

# Brivo ACS6100 Installation Guide

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# Legal Disclaimers

## Federal Communications Commission (FCC) Compliancy

You are cautioned that changes or modifications not expressly approved by the part responsible for compliance could void the user's authority to operate the equipment.

### FCC 15B Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation or when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/TV technician for help.

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 of the device.

### FCC RF Radiation Exposure Statement

1. This transmitter must not be co-located or operate in conjunction with any other antenna or transmitter.
2. This equipment complies with the FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

This telecommunication equipment conforms to NTC technical requirement.

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

(1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

(1) l'appareil ne doit pas produire de brouillage, et (2) l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

### MET Labs (MET) Compliance

The B-ACS6000-MBE/MBS and B-ACS6000v2MBE/MBS control panels comply with the UL 294 Standard for access control units with the following restrictions:

- The Ethernet port is for supplemental use only. The unit will continue to operate standalone if the network connection is interrupted.
- The monitoring software is not MET evaluated.

### Canada-MET Labs (MET-C) Compliancy (CSA C22.2 No. 205)

For MET-C Listed applications, the unit shall be installed in accordance with Part 1 of the Canadian Electrical Code.

### UL294/ULC Listing Compliancy

UL294 Performance Levels					
Model Number	Access Control Line Security Level	Destructive Attack Level	Endurance Level	Stand-by Power Level	Conditions
Brivo B-ACS6100R-E/S and B-ACS6100L-E/S	Level 1	Level 1	Level 4	Level 1	N/A

### Parts and Service

The B-ACS6000-MBE/MBS and B-ACS6000v2MBE/MBS control panels contain no user serviceable parts. The lithium battery is not serviceable and is to be replaced by qualified service technicians only.

### Documentation Disclaimer and Restrictions

Information in this document is subject to change without notice and does not represent a commitment on the part of Brivo Systems LLC. For the most up-to-date information, visit [www.brivo.com](http://www.brivo.com).

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### 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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# Introduction

## Document Objectives

This Installation Guide provides step-by-step instructions for installing the Brivo B-ACS6000-MBE/MBS and B-ACS6000v2-MBE/MBS Control Panels. Its primary audience is trained access control installation technicians (Installers) who are responsible for installing the B-ACS6000-MBE/MBS and B-ACS6000v2-MBE/MBS Control Panels at client sites.

This version of the guide is also intended for IT personnel, who should use it in conjunction with the [Brivo Panel Networking Guide](#) or [Brivo Onsite Administrator's Guide](#). It may be used by dealers and their sales professionals to help them conduct pre-sales, and to provide client support during the installation process. Finally, it may be used for in-house training purposes and ongoing support.

## Document Layout

This guide is organized into a series of procedural checklists, detailing steps you must follow to ensure a safe and effective installation. The main sections of the guide are:

- Pre-Installation Procedures
- General Assembly Procedures
- Installation Procedures
- Powering and Testing Procedures
- Configuration Procedures

## Terminology

The following is a list of terms that are used throughout this document. While some of these terms may have other meanings, the definitions provided below are the ones intended in this [Installation Guide](#).

- **Control chassis.** The main chassis for a control panel. The control chassis contains the MAIN CONTROL BOARD, POWER SUPPLY BOARD (PSB) (x2 if using a large chassis) and may also contain up to two expansion boards (DOOR BOARDS and/or INPUT OUTPUT BOARDS) in any combination (if using a standard chassis) or up to six expansion boards (DOOR BOARDS and/or INPUT OUTPUT BOARDS) in any combination (if using a large chassis).
- **Control panel.** The complete system of control chassis and expansion chassis for an account. A control panel will have the MAIN CONTROL BOARD (contained in the control chassis) and a number of additional expansion chassis (standard or large) to hold a maximum of 14 additional DOOR BOARDS and/or INPUT OUTPUT BOARDS (for a total maximum of 15 boards).
- **Access control system (ACS).** The complete interaction between a control panel, Brivo Access, and the Brivo Cloud Server.
- **Brivo Access.** Brivo's cloud based software application which enables the end user to manage their Brivo account.
- **Brivo Cloud Server.** The off-site servers, hosted by Brivo, that are used to store an account's database. Configuration and maintenance of the control panel is managed through Brivo Access.
- **Brivo Onsite.** Brivo's standalone software application which enables an end user to manage their Brivo Onsite account.
- **B-ACS6000-MBE or B-ACS6000v2-MBE.** Brivo control board with Access firmware loaded.
- **B-ACS6000-MBS or B-ACS6000v2-MBS.** Brivo control board with standalone Onsite firmware loaded.
- **B-ACS6100R-E.** The full access control panel that includes: main controller board with Access firmware loaded, a regular size enclosure, a power supply board, AC/DC wall transformer, and a 14Ah battery (or two 7Ah batteries).
- **B-ACS6100L-E.** The full access control panel that includes: main controller board with Access

- firmware loaded, a large size cabinet, , two power supply boards, two power transformers and two 14Ah batteries.
- **B-ACS6100R-S.** The full access control panel that includes: main controller board with standalone Onsite firmware loaded, a regular size enclosure, a power supply board, AC/DC wall transformer, and a 14Ah battery (or two 7Ah batteries).
- **B-ACS6100L-S.** The full access control panel that includes: main controller board with standalone Onsite firmware loaded, a large size cabinet, , two power supply boards, two power transformers, and two 14Ah batteries.
- **B-ACS6100R-EXP (Expansion Chassis).** An access control expansion chassis that includes a regular size cabinet , a power supply board, a power transformer and a 14Ah battery (or two 7Ah batteries).
- **B-ACS6100L-EXP (Large Expansion Chassis).** An access control expansion chassis that includes a large size cabinet, two power supply boards, two power transformers and two 14Ah batteries.

## Wire Recommendations

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

## Additional Resources

The following additional resources are available for the installer as well as the client.

- Panel Networking Guide
- Brivo Onsite Administrator's Guide
- Approved Reader Compatibility List
- Brivo Cellular Network Router Configuration Guide
- Technical Support: 1-866-BRIVO-4-U
- [www.brivo.com](http://www.brivo.com)

## Pre-Installation Procedures

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

### Understanding the function of the Brivo B-ACS6000-MBE/MBS and B-ACS6000v2-MBE/MBS control panels

The B-ACS6000-MBE/MBS and B-ACS6000v2-MBE/MBS are control panels with multiple access points with up to six readers per standard chassis and 14 per large chassis (in chassis with the MAIN CONTROL BOARD). This control panel is considered a standalone system. The MAIN CONTROL BOARD has two (2) readers on-board, and up to two additional expansion boards can be integrated with the MAIN CONTROL BOARD in a standard chassis (up to six additional expansion boards in a large chassis) which will form the control chassis. Additional standard expansion panels (B-ACS6100R-E/S) or large expansion panels (B-ACS6100L-E/S) can be connected to the control chassis with up to four expansion boards in each standard expansion panel or eight expansion boards in each large expansion panel. Each expansion board can be a door board (two (2) readers on board) or an input-output board.

The Brivo B-ACS6000-MBE and B-ACS6000v2-MBE MAIN CONTROL BOARDS use an on-board Ethernet interface to communicate via any TCP/IP networking technology that can be connected through a hub, router or switch, including Wi-Fi and satellite communications. It is an IP-enabled Access Control System that interacts with the Brivo Cloud Server via the Internet application Brivo Access.

The Brivo B-ACS6000-MBS is identical to the B-ACS6000-MBE (the B-ACS6000v2-MBS is identical to B-ACS6000v2-MBE) except that the B-ACS6000-MBS and B-ACS6000v2-MBS cannot communicate through the web. Instead, the boards are programmed through an on-board interface for data management.

The B-ACS6100R-E/S and B-ACS6100L-E/S are identical except for the size of the enclosure which allows for a total of four expansion boards (door boards and/or input-output boards in any combination) in the B-ACS6100R-E/S and a total of eight expansion boards (door boards and/or input-output boards in any combination) in the B-ACS6100L-E/S. The B-ACS6100R-E/S series is connected to either two (2) 12V, 7Ah batteries or one (1) 12V, 14Ah battery for standby power. The B-ACS6100L-E/S series is connected to two (2) 12V, 14Ah batteries for standby power. Batteries should be connected in parallel.

### Understanding Brivo B-ACS6000-MBE/MBS and B-ACS6000v2-MBE/MBS control panels product compatibility

The B-ACS6000-MBE/MBS and B-ACS6000v2-MBE/MBS control panels are compatible with a large number of standard reader models. The B-ACS6000-MBE and B-ACS6000v2-MBE are designed to accommodate the latest updates in Wiegand and OSDP using RS-485 reader formats. The B-ACS6000-MBS and B-ACS6000v2-MBS are not OSDP compatible. The B-ACS6000-MBE/MBS and B-ACS6000v2-MBE/MBS control boards and door boards are compatible with Wiegand devices that transmit up to 255-bit data. The B-ACS6000-MBE control board and door boards are also compatible with OSDP readers using RS-485.

A current list of compatible readers and keypads is maintained by Brivo. If you have a specific model of reader or keypad that you want to verify is compatible, please contact Technical Support at 1-866-BRIVO-4-U.

### Verify that the client site is ready to support the installation

1. Check with the IT department to ensure that the B-ACS6000-MBE/MBS control panel to be installed is compatible with the company's local area network (LAN).
  - a) The B-ACS6000-MBE/MBS and B-ACS6000v2-MBE/MBS control panels are equipped with a standard

- RJ-45 socket that accepts a CAT5 or CAT6 cable with an RJ-45 plug on any 10/100 Ethernet network. Physically connecting the panel is the same as plugging any computer or other device into the LAN.
- b) Refer to the [Panel Networking Guide](#) (or the [Brivo Onsite Administrator's Guide](#) in the case of the B-ACS6000-MBS and B-ACS6000v2-MBS) for instructions on connecting to the LAN. The [Panel Networking Guide](#) (or [Brivo Onsite Administrator's Guide](#)) also contains a complete list of requirements regarding TCP/IP configuration parameters and information about security considerations.
2. For Brivo Access accounts, make sure the account has been created and the control panel is registered through Brivo. If the control panel has not been registered by the dealer, the installer may either contact Brivo Technical Support for assistance or simply register the panel directly.
  3. Verify that the Primary Administrator and any other employee(s) who will be accessing the system have Internet access on a computer equipped with a supported Web browser.

## Verify shipping contents

1. Locate and check the contents of the Control Panel kit.  
The B-ACS6100R-E/S control panel kit should contain the following parts:
  - a) 1 metal chassis. Packed inside the chassis are:
    - An identify label to be adhered to the inside of the door.
    - 1 cardboard box containing the MAIN CONTROL BOARD and MAIN CONTROL BOARD accessories.
      - 1 MAIN CONTROL BOARD
      - 1 anti-static bubble wrap bag
      - 1 MAIN CONTROL BOARD Accessory Kit
        - 1 zipper bag
        - 2 metal oxide varistors
        - 16 2k ¼W 5% resistors
        - 5 B-ACS6000-MBE style standoffs
        - 5 B-ACS5000-MBE style standoffs
        - 1 dipole antenna – 2dB (Wi-Fi antenna)
        - 1 IPEX cable (Wi-Fi cable)
        - 1 earth ground screw
        - 1 4P power wire harness
      - 1 identity label
    - 1 cardboard box containing a power supply board (B-ACS6100-PSB) and PSB accessories.
      - 1 power supply board
      - 1 anti-static bubble wrap bag
      - 1 power supply board accessories kit
        - 1 zipper bag
        - 4 screws
      - 1 identity label
  - b) 1 cardboard box containing accessories, including:
    - 1 Pre-assembled CAN Bus cable
    - 1 AC/DC power adapter
    - 1 14Ah lead-acid battery or 2 7Ah lead-acid batteries
  - c) 1 lock and key set
  - d) 1 documentation set, including:
    - Installation Guide (this document)
2. The B-ACS6100L-E/S control panel kit should contain the following parts:
  - a) 1 metal chassis. Packed inside the chassis are:
    - An identify label to be adhered to the inside of the door.

- 1 cardboard box containing the MAIN CONTROL BOARD and MAIN CONTROL BOARD accessories.
        - 1 MAIN CONTROL BOARD
        - 1 anti-static bubble wrap bag
        - 1 MAIN CONTROL BOARD Accessory Kit
          - 1 zipper bag
          - 16 2k ¼W 5% resistors
          - 5 B-ACS6000-MBE style standoff
          - 5 B-ACS5000-MBE style standoff
          - 1 dipole antenna – 2dB (Wi-Fi antenna)
          - 1 IPEX cable (Wi-Fi cable)
          - 1 earth ground screw
          - 1 4P power wire harness
        - 1 identity label
      - 1 cardboard box containing a power supply board (B-ACS6100-PSB) and PSB accessories.
        - 2 power supply boards
        - 2 anti-static bubble wrap bags
        - 2 power supply board accessories kits
          - 1 zipper bag
          - 4 screws
        - 1 identity label
    - b) 1 cardboard box containing accessories, including:
      - 1 Pre-assembled CAN Bus cable
      - 2 AC/DC power adapters
      - 2 14Ah lead-acid batteries
    - c) 1 lock and key set
    - d) 1 documentation set, including:
      - Installation Guide (this document)
3. If additional DOOR BOARDS have been ordered with the control panel, locate and check the contents of each 2-Door Board (B-ACS6100-DB) Kit. There may be up to 15 of these kits, and each should contain the following parts:
  - a) 1 DOOR BOARD
  - b) 1 anti-static bubble wrap bag
  - c) 1 DOOR BOARD Accessory Kit
    - 1 zipper bag
    - 16 2k ¼W resistors
    - 1 power wire harness
  - d) 1 identity label
4. If additional INPUT OUTPUT BOARDS have been ordered with the control panel, locate and check the contents of each INPUT OUTPUT BOARD (B-ACS6100-IO) Kit. There may be up to 14 of these kits, and each should contain the following parts.
  - a) 1 INPUT OUTPUT BOARD
  - b) 1 anti-static bubble wrap bag
  - c) 1 INPUT OUTPUT BOARD Accessory Kit
    - 1 zipper bag
    - 16 2k ¼W resistors
    - 1 power wire harness
  - d) 1 identity label
5. If additional standard expansion chassis have been ordered with the control panel, locate and check the contents of each standard Expansion Chassis Kit (B-ACS6100R-EXP). Each standard expansion chassis can

hold up to four boards, including any combination of door and/or Input Output boards. Combined, there may be enough chassis kits to hold 1 MAIN CONTROL BOARD, and any combination of 14 door and/or Input/ Output boards. Each standard expansion chassis (B-ACS6100R-EXP) should contain the following parts:

- a) 1 metal chassis
  - 1 lid
  - 1 box
  - 1 hinge pair short
  - 1 hinge pair long
- b) 1 lock and key set
- c) An identify label to be adhered to the inside of the door
- d) Battery and PSU cardboard box
  - 1 power supply board (B-ACS6100-PSB)
  - 1 pair of battery wires
  - 1 AC/DC power adapter
  - 1 14Ah lead-acid battery or 2 7Ah lead-acid batteries

6. If additional large expansion chassis have been ordered with the control panel, locate and check the contents of each Large Expansion Chassis Kit (B-ACS6100L-EXP). Each large expansion chassis can hold up to eight boards, including any combination of door and/or Input Output boards. Combined, there may be enough chassis kits to hold 1 MAIN CONTROL BOARD, and any combination of 14 door and/or Input/ Output boards. Each large expansion chassis (B-ACS6100L-EXP) should contain the following parts:

- a) 1 metal chassis
  - 1 lid
  - 1 box
  - 1 hinge pair short
  - 1 hinge pair long
- b) 1 lock and key set
- c) An identify label to be adhered to the inside of the door
- d) Battery and PSU cardboard box
  - 2 power supply board (B-ACS6100-PSB)
  - 2 pair of battery wires
  - 2 AC/DC power adapters
  - 2 14Ah lead-acid batteries

## Plan your installation and decide where to install the B-ACS6000-MBE/MBS or B-ACS6000v2-MBE/MBS panel

1. Determine the size of your control panel.
  - a) In addition to the control chassis, which contains the MAIN CONTROL BOARD, there may be several additional expansion chassis.
  - b) The control chassis contains the MAIN CONTROL BOARD, which also serves as a 2-door board, and may also contain up to two additional expansion boards (DOOR BOARD and or INPUT OUTPUT BOARD) in any combination (if using a B-ACS6100R-E chassis or six additional expansion boards (DOOR BOARD and/or INPUT OUTPUT BOARD) in any combination if using a B-ACS6100L-E chassis).
  - c) Each standard expansion chassis (B-ACS6100R-EXP) may contain up to four boards, in any combination of DOOR BOARDS and/or INPUT OUTPUT BOARDS.
    - Each DOOR BOARD has two terminal nodes, each of which contains a complete set of terminals for controlling a door. This means that each DOOR BOARD can be used to control two doors.
    - The same inputs and outputs that drive a door can also be used for other devices. In other words, DOOR BOARDS do not need to be used to control doors.

## WARNING: Door Wiring

If a node is to be used for a door, do not connect any other device to the following terminal blocks: REX & DOOR, DOOR LOCK RELAY, and READER.

- An INPUT OUTPUT BOARD cannot be used to control a door; however, it can be used in any circumstance that uses contact closure to track change of status.
  - d) Each large expansion chassis (B-ACS6100L-EXP) may contain up to eight boards, in any combination of DOOR BOARDS and/or INPUT OUTPUT BOARDS.
    - Each DOOR BOARD has two terminal nodes, each of which contains a complete set of terminals for controlling a door. This means that each DOOR BOARD can be used to control two doors.
    - The same inputs and outputs that drive a door can also be used for other devices. In other words, DOOR BOARDS do not need to be used to control doors.
    - An INPUT OUTPUT BOARD cannot be used to control a door; however, it can be used in any circumstance that uses contact closure to track change of status.
2. Using the packing slip as a guide, complete the appropriate Installation Worksheets included with your documentation set.

## Decide where to install each chassis

1. Do not place the control chassis more than 100 feet from the transformer. This is the maximum cable run allowed by the ACS power supply.
2. Calculate the distance between the control chassis and each expansion chassis using the chart in Table 1 below. The calculations are based on the following restrictions.
  - a) The control chassis, containing the MAIN CONTROL BOARD, and the first expansion chassis can be up to 1500 feet apart.
  - b) Each time another expansion chassis is added, the maximum distance between the first and last chassis decreases by 50 feet. So, if there are three chassis in a system, the control chassis plus two expansion chassis, the two most distant chassis can be no more than 1450ft/440m apart.

Total # of chassis	Max allowed distance (ft/m)
2	1500ft / 455m
3	1450ft / 440m
4	1400ft / 425m
5	1350ft / 410m
6	1300ft / 395m
7	1250ft / 380m
8	1200 ft / 365m

*Maximum Distance Calculations*

- c) Calculate the distance between each chassis and its associated keypad or reader. The B-ACS6000-MBE/MBS or B-ACS6000v2-MBE/MBS control panels do not specify a maximum distance between the chassis and a keypad or reader, but the keypad/reader manufacturer does. Follow manufacturer guidelines for each keypad and reader.
- d) Place each chassis within 500 feet of its associated electronic strike or latch.

## Follow safety precautions

### **WARNING: Fire Code**

Never connect a keypad/reader or lock to doors without first consulting the applicable fire code. You must consult with, and get approval from, local fire officials before installing locks or devices on any doors that may be fire exits. Use of egress push buttons may not be legal. Single action exits may be required. Always obtain proper permits and approvals in writing before installing equipment

### **WARNING: Fail Secure Mode**

Do not install the system in the fail secure mode unless permitted by the local authority having jurisdiction. Doing so may cause interference with the operation of panic hardware.

### **WARNING: Heat and Noise**

Do not install the control panel in an area that could drop below 32 degrees FAHRENHEIT (0 degrees CELSIUS) or exceed 125 degrees FAHRENHEIT (52 degrees CELSIUS). Doing so can cause damage to components within the control panel.

Do not install the control panel near or on the same circuit with devices that produce large amounts of electrical noise. This includes grinders, electric motors and blowers, electrical switch-gear and other electrically noisy equipment. Electrical noise can interfere with panel operation. If it is not possible to install the panel away from such sources of noise, it is advisable to isolate it by using a high-quality UPS (Uninterruptible Power Supply) between the AC Mains and the transformer.

### **WARNING: Humidity**

Do not install the control panel in an area that could experience humidity greater than 85 percent non-condensing.

## General Assembly Procedures

### Assemble and mount chassis

1. Stick the identity label to the inside of the metal chassis.

**NOTE:** In the top position of the chassis, standoffs are included to mount either a MAIN CONTROL BOARD or two DOOR BOARDS/input-output boards. If mounting a MAIN CONTROL BOARD, clip off the four central plastic standoffs.

2. Mount the chassis.
  - a) Use four bolts (#8 or equivalent) to mount each chassis securely in place.
  - b) Make sure the chassis door can swing open freely to allow for access after the installation is complete.
  - c) In tight spaces, the removable hinge design of the B-ACS6100R-E/B-ACS6100L-E enclosures allow an installer to completely remove the chassis door and replace it just as easily upon completion of the installation.
3. Remove any knock-outs that may be required to accommodate conduit or wiring.

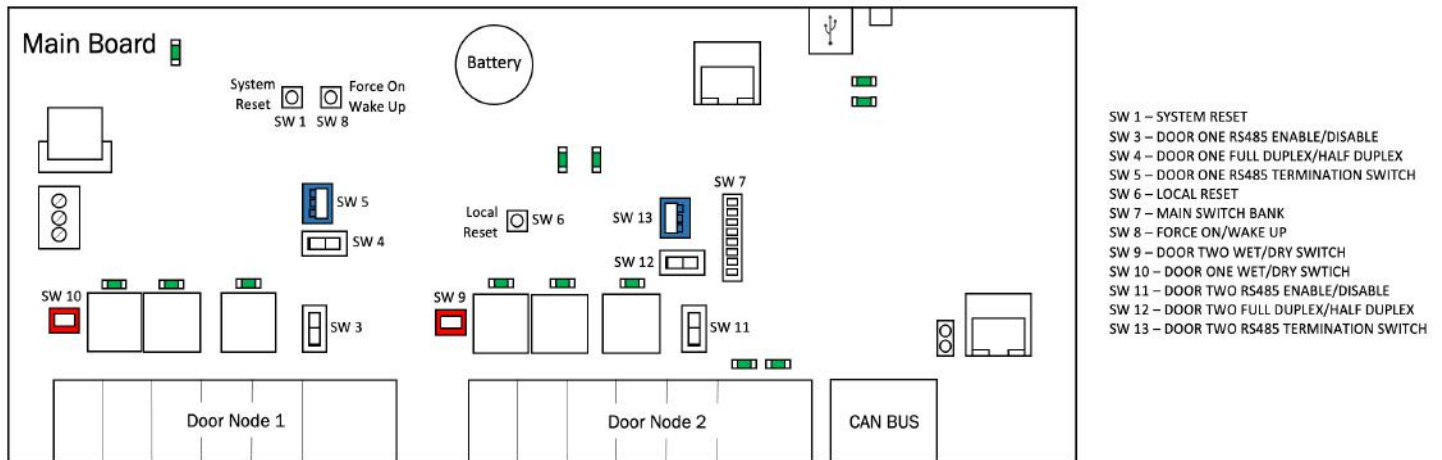
#### **WARNING: Knockouts**

DO NOT ATTEMPT TO REMOVE THE KNOCKOUTS WITH A HAMMER. Banging on the knockouts may result in shock to the circuit boards, which could cause permanent damage. Pry them out using an appropriate knockout removal tool.

4. Assemble the chassis.
  - a) Install the power supply board in each chassis first. If you install the MAIN CONTROL BOARD or a Door or INPUT OUTPUT BOARD first, you may find it difficult to position your screwdriver in a way that will allow you to install the power supply board later.
  - b) Install the MAIN CONTROL BOARD in the control chassis.
    - Install each board by aligning it with the previously installed stand-offs and then gently pressing it into place. You will hear a slight click as the board settles into the locked position on the standoffs.
    - After that, screw on the ground post screw on the bottom left corner.
  - c) If there are DOOR BOARDS or INPUT OUTPUT BOARDS for the control chassis, install those now, using the procedures described for the MAIN CONTROL BOARD.
  - d) If there are expansion chassis, install the appropriate DOOR BOARDS and/or INPUT OUTPUT BOARDS in each chassis at this time, using the procedures described for the MAIN CONTROL BOARD.
  - e) You will note that the control panel kit contained an adhesive Identity Label. This label should be affixed to the inside of the front door of the control chassis, beneath the large wiring guide.
5. Verify presence of optical tamper reflector on the inside of the chassis door.
6. **OPTIONAL:** Install a user provided physical tamper switch in the chassis.
  - a) Install a user provided tamper switch in the chassis by removing the hex collar, seating the switch inside the provided mounting bracket, and reattaching and tightening the hex collar.

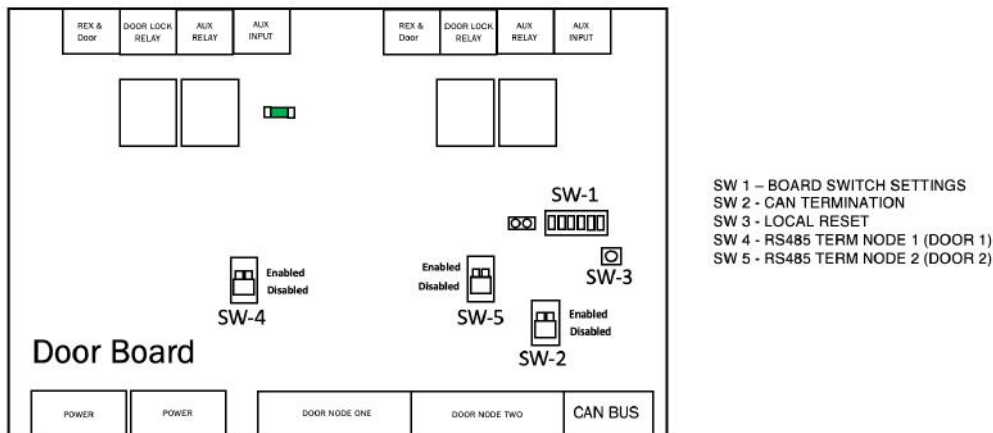
# ACS6000 MAIN CONTROL BOARD and ACS6100 Door Board and ACS6100 Input/Output Board switch locations

Specific switch functionality is discussed later in the installation guide.



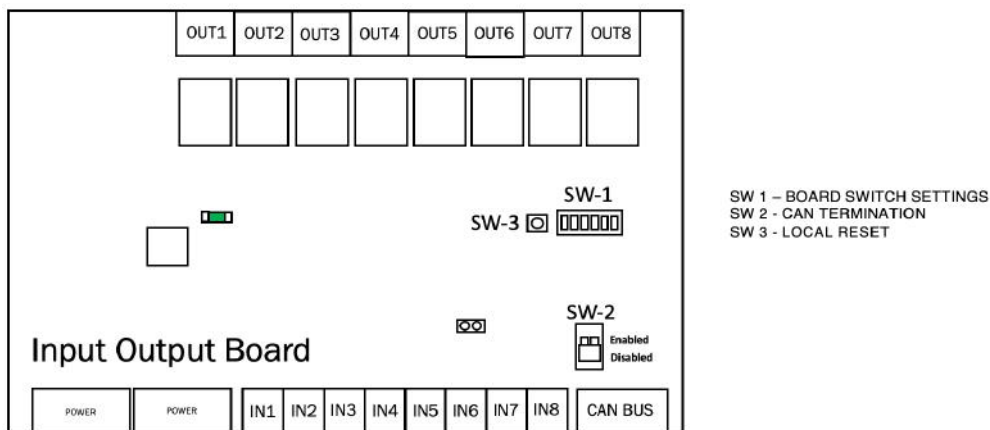
- SW 1 – SYSTEM RESET
- SW 2 – CAN TERMINATION
- SW 3 – DOOR ONE RS485 ENABLE/DISABLE
- SW 4 – DOOR ONE FULL DUPLEX/HALF DUPLEX
- SW 5 – DOOR ONE RS485 TERMINATION SWITCH
- SW 6 – LOCAL RESET
- SW 7 – MAIN SWITCH BANK
- SW 8 – FORCE ON/WAKE UP
- SW 9 – DOOR TWO WET/DRY SWITCH
- SW 10 – DOOR ONE WET/DRY SWITCH
- SW 11 – DOOR TWO RS485 ENABLE/DISABLE
- SW 12 – DOOR TWO FULL DUPLEX/HALF DUPLEX
- SW 13 – DOOR TWO RS485 TERMINATION SWITCH

Figure 1 - ACS6000 MAIN CONTROL BOARD Switch Locations



- SW 1 – BOARD SWITCH SETTINGS
- SW 2 - CAN TERMINATION
- SW 3 - LOCAL RESET
- SW 4 - RS485 TERM NODE 1 (DOOR 1)
- SW 5 - RS485 TERM NODE 2 (DOOR 2)

Figure 2 - ACS6100 DOOR BOARD Switch Locations



- SW 1 – BOARD SWITCH SETTINGS
- SW 2 - CAN TERMINATION
- SW 3 - LOCAL RESET

Figure 3 - ACS6100 INPUT OUTPUT BOARD Switch Locations

### ACS6000 MAIN CONTROL BOARD SW 7 Switch Bank

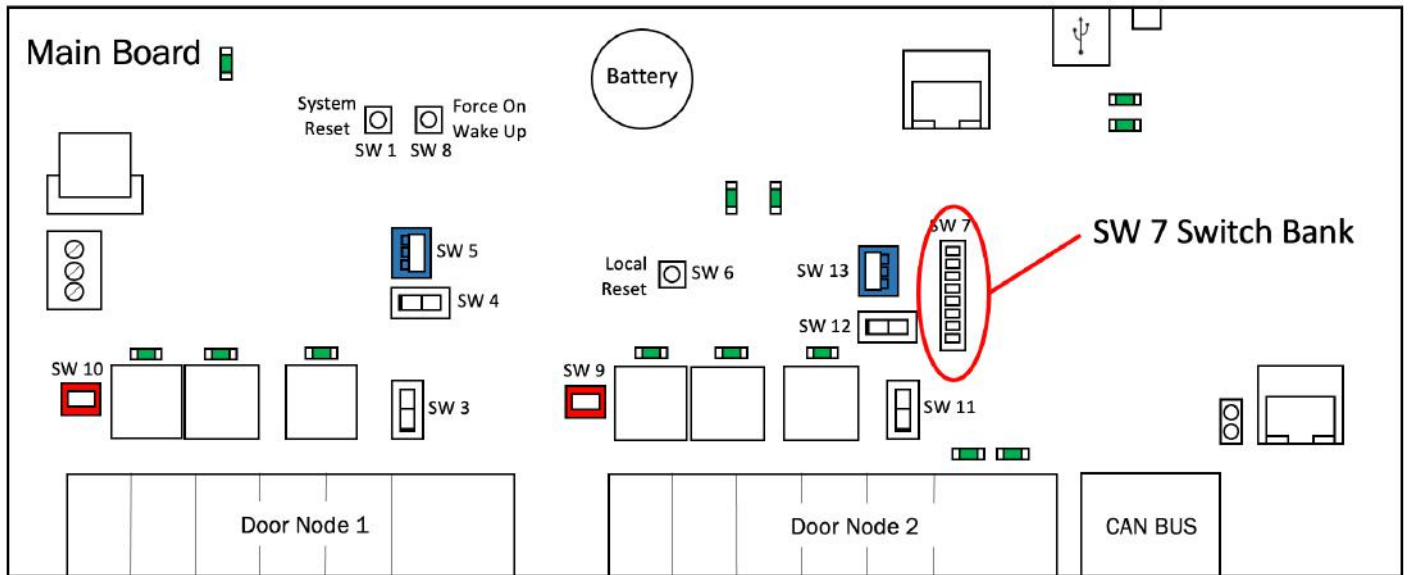


Figure 4 - ACS6000 SW 7 Switch Bank Location

#### SW 7 – System Settings

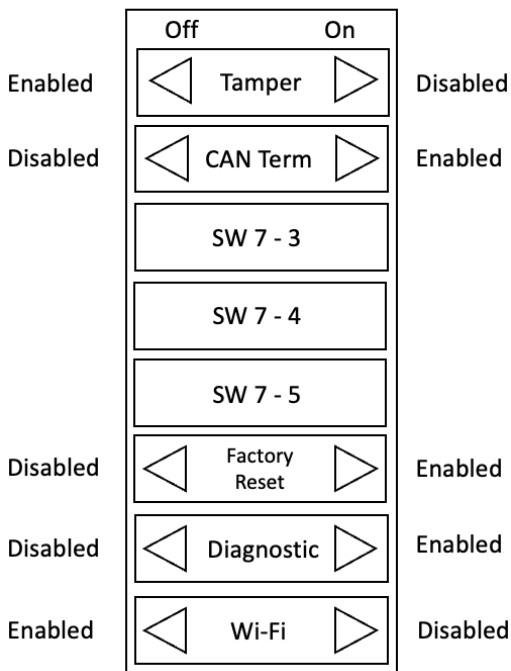


Figure 5a - ACS6000-v1 SW 7 Switch Settings

#### SW 7 – System Settings

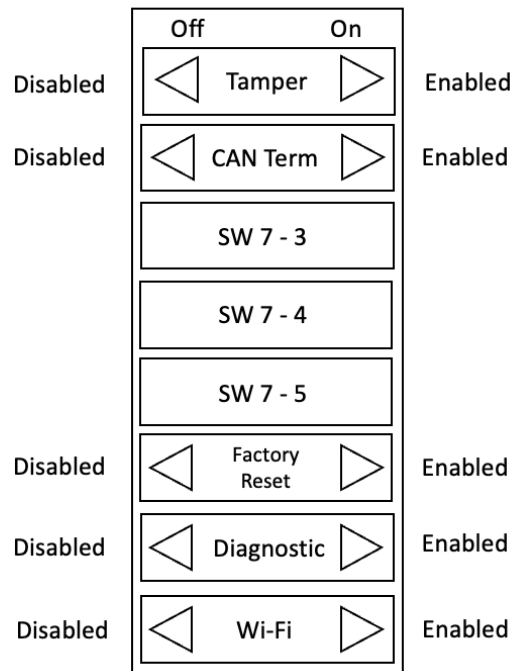


Figure 5b - ACS6000-v2 SW 7 Switch Settings

Switch Setting	Description	Functionality Description
SW 7-1	Tamper	Enabled: Tamper functionality is in use Disabled: Tamper functionality is not in use
SW 7-2	CAN Bus	Enabled: CAN Bus is terminated Disabled: CAN Bus is not terminated
SW 7-3		
SW 7-4	Maintenance Mode	For general operation, SW 7-4 needs to be in the Off position.
SW 7-5		
SW 7-6	Factory Reset	How to perform factory reset: <ul style="list-style-type: none"> <li>• Ensure that SW 7-6 is in the OFF position.</li> <li>• Power off MAIN CONTROL BOARD.</li> <li>• Place SW 7-6 dip switch in the ON position.</li> <li>• Power on the board and wait until you hear two two-second long beeps and see the main heartbeat LED turn off.</li> <li>• Within 10 seconds of hearing the beeps, place SW 7-6 dip switch back into the OFF position.</li> <li>• You will hear a one second-long beep and the main heartbeat LED will start blinking again indicating the system is performing a factory reset.</li> <li>• After the factory reset is complete, you will hear 2 short beeps.</li> <li>• At this point, the factory reset is complete and the system will now run with factory default firmware.</li> </ul>
SW 7-7	Diagnostic	Enabled: MCU Full Debug Disabled: MCU Standard Debug
SW 7-8	Wi-Fi	Enabled: Wi-Fi can be used if configured Disabled: Wi-Fi cannot be used at all, even if configured

## Connect the MAIN CONTROL BOARD and all expansion boards to a power supply board

**IMPORTANT NOTE:** If you are mounting the new B-ACS6100-DB DOOR BOARDS or B-ACS6100-IO INPUT/OUTPUT BOARDS in an ACS6000 or ACS6008 chassis, an adapter plate (B-ACS6100-ADPL) is required.

**IMPORTANT NOTE:** If you are mounting the new B-ACS6100-DB DOOR BOARDS or B-ACS6100-IO INPUT/OUTPUT BOARDS in the larger ACS6008 chassis, the POWER SUPPLY BOARD is only capable of supporting FOUR boards in total. If you mount more than four boards, you need to use a new B-ACS6100L-EXP chassis, which provides two POWER SUPPLY BOARDS.

1. Connect the MAIN CONTROL BOARD in the control chassis to the power supply board.

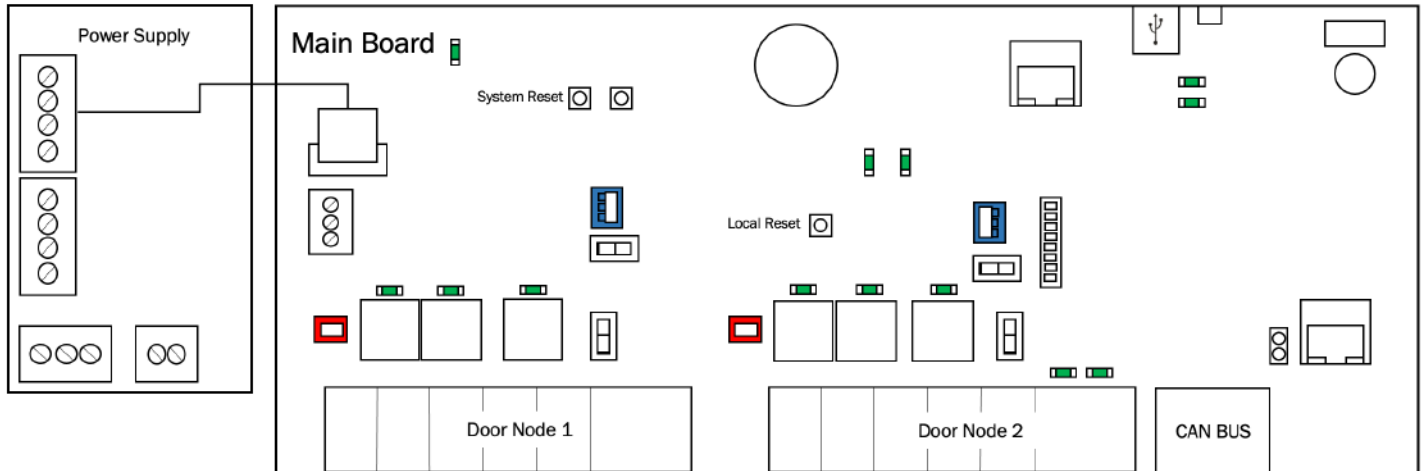


Figure 6 - Connect MAIN CONTROL BOARD to Power Supply

2. If there are DOOR BOARDS or INPUT OUTPUT BOARDS in the control chassis, connect that to the power supply board.

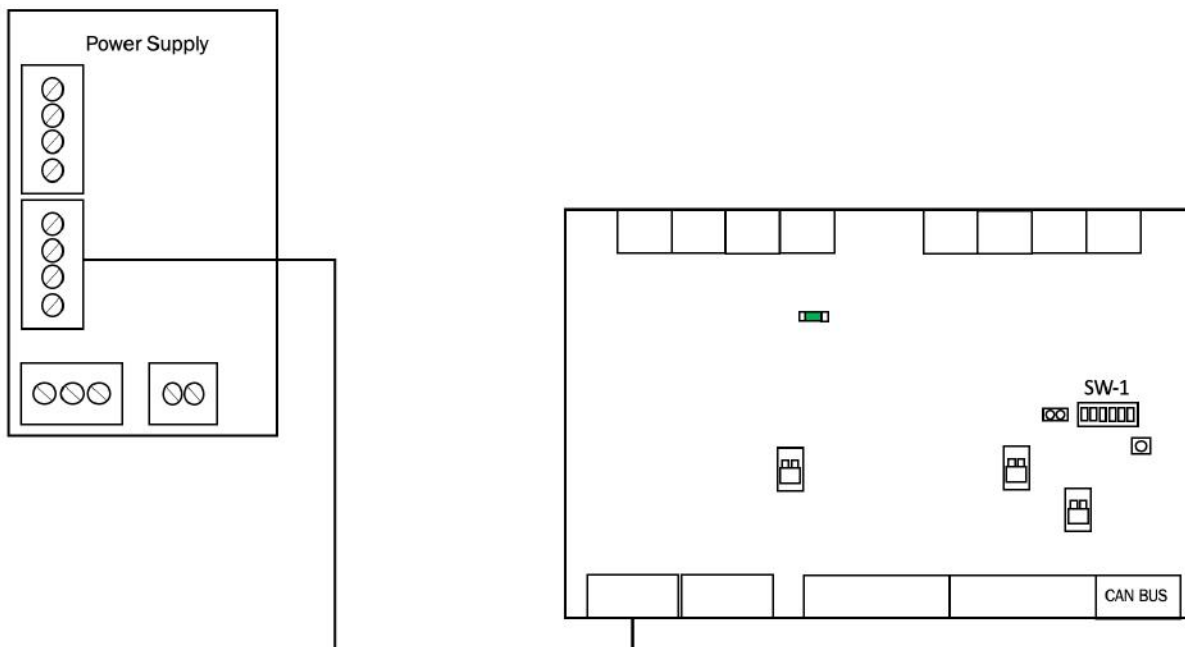


Figure 7 - Connect Expansion Board to Power Supply

3. If there is a standard expansion chassis, connect each DOOR BOARD and INPUT OUTPUT BOARD to the power supply board in each chassis. If there is a large expansion chassis, connect the first four expansion boards (DOOR BOARDS or INPUT OUTPUT BOARDS) to the first power supply board and the remaining boards (up to four) to the second power supply board.
  - a) Use the power cable that came with each circuit board kit.
  - b) The power connector uses a 4-pin screw terminal block connector to deliver +12V, Ground, Power Detection and Earth Ground to each board from the power supply.

**WARNING: Power Supply**

Do not use any power supply other than those supplied with your Brivo product.

**WARNING: Powering Electronic Strikes and Latches**

Do not power electronic strikes and latches with the battery (or other power source) used to power the control panel. Doing so will cause damage to the Brivo control panel. Use only a UL/MET listed burglar alarm or access control system to power electronic strikes and latches.

**ACS6000 control panel tamper switches**

The B-ACS6000-MBE/MBS control panel tamper ON/OFF toggle in the OFF position deactivates both the optical and physical tamper switches.

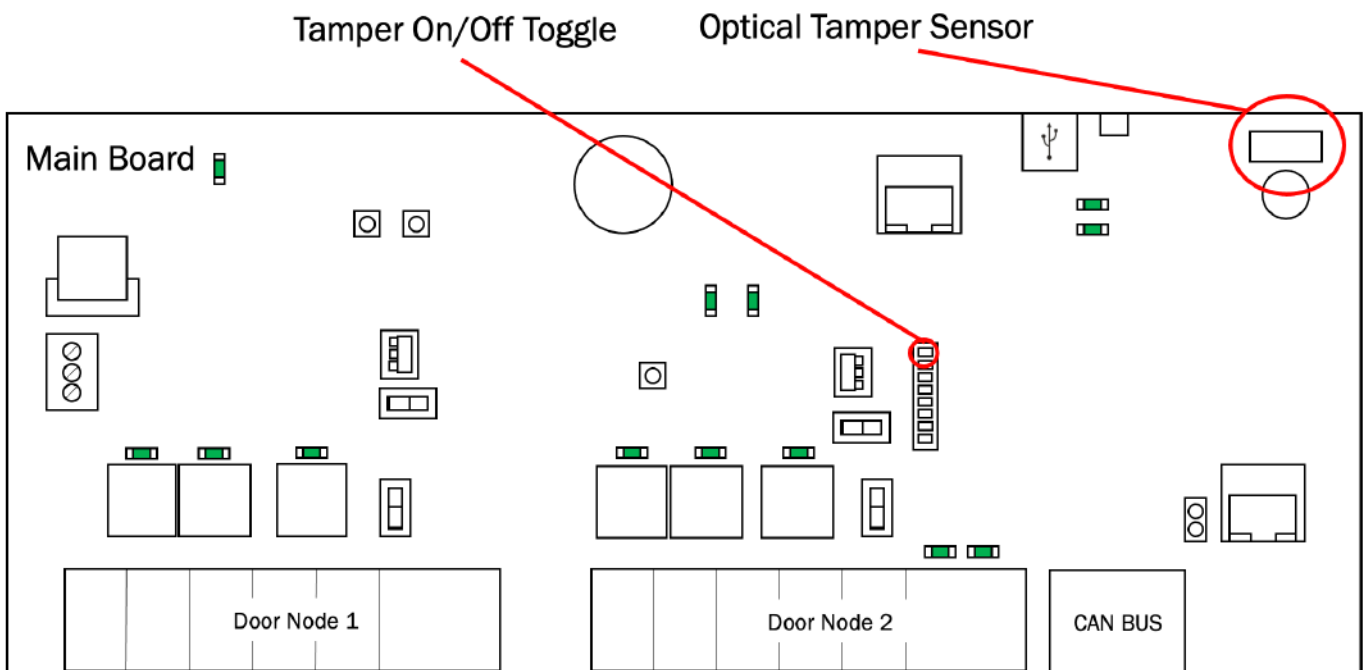


Figure 8 - Tamper Switch and Optical Tamper Sensor Locations

**NOTE:** If the technician is installing the B-ACS6000-MBE MAIN CONTROL BOARD as a retrofit in a B-ACS5000-MBE/MBS enclosure, there is no optical reflector present. The optical tamper will not function.

**OPTIONAL: Connect the physical tamper switch to the MAIN CONTROL BOARD and to one board in each expansion chassis.**

1. Connect a user provided physical tamper switch to the MAIN CONTROL BOARD in the control chassis.

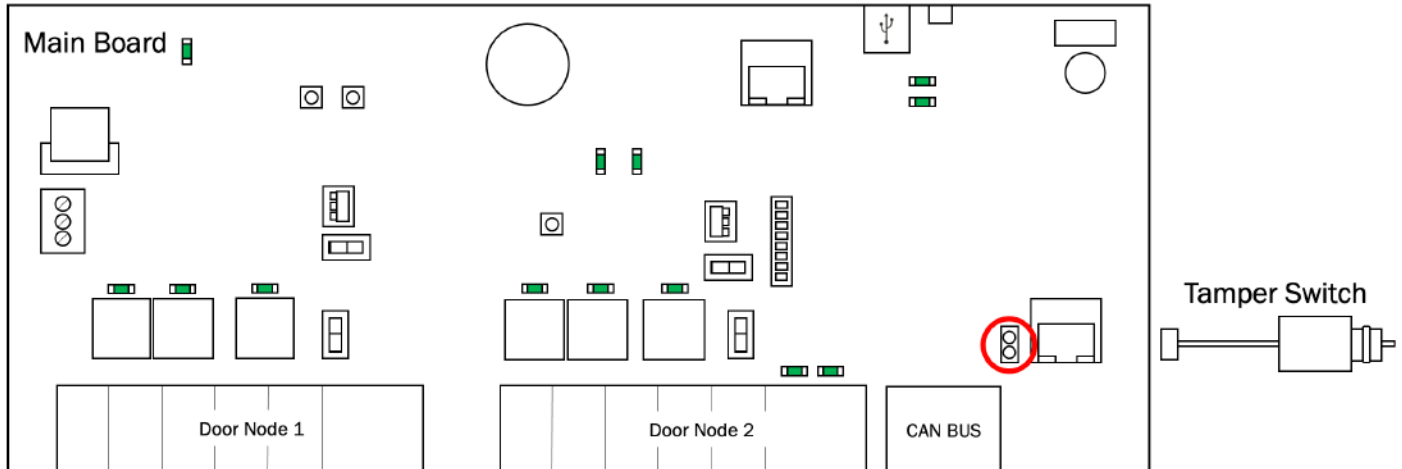


Figure 9 - Connect Tamper Switch to MAIN CONTROL BOARD

- a) The tamper header connects to an optional user supplied tamper switch.
- b) The header connector for the tamper switch should be connected to the TAMPER pins located on the lower right side of the MAIN CONTROL BOARD and each expansion board.

2. Connect the tamper switch to one expansion board (DOOR BOARD or INPUT OUTPUT BOARD) in each expansion chassis.

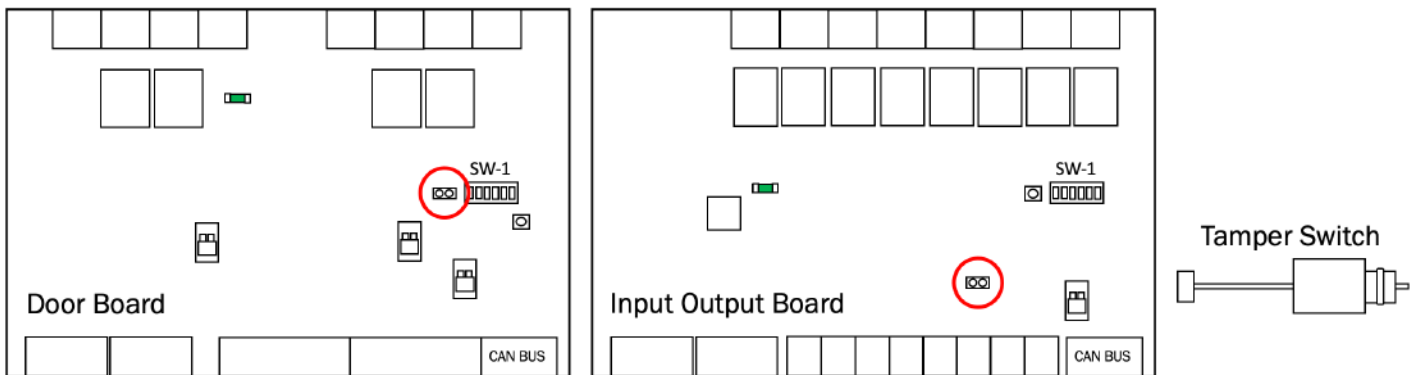


Figure 10 - Connect Tamper Switch to Expansion Boards

**NOTE:** If a chassis has two or more boards, connect the tamper switch to the upper right board.

**NOTE:** If the tamper switch is not going to be used, leave the supplied jumper on this connector to keep the circuit closed.

## Connect the battery leads to the power supply

### WARNING: Backup Battery

DO NOT CONNECT ANY BACK-UP BATTERY AT THIS TIME. Premature connection of the battery terminals may cause damage to the control panel.

1. Connect the battery wires that come with each circuit board kit to the power supply BATTERY INPUT terminal block.
  - a) Connect the black wire to the ground (GND) terminal.
  - b) Connect the red wire to the +12V terminal.
  - c) Make sure the battery wires are segregated at least  $\frac{1}{4}$  inch away from all other input/output wiring.

**NOTE:** Power Standby Level 1 for MET listed systems.

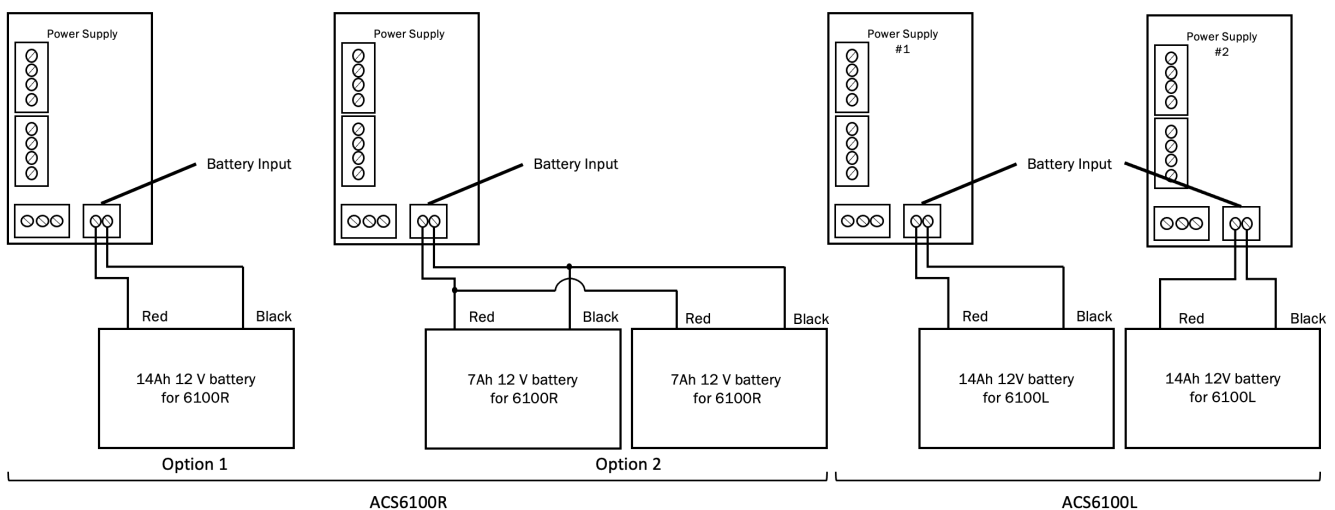


Figure 11 - Connect Battery Leads to Power Supply

## Wire the AC/DC power adapter to the power supply

### WARNING: Power Adapter Connection

DO NOT CONNECT ANY POWER ADAPTER TO A SWITCHED OUTLET OR OTHERWISE CONTROLLED AC OUTLET.

DO NOT CONNECT ANY POWER ADAPTER TO THE 120 VAC OUTLET UNTIL ALL WIRING IS COMPLETED.

1. The power adapter block(s) comes pre-wired with 10 feet of cable. If an extension is needed, use 18 AWG wire (minimum grade) to connect to the 16.5VAC/19VDC POWER INPUT terminal block on the power supply board, using terminals DC +/AC1 and DC -/AC2.
2. To maintain MET compliance, the unit must be powered by a UL 294, UL 62368-1 or UL60950-1 Listed power supply capable of supplying 16.5VAC, 3.03A, 60Hz or 19VDC, 2.63A to the power supply board.

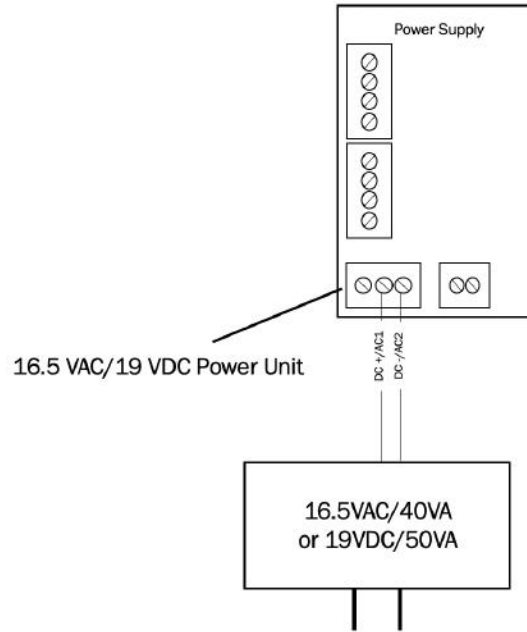


Figure 12 - Connect AC/DC Power Adapter to Power Supply

Model	Circuit	Voltage	Current
Brivo B-ACS6100R-E/S	Input	120/240VAC (Primary) (This voltage is supplied to the wall power adapter and not directly to any PSBs inside of the chassis)	1.0A/0.5A
		19 VDC (Secondary)	2.63A (DC)
		16.5 VAC (Secondary)	3.03A (RMS)

Model	Circuit	Voltage	Current
Brivo B-ACS6100L-E/S	Input per power supply board (Qty 2)	120/240VAC (Primary) (This voltage is supplied to the wall power adapter and not directly to any PSBs inside of the chassis)	1.0A/0.5A
		19 VDC (Secondary)	2.63A (DC)
		16.5 VAC (Secondary)	3.03A (RMS)

# Installation Procedures

## Establish CAN Bus Wiring

**NOTE:** The B-ACS6100R-E/S and B-ACS6100L-E/S chassis include a pre-assembled CAN Bus connection cable. This cable should be used for connecting panels within the same chassis. The B-ACS6100R-E/S chassis include a 4-board connection cable, and the B-ACS6100L-E/S includes an 8-board connection cable. The installer must still manually wire connections between each individual chassis.

**NOTE:** The B-ACS6100R-E/S enclosures CAN Bus cable has four connectors and the B-ACS6100L-E/S CAN Bus cable has eight connectors. In a B-ACS6100R-E/S enclosure, you have the option to connect a mainboard to up to two door and/or IO boards or to connect up to four door and/or IO boards together using the provided pre-assembled CAN Bus cable. In a B-ACS6100L-E/S enclosure, you have the option to connect a mainboard to up to six door and/or IO boards or to connect up to eight door and/or IO boards together using the provided pre-assembled CAN Bus cable. Upon completion, there may be an extra connector if you are installing a MAIN CONTROL BOARD into a chassis (standard or large). The installer may cut this connector off should they deem it necessary.

1. If there are expansion boards in the control chassis, connect them to the MAIN CONTROL BOARD.

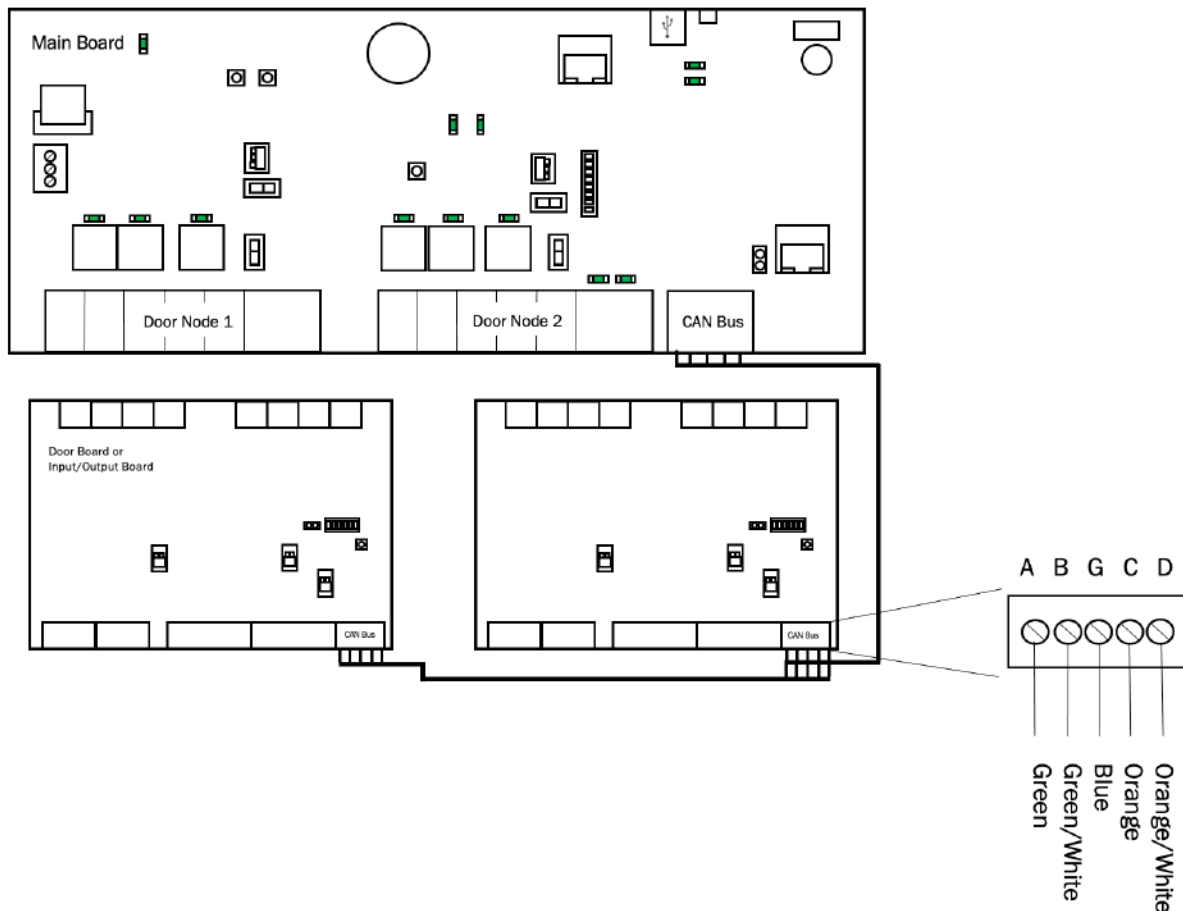


Figure 13 - Connect Expansion Board to MAIN CONTROL BOARD

2. If there are expansion chassis, in each chassis connect the expansion boards as shown below.

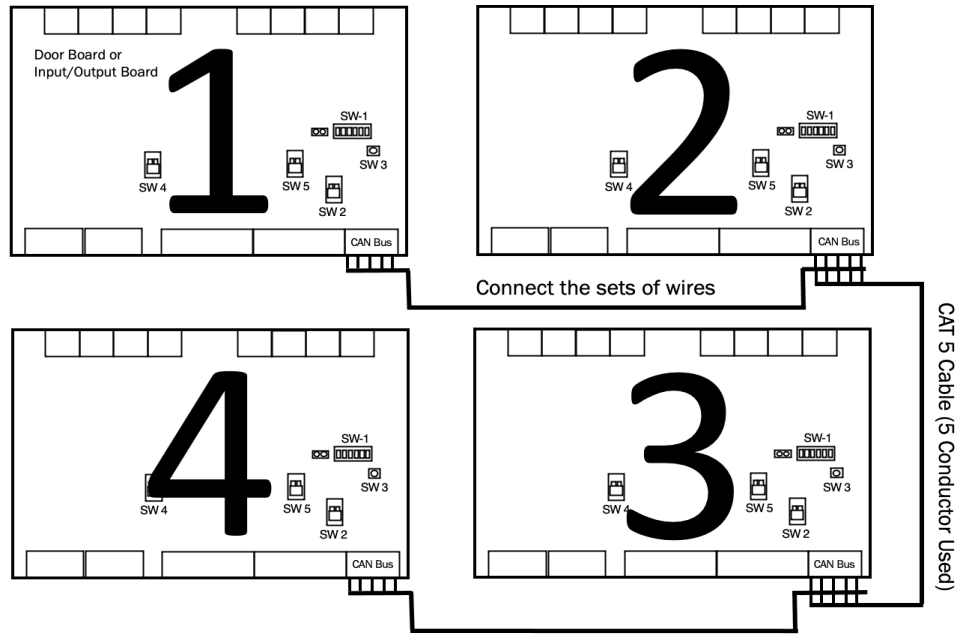


Figure 14 - Connect Expansion Boards in Expansion Chassis

3. If you have multiple chassis, daisy-chain the complete set of chassis together.
  - a) For example, if there are seven boards in the control panel, there would be a MAIN CONTROL BOARD and two expansion boards (E1, E2) in the first chassis and then an expansion chassis with four expansion boards (E3, E4, E5, and E6). Each expansion board could be either a DOOR BOARD or an INPUT OUTPUT BOARD.
  - b) To daisy-chain the boards together: (See Figure 12 below)
    - Wire E3, E4, E5, and E6 together as described above in Figure 11.
    - Wire E1 in the Control Chassis to E3 in the expansion chassis.
    - Wire E2 to the MAIN CONTROL BOARD.

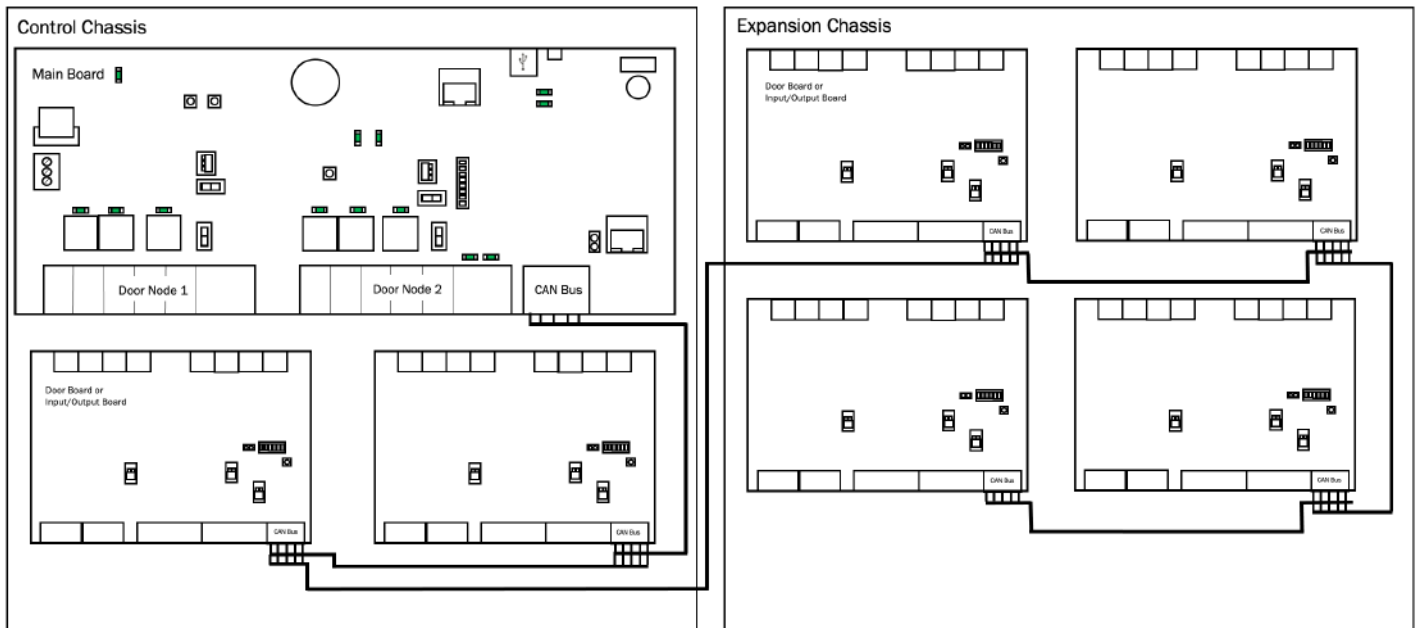


Figure 15 - CAN Bus Configuration

4. Use standard CAT5 or CAT6 (unshielded twisted pair) cabling to connect the CAN Bus across multiple chassis.
5. Always connect like terminals to one another (i.e., A to A, B to B, and so on.).
6. Follow the color coding shown on the wiring diagram on the inside of the chassis door.

**WARNING: CAN BUS Wiring**

THE A/B CIRCUITS MUST SHARE A TWISTED PAIR, AND THE C/D CIRCUITS MUST SHARE A TWISTED PAIR. Otherwise, the distance and data integrity of the communications channel will be compromised.

WHEN USING JUST A MAIN CONTROL BOARD, SWITCH SW 7-2 TO THE ON POSITION WHICH ENABLES CAN TERMINATION ON THE MAIN CONTROL BOARD. If expansion boards are used, the can termination jumper remains attached on the first and last board(s) in the daisy chain; i.e. It must be removed from all boards except the endpoint of the daisy chain. (NOTE: The MAIN CONTROL BOARD does not have to be an endpoint in the control panel; the control panel may be in the middle of the chain with expansion boards branching out in either direction.)

7. On the first board, connect the wires of the CAT5/CAT6 cable to the CAN BUS terminal block as follows:
  - a) Connect the green wire to the A terminal.
  - b) Connect the green and white wire to the B terminal.
  - c) Connect the blue wire to the G (ground) terminal.
  - d) Connect the orange wire to the C terminal.
  - e) Connect the orange and white wire to the D terminal.
8. After all the wires of the CAT5/CAT6 cable are connected to the first board, connect the wires to the second board in the same manner.
9. Address the CAN BUS ADDRESS switch (SW1). The silkscreen next to SW1 shows how to position the switches appropriately.
10. Switch positions for all address values are shown in the diagram below.

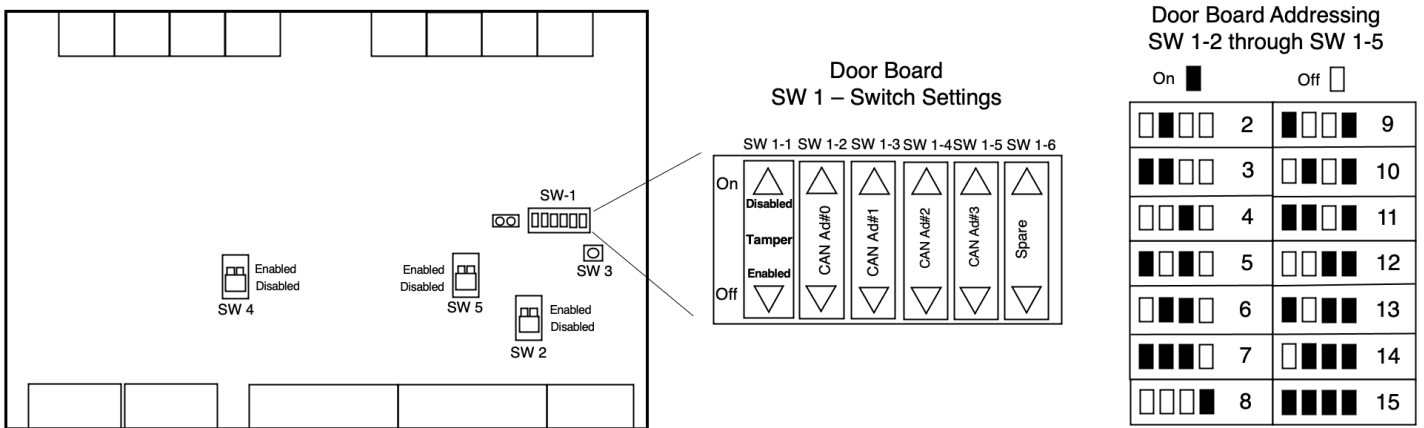


Figure 16 - CAN BUS ADDRESS Switches

**WARNING: CAN BUS Wiring and Addressing**

The CAN BUS ADDRESS switch (SW1) is used to set the address of each board on the CAN BUS. DO NOT ASSIGN TWO BOARDS THE SAME ADDRESS, OR THE BUS WILL NOT FUNCTION PROPERLY.

CAN BUS addressing starts sequentially with board 2 as the first expansion board address; address 1 is always the MAIN CONTROL BOARD. These switch settings will map to board numbers when the control panel is configured via the application.

**Wire Doors**

For each board node to be used for controlling a door, as indicated in the completed Installation Worksheet, make the following connections.

**NOTE:** Doors can be wired to the MAIN CONTROL BOARD or to expansion boards, including both DOOR BOARDS and INPUT OUTPUT BOARDS.

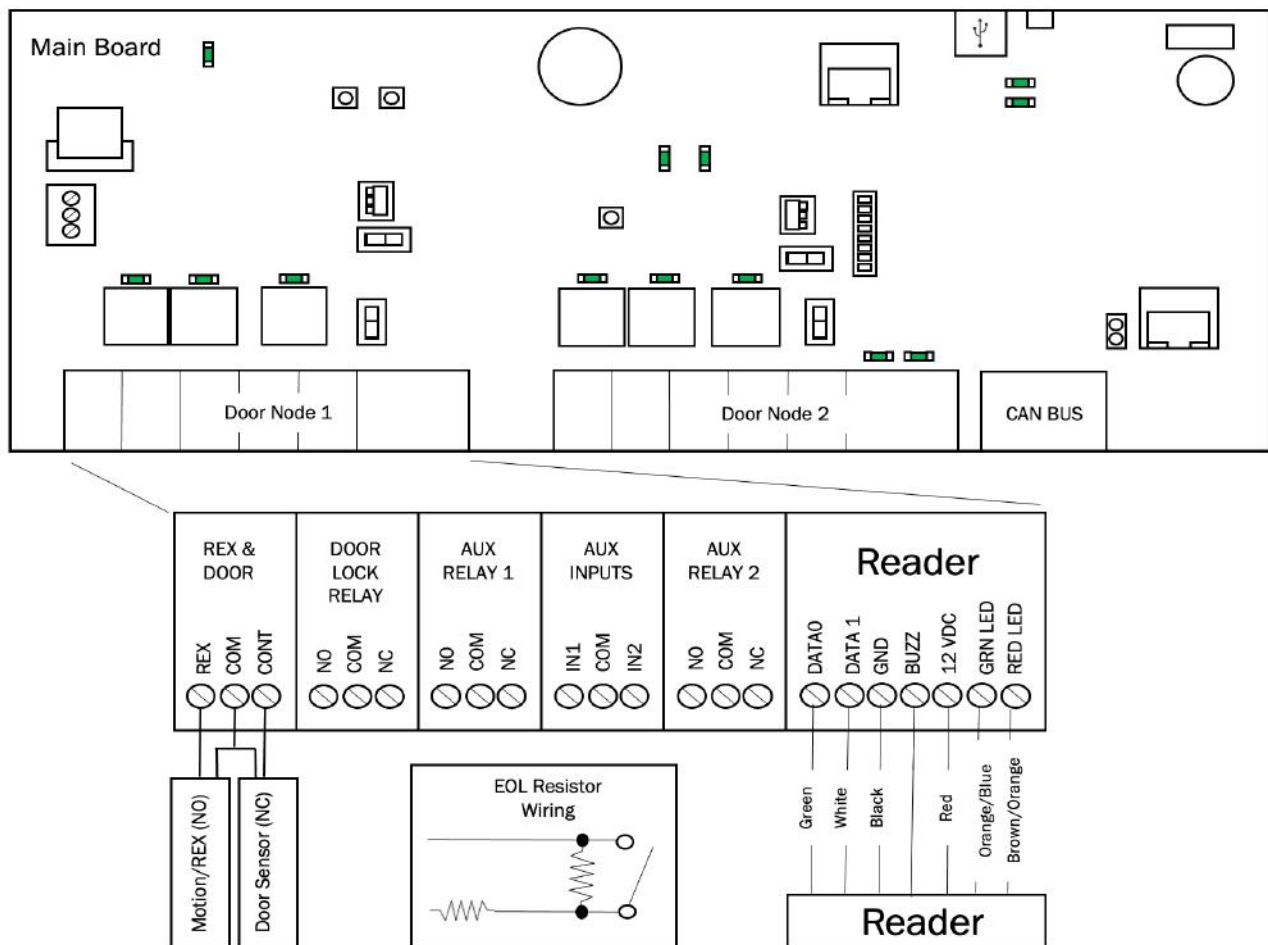


Figure 17 - Wire Doors for Wiegand Readers

**NOTE:** Output Ratings for the B-ACS6000-MBE/MBS MAIN CONTROL BOARD

- Two (2) reader ports, 12V, 350mA each
- Two (2) selectable wet contacts, 12VDC, 350mA each
- Four (4) dry contacts are 28VDC, 6A each

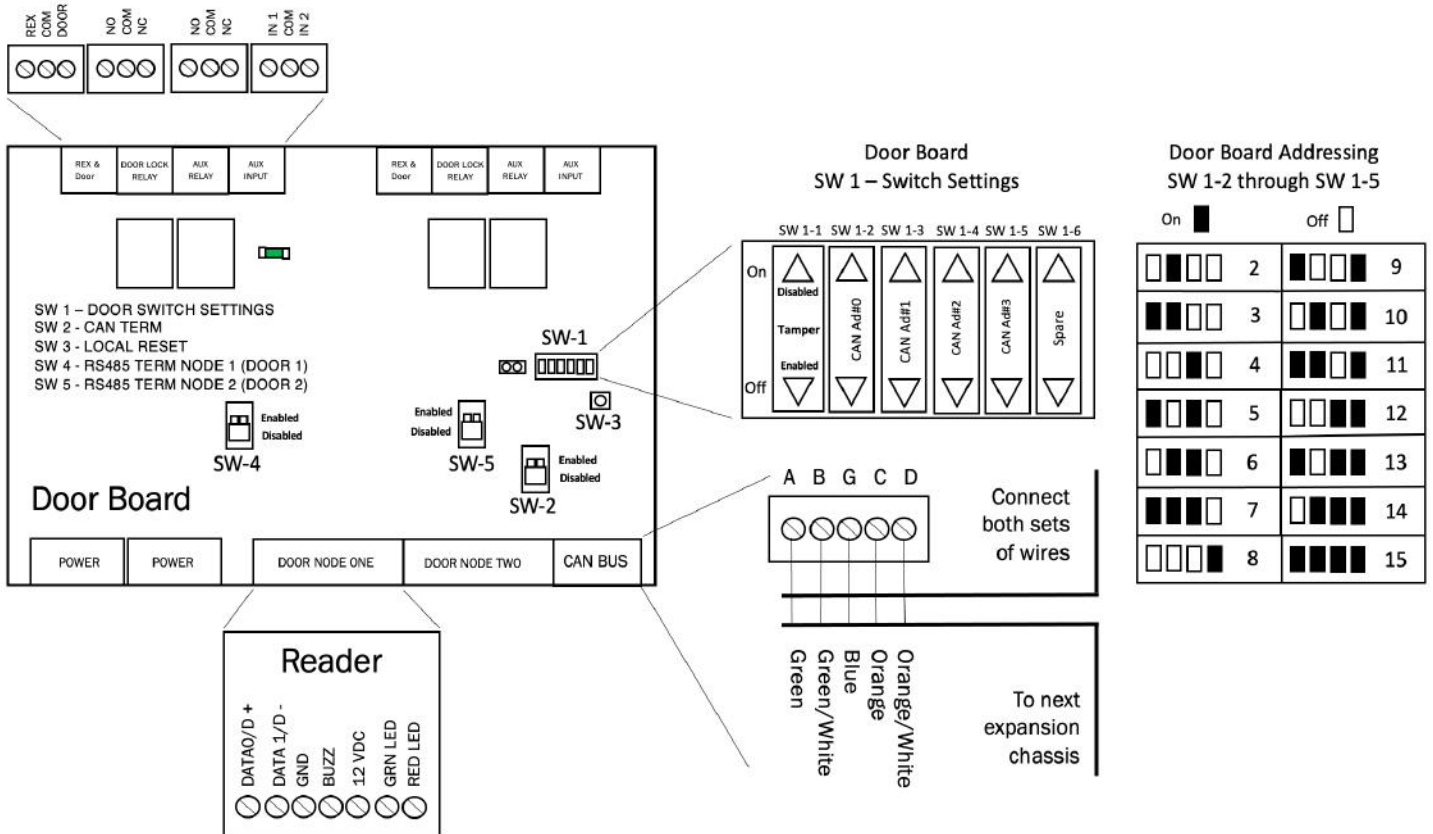


Figure 18 - Wire DOOR BOARD

**NOTE:** Output Ratings for the B-ACS6100-DB Door Board

- Two (2) reader ports, 12V, 500mA for each reader.
- Four (4) relays on the Door Board. The ratings are 28VDC, 3A each.

1. Wire the REX & DOOR terminal block.
  - a) Connect the Normally Open (NO) contacts of the REX device to the REX and COM terminals.
    - When this switch closes, it initiates a Request-to-Exit (REX) program sequence, as defined by the appropriate application, including the option to activate the door or other relays, fire the door strike, and suppress any “Door Forced” messages.
  - b) Connect the Normally Closed (NC) contacts of the Door Sensor to the COM and CONTACT terminals.
    - In this context, an NC switch is considered closed when the door is closed (magnet is present), and open when the door is open (no magnet is present).
    - When the switch is open, the control panel interprets this input as a “Door Open” condition. When the switch is closed, the control panel interprets this input as a “Door Closed” condition.
    - This circuit provides door status information (open/closed) to the control panel so the application can take appropriate action locally, or send email notifications if necessary.
2. Wire the DOOR LOCK RELAY terminal block.
  - a) Connect the door latch to the COM terminal and either the NO or NC terminal.
  - b) The DOOR LOCK RELAY provides both NO (Normally Open) and NC (Normally Closed)

- contacts, and is driven in response to the presentation of valid credentials or the programmable REX input.
  - c) Timing and other aspects of relay activation are programmed through the application.
3. If used for an alarm shunt, wire the AUX RELAY 1 terminal block. If not used for an alarm shunt, AUX RELAY 1 can be used for a variety of purposes.

**NOTE:** The fully programmable AUX RELAYs provide both NO (Normally Open) and NC (Normally Closed) contacts.

**WARNING: Relay Amp Limit**

THERE IS A 3A, 28VDC LIMIT ON THROUGH CURRENT FOR ALL RELAYS.

4. If used, wire the AUX INPUTS terminal block.
- a) The IN1 and IN2 terminals are contact closure type inputs that share a COM terminal.
  - b) The terminals can be used for a variety of purposes, and are programmed through the application.
5. Wire the Reader terminals to the last block of terminals in this door node. For Wiegand readers, refer to Wiegand wiring instructions below. For OSDP Readers, refer to OSDP wiring instructions below.

**NOTE:** Wiegand readers use a 5V signaling level and Brivo hardware is compliant with 5V Wiegand readers. Any reader that claims to be Wiegand but does not use 5V signaling is not compatible with Brivo hardware.

**NOTE:** To activate RS-485 functionality on the ACS6000 MAIN CONTROL BOARD for Door 1, put the RS-485/Wiegand Door 1 switch in the RS-485 position. For Door 2, put the RS-485/Wiegand Door 2 switch into the RS-485 position.

To activate Wiegand functionality on the ACS6000 MAIN CONTROL BOARD for Door 1, put the RS-485/Wiegand Door 1 switch in the Wiegand position. For Door 2, put the RS-485/Wiegand Door 2 switch in the Wiegand position.

On B-ACS6100-DB door boards, the board automatically detects Wiegand versus OSDP readers.

## Wiring OSDP Readers and Allegion Transceivers

**IMPORTANT NOTE:** The B-ACS6000-MBS control panel cannot use OSDP readers.

**NOTE:** Ensure that when wiring the RS-485 bus that BOTH ENDS of the RS-485 bus are terminated using a 120Ω resistor.

**NOTE:** The B-ACS6000-MBE and B-ACS6000v2-MBE control panels have an RS-485 termination switch built in for the Door 1 and Door 2 nodes. If the B-ACS6000-MBE or B-ACS6000v2-MBE control panels are being used as one end of the RS-485 bus, be sure to put the appropriate switch in the **Enabled** position.

**NOTE:** Brivo recommends using Half-Duplex mode for OSDP readers. Most commercially available OSDP readers operate in Half-Duplex mode.

**NOTE:** When wiring OSDP readers, wire only a single OSDP reader per door node.

**NOTE:** When wiring the RS-485 bus, use only twisted pair shielded wire.

**NOTE:** The RS-485 bus uses a series bus topology, not a star topology. Failure to wire the RS-485 bus properly will result in communication failure between devices.

**NOTE:** Any device at the end of the RS-485 bus needs to be terminated using a 120Ω resistor. This resistor may be built into the device or may need to be added externally.

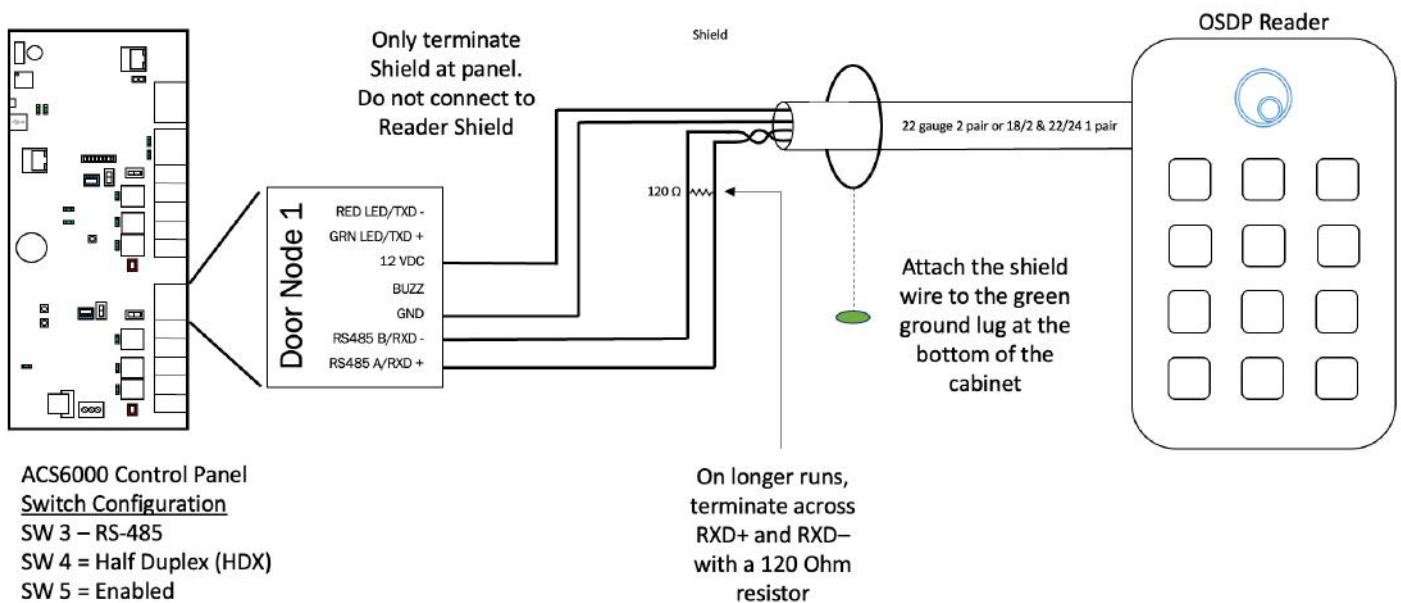


Figure 19 – Typical Half Duplex RS-485 Wiring Diagram for OSDP Reader

**IMPORTANT NOTE:** Allegion RSI functionality is supported on Door Node 1 only of the MAIN CONTROL BOARD. Door Node 2 does NOT support Allegion RSI functionality, nor do the B-ACS6100-DB DOOR BOARDS. On B-ACS6100-DB DOOR BOARDS, RS-485 is only supported for OSDP readers.

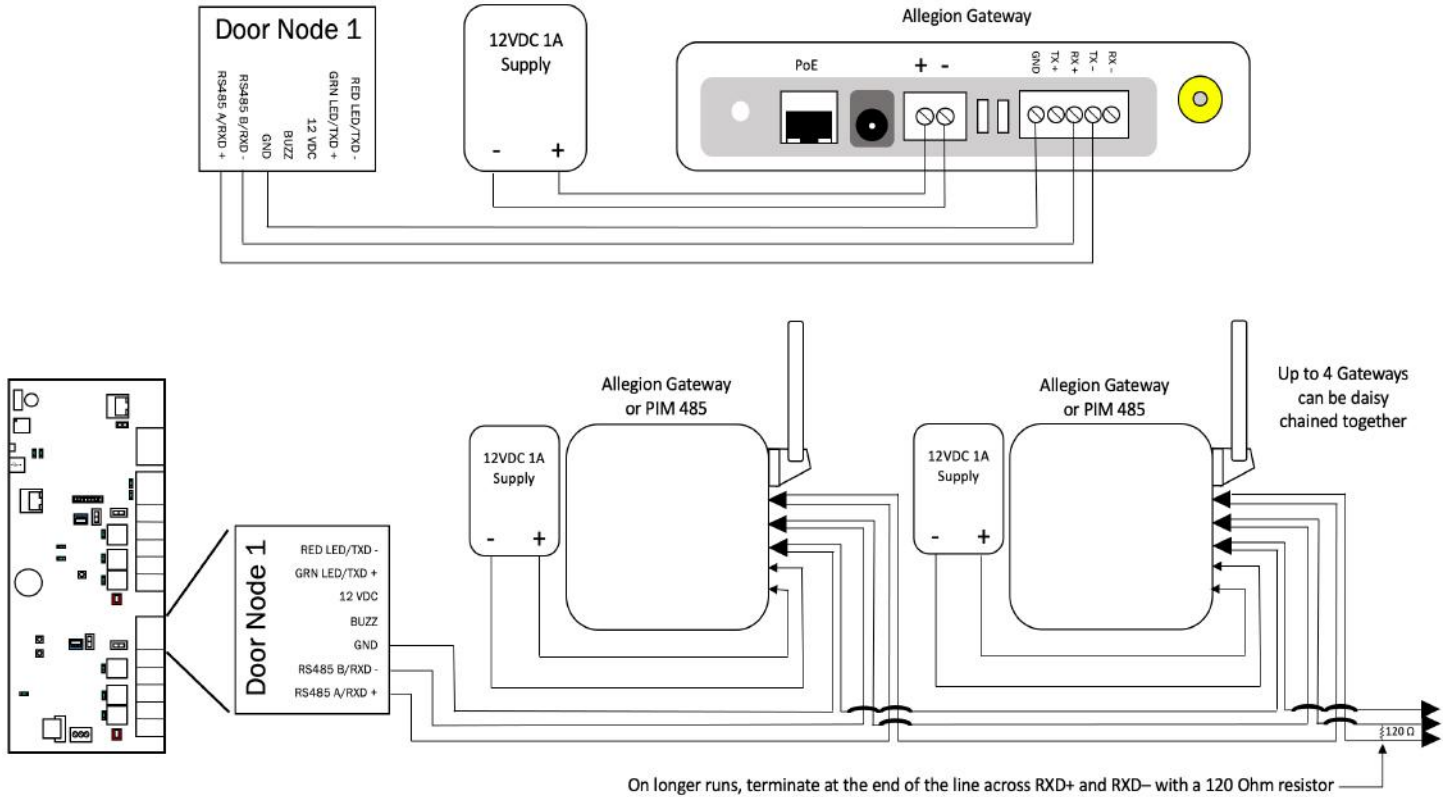


Figure 20 – Typical Half Duplex RS-485 Wiring Diagram for Allegion Transceivers

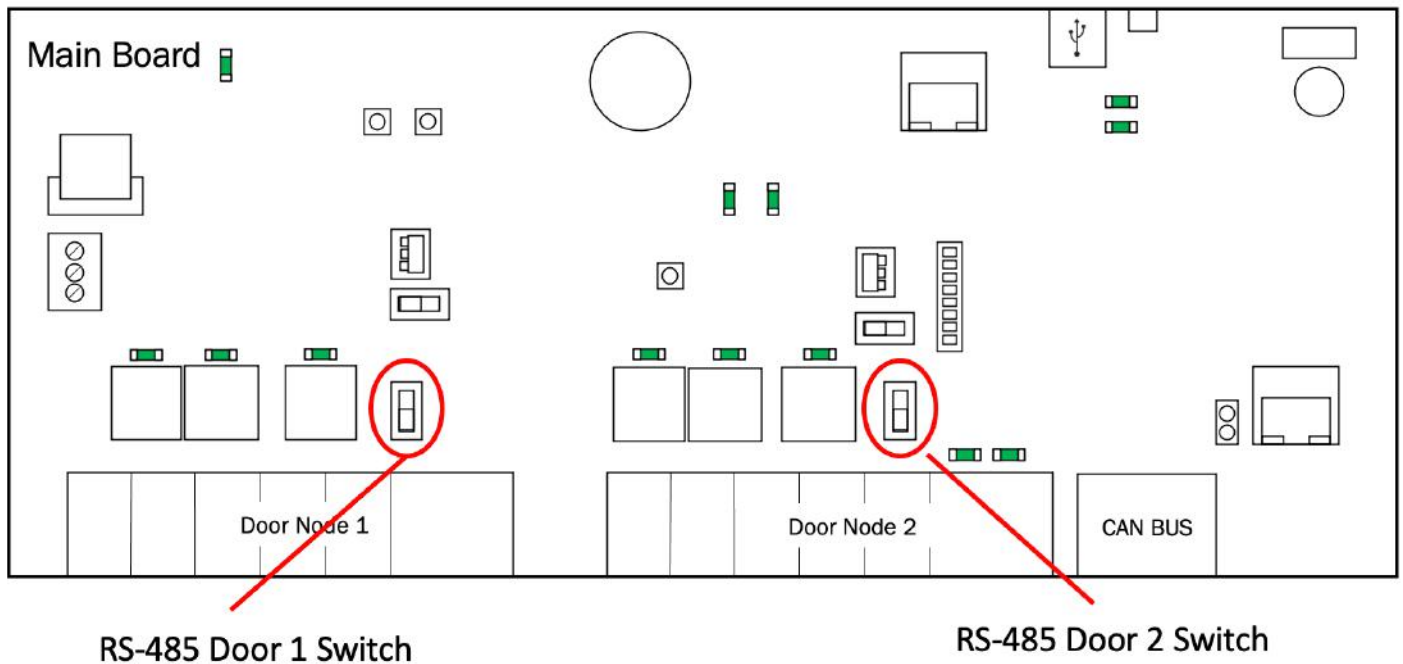


Figure 21 - RS-485/Wiegand Switch Locations

**NOTE:** The B-ACS6000-MBE and B-ACS6000v2-MBE MAIN CONTROL BOARDs ship and default to Half-Duplex communication for OSDP reader functionality. If placing the board into Full-Duplex mode, be careful as most readers will typically operate in Half-Duplex mode.

**NOTE:** To activate Full Duplex functionality on the B-ACS6000-MBE and B-ACS6000v2-MBE MAIN CONTROL BOARDs for Door 1, put the FDX/ HDX Door 1 switch in the FDX position. For Door 2, put the FDX/HDX Door 2 switch into the FDX position. To activate Half Duplex functionality on the B-ACS6000-MBE and B-ACS6000v2-MBE MAIN CONTROL BOARDs for Door 1, put the FDX/HDX Door 1 switch in the HDX position. For Door 2, put the FDX/HDX Door 2 switch in the HDX position.

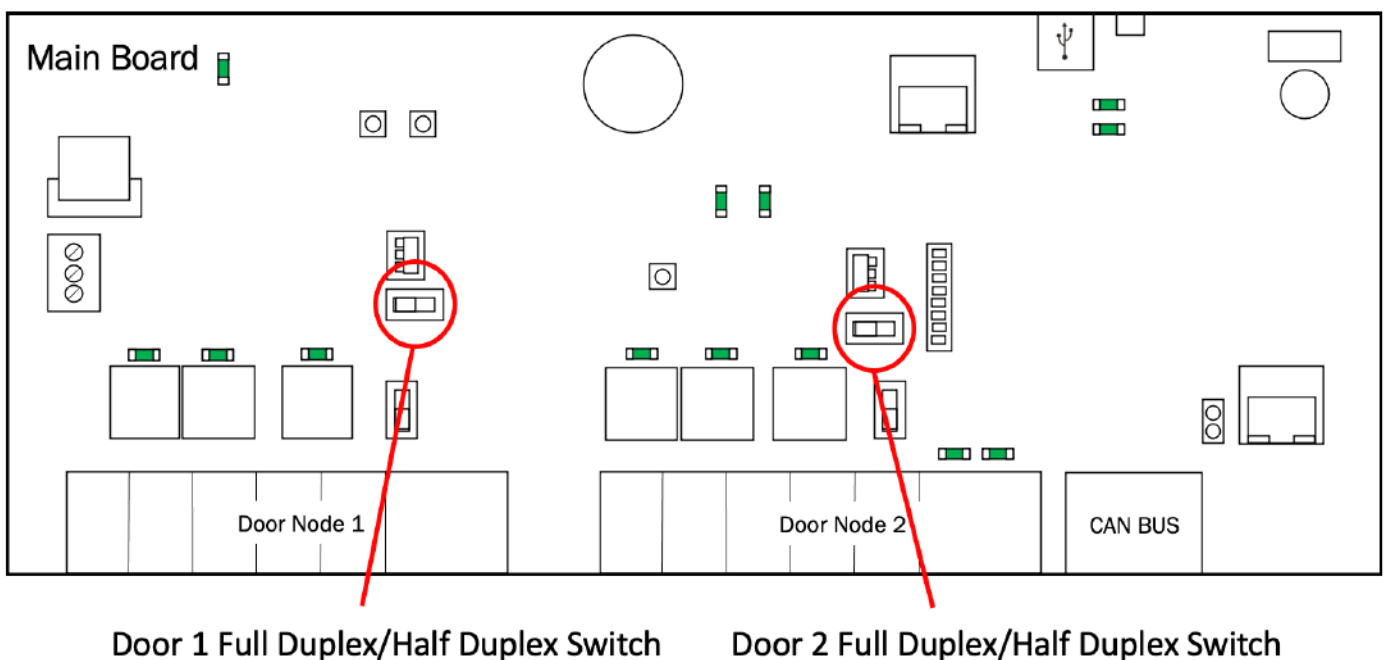


Figure 22 - RS-485 Full Duplex/Half Duplex Switch Locations for Doors 1 and 2

**NOTE:** RS-485 bus requires termination. Door 1 RS-485 Term is the RS-485 Door 1 bus termination switch and Door 2 RS-485 Term is the RS-485 Door 2 bus termination switch. To enable RS-485 bus termination for Door 1, put the RS-485 termination switch in the Enabled position. To enable RS-485 termination for Door 2, put the RS-485 termination switch in the Enabled position.

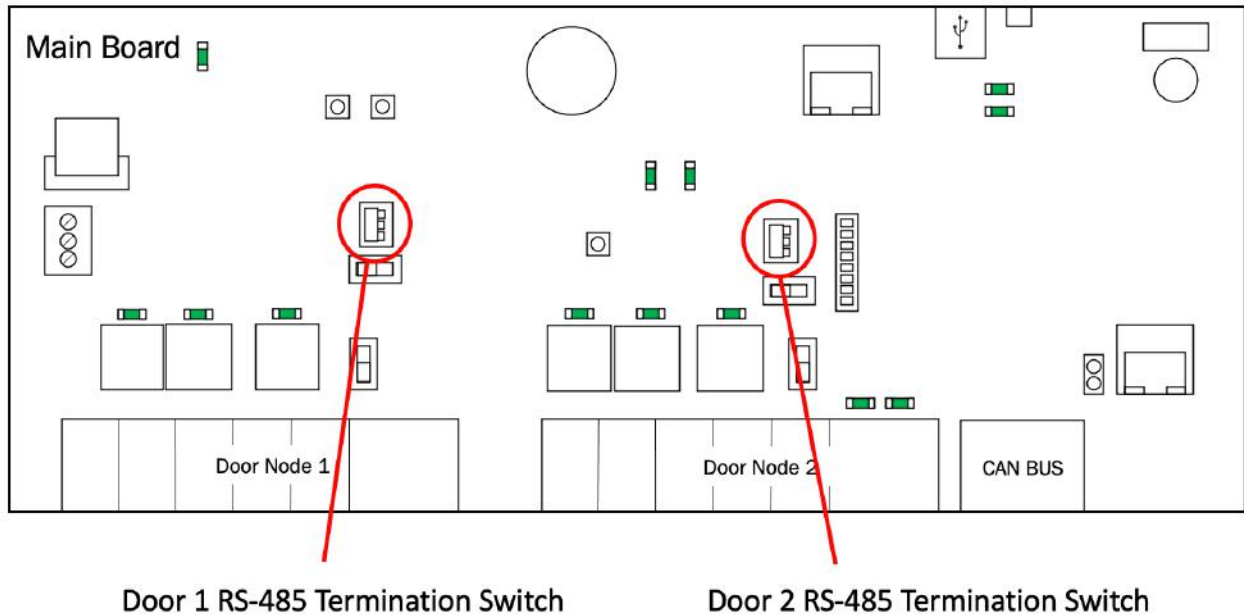


Figure 23 - RS-485 Termination Switch Locations for Doors 1 and 2

**NOTE:** Door lock relays can be provided with power by using Door 1 Wet/Dry Switch above Door Node 1 and Door 2 Wet/Dry Switch above Door Node 2. To enable wet mode for Door 1, put the Door 1 Wet/Dry Select Switch in the Wet position. To enable wet mode for Door 2, put the Door 2 Wet/Dry Select Switch in the Wet position. To enable dry mode for Door 1, put the Door 1 Wet/Dry Select Switch in the Dry position. To enable dry mode for Door 2, put the Door 2 Wet/Dry Select Switch in the Dry position.

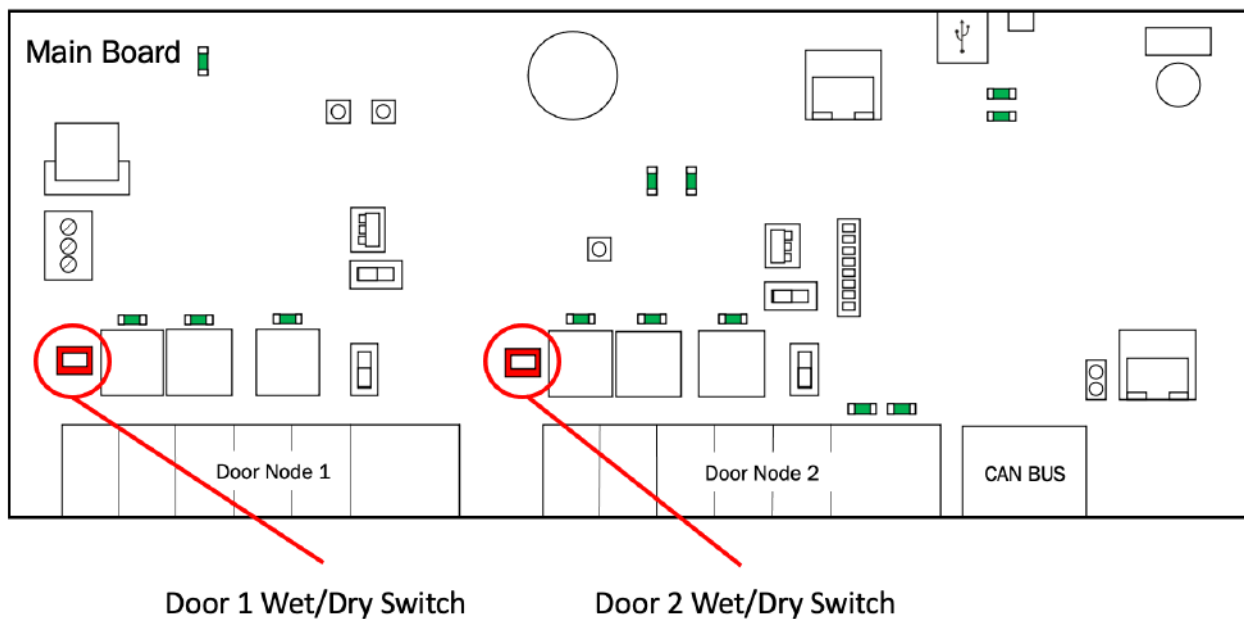


Figure 24 - ACS6000 Wet/Dry Door Contact Switches for Doors 1 and 2

**NOTE:** Refer to our Approved Reader Compatibility List and connection diagrams.

1. Use the wire recommended by the manufacturer of the reader or keypad. If no wire is recommended, use a minimum of 22 AWG wire with sufficient conductors that include shield (drain).
2. If your reader interface uses standard Wiegand conventions, connect the wire properly to the terminal block on the appropriate board node. Following is a typical, but not universal, wiring guide. Refer to our Approved Reader List for guidelines related to your specific reader or keypad.
  - a) Connect the green reader wire to the DATA0 terminal. This is the standard Data 0 circuit for Wiegand readers.
  - b) Connect the white reader wire to the DATA1 terminal. This is the standard Data 1 circuit for Wiegand readers.
  - c) Connect the black reader wire to the GND terminal. This is the standard Ground circuit for the reader.
  - d) Connect the blue reader wire to the BUZZ terminal. This is the standard Buzzer circuit for the reader.
  - e) Connect the red reader wire to the 12VDC terminal. This provides +12VDC to power the reader.
  - f) Connect the orange reader wire to the GRN LED terminal. This is the green LED circuit.
  - g) Connect the brown reader wire to the RED LED terminal. This is the red LED circuit.
3. If your reader is OSDP using RS-485 wiring conventions, connect the wire properly to the terminal block on the appropriate board node. Following is a typical, but not universal, wiring guide. Refer to our Approved Wiegand and OSDP Reader List for guidelines related to your specific reader or keypad.
  - a) Connect the wire to the RXD+ terminal. This is the standard RXD+ circuit for OSDP readers using RS-485.
  - b) Connect the wire to the RXD- terminal. This is the standard RXD- circuit for OSDP readers using RS-485.
  - c) Connect the wire to the GND terminal. This is the standard Ground circuit for OSDP readers using RS-485.
  - d) Connect the wire to the 12VDC terminal. This provides +12VDC to power OSDP readers using RS-485.

**OSDP / RS-485 Wiring Table**

Hardware	Green Reader Wire	White Reader Wire
ACS6000/ACS6100	D0 / RXD +	D1 / RXD -
ACS300	RXD +	RXD -
ACS100	Green	White
ACS-SDC	RS485 +	RS485 -

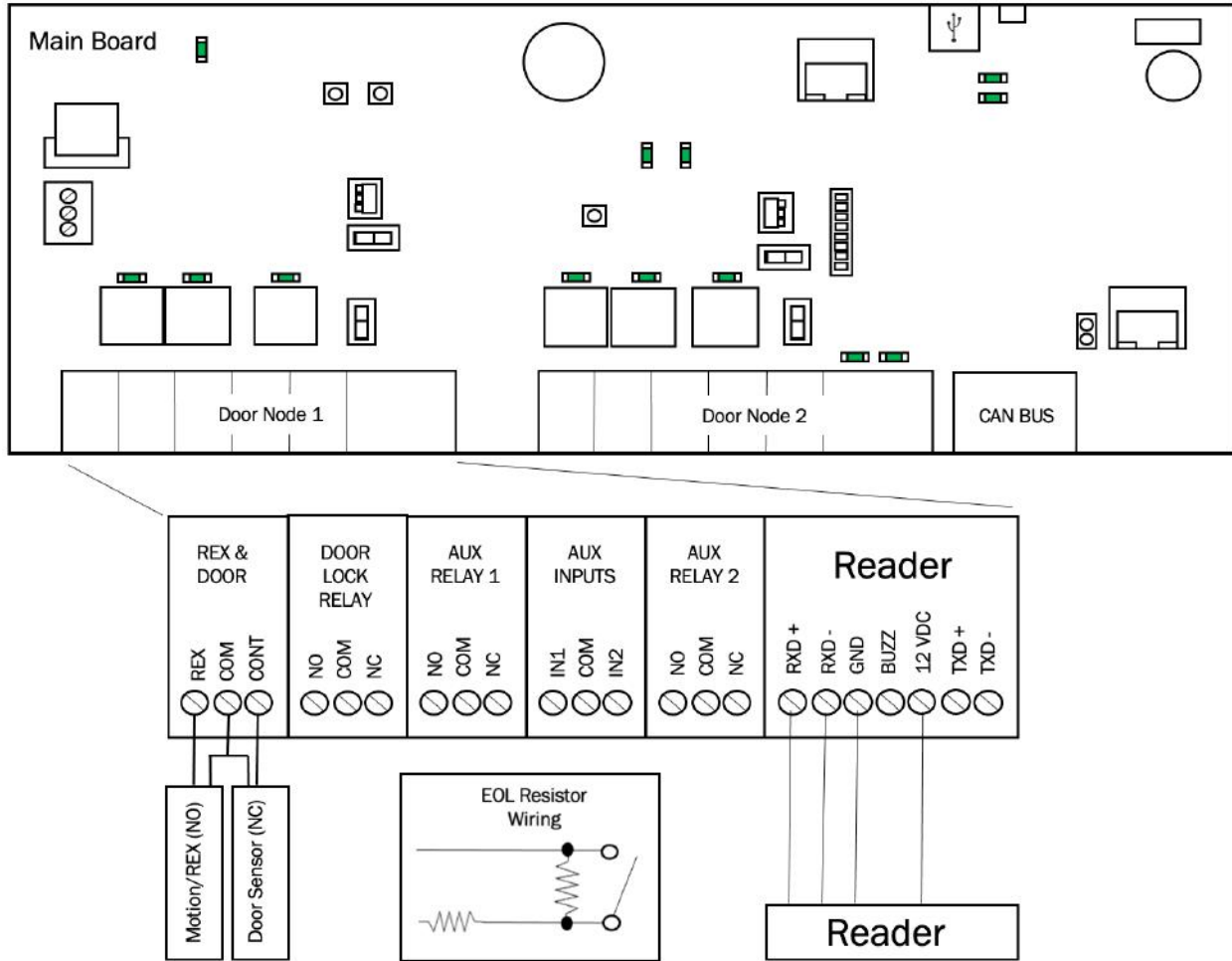


Figure 25 - Wire Doors for OSDP Readers using RS-485

4. Install MOVs.

**WARNING: Noise Suppression**

INSTALL THE TRANSIENT NOISE SUPPRESSION DEVICE (MOV) SUPPLIED WITH THE CONTROL PANEL.

- a) Install the MOV across the conductors, as close as possible to the electric strike or latch. This will normally be at the connection from the field-installed wiring to the pig tail or screw terminals of the electronic strike or latch.
- b) Use the wire recommended by the manufacturer of the electric strike or latch. If no wire is recommended, use a minimum of 18 AWG wire with sufficient strands for the specific electronic strike or latch.

## Wire INPUT OUTPUT BOARDS

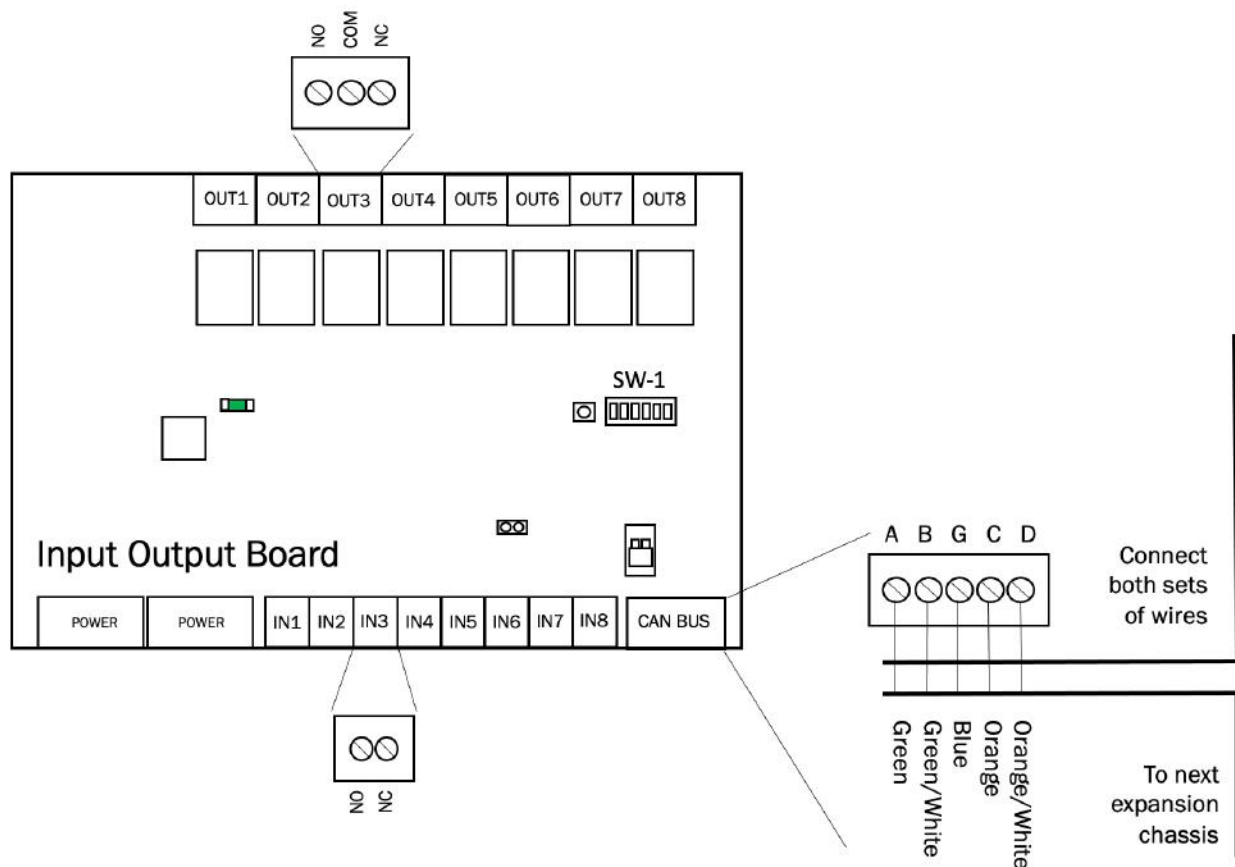


Figure 26 - Wire INPUT OUTPUT BOARD

### NOTE: Output Ratings for the B-ACS6100-IO Input Output Board

- Eight (8) relays on the I/O Board. The ratings are 28VDC, 3A each.
1. An INPUT OUTPUT BOARD has 8 output relays and 8 inputs. The 8 inputs are located on the bottom of the INPUT OUTPUT BOARD and the 8 outputs are located along the top. The inputs can be wired for line supervision.
  2. The B-ACS6000-MBE/MBS control panel is capable of 4-state input monitoring at each input connector, whether it be on the MAIN CONTROL BOARD, a Door Board, or an Input Output Board. This allows for monitoring of not only open and closed switches, but cut and short-circuited lines as well. This can only happen when the EOL (end-of-line) resistor wiring is installed.
    - a) You will need two 2K ohm resistors for each input.
    - b) The resistors are installed on the input lines as close to the switch as possible, and as far from the B-ACS6000-MBE/MBS control panel.
    - c) One resistor is placed in parallel with the switch, so that one end of the resistor is connected to wire 1 from the switch, while the other end is connected to wire 2 from the switch.
    - d) The second resistor is placed in series with the switch, so that one end of the resistor is connected to wire 1 from the switch, while the other end is connected to the wire leading to the B-ACS6000-MBE/MBS MAIN CONTROL BOARD.
    - e) The other wire from the B-ACS6000-MBE/MBS is connected to wire 2 from the switch, as shown in Figure 21.

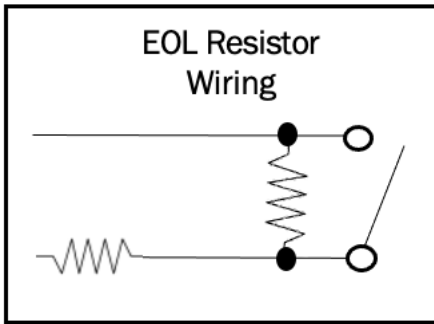


Figure 27 - EOL Resistor Wiring

**WARNING: Powering Electronic Strikes and Latches**

DO NOT POWER ELECTRONIC STRIKES AND LATCHES WITH THE BATTERY (OR OTHER POWER SOURCE) USED TO POWER THE CONTROL PANEL; DOING SO WILL CAUSE DAMAGE TO THE BRIVO CONTROL PANEL. USE ONLY A MET LISTED BURGLAR ALARM OR ACCESS CONTROL SYSTEM TO POWER ELECTRONIC STRIKES AND LATCHES.

**Mount and connect the Wi-Fi antenna (if using Wi-Fi functionality)**

**NOTE:** Wi-Fi Frequency - Wi-Fi on the B-ACS6000-MBE panel operates in the 2.4GHz frequency bands.

1. If you are using the Wi-Fi functionality of the B-ACS6000-MBE MAIN CONTROL BOARD, please make certain that your SW 7-8 Wi-Fi switch is set to the Enabled position.
2. Included in the shipping contents of the B-ACS6000-MBE panel is a Wi-Fi antenna cable with one end being a brass washer/screw connector (which is covered by a removable red protective cover) and the other end being a silver snap connector.
3. Unscrew the brass washer from the cable and place that end through the top of the chassis. Now screw the washer back in place on the outside of the chassis, securing the cable to the top of the chassis.
4. Attach the Wi-Fi antenna (included with the shipping contents) to the connector atop the chassis.

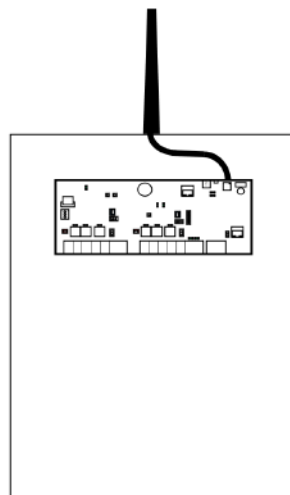


Figure 28 - ACS6000 Wi-Fi Cable Connection

- Attach the silver end of the Wi-Fi integrated circuit antenna connector located in the upper right hand corner of the Wi-Fi antenna chip on the B-ACS6000-MBE and B-ACS6000v2 MBE MAIN CONTROL BOARDS.

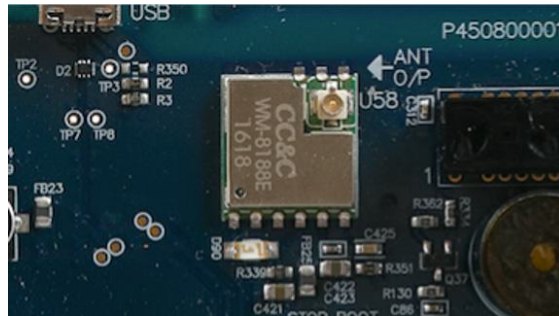


Figure 29 – Wi-Fi Integrated Circuit Antenna Connector

**ACS6000 Wi-Fi Integrated Circuit**

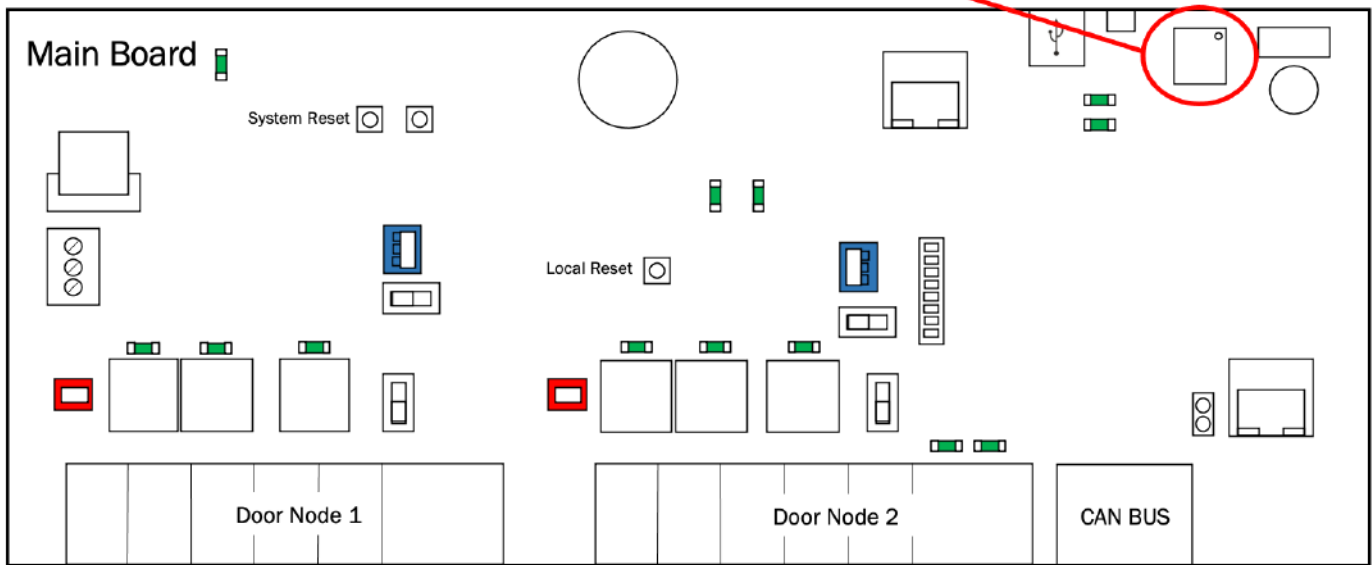


Figure 30 - ACS6000 Wi-Fi Integrated Circuit Location

- When snapped into place, you may feel and hear an audible click.

**Ground the control chassis**

- Wired the incoming Earth ground cable to the control chassis Earth ground screw located at the bottom of the chassis.
- Use 18 AWG or larger solid wire to connect the chassis to a suitable earth ground.
- The ground contact point is in the lower panel area, near the hinge for the door and in front of the power supply.

## Powering and Testing Procedures

### WARNING: Power Precautions

BEFORE POWERING UP THE CONTROL PANEL, CHECK THE FOLLOWING CONNECTIONS. MAKE SURE THAT:

- The power adapter is NOT plugged into the 120VAC outlet.
- All wiring to the back-up battery is DISCONNECTED.

### Power up the control panel.

1. Plug the power adapter into a 120VAC outlet.

### NOTE: Firmware Upgrade at First Time Connect

This automatic update is a one-time process that occurs only during the initial connection. When first registered and connected to the Brivo Cloud Server, your B-ACS6000-MBE or B-ACS6000v2-MBE will automatically download and install the latest firmware. This process may take several minutes, so do not disconnect or cut power to your board during this process. If you encounter any difficulties, please contact Brivo Technical Support at 866-274-8648, Ext 2 or email [customercare@brivo.com](mailto:customercare@brivo.com).

2. Check ALL power indicators:
  - a) Once the chassis door is closed, check the power supply board through the clear viewing hole to confirm that the green LED is on, indicating that AC power is being supplied to board and that the board is producing 12VDC power.
  - b) Check the MAIN CONTROL BOARD to confirm that the LOCAL HRTBT (local heartbeat) and MAIN HRTBT (main heartbeat) have come on and are blinking.
    - The local heartbeat should begin blinking immediately.
    - The main heartbeat can take 30-60 seconds to establish a steady beat.

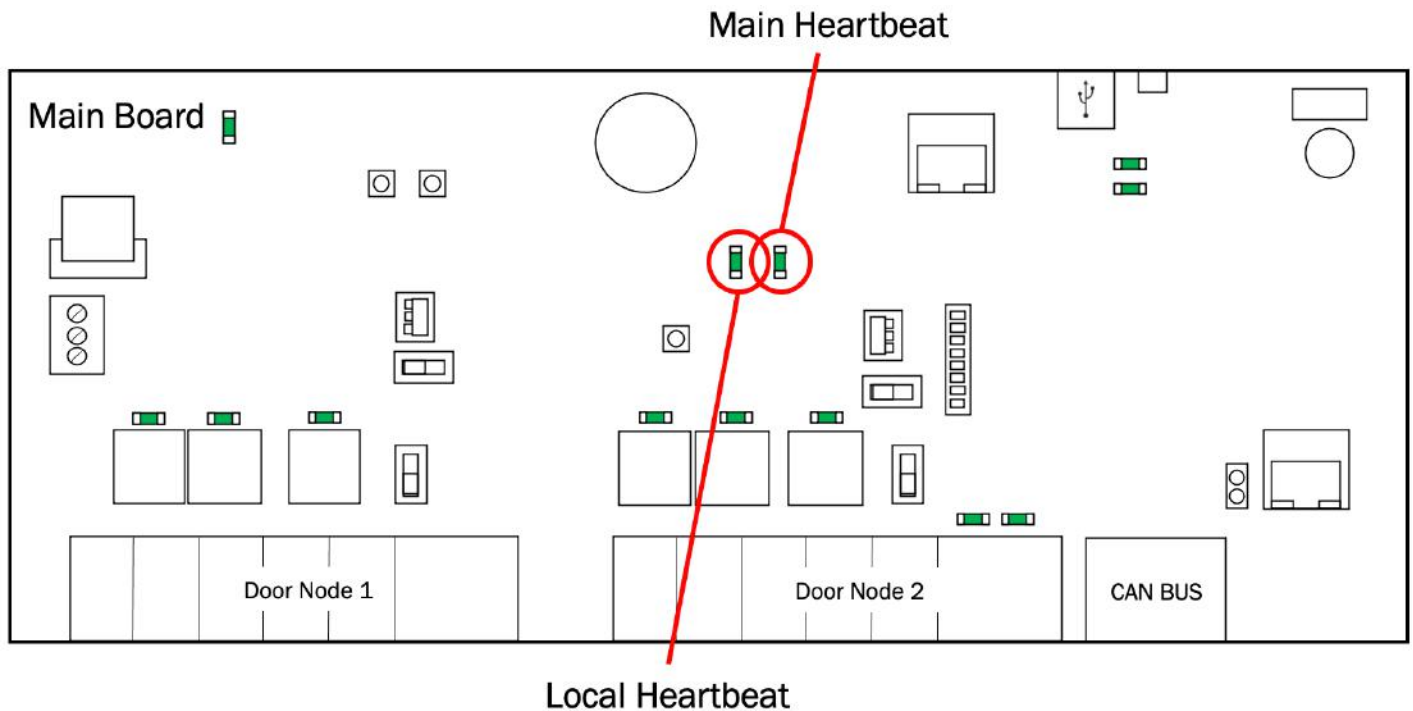
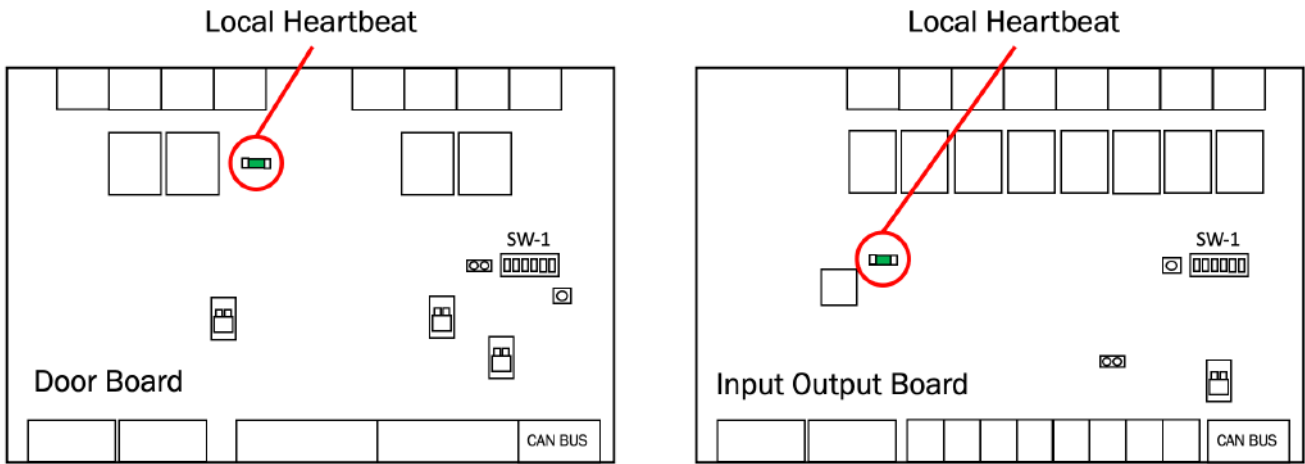


Figure 31 - MAIN CONTROL BOARD Heartbeats



- c) Check each DOOR BOARD to confirm that the LOCAL HRTBT has come on and is blinking, indicating that 12 VDC power is present.

*Figure 32 - Expansion Boards Local Heartbeat*

- d) Check each INPUT OUTPUT BOARD to confirm the LOCAL HRTBT has come on and is blinking.
- e) If any of these power indicators is not correct (i.e., the LED light does not come on or does not begin blinking, check the connections from the power supply to each of the circuit boards. If all connections are good but there is a still a problem with the power indicator, contact Technical Support.

**NOTE:** A steady light is an indication of a problem, just as much as no light is.

- 3. If ALL power indicators are correct, attach the back-up battery and check that ALL indicators remain the same.

## Configuration Procedures

### Connect a laptop to the MAIN CONTROL BOARD's ADMIN Port (if required)

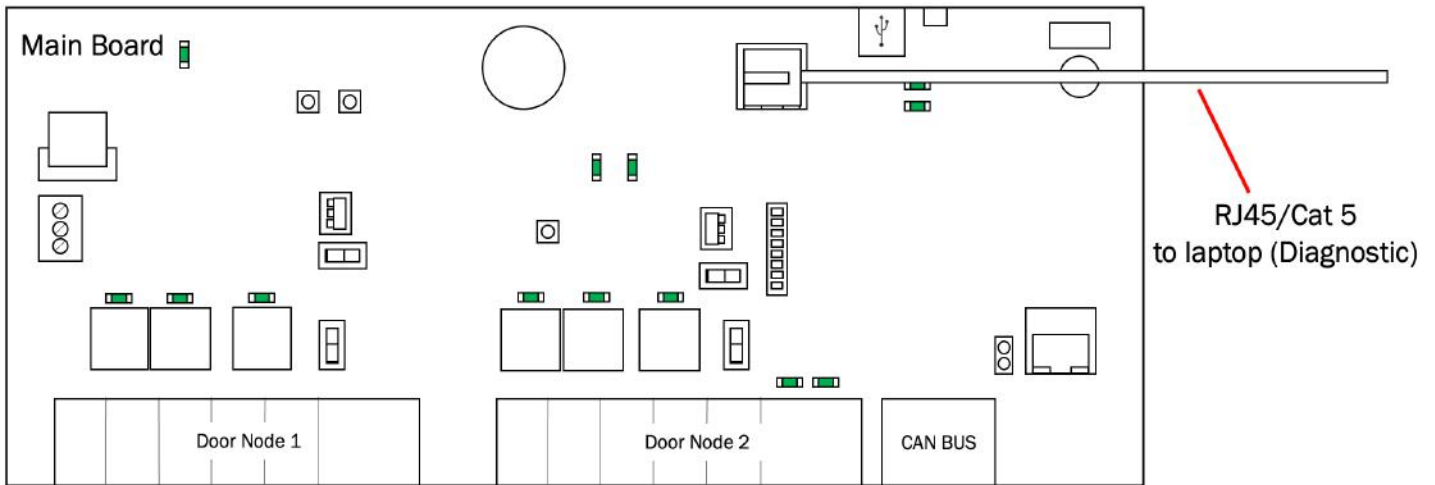


Figure 33 - Connect Laptop to MAIN CONTROL BOARD

1. Connect a laptop to the ADMIN port on the MAIN CONTROL BOARD using a standard Ethernet cable or a patch cable.
  - a) The ADMIN port is a 10/100 Ethernet interface with RJ45 jack for connecting the MAIN BOARD to a laptop or PC to gain access to the local administrative interface for debug and manual configuration utilities.
  - b) The port uses auto-sensing technology to determine polarity, which permits either a straight or crossover cable to be used between the board and the computer.

### Connect the LAN to the MAIN CONTROL BOARD (if required)

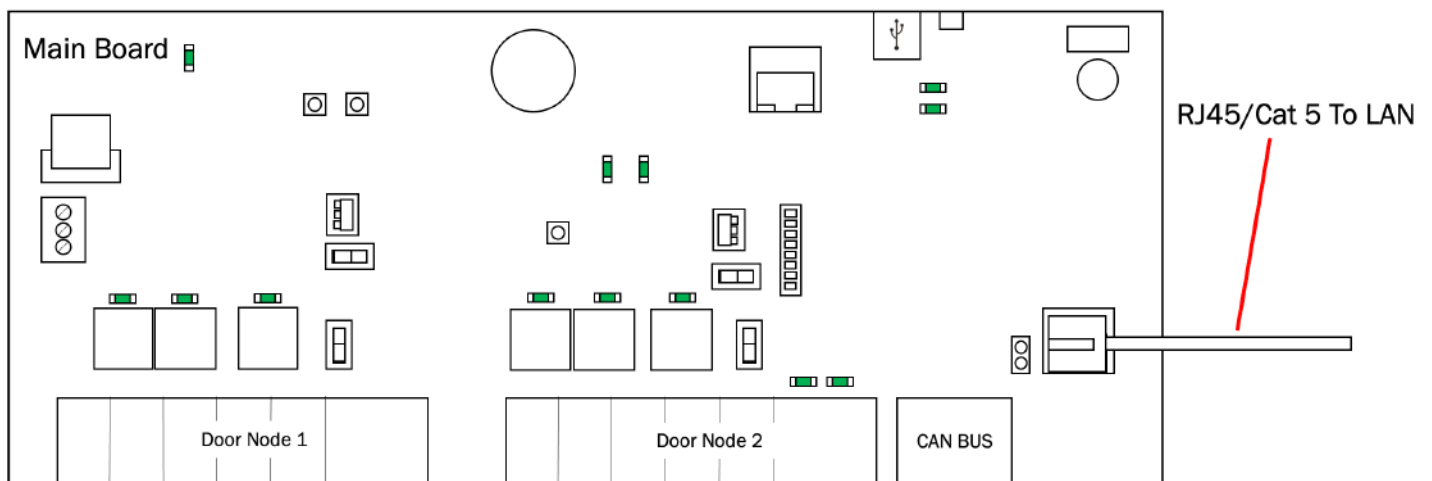


Figure 34 - Connect LAN to MAIN CONTROL BOARD

1. Connect the LAN to the MAIN CONTROL BOARD according to the instructions in the [Panel Networking Guide](#) (or [Brivo Onsite Administrator's Guide](#)).
  - a) The LAN port is a 10/100/1000 Ethernet interface with an RJ45 jack for connecting the MAIN CONTROL BOARD to a Local Area Network in order for it to gain connectivity to

- the Internet and the appropriate server depending upon the version of MAIN CONTROL BOARD.
- b) Use a straight, (i.e., non-crossover) cable to connect this port to a local hub, switch or router that has connectivity to the Internet.
  - c) The following Ethernet LED behavior represents the network speed for the LAN port on the MAIN CONTROL BOARD:
    - Green LED only – 1000 M
    - Orange LED only – 100 M
    - Green LED + Orange LED – 10 M

**NOTE:** Since each OSDP reader is on a separate bus on the B-ACS6000-MBE and B-ACS6000v2-MBE MAIN CONTROL BOARDS, the RS-485 default address assigned to each reader should not interfere with any other OSDP readers assigned to the same control panel. However, make certain that the default OSDP reader address matches the OSDP address used when assigning the reader in Brivo.

### Revision Table

Version	Date	Author	Content
1.0	08/27/2021	LMW	Original document
1.1	11/01/2021	LMW/RC/ RTM/TRN	Updates and corrections
1.2	08/01/2022	LMW	Added Wiegand voltage warning
1.3	11/29/2023	LMW	Added references to v2 boards
1.4	04/03/2024	LMW	Added the OSDP / RS-485 Wiring Table on page 31, updated the switch bank information for v2 boards, and updated Wire Recommendations on page 5
1.4.1	11/20/2024	LMW	Corrected language on page 12.
1.4.2	01/06/2025	LMW	Edited the column headers on the OSDP Wiring Table on page 31
1.4.3	10/06/2025	LMW	Updated figure 19 on page 27
20260122	01/22/2026	LMW	Adopting new revision nomenclature and clarified the language of the first time firmware upgrade procedure