 m
Request-to-Exit	6502UE	22 / .644	No	No	4	500 ft / 150 m
	6300UE	18 / 1.024	No	No	2	500 ft / 150 m
Door Contact	6500UE	22 /.644	No	No	2	500 ft / 150 m
Transformer Block	6300UE	18 / 1.024	No	No	2	100 ft / 32 m
Power Connector	N/A	18 / 1.024	No	No	4	1 ft / .32 m
Earth Ground	N/A	12 / 2.058	No	No	1	40 ft / 12 m
Reader Option 1 (22 AWG)	6504FE	22 / .644	No	Yes	6	250 ft / 75 m
Reader Option 2 (18 AWG)	6304FE	18 / 1.024	No	Yes	6	500 ft / 150 m
Reader OSDP	6381MD	24 / .511 (Data)	Yes	Yes	2	500 ft / 150 m
		18 / .644 (Power)			2	500 ft / 150 m

Communication Wiring

Mercury SCP controllers communicate to the host via the on-board 10-BaseT/100Base-TX Ethernet interface J2 (port 0). The serial I/O device communication port (TB3) is a 2-wire RS-485 interface (see Figure 5), which can be used to connect additional I/O panels. The interface allows multi-drop communication on a single bus of up to 4,000 feet (1,219 m). Use twisted pairs (minimum 24 AWG) with drain wire and shield for communication.

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.

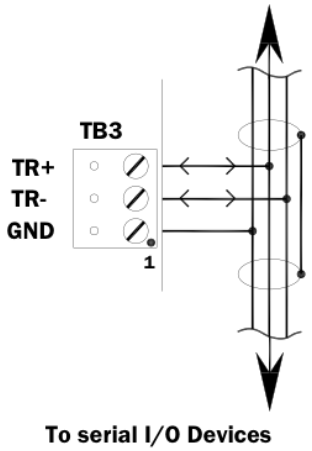


Figure 5 - RS-485 2-Wire Connection Diagram

Reader Wiring

Each reader port supports a reader with TTL (D1/D0, Clock/Data), F/2F (standard or supervised) or 2-wire RS-485 signaling (OSDP reader for example). Power to the readers is selectable: 12 VDC (VIN must be greater than 20 VDC), or power is passed-through (PASS) from the input voltage of the SCP (TB1-VIN), 300 mA maximum per reader port. Readers that require different voltage or have high current requirements must be powered separately. Refer to the reader manufacturer's specifications for cabling requirements for your readers. 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. To fully utilize each reader port: TTL signaling requires a 6-conductor cable (18 AWG), F/2F signaling requires a 4-conductor cable RS-485 signaling requires two 2-conductor cables. Use one cable for power (18 AWG) and one cable for communication (24 AWG, with drain wire and shield), see Figure 6 below. If the input voltage to the SCP is 12 VDC, jumper J7 MUST be in the PASS position, see Figure 7 below.

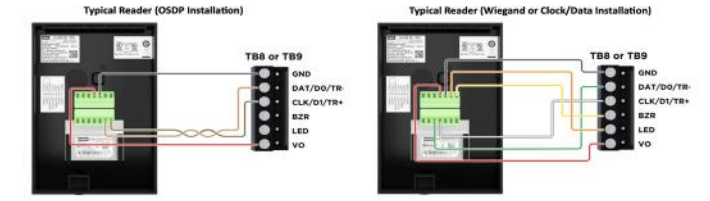


Figure 6

12V PASS	READER POWER
▪ ▪ ▪	12 Vdc IS AVAILABLE ON READER PORTS (VIN≥20 Vdc)
▪ ▪ ▪	VIN POWER IS "PASSED THROUGH" TO READER PORTS

Figure 7

Input Circuit Wiring

Typically, these inputs are used to monitor door position, request to exit, or alarm contacts. Input circuits can be configured as unsupervised or supervised. When unsupervised, reporting consists of only the open or closed states. When configured as supervised, the input circuit will report not only open and closed, but also open circuit, shorted, grounded, and foreign voltage.

A supervised input circuit requires two resistors be added to the circuit to facilitate proper reporting. The standard supervised circuit requires 1k ohm, 1% resistors and should be located as close to the sensor as possible. Custom end of line (EOL) resistances may be configured via the host software. The input circuit wiring configurations shown in Figure 8 are supported but may not be typical.

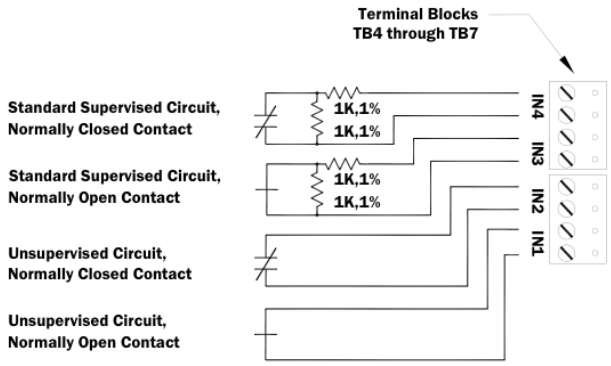


Figure 8 - Input Circuit Wiring Configuration

Relay Circuit Wiring

Four relays with Form-C contacts are provided for controlling door lock mechanisms or alarm signaling. The relay contacts are rated at 5 A @ 30 VDC, dry contact configuration. Each relay has a Common pole (C), a Normally Open pole (NO) and a Normally Closed pole (NC). When you are controlling the delivery of power to the door strike, the Normally Open and Common poles are used. When momentarily removing power to unlock the door, as with a mag lock, the Normally Closed and Common poles are used. Check with local building codes for proper egress door installation.

Door lock mechanisms can generate feedback to the relay circuit that can cause damage and premature failure of the relay. For this reason, it is recommended that a diode be used to protect the relay. Wire should be of sufficient gauge to avoid voltage loss.

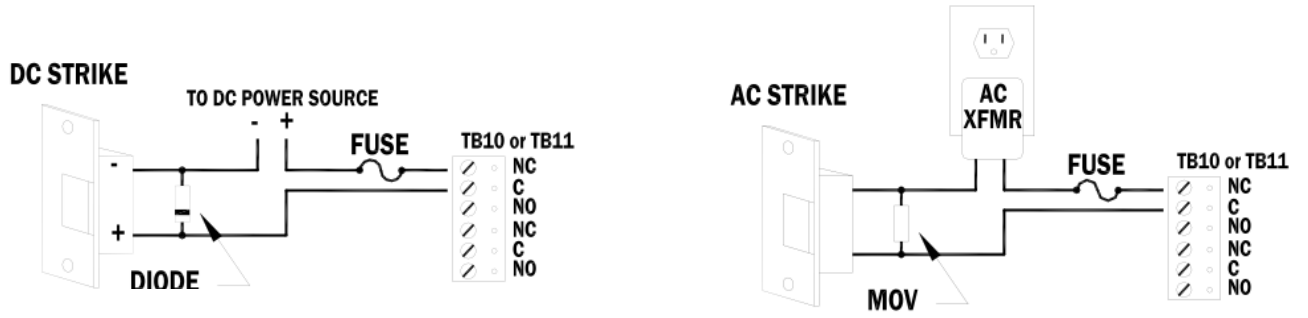


Figure 9

Diode Selection (Figure 9)

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

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. Remove the insulator from the battery holder after installation. Battery type: BR2325, BR2330, or CR2330.

Panel Setup

Mercury SCPs supplied by Brivo will be delivered with the necessary configuration to connect to Brivo. If the panel you are connecting has been installed on a different access control platform and has the ability to be converted, use the steps in Appendix C for converting your board. Discuss this process with your Brivo Regional Technical Manager or Brivo Customer Care before attempting a conversion.

Default Communication Parameters

The following are the default network parameters:

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, no encryption, port 3001, communication address: 0
Alternate Host Port 1: RS-232, 38,400 baud, no encryption, no flow control.

Pre-Configuration Steps

Once you have reached the panel...

1. Set DIP switch 1 to ON and login into the panel using the default username and password. You will have 5 minutes after setting DIP switch 1 on to login.

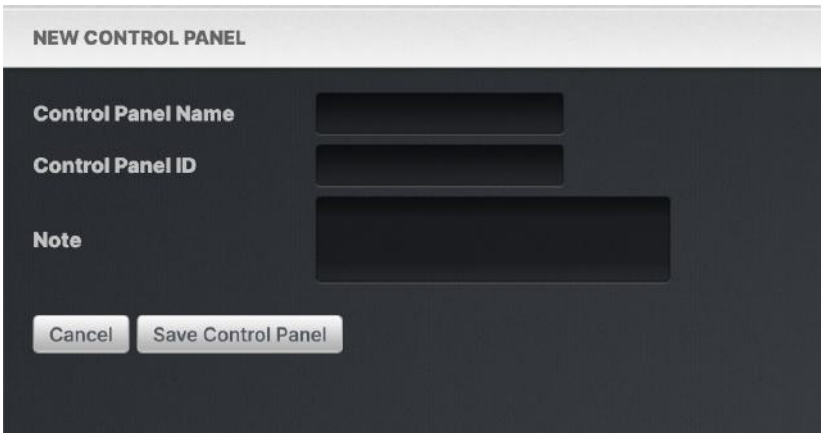
   Username: admin
   Password: password

2. Once logged in, it is recommended to add a new user. In order to maintain a high degree of security, the default account and password MUST be changed. Click on the user tab, add a new user and password, then click save.
3. Set the panel to desired network parameters either DHCP or a specific Static IP under the network tab.
4. Go to device info and write down MAC address and Firmware revision. This information will be needed shortly.
5. Go to apply settings and the panel will reboot.
6. Connect a properly terminated Ethernet cable (Category 5 or higher) to the SCP Ethernet port, with the other end connected to a network switch that has connectivity to the Internet.

Associating the Panel with Brivo Access

Adding a New Control Panel

1. Using Remote Access via Partner Portal, click on the Account Config button and log into the Brivo Access account



2. Navigate to the Setup tab and down to Setup → Sites/Doors → New Control Panel
3. Type in the desired name for the control panel
4. Insert the Control Panel ID. This will be the panel's MAC address with the prefix "SCP-." (Ex. SCP-1234567890)
5. Input any notes and then click Save Control Panel

The panel has now been associated to the Brivo Access account. Ensure that the panel is now communicating and continue with configuring the Brivo Access account.

Appendix A: Site Assessment Worksheets

Reader Installation Worksheet

COMPANY NAME | PRIMARY ADMIN. | DATE

SITE NAME | TECHNICIAN | DEALER REF. #

PANEL DESCRIPTION	KEYPAD	RS-485?	WIEGAND?	LED	BUZZ	NOTES
ex. North Entrance	KP123	Yes (No)	(Yes) No	(2-Wire) 1-Wire	Yes (No)	
1				2-Wire 1-Wire	Yes No	
2				2-Wire 1-Wire	Yes No	
3				2-Wire 1-Wire	Yes No	
4				2-Wire 1-Wire	Yes No	
5				2-Wire 1-Wire	Yes No	
6				2-Wire 1-Wire	Yes No	
7				2-Wire 1-Wire	Yes No	
8				2-Wire 1-Wire	Yes No	
9				2-Wire 1-Wire	Yes No	
10				2-Wire 1-Wire	Yes No	
11				2-Wire 1-Wire	Yes No	
12				2-Wire 1-Wire	Yes No	
13				2-Wire 1-Wire	Yes No	
14				2-Wire 1-Wire	Yes No	
15				2-Wire 1-Wire	Yes No	
16				2-Wire 1-Wire	Yes No	
17				2-Wire 1-Wire	Yes No	
18				2-Wire 1-Wire	Yes No	
19				2-Wire 1-Wire	Yes No	
20				2-Wire 1-Wire	Yes No	
21				2-Wire 1-Wire	Yes No	
22				2-Wire 1-Wire	Yes No	
23				2-Wire 1-Wire	Yes No	
24				2-Wire 1-Wire	Yes No	
25				2-Wire 1-Wire	Yes No	
26				2-Wire 1-Wire	Yes No	
27				2-Wire 1-Wire	Yes No	
28				2-Wire 1-Wire	Yes No	
29				2-Wire 1-Wire	Yes No	
30				2-Wire 1-Wire	Yes No	

Door Installation Worksheet

COMPANY NAME | PRIMARY ADMIN. | DATE

SITE NAME | TECHNICIAN | DEALER REF. #

DOOR NAME	CONTROL PANEL ID #	BOARD #	DOOR NODE (1-2)	READER TYPE*	HAS REX**	DOOR AJAR THRESHOLD (30-600 SECS.)	INVALID PINS THRESHOLD (1-10 PINS, 10-600 SECS.	PASS THROUGH PERIOD (1-600 SECS)	ALARM SHUNT DELAY (1-240 SECS)
ex. Lobby Door	CP123456	8	1	(C) K D B	Yes (No)	☒ 123	3 / 120	10	1
1				C K D B	Yes No	☐	/		
2				C K D B	Yes No	☐	/		
3				C K D B	Yes No	☐	/		
4				C K D B	Yes No	☐	/		
5				C K D B	Yes No	☐	/		
6				C K D B	Yes No	☐	/		
7				C K D B	Yes No	☐	/		
8				C K D B	Yes No	☐	/		
9				C K D B	Yes No	☐	/		
10				C K D B	Yes No	☐	/		
11				C K D B	Yes No	☐	/		
12				C K D B	Yes No	☐	/		
13				C K D B	Yes No	☐	/		
14				C K D B	Yes No	☐	/		
15				C K D B	Yes No	☐	/		
16				C K D B	Yes No	☐	/		
17				C K D B	Yes No	☐	/		
18				C K D B	Yes No	☐	/		
19				C K D B	Yes No	☐	/		
20				C K D B	Yes No	☐	/		

* Reader Types: C - Card Reader; K - Keypad; D - Dual Reader (Card Reader & Keypad); B - Biometric ** REX - Request-to-Exit Switch / Sensor

CARDS

- ☐ Standard 26-Bit
- ☐ HID 37-Bit w/o Facility Code
- ☐ HID 37-Bit with Facility Code
- ☐ HID Corporate 1000 35-bit (No Parity)
- ☐ HID Corporate 1000 48-Bit (No Parity)
- ☐ HID Corporate 1000 48-bit (No Parity with Facility Code)

FACILITY CODE | COMPANY ID CODE

Input/Output Board Installation Worksheet

COMPANY NAME PRIMARY ADMIN. DATE

SITE NAME TECHNICIAN DEALER REF. #

DEVICE NAME	CONTROL PANEL ID #	BOARD # (2-16)	IO TYPE*	INPUT (1-8)	OUTPUT (1-8)	OUTPUT BEHAVIOR **
ex. Motion Sensor Switch	CP123456	8	(I) NO/NC	6	7	(L) U F P
1			I NO/NC			L U F P
2			I NO/NC			L U F P
3			I NO/NC			L U F P
4			I NO/NC			L U F P
5			I NO/NC			L U F P
6			I NO/NC			L U F P
7			I NO/NC			L U F P
8			I NO/NC			L U F P
9			I NO/NC			L U F P
10			I NO/NC			L U F P
11			I NO/NC			L U F P
12			I NO/NC			L U F P
13			I NO/NC			L U F P
14			I NO/NC			L U F P
15			I NO/NC			L U F P
16			I NO/NC			L U F P
17			I NO/NC			L U F P
18			I NO/NC			L U F P
19			I NO/NC			L U F P
20			I NO/NC			L U F P
21			I NO/NC			L U F P
22			I NO/NC			L U F P
23			I NO/NC			L U F P
24			I NO/NC			L U F P
25			I NO/NC			L U F P
26			I NO/NC			L U F P
27			I NO/NC			L U F P
28			I NO/NC			L U F P
29			I NO/NC			L U F P
30			I NO/NC			L U F P

* I = Input; NO = Normally Open; NC = Normally Closed ** L = Latch; U = Unlatch; F = Follow; P = Pulse

Appendix B: Reader Evaluation Requests

Brivo will evaluate and qualify a reader for installation with the Mercury SCP. All we ask is that you provide us with a reader and the credentials required for operation. Evaluation of a reader may take up to two weeks to complete. Any reader sent to Brivo must be in "like new" condition and free of defects.

Include the following in an email to customercare@brivo.com to get started.

Contact Information

- Your Full Name
- Phone Number (direct to you, if possible)
- Email Address
- Company Name and Full Address

Reader Type

Indicate what type of reader you need to have evaluated (select from the following).

- Prox 125KHz
- SC 13.56MHz
- RF
- Multi-Tech
- Barcode / Magstripe

Note: if your reader type is not included in this list, indicate what type of reader it is to the best of your understanding

Requirements for your Reader

More than one may apply. Indicate whether or not your reader…

- Must operate at 500 feet
- Will be used in an elevator
- Requires power
- Must operate with specific credentials

Comments

In your email, include any additional information Brivo Customer Care might need to help with the evaluation.

Appendix C: Configuring a Mercury Panel to Communicate with Brivo

This appendix provides instructions to allow our Provisioning Tool to convert non-Brivo EP/LP/MP mainboards to be allowed to utilize Brivo Mercury software for both new panels as well as existing Mercury panels already in the field.

Brivo developed a provisioning server that accepts connections from whitelisted LP/MP1501s and EP/LP/MP1502's (see Prerequisites below), regardless of the system it is coming from (assuming the existing system did not modify the panel in such a way that you cannot access it to provision it).

Once connected to the Brivo Mercury Provisioning Tool, the panel will be reconfigured to securely communicate to the Brivo Panel Server for Brivo Access.

This process does not import any data from the existing system. It does not import any configuration from the existing system. The provisioning server does not interface with the existing system in any way. The panel's existing configuration will be eliminated during this process. The new Brivo configuration will be added once the panel successfully connects to Brivo Access.

The Mercury Provisioning Tool will allow the transition of Mercury panels to Brivo Access without needing to change hardware, for most systems. For systems that do not support Client IP communication, first go to the **Brivo Mercury OEM Conversion** section of this appendix to enable IP Client communication.

This solution supports:

EP1502
LP1501
LP1502
EP2500
LP2500
MP1501
MP1502
MP2500
MP4502

Prerequisites

(*All requirements for feature/product to function hardware and software*)

- The Panel must have an open outbound connection. Note: Many Server Based Solutions are on an isolated network without open routing to an ISP. Many global systems use VPNs to secure the connection between sites. Ensure that the Mercury Controller has an outbound connection on port 3001.
- An assessment must be done to ensure that the existing system can be wired to the Brivo specifications. Brivo currently has a 30 door limit, including on the Mercury solution. Some systems may need to add a controller for larger door counts.
- The reseller must have physical access to Main Control Board. The Main Controller will be factory defaulted during the provisioning.
- The Main Controller must be whitelisted through Brivo Technical Support. This is a simple phone call or email to support to whitelist the panel.

Configuring Panels

Provisioning Setup

Setting up the panel to connect to the Mercury Provisioning Tool

1. Default the Mercury Panel
    a. Bulk Erase Configuration Memory
        i. The bulk erase function can be used for the following purposes:
            1. Erase all configuration and cardholder database (sanitize board).
            2. Update OEM default parameters after OEM code has been changed.
            3. Recover from database corruption causing SCP board to continuously reboot.
        ii. If clearing the memory does not correct the initialization problem, contact Brivo Customer Care.
    b. Bulk Erase Steps
        i. Do not remove power during steps 1-8.
        ii. Set S1 DIP switches to: 1 & 2 “ON”, 3 & 4 “OFF”.
        iii. Apply power to the SCP board.
        iv. Watch for LEDs 1 & 2 and 3 & 4 to alternately flash at a 0.5 second rate.
        v. Within 10 seconds of powering up, change switches 1 or 2 to “OFF”. If these switches are not changed, the SCP board will power up using the OEM default communication parameters.
        vi. LED 2 will flash indicating that the configuration memory is being erased.
        vii. Full memory erase takes up to 60 seconds.
        viii. When complete, only LEDs 1 & 4 will flash for 8 seconds.
        ix. The SCP board will reboot 8 seconds after LEDs 1 & 4 stop flashing (no LEDs are on during this time).
2. Connect to the panel’s WebCLI and perform the following changes on the Host Comm page:
    a. Factory Default Communication Parameters:
        i. After you have factory defaulted the panel, the following is the default network parameters.
            1. Network: static IP address: 192.168.0.251
            2. Subnet Mask: 255.255.0.0
            3. Default Gateway: 192.168.0.1
            4. DNS Server: 192.168.0.1
            5. Primary Host port: IP server, no encryption, port 3001, communication address: 0
            6. Alternate Host Port 1: RS-232, 38,400 baud, no encryption, no flow control.

b. Pre-Configuration Steps

i. Once you have reached the panel, set DIP switch 1 to ON and login into the panel using the default username and password. You will have 5 minutes after setting DIP switch on to login.

1. Username: admin
2. Password: password

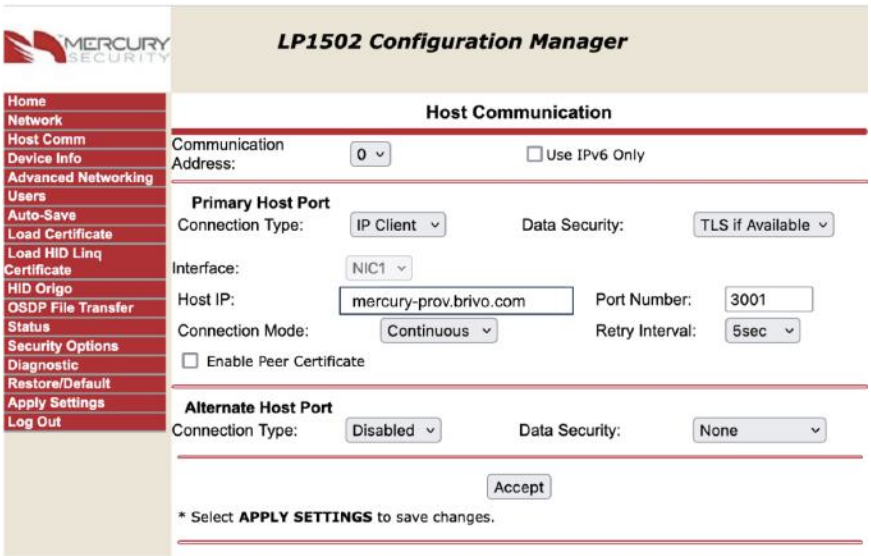
ii. Once logged in, it is recommended to add a new user. In order to maintain a high degree of security, the default account and password MUST be changed. Click on the user tab, add a new user and password, then click save.

iii. Go to device info and write down MAC address and firmware revision. This information will be needed shortly.

iv. Go to apply settings and the panel will reboot.

v. Connect a properly terminated Ethernet cable (Category 5 or higher) to the SCP Ethernet port, with the other end connected to a network switch that has connectivity to the Internet.

1. Connection Type: **IP Client**
2. Data Security: **TLS if available**
3. Deselect **Enable Peer Certificate** option
4. Set the Host IP to the URL of the mercury provisioning tool:
   a. For accounts registered in the US: **mercury-prov.brivo.com**
   b. For accounts registered in the EU: **mercury-prov.eu.brivo.com**
5. Select Set the Port Number: **3001**
6. Press the **Accept** button.



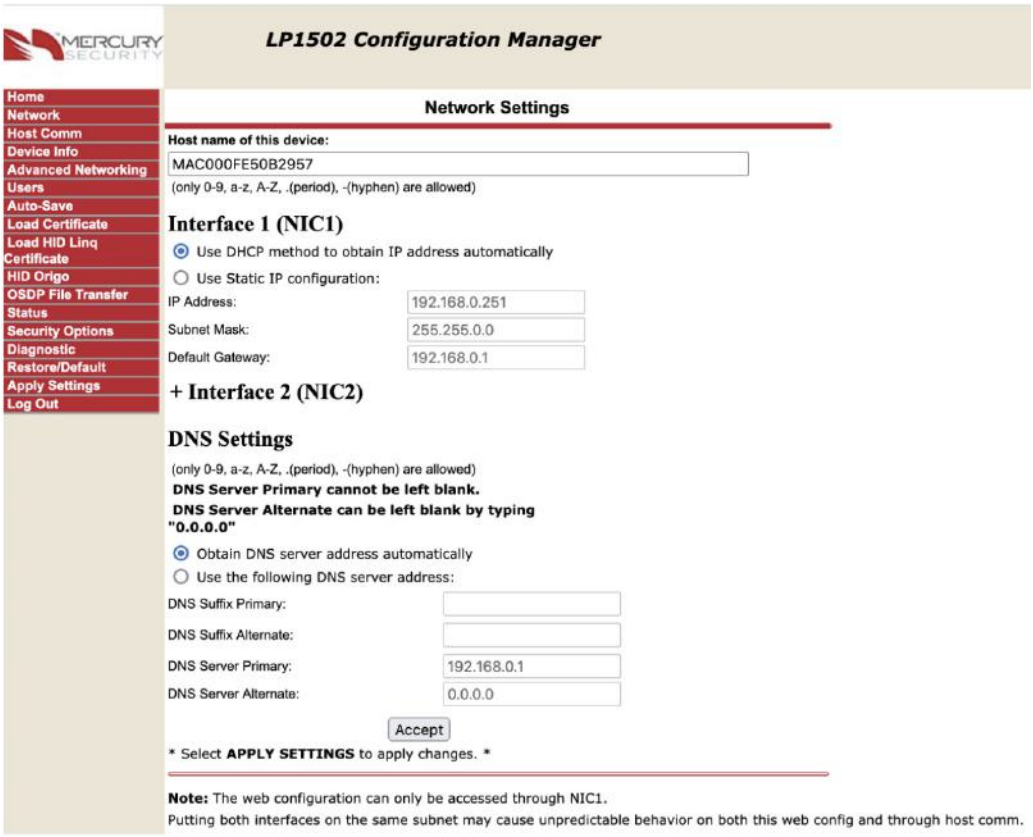
Host Comm settings

3. Go to the Network page to get an IP address from the DHCP server

   i. Select **Use DHCP method to obtain IP address automatically**.

   ii. Select **Obtain DNS server address automatically**.

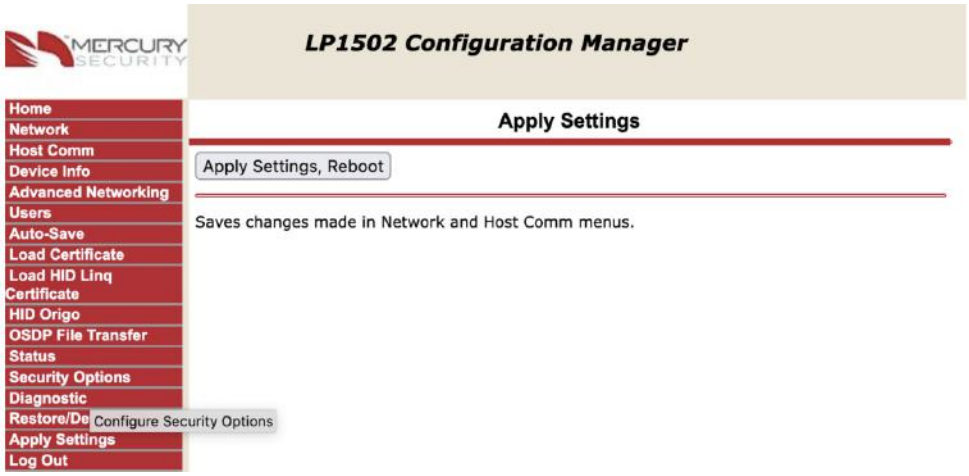
   iii. Press the **Accept** button.



Network settings

NOTE: The most common way to connect to the Brivo Provisioning Tool is to connect the panel by DHCP to the client network and internet. In special circumstances, you may need to contact a network administrator for IP address information or to configure the firewall for outbound access.

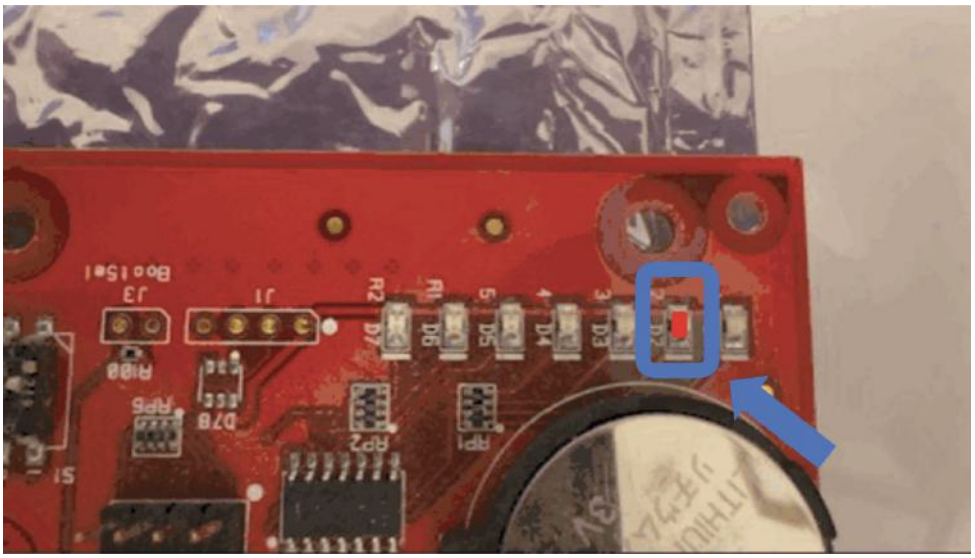
4. Apply the settings, so that the panel connects to the Mercury Provisioning Tool.



Apply Settings Tab

i. Check that the panel connected to the Mercury Provisioning Tool. If LED 2 is blinking, it means that the panel connected to the host specified in the Host Comm page.

Important Note: LED 2 can take between 10 to 20 seconds to begin blinking.



Brivo Mercury OEM Conversion

In certain situations, IP Client Communication is not available due to the existing system's configuration. To enable IP Client communication, the panel must first be converted to the Brivo Configuration. Brivo has developed a conversion application that will assist in enabling IP Client communication.

The Conversion application works by:

- Replacing the OEM Code of the existing system with the Brivo OEM Code
- Enabling IP Client
- Configuring the panel to connect via IP Client to Brivo Mercury Provisioning Tool
- Redirecting the panel to Brivo Mercury Provisioning Tool

Before running the application, run the default configuration steps above. The panel and PC will need to be on the same LAN and the panel will need to be configured for internet access.

Getting Started

1. Default the Mercury Panel
    a. Bulk Erase Configuration Memory
        i. The bulk erase function can be used for the following purposes:
            1. Erase all configuration and cardholder database (sanitize board).
            2. Update OEM default parameters after OEM code has been changed.
    b. Bulk Erase Steps
        i. Do not remove power during steps 1-8.
        ii. Set S1 DIP switches to: 1 & 2 "ON", 3 & 4 "OFF".
        iii. Apply power to the SCP board.
        iv. Watch for LEDs 1 & 2 and 3 & 4 to alternately flash at a 0.5 second rate.
        v. Within 10 seconds of powering up, change switches 1 or 2 to "OFF". If these switches are not changed, the SCP board will power up using the OEM default communication parameters.
        vi. LED 2 will flash indicating that the configuration memory is being erased.
        vii. Full memory erase takes up to 60 seconds.
        viii. When complete, only LEDs 1 & 4 will flash for 8 seconds.
        ix. The SCP board will reboot 8 seconds after LEDs 1 & 4 stop flashing (no LEDs are on during this time).
2. Whitelist the Mercury Panel.

    You will need to whitelist the panel with Brivo Technical Support prior to being able to provision through the Brivo Mercury Provisioning Tool. Contact Brivo Technical Support at 866-274-8648 or email techsupport@brivo.com for assistance. Only Authorized Brivo Installers may request panel whitelisting.

3. Download the Brivo Mercury OEM Conversion Application.

    a. The Brivo Mercury OEM Conversion Application may be downloaded on the New Control Panel page in the Brivo Account Configuration Tool.

4. Installation

    a. Once the application is downloaded to a Windows PC, double click the installation icon to begin the installation of the MOCA application. Follow the prompts to finish the installation. Once installed, you may launch the application to being the conversion process.

Converting the Panel

1. After the bulk erase is complete, log into the panel.

2. If the panel has already been added to the network using DHCP without a reserved address, you can find the panel by using a LAN scanner, Zeroconf / Bonjour, or by reviewing the DHCP assignment from the DHCP Server. Otherwise use the default address: 192.168.0.251: PC must be on the same subnet as the panel.

3. If you are having issues reaching the panel, you can use the default communication parameters by switching on SW1: Switch 2. Remember to turn this off before rebooting the panel.

    a. Since there are multiple ways to connect to the panel locally, it is best practice to figure out which process works best for you prior to attempting a conversion. This will reduce confusion and errors when trying to convert a panel.

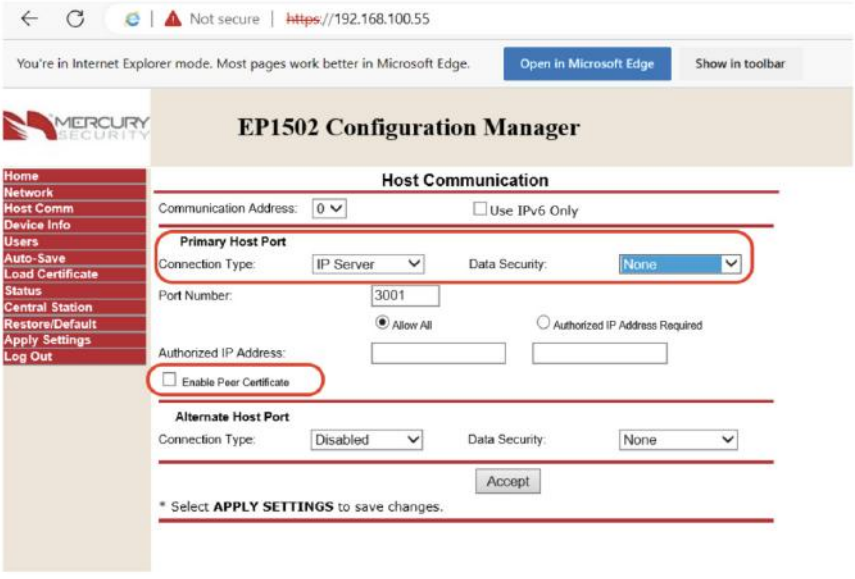
    b. Note that the panel must have an outbound connection available and open on Port 3001 (TCP) before the provisioning can be completed.

4. Once logged into the panel, set:

    a. **Connection type:** IP Server

    b. **Data Security:** None

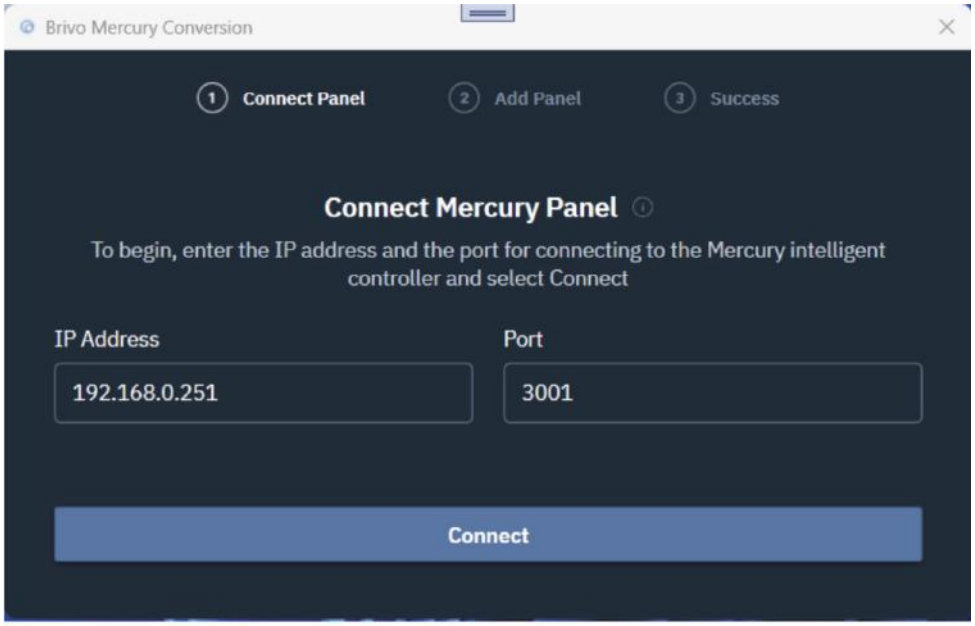
    c. **Enable Peer Certificate checkbox:** disabled



Mercury controller setup to communicate with MOCA

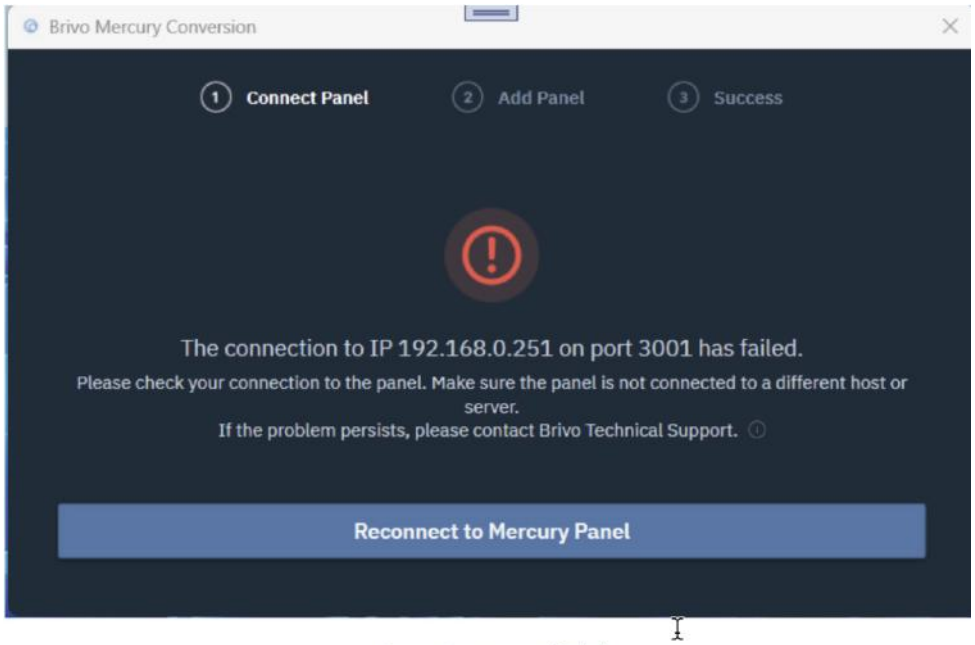
Configuration Steps

1. Connect MOCA to the panel, by specifying the correct IP address and port.



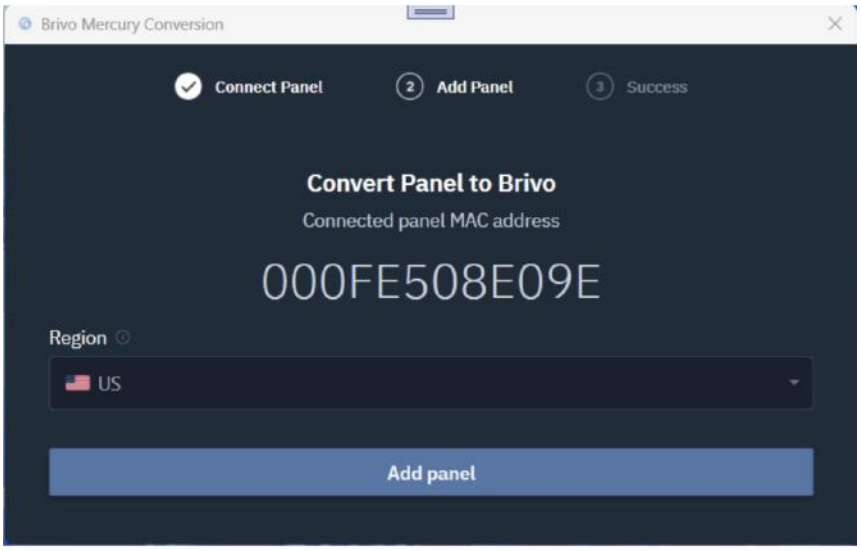
Connect Panel

IMPORTANT NOTE: If the panel is not set to IP server or it is connected to another host, the following error page appears:



Connection to panel failed

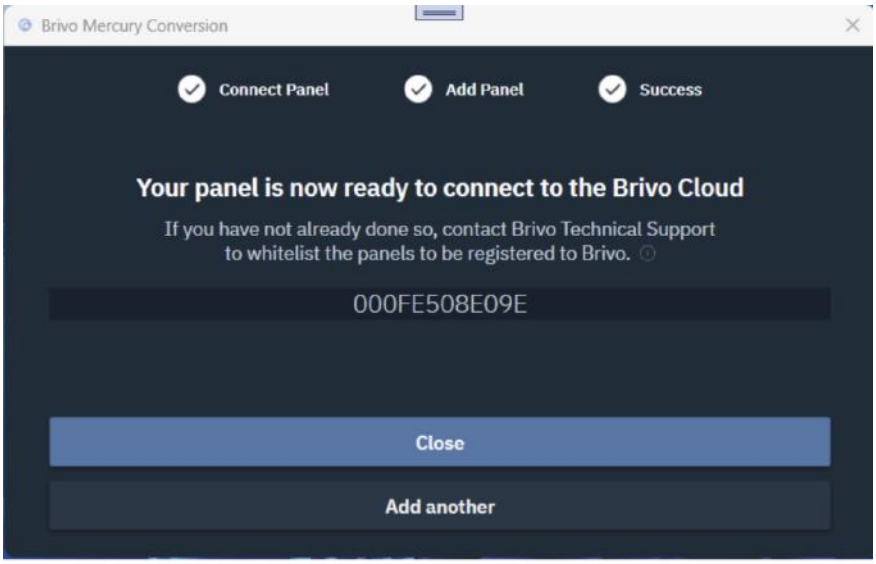
2. If the MAC address of the panel appears, then the connection was successful. Change the OEM code of the panel to the Brivo one and redirect the panel to Mercury Provisioning Tool by selecting the region (EU or US) and clicking on the **Add panel** button.



Reconfigure and redirect to Brivo

3. If you have not already done so, contact Brivo support to whitelist the panel for US/EU, depending on the region you selected, so that Mercury Provisioning Tool can manufacture the panel.

IMPORTANT NOTE: The panel must be rebooted after it is whitelisted.



Reconfiguration Complete. Panel can connect to Brivo Mercury Provisioning Tool

a. Multiple panels can be updated in the same session. All the mac addresses updated in the current session will appear in this screen.

Appendix D: LP1502 Technical Information

LP1502 Board Specifications

Primary Power:	12 to 24 Vdc ± 10 %, 500 mA maximum (reader and USB ports not included)
Reader Ports:	600 mA maximum (add 600 mA to primary power current)
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:	One 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:	Eight unsupervised/supervised, standard EOL: 1k/1k ohm, 1%, ¼ watt Two unsupervised dedicated for cabinet tamper and UPS fault monitoring
Outputs:	Four relays, Form-C with dry contacts Normally open contact (NO) contact: 5 A @ 30 Vdc resistive Normally closed contact (NC) contact: 3 A @ 30 Vdc resistive
READER INTERFACE:	
Power: (jumper selectable)	12 VDC ± 10 % regulated, 300 mA maximum each reader (input voltage (VIN) must be greater than 20 VDC) or 12 to 24 VDC ± 10 % (input voltage passed through), 300 mA maximum each reader
Data Inputs:	TTL compatible, F/2F or 2-wire RS-485
RS-485 Mode:	9,600 to 115,200 bps, asynchronous, half-duplex, 1 start bit, 8 data bits, and 1 stop bit. Maximum cable length: 2000 ft. (609.6 m)
LED Output:	TTL levels, 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
CABLE REQUIREMENTS:	
Power:	1 twisted pair, 18 AWG
Ethernet:	CAT-5, minimum
RS-485:	1 twisted pair with drain wire and shield, 24 AWG, 4,000 ft. (1,219 m) max.
(I/O Device Port): (Reader Port)	1 twisted pair with drain wire and shield, 24 AWG, 2,000 ft. (610 m) max.
Alarm Input:	1 twisted pair, 30 ohms maximum
MECHANICAL:	
Dimension:	8 in. (203.2 mm) W x 6 in. (152.4 mm) L x 1 in. (25 mm) H
Weight:	9 oz. (255 g) nominal, board only
ENVIRONMENTAL:	
Temperature:	-55 to +85 °C, storage 0 to +70 °C, operating
Humidity:	5 to 95 % RHNC
SECURITY:	
Host Communication Security Profile:	HTTPS/TLS1.2+, with AES256 encryption. Panel to host mutual authentication with X.509 digital certificates

LP1502 Terminal Block Connections

The table below shows the terminal block connections for TB1 through TB11.

CONNECTION					CONNECTION
TB1-1	GND	Power Fault	TB8-1	GND: Ground	Reader 1
TB1-2	FLT	Input	TB8-2	DAT/D0: Data/Data 0/TR- (A) See Note 1	
TB1-3	GND	Cabinet	TB8-3	CLK/D1: Clock/Data 1/TR+ (B) See Note 1	
TB1-4	TMP	Tamper Input	TB8-4	BZR: Reader Buzzer	
TB1-5	GND	Power Input	TB8-5	LED: Reader LED	
TB1-6	VIN	12 to 24 VDC	TB8-6	VO: Reader Power	
TB2	N/A	Not Used	TB9-1	GND: Ground	Reader 2
TB3-1	GND	SIO Port	TB9-2	DAT/D0: Data/Data 0/TR- (A) See Note 1	
TB3-2	TR- (B)	(2-wire RS-485)	TB9-3	CLK/D1: Clock/Data 1/TR+ (B) See Note 1	
TB3-3	TR+ (A)	See Note 1	TB9-4	BZR: Reader Buzzer	
TB4-1	IN2	Input 2	TB9-5	LED: Reader LED	
TB4-2	IN2		TB9-6	VO: Reader Power	
TB4-3	IN1	Input 1	TB10-1	NO: Normally Open Contact	Out 1
TB4-4	IN1		TB10-2	C: Common	
TB5-1	IN4	Input 4	TB10-3	NC: Normally Closed Contact	
TB5-2	IN4		TB10-4	NO: Normally Open Contact	Out 2
TB5-3	IN3	Input 3	TB10-5	C: Common	
TB5-4	IN3		TB10-6	NC: Normally Closed Contact	
TB6-1	IN6	Input 6	TB11-1	NO: Normally Open Contact	Out 3
TB6-2	IN6		TB11-2	C: Common	
TB6-3	IN5	Input 5	TB11-3	NC: Normally Closed Contact	
TB6-4	IN5		TB11-4	NO: Normally Open Contact	Out 4
TB7-1	IN8	Input 8	TB11-5	C: Common	
TB7-2	IN8		TB11-6	NC: Normally Closed Contact	
TB7-3	IN7	Input 7			
TB7-4	IN7				

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

LP1502 Jumpers

The LP1502 processor hardware interface is configured using jumpers to setup the port interface and end of line termination.

JUMPER	SET AT	DESCRIPTION
J1	N/A	Factory Use Only
J2	N/A	10-Base-T/100Base-Tx Ethernet Connection (Port 0)
J3	N/A	Factory Use Only
J4	N/A	N/A
J5	OFF	Port 2 RS-485 EOL Terminator is Off
	ON	Port 2 RS-485 EOL Terminator is On
J6	N/A	MicroUSB Port (2.0)
J7		Reader Power Select. See Note 2
	12V	12 VDC at Reader Ports
	PASS	VIN "Pass Through" to Reader Ports
J8	N/A	microSD Card

*Note 2: Install jumper J7 in the 12V position **ONLY** if the input voltage (VIN) is greater than 20 VDC! Failure to do so may damage the reader or LP1502!*

LP1502 DIP Switches

The four switches on S1 DIP switch configure the operating mode of the LP1502 processor. DIP switches are read on power-up except where noted. Pressing switch S2 causes the LP1502 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 re-boot. 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 LP1502 report and function like an EP1502. To be used in situations where the host software has not been updated to support the LP series product line

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

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

Appendix E: MR52 Technical Information

MR52 Board Specifications

Primary Power:	12 to 24 VDC ± 10 %, 550 mA maximum (reader current not included)
Outputs:	Six relays: Form-C, 5 A @ 30 VDC, resistive
Inputs:	Eight unsupervised/supervised, standard EOL: 1k/1k ohm, 1%, 1⁄4 watt Two unsupervised, dedicated for cabinet tamper and UPS fault monitoring
READER INTERFACE:	
Power: (jumper selectable)	12 VDC ± 10 % regulated, 180 mA maximum each reader (input voltage (VIN) must be greater than 20 VDC) or 12 to 24 VDC ± 10 % (input voltage passed through), 180 mA maximum each reader
Data Inputs:	TTL compatible, F/2F or 2-wire RS-485
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
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, 4,000 feet (1,200 m) maximum
Alarm inputs:	One twisted pair per input, 30 ohms maximum
Outputs:	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):	1 twisted pair with drain wire and shield, 24 AWG, 120 ohm impedance, 2,000 feet (610 m) maximum
MECHANICAL:	
Dimension:	6 in. (15 2mm) W x 8 in. (203 mm) L x 1 in. (25 mm) H
Weight:	11 oz. (312 g) nominal
ENVIRONMENTAL:	
Storage Temperature:	-55 to +85 °C
Operating Temperature:	0 to +70 °C
Humidity:	5 to 95 % RHNC

MR52 Jumpers

JUMPER	DESCRIPTION
J2	Reader Power Select 12V = 12 VDC at reader ports. *** See note below *** PT = VIN "Passed Through" to reader ports
J3	2-Wire/4-Wire Select, install in 2W position only
J5	RS-485 Termination, install in first and last units only
J6	Factory use only
J7	Factory use only
J8	Factory use only
J9	Factory use only
J10	Factory use only
J11	Factory use only
J12	Factory use only
J13	Factory use only
J14	Factory use only
J15	Factory use only

Note: The input power (VIN) must be 20 VDC minimum if the 12 VDC selection is to be used.

MR52 DIP Switch

S8	S7	S6	S5	S4	S3	S2	S1	SELECTION
.	.	.	OFF	OFF	OFF	OFF	OFF	Address 0
.	.	.	OFF	OFF	OFF	OFF	ON	Address 1
.	.	.	OFF	OFF	OFF	ON	OFF	Address 2
.	.	.	OFF	OFF	OFF	ON	ON	Address 3
.	.	.	OFF	OFF	ON	OFF	OFF	Address 4
.	.	.	OFF	OFF	ON	OFF	ON	Address 5
.	.	.	OFF	OFF	ON	ON	OFF	Address 6
.	.	.	OFF	OFF	ON	ON	ON	Address 7
.	.	.	OFF	ON	OFF	OFF	OFF	Address 8

Appendix F: MR52-S3 Technical Information

MR52-S3 Board Specifications

Primary Power:	12 to 24 VDC ± 10 %, 550 mA maximum (reader current not included)
Outputs:	Six Form-C relays
	Normally open contact (NO) contact: 5 A @ 30 V DC resistive
	Normally closed contact (NC) contact: 3 A @ 30 V DC resistive
Inputs:	Eight unsupervised/supervised, standard EOL: 1k/1k ohm, 1%, 1⁄4 watt
	Two unsupervised, dedicated for cabinet tamper and UPS fault monitoring
READER INTERFACE:	
Power: (jumper selectable)	12 VDC ± 10 % regulated, 180 mA maximum each reader (input voltage (VIN) must be greater than 20 VDC) or 12 to 24 VDC ± 10 % (input voltage passed through), 180 mA maximum each reader
Data Inputs:	TTL compatible, F/2F or 2-wire RS-485
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
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, 4,000 feet (1,200 m) maximum
Alarm inputs:	One twisted pair per input, 30 ohms maximum
Outputs:	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):	1 twisted pair with drain wire and shield, 24 AWG, 120 ohm impedance, 2,000 feet (610 m) maximum
MECHANICAL:	
Dimension:	6 in. (15 2mm) W x 8 in. (203 mm) L x 1 in. (25 mm) H
Weight:	11 oz. (312 g) nominal
ENVIRONMENTAL:	
Storage Temperature:	-55 to +85 °C
Operating Temperature:	0 to +70 °C
Humidity:	5 to 95 % RHNC

MR52-S3 Jumpers

JUMPER	DESCRIPTION
J1	Reader Power Select 12V = 12 VDC at reader ports. *** See note below *** PT = VIN "Passed Through" to reader ports
J3	Factory use only
J4	RS-485 Termination, install in first and last units only
J6	Factory use only
J7	Factory use only
J8	Factory use only
J9	Factory use only
J10	Factory use only
J11	Factory use only
J12	Factory use only
J13	Factory use only
J14	Factory use only
J15	Factory use only

Note: The input power (VIN) must be 20 VDC minimum if the 12 VDC selection is to be used.

MR52-S3 DIP Switch

S8	S7	S6	S5	S4	S3	S2	S1	SELECTION
.	.	.	OFF	OFF	OFF	OFF	OFF	Address 0
.	.	.	OFF	OFF	OFF	OFF	ON	Address 1
.	.	.	OFF	OFF	OFF	ON	OFF	Address 2
.	.	.	OFF	OFF	OFF	ON	ON	Address 3
.	.	.	OFF	OFF	ON	OFF	OFF	Address 4
.	.	.	OFF	OFF	ON	OFF	ON	Address 5
.	.	.	OFF	OFF	ON	ON	OFF	Address 6
.	.	.	OFF	OFF	ON	ON	ON	Address 7
.	.	.	OFF	ON	OFF	OFF	OFF	Address 8

S8	S7	S6	S5	S4	S3	S2	S1	SELECTION
.	OFF	OFF	.	.	.	.	.	115,200 BPS[1]
.	OFF	ON	.	.	.	.	.	9,600 BPS
.	ON	OFF	.	.	.	.	.	19,200 BPS
.	ON	ON	.	.	.	.	.	38,400 BPS
OFF	.	.	.	.	.	.	.	Encrypted communication not required[2]
ON	.	.	.	.	.	.	.	Encrypted communication required[2]

1. Firmware revisions prior to 1.38.1, this setting is 2,400 BPS
2. Firmware revisions prior to 1.38.1, SW8 is not defined. Set to the OFF position.

Appendix G: MR16IN-S3 Technical Information

MR16IN-S3 Board Specifications

Primary Power:	12 to 24 V DC ± 10%, 350 mA maximum
Outputs:	Two Form-C relays
	Normally open contact (NO) contact: 5 A @ 30 V DC resistive
	Normally closed contact (NC) contact: 3 A @ 30 V DC resistive
Inputs:	16 unsupervised/supervised, standard EOL: 1k/1k ohm, 1%, ¼ watt
	Two unsupervised, dedicated for cabinet tamper and UPS fault monitoring
Communication:	2-wire RS-485: 9600, 19200, 38400 or 115200 bps
CABLE REQUIREMENTS:	
Power:	1 twisted pair, 18 AWG
RS-485:	24 AWG, 120 ohm impedance, twisted pair with drain wire and shield, 4,000 feet (1,200 m) maximum
Alarm inputs:	One twisted pair per input, 30 ohms maximum
Outputs:	As required for the load
MECHANICAL:	
Dimension:	6 in. (152mm) W x 8 in. (203 mm) L x 1 in. (25.4 mm) H
Weight:	9 oz. (250 g) nominal
ENVIRONMENTAL:	
Storage Temperature:	-55 to +85 °C
Operating Temperature:	0 to +70 °C
Humidity:	5 to 95 % RHNC

MR16IN-S3 Jumpers

JUMPER	DESCRIPTION
J1	Factory use only
J3	RS-485 Termination, install in first and last units only
J4	Factory use only
J6	Factory use only
J7	Factory use only
J8	Factory use only
J9	Factory use only
J10	Factory use only
J11	Factory use only
J12	Factory use only
J13	Factory use only
J14	Factory use only
J15	Factory use only

Note: The input power (VIN) must be 20 VDC minimum if the 12 VDC selection is to be used.

MR16IN-S3 DIP Switch

S8	S7	S6	S5	S4	S3	S2	S1	SELECTION
.	.	.	OFF	OFF	OFF	OFF	OFF	Address 0
.	.	.	OFF	OFF	OFF	OFF	ON	Address 1
.	.	.	OFF	OFF	OFF	ON	OFF	Address 2
.	.	.	OFF	OFF	OFF	ON	ON	Address 3
.	.	.	OFF	OFF	ON	OFF	OFF	Address 4
.	.	.	OFF	OFF	ON	OFF	ON	Address 5
.	.	.	OFF	OFF	ON	ON	OFF	Address 6
.	.	.	OFF	OFF	ON	ON	ON	Address 7
.	.	.	OFF	ON	OFF	OFF	OFF	Address 8

S8	S7	S6	S5	S4	S3	S2	S1	SELECTION
.	OFF	OFF	.	.	.	.	.	115,200 BPS[1]
.	OFF	ON	.	.	.	.	.	9,600 BPS
.	ON	OFF	.	.	.	.	.	19,200 BPS
.	ON	ON	.	.	.	.	.	38,400 BPS
OFF	.	.	.	.	.	.	.	Encrypted communication not required[2]
ON	.	.	.	.	.	.	.	Encrypted communication required[2]

1. Firmware revisions prior to 1.30.1, this setting is 2,400 BPS
2. Firmware revisions prior to 1.30.1, SW8 is not defined. Set to the OFF position.

Appendix H: MR16OUT-S3 Technical Information

MR16OUT-S3 Board Specifications

Primary Power:	12 to 24 V DC ± 10%, 1100 mA maximum
Relay contacts (sixteen Form-C):	Normally open contact (NO) contact: 5 A @ 30 V DC resistive
	Normally closed contact (NC) contact: 3 A @ 30 V DC resistive
Inputs:	Two unsupervised, dedicated for cabinet tamper and UPS fault monitoring
Communication:	2-wire RS-485: 9600, 19200, 38400 or 115200 bps
CABLE REQUIREMENTS:	
Power:	1 twisted pair, 18 AWG
RS-485:	24 AWG, 120 ohm impedance, twisted pair with drain wire and shield, 4,000 feet (1,200 m) maximum
Inputs:	One twisted pair, 30 ohms maximum
Outputs:	As required for the load
MECHANICAL:	
Dimension:	6 in. (152mm) W x 8 in. (203 mm) L x 1 in. (25.4 mm) H
Weight:	14 oz. (400 g) nominal
ENVIRONMENTAL:	
Storage Temperature:	-55 to +85 °C
Operating Temperature:	0 to +70 °C
Humidity:	5 to 95 % RHNC

MR16OUT-S3 Jumpers

JUMPER	DESCRIPTION
J1	RS-485 Termination, install in first and last units only
J3	Factory use only
J4	Factory use only
J6	Factory use only
J7	Factory use only
J8	Factory use only
J9	Factory use only
J10	Factory use only
J11	Factory use only
J12	Factory use only
J13	Factory use only
J14	Factory use only
J15	Factory use only

Note: The input power (VIN) must be 20 VDC minimum if the 12 VDC selection is to be used.

MR16OUT-S3 DIP Switch

S8	S7	S6	S5	S4	S3	S2	S1	SELECTION
.	.	.	OFF	OFF	OFF	OFF	OFF	Address 0
.	.	.	OFF	OFF	OFF	OFF	ON	Address 1
.	.	.	OFF	OFF	OFF	ON	OFF	Address 2
.	.	.	OFF	OFF	OFF	ON	ON	Address 3
.	.	.	OFF	OFF	ON	OFF	OFF	Address 4
.	.	.	OFF	OFF	ON	OFF	ON	Address 5
.	.	.	OFF	OFF	ON	ON	OFF	Address 6
.	.	.	OFF	OFF	ON	ON	ON	Address 7
.	.	.	OFF	ON	OFF	OFF	OFF	Address 8

S8	S7	S6	S5	S4	S3	S2	S1	SELECTION
.	OFF	OFF	.	.	.	.	.	115,200 BPS[1]
.	OFF	ON	.	.	.	.	.	9,600 BPS
.	ON	OFF	.	.	.	.	.	19,200 BPS
.	ON	ON	.	.	.	.	.	38,400 BPS
OFF	.	.	.	.	.	.	.	Encrypted communication not required[2]
ON	.	.	.	.	.	.	.	Encrypted communication required[2]

1. Firmware revisions prior to 1.30.1, this setting is 2,400 BPS
2. Firmware revisions prior to 1.30.1, SW8 is not defined. Set to the OFF position.

Appendix I: Mercury Multi-Drop

Setting up Multi-Drop for Multiple OSDP Readers per Door

Introduction

Mercury LP/MP controllers support the ability to assign more than one reader to a given door node over OSDP. This is done through creating a RS-485 bus. The limit per board is 4. The maximum number of readers that can be assigned to a single node is 3, by using Brivo's Anti-Passback setting.

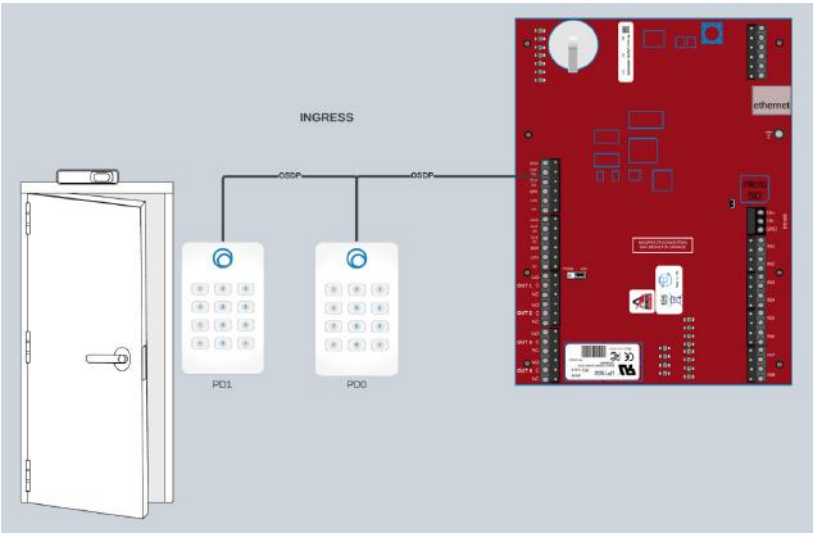
Having more than one reader available reduces the number of door nodes for situations where two readers at one door are required. Examples of this are having a separate reader on a pedestal for ADA compliance, or at a vehicle gate where two different heights are needed for the size of vehicle. Another use is Anti-Passback.

In this guide we will first walk through the different connection scenarios. We will then walk through the door setup for the primary and alternate readers. Finally we will walk through setting up Anti-Passback with Multi-Drop readers.

Multi-Drop Scenarios

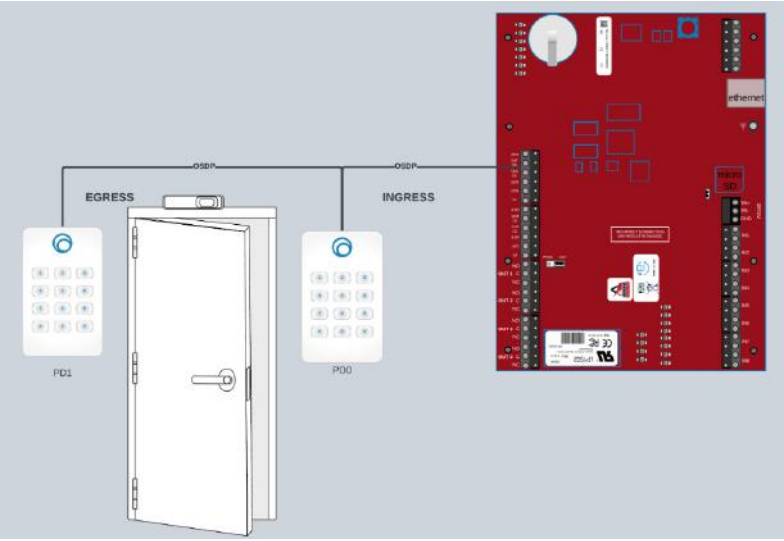
Multi-drop can be configured as follows.

Configuration A:



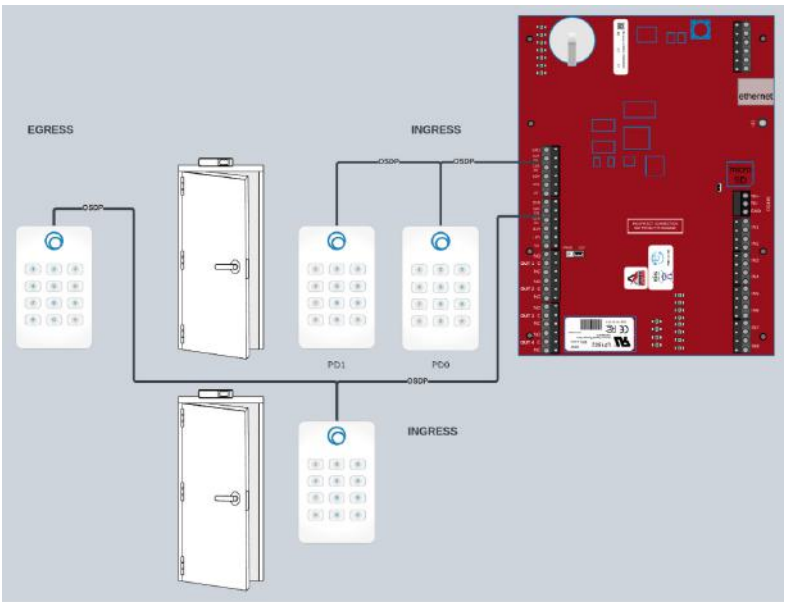
In this configuration, you are using both readers as inbound, or INGRESS readers. The system will not distinguish between the two readers. The readers must be addressed before connecting to the panel. The procedure for addressing the reader differs by manufacturer. For Brivo Smart Readers, please refer to the Reader Installation Guide.

Configuration B:



In this configuration, you are using the readers for inbound and outbound traffic. You can use this configuration with or without Anti-Passback. Today, this configuration will report as the same door and will not report In or Out unless you are using Anti-Passback. Any time that you are using readers back to back on opposite sides of a wall, it is best to offset the reader placement by a minimum of 4-6" horizontally to ensure the readers do not interfere with each other. In the cases of mullion mounts to metal frames, less interference is possible.

Configuration C:



In this configuration, you are using Anti-Passback to allow the alternate reader on another node control the outbound access to the door. The primary and alternate readers are paired as inbound and the alternate reader on the other node is configured as an egress reader in ANti-Passback. Note that the use of this scenario will result in an Anti-Passback condition. One way to avoid this, if Anti-Passback is not required, is to set each group to "Immune to Anti-Passback". Another solution would be to set a short (1 min.) reset interval for Anti-Passback. Any time that you are using readers back to back on opposite sides of a wall, it is best to offset the reader placement by a minimum of 4-6" horizontally to ensure the readers do not interfere with each other. In the cases of mullion mounts to metal

frames, less interference is possible.

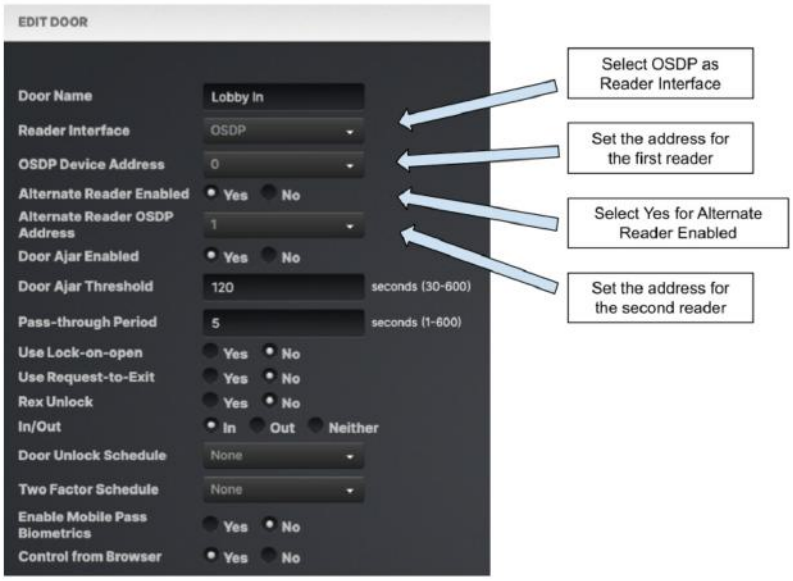
NOTE: Follow all RS-485 termination instructions for properly setting up more than one OSDP per node.

NOTE: Some readers may require external power.

Configuring Multi-Drop

In order to configure Multi-drop onto your panel, either select a door that you have already configured or create a new door.

(Account Config Tool must be enabled)
In Account Config Tool, go to Setup → Sites / Doors → Sites. Select the Site that you are editing and then either select the door to Edit or select More Operations → Add Door



You will need to set the addresses

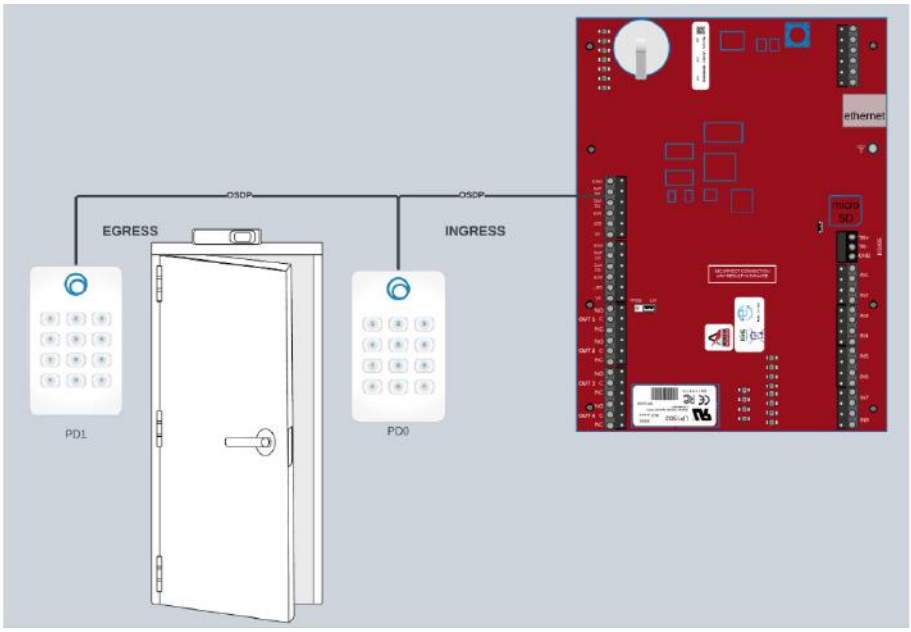
The alternate reader will automatically be reported as the door it is configured to unless the reader is assigned as the alternate reader for another Door in the AntiPassback Settings.

Configuring Anti-Passback with Multi-Drop readers

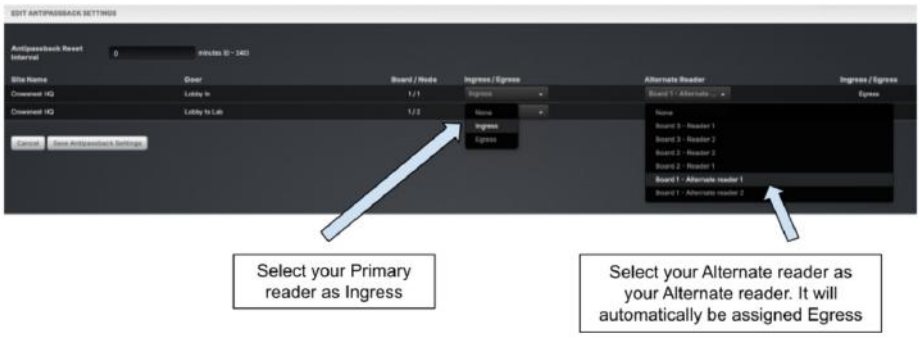
To configure a reader as an Egress reader for Anti-Passback, you will want to configure the reader in the Control Panel page.

Using the scenarios described above, you can either use the same node's alternate reader or another node's alternate reader as the Egress reader.

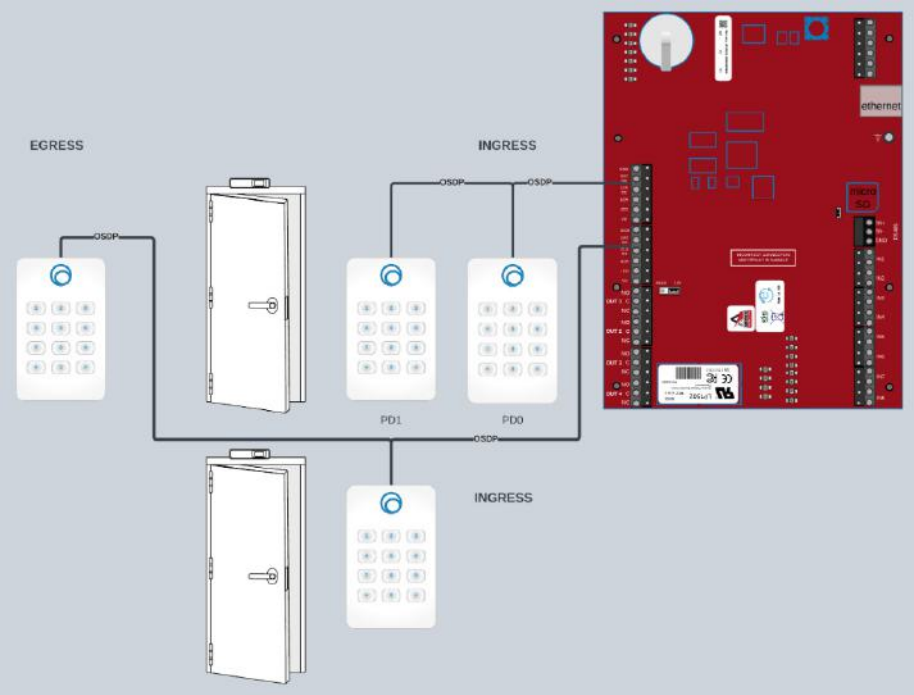
Setting the Alternate Reader as EGRESS



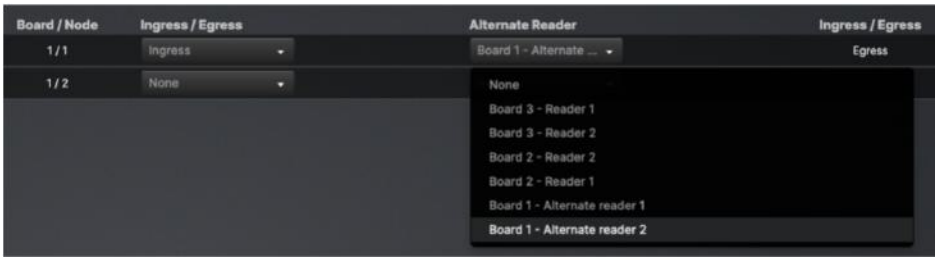
(Account Config Tool must be enabled)
In Account Config Tool, go to Setup → Sites / Doors → Control Panels. Select the panel the you are configuring Anti-Passback on. Select More Operations → Configure Antipassback



If you need to reverse the setup, where the primary reader is Egress, Select Egress for the primary reader. Then, when you assign your alternate reader it will automatically be assigned Ingress.



If you are using Configuration Scenario C above, you will Select Alternate Reader 2 rather than Alternate Reader 1 to act as your Egress reader.



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Revision List

Date	Revision Number	Description
April 10, 2018	1.0	Initial Draft
August 20, 2018	1.1	Updated Mercury client instructions; typographical edits
September 17, 2018	1.2	Content adjustments
April 6, 2020	1.3	Content adjustments
April 6, 2021	1.4	Added technical information for MR52-S3, MR16IN, MR16OUT, and removed EP1502
August 12, 2022	1.5	Removed Onair references and updated language
March 29, 2024	1.6	Corrected Port 443 to Port 3001
July 30, 2024	1.7	Added Mercury Multi-Drop appendix
August 27, 2024	1.8	Replaced Appendices C and D with the content from the Brivo Mercury Panel Configuration Guide and corrected typos on Pages 7 and 9
February 26, 2025	1.9	Added Plug and Play Provisionig and MP series boards to the Installation Guide

Product Support

All support for this product is provided by the third-party dealer. Please contact the dealer who installed the product with questions and support requests.

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