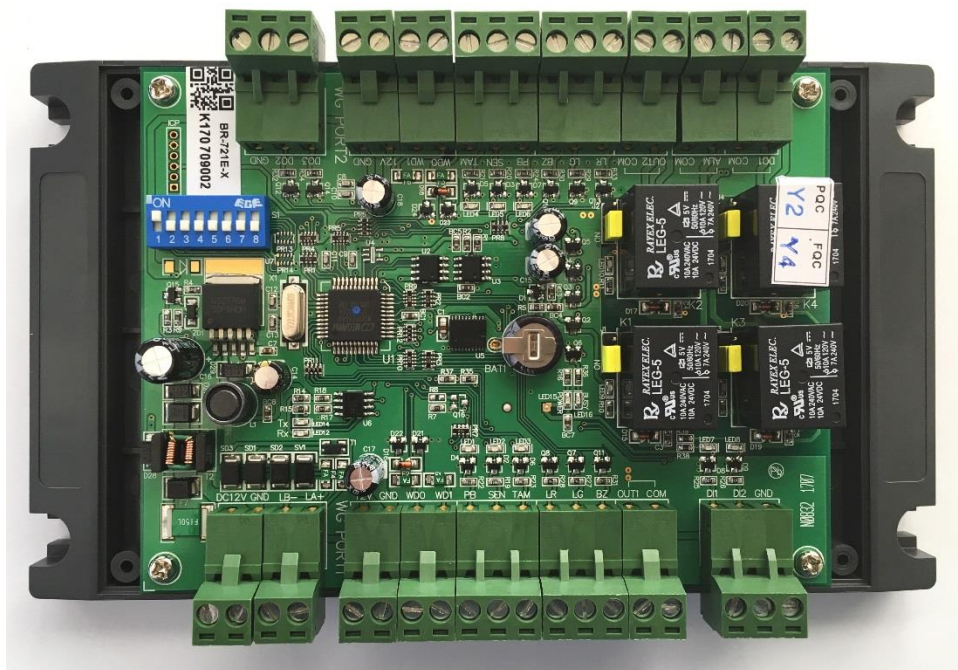


721EX Access Controller Installation

May 19, 2022



Standalone Controller Specifications

Card Capacity: 3000 cards
Computer Connection: RS485

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What is included in the box

- Plastic enclosure, including:
 - B-Id 721EX controller board
 - 12VDC power supply and pigtail
 - 2 Varistors (pre-installed on controller board), which is protection for the relays
 - 6 feet of 4-conductor wire (to connect to computer)
 - Crimp connectors
 - Small flathead screwdriver
- USB/RS485 converter
- 4-conductor and/or 2-conductor wire (if ordered)

Tools that you will need

- Wire cutters/strippers (for 24-gauge wire)
- Pliers (for crimping wire connections)
- Voltmeter (optional)

If you are upgrading a legacy Gym Assistant Access Control system

If you are upgrading a legacy Gym Assistant Access Control system (either barcode or proximity), be sure to thoroughly document your current setup. This will not only facilitate connections to the new controller, but it will also give you an easy way to back out of the installation and return the system to its prior state should you encounter a problem.

- Take clear pictures of the existing controller with all wire connections visible.
- Take pictures of all connectors.
- Label existing wires wherever possible. For example: Reader, Door Lock, Controller Power, Reader Power, etc.

Upgrading Legacy Barcode Controller






The new controller can be mounted near the old controller.

The existing serial (RS232) reader will connect to the new controller using the included Serial/Wiegand adapter.

Upgrading Legacy Proximity Controller

The new controller should be mounted near the old controller. The existing reader and lock wires will connect directly to the new controller.

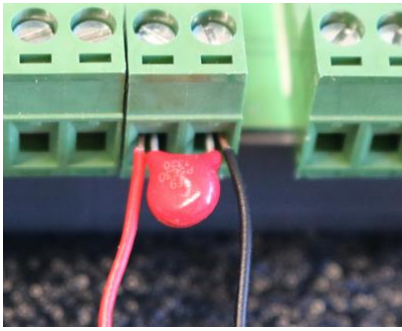
Components included with 721EX controller

 <p>Controller Power Supply with female pigtail connector (Found in controller enclosure)</p>	 <p>USB/RS485 Converter (Connects controller to computer, with included 4-conductor wire)</p>
 <p>Crimp Connectors (Found in controller enclosure)</p>	 <p>Varistors (2) (Pre-installed in controller)</p>
 <p>5VDC Voltage Regulator Only for Wiegand Barcode Reader (Pre-installed in controller)</p>	 <p>Serial/Wiegand Adapter Only for Legacy Barcode Reader upgrade (Converts Serial/RS232 connection to Wiegand connection)</p>

What is the red capacitor thing?

The red circular thing (we like to call it the “red doo-dad”) pre-mounted in the controller is a **varistor**. It acts to dampen the spark that occurs when the relay opens and closes the circuit (like an on/off switch). The varistor prevents the relay from burning out over time, and it should be left connected to the controller.

Connect door lock wires to the relay together with the varistor, as shown below. We recommend that you loosen one terminal screw, insert one of the lock wires, then re-tighten the terminal screw. Then repeat for the other terminal.



What is the white box inside the controller box?

If you are using a Wiegand Barcode Reader, then the controller includes a 5VDC Voltage Regulator. The Wiegand Barcode Reader requires 5VDC power, but the controller provides 12VDC. The regulator provides a source of 5VDC power for the reader.

DO NOT connect a Wiegand Barcode Reader direct to the controller! If you do attach 12V power directly to the reader then you will experience smoke and flames from the reader. This is a bad thing, so just don't do it. It will also obviously void the reader warrantee. Fried readers will not be replaced free of charge.

Additional Components included with Wiegand Barcode Reader



Wiegand Barcode Reader



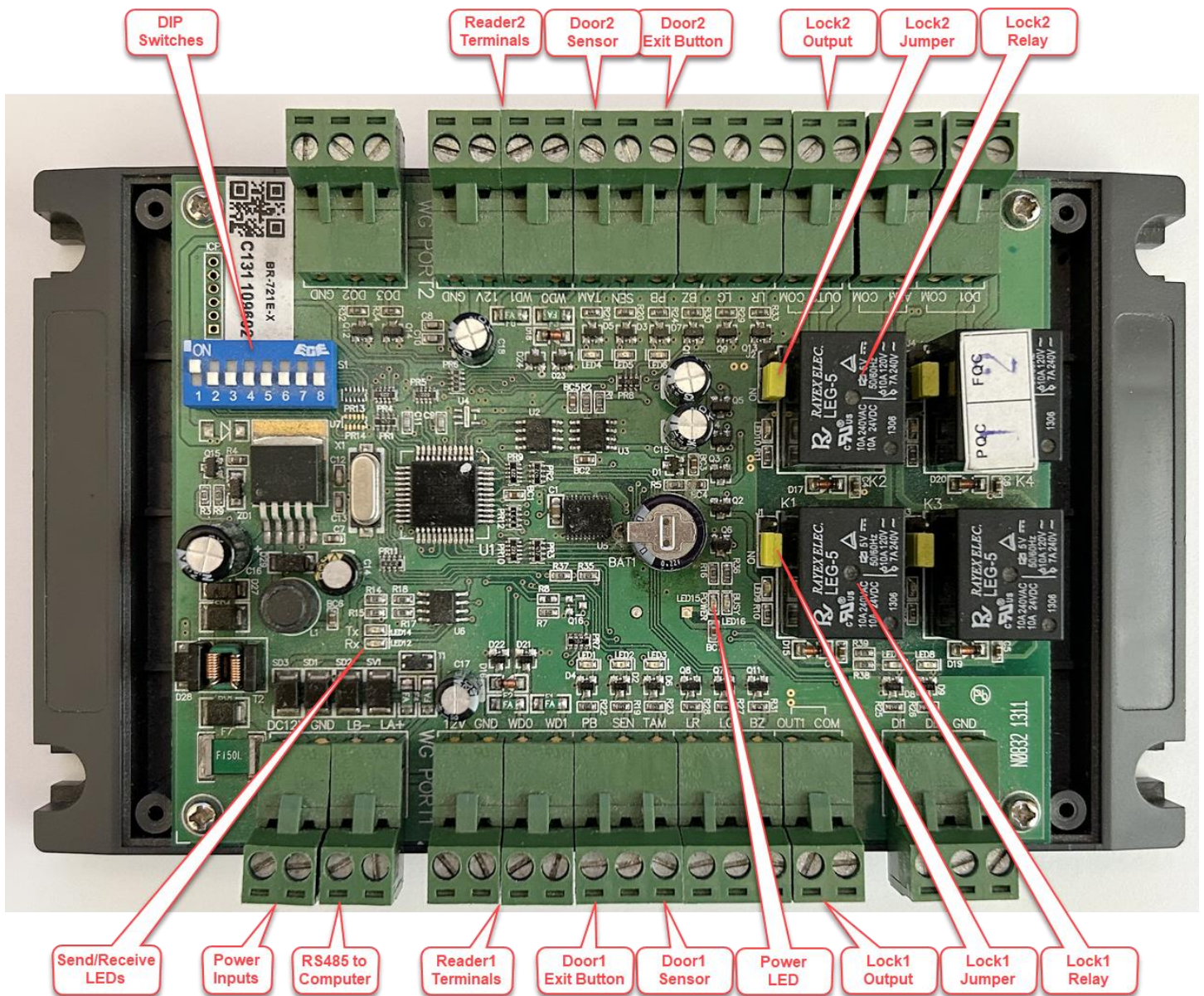
5VDC Voltage Regulator

Required for reader power (see below)
Pre-installed inside controller enclosure

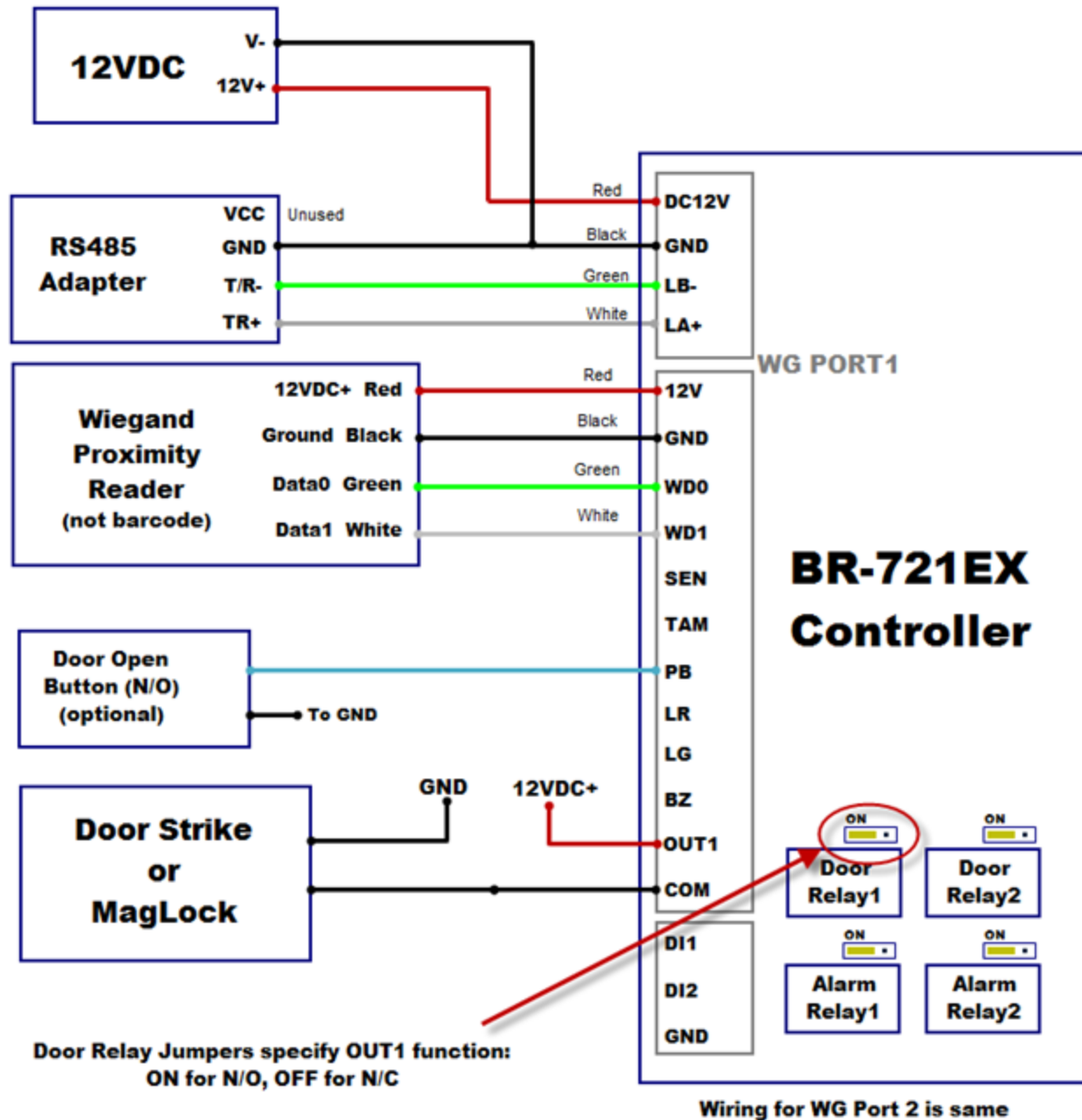
Note: The Wiegand Barcode Reader requires 5VDC power, but the controller provides 12VDC.

DO NOT attach 12VDC power to the Wiegand Barcode Reader! If you do attach 12V power to the reader then you will experience smoke and flames from the reader. This is a bad thing, so just don't do it. It will also obviously void the reader warrantee. Fried readers will not be replaced free of charge.

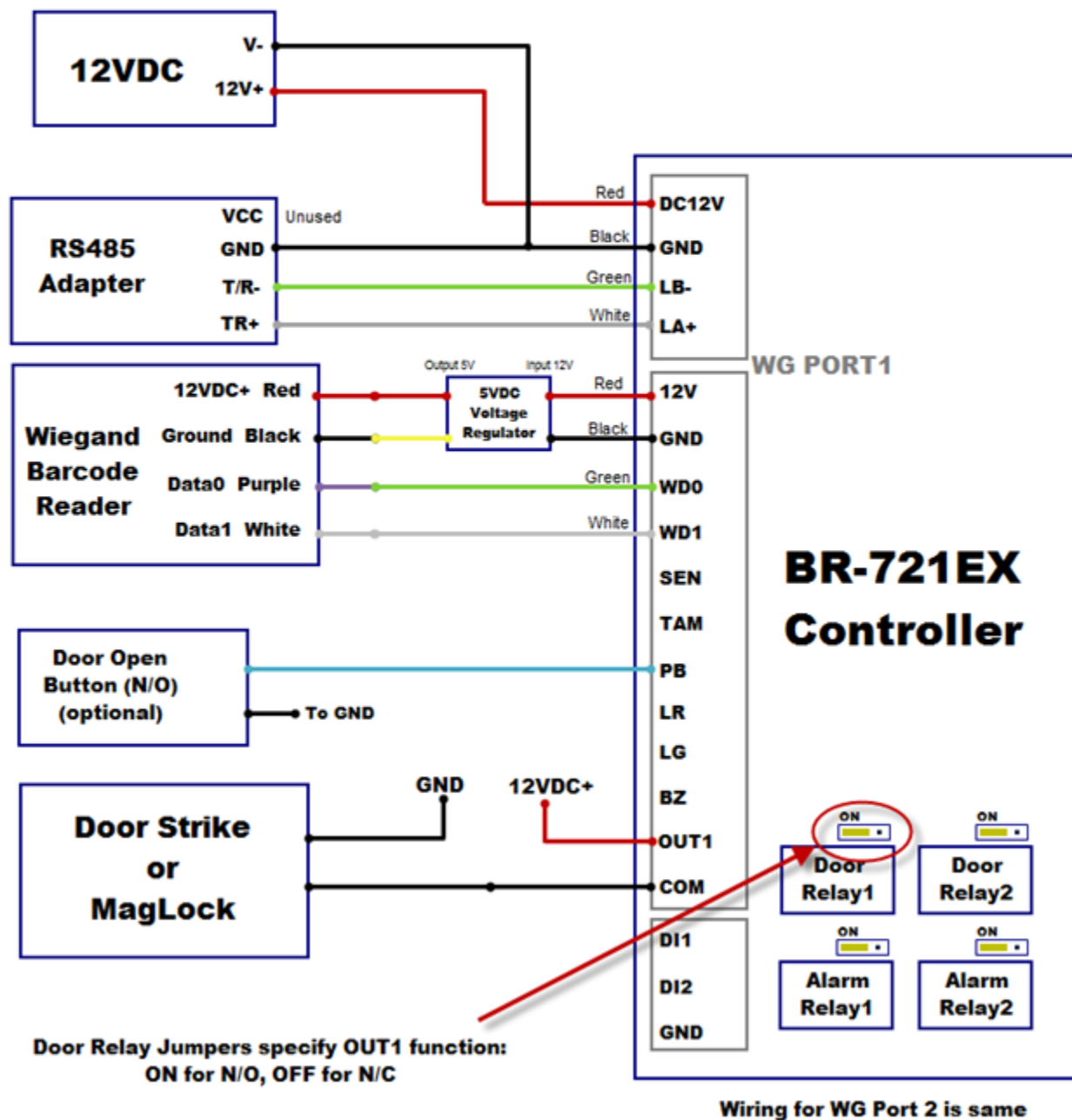
Please see wiring diagram below for details.



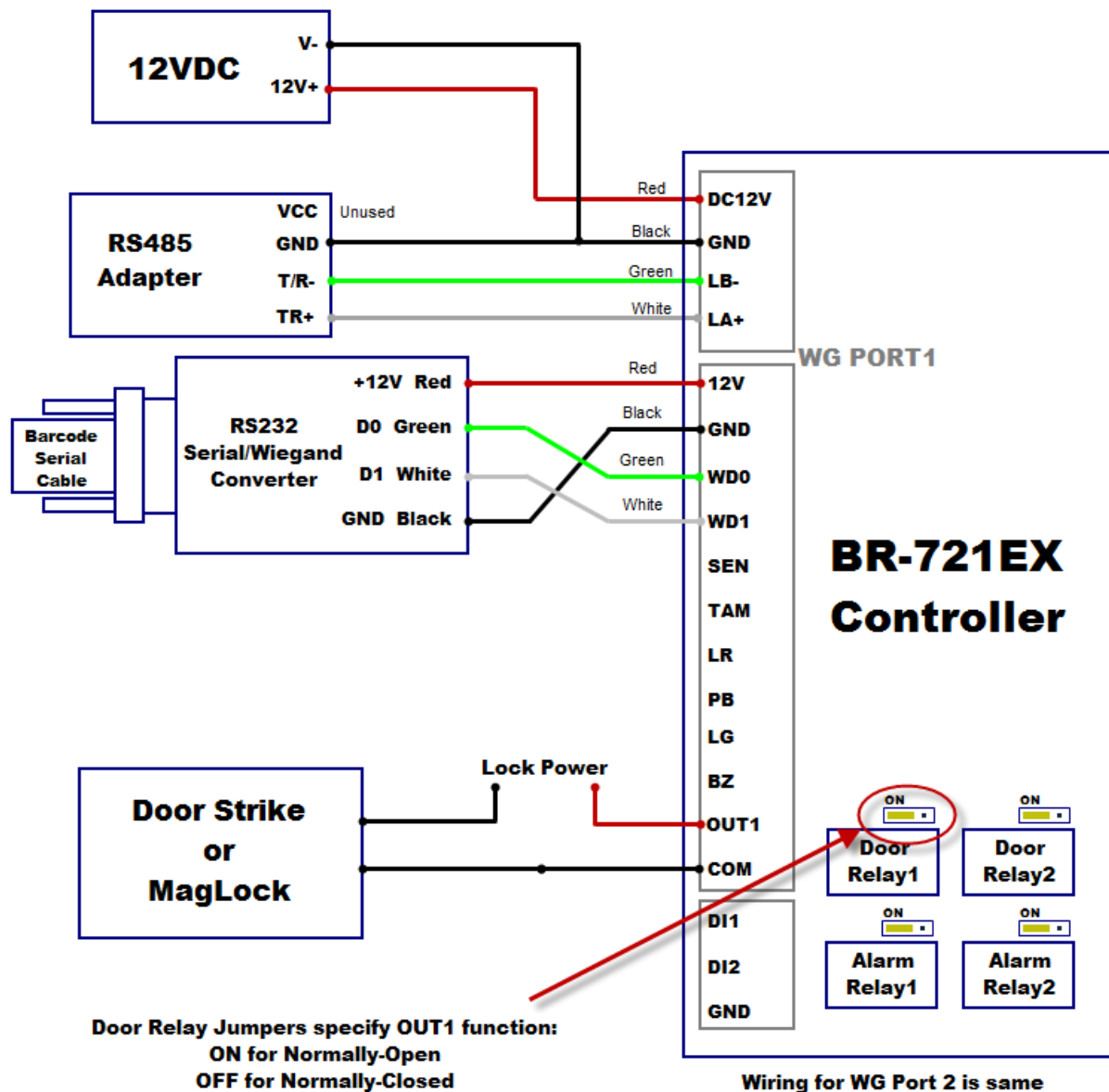
BR-721EX Access Controller Wiring Schematic (Proximity Reader)



BR-721EX Access Controller Wiring Schematic (Wiegand Barcode Reader)



721EX Access Controller Wiring Schematic (with Serial Barcode Reader)



Installation Notes

- Use crimp connectors when connecting wires together.
- When connecting wires to the controller board terminals, be sure to loosen the terminal screw (counter-clockwise) completely before inserting the wire. This lowers the metal piece that will clamp onto the wire. Then tighten the screw to raise up the metal clamp against the wire. Note that the wire will be inserted above the clamp, not below.

Install Gym Assistant Version 2.6

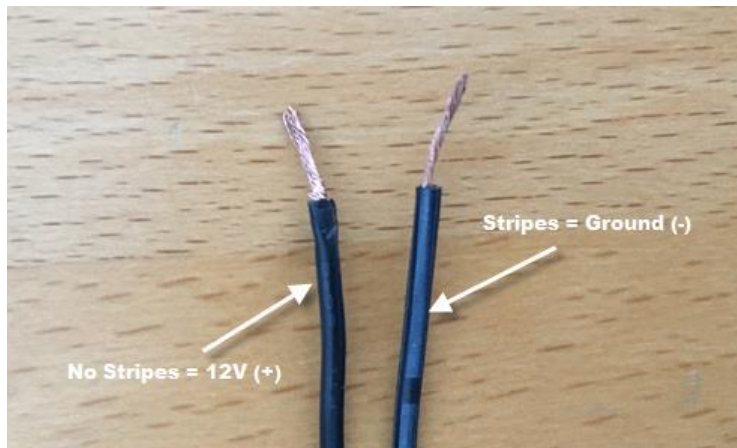
The standalone controller requires Gym Assistant v2.6 or newer. Please contact Gym Assistant if you need to upgrade.

Connect Power to the Controller

Connect 12VDC power to DC12V and GND terminals on the controller.

If you received a female pigtail connector with your power supply, then connect the red wire to DC12V and the black wire to GND.

If you **did not** receive a female pigtail connector then cut the round male plug off the end of the power supply cable. Separate the two wires and strip about ½ inch off the end of each. **Confirm the polarity of the wires with a voltmeter before connecting power to the controller.**



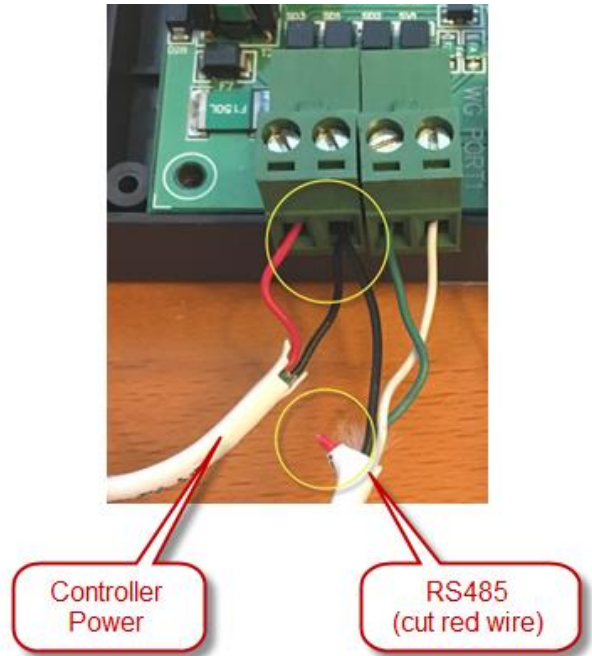
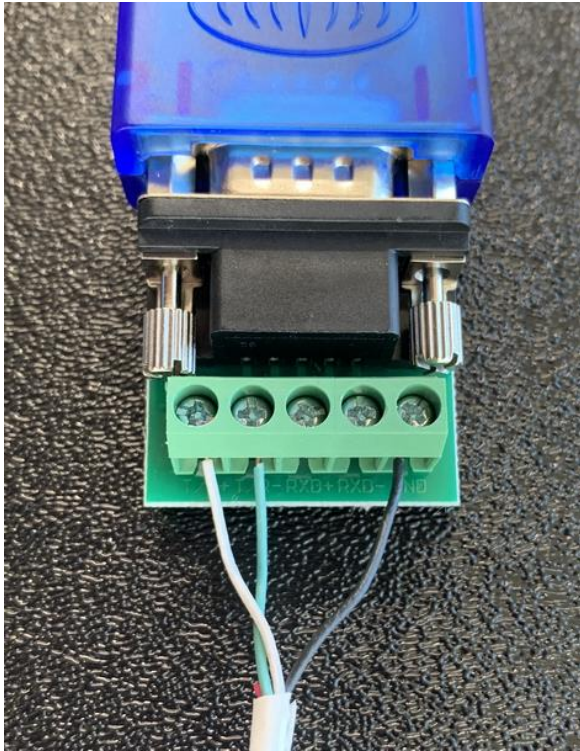
Power	ControllerTerminal
Ground (-)	GND
12VDC (+)	DC12V

When you turn on power to the controller, a single green LED (labeled “Power”) should light upon the controller.

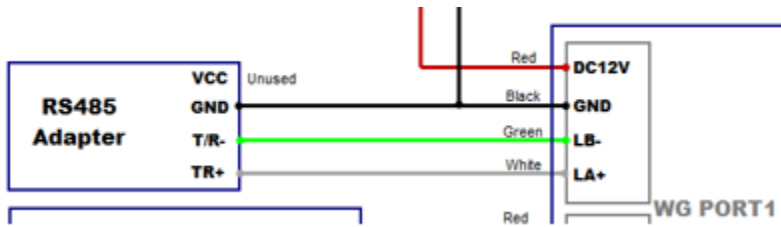
Connect the Controller to your Computer

USB/RS485 Connection

You will need to run a short length of 4-wire cable from the RS485 adapter to the controller. Connect the other end of the cable to the Controller as shown below.



Now connect the other end of the cable to the controller as shown below:



Notes:

- 1) The black GND wire will be joined together with the black wire from the power supply, as shown above.
- 2) The Red wire from the RS485 adapter will not be used, so it is best to cut that red wire very short just past the cable sleeve.

Connect USB to computer

Connect the USB/Serial adapter to the computer and wait for Windows to install the drivers automatically.

Configure GateKeeper Settings

In GateKeeper select **Access Points / Ports** from the **Settings** menu.

In the **Ports** tab, Check the **Entrance Enabled** checkbox.

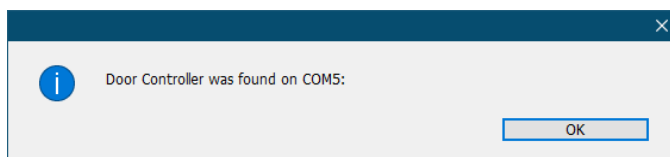
Set the **Entrance Type** to **Standalone Controller**.

Select the **Reader Type**.

The screenshot shows the 'Access Point Settings' window. At the top, 'Entrances:' is set to '1: Front Door'. A red note states: 'Note: Access control is PAUSED until this window is closed'. Below this, 'Settings for Front Door' are shown. The 'Entrance Enabled' checkbox is checked. 'Entrance Name' is 'Front Door'. The 'Ports' tab is selected, showing 'Entrance Type' as 'Standalone Controller'. The 'Reader Enabled' checkbox is checked, and 'Reader Type' is 'Proximity - Wiegand'. 'Door #' is '2'. Under 'Door Controller Enabled', 'Controller Type' is 'B-Id 721', 'Controller Serial Port' is 'COM4', and 'Baud Rate' is '9600'. 'DIP Switches' are '00000001', and 'Controller ID' is '1'. The 'Find Controller' button is highlighted. Other buttons include 'List All Ports', 'Show all options', 'Test Controller', 'Re-Scan Ports', 'Cancel', and 'OK'. The 'Door Relay' is set to '2'.

If you have more than one controller then select a **Controller ID**. You will set the controller ID on the controller by setting the blue DIP Switches as shown. For example, for an ID of 1 only switch 1 is ON, for an ID of 2 only switch 2 is on.

Click the **Find Controller** button. After a few seconds the controller should be found.



Note that the **Controller Serial Port** will be set automatically.

If the controller is not found:

- Confirm that the controller has power.
- Open Device Manager (in Gym Assistant select **Device Manager** from the **Help / Troubleshooting** menu) and confirm that the controller serial port drivers have been installed.

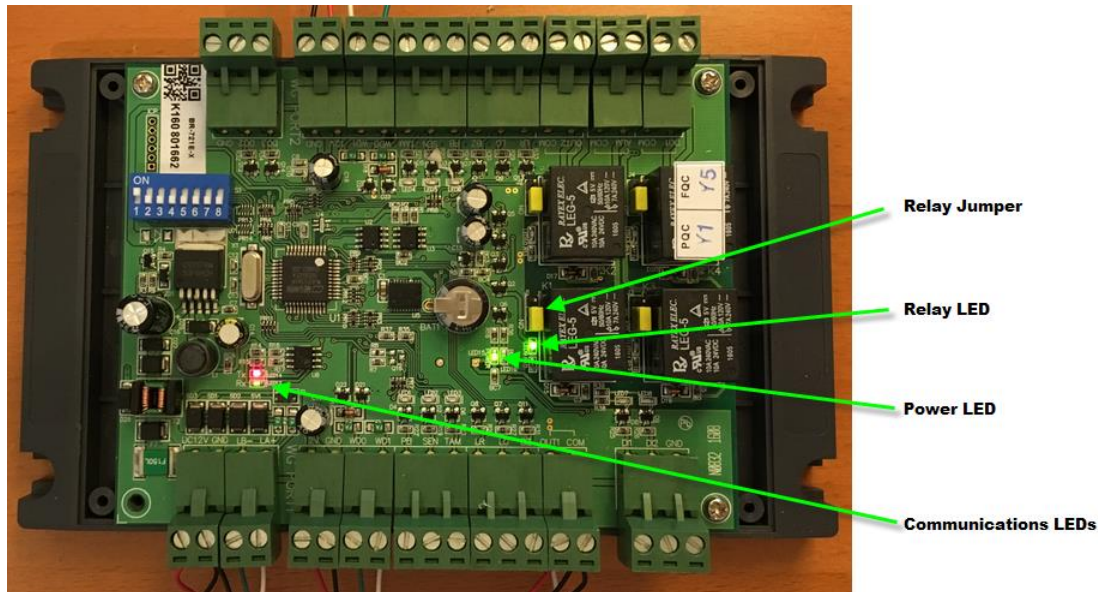
Set the **Door Relay** value:

- Set Door Relay to 1 if the reader is connected to the terminals labeled “WG Port1”.
- Set Door Relay to 2 if the reader is connected to the terminals labeled “WG Port2”.

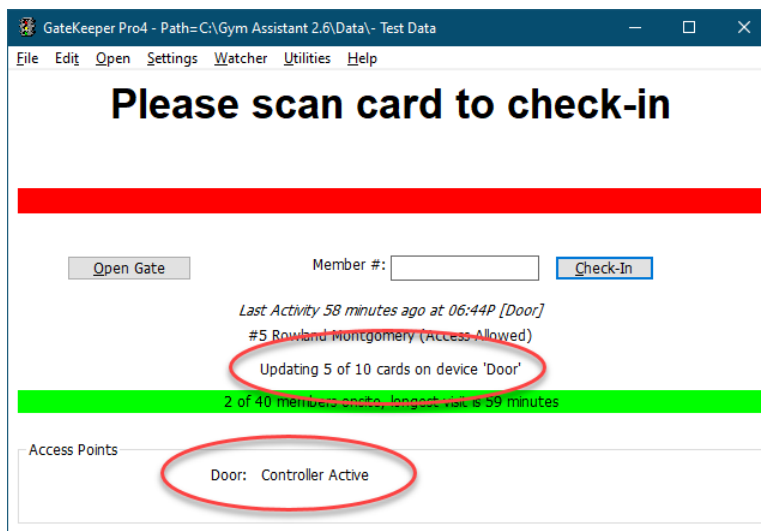
Set the **Relay Open Time**. We recommend 3-5 seconds.

Click **OK** to close the **Access Point Settings** window.

The red and green Communications LEDs on the controller should now be blinking rapidly, which indicates that GateKeeper and the controller are communicating.



In GateKeeper the Access Points status should now show as “Controller Active” with a flashing *.



GateKeeper is now successfully communicating with the controller!

You may also see that cards are being updated on the controller. This is GateKeeper uploading the list of valid card numbers to the controller.

Click the **Open Gate** button. You should hear the controller relay click, and the green Relay LED should light up. After a few seconds (as specified in the settings) the relay should click again and the Relay LED will turn off.

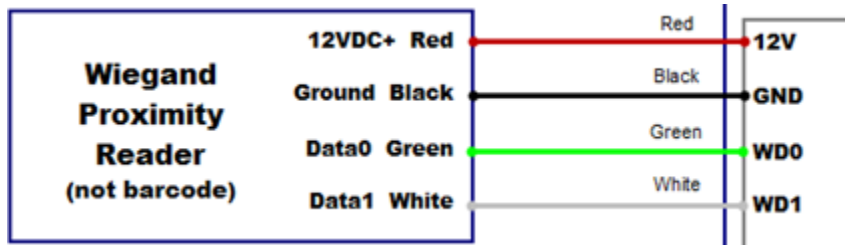
Connect the Card Reader

What type of reader are you connecting?

The type of reader that you will be connecting determines your wiring configuration.

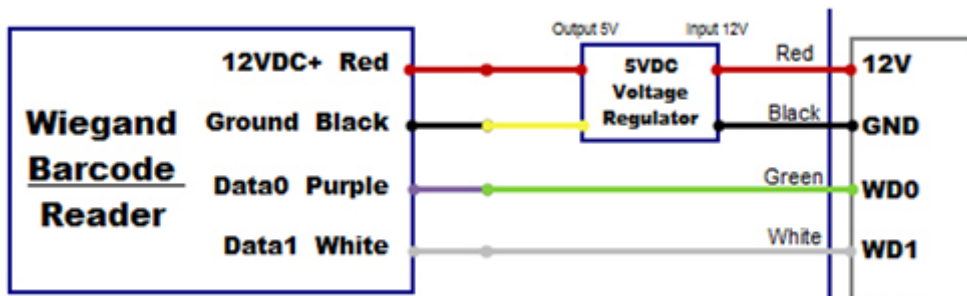
Wiegand Proximity Reader, RFID Reader, Keypad, SmartReader

The reader will connect directly to the controller with four wires: 12V and Ground for power, and 2 wires for the data.



Wiegand Barcode Reader

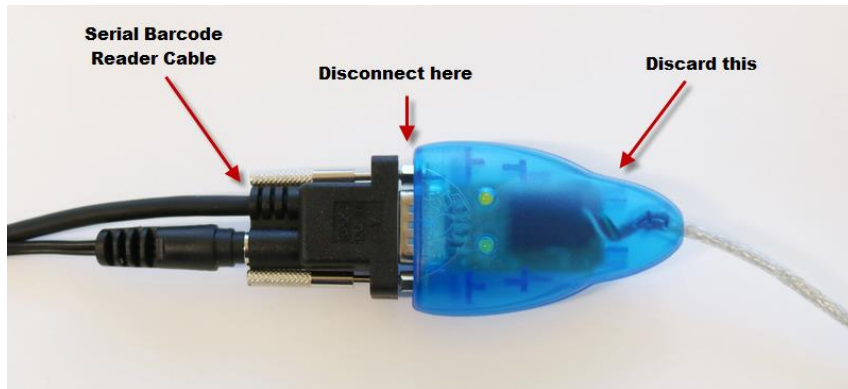
The Wiegand barcode reader requires 5VDC power, but the controller outputs 12VDC. The reader power is provided by a 12V/5V voltage regulator pre-installed in the controller. Two data wires carry the reader data.



Serial Barcode Reader (upgrade from Legacy Barcode system)

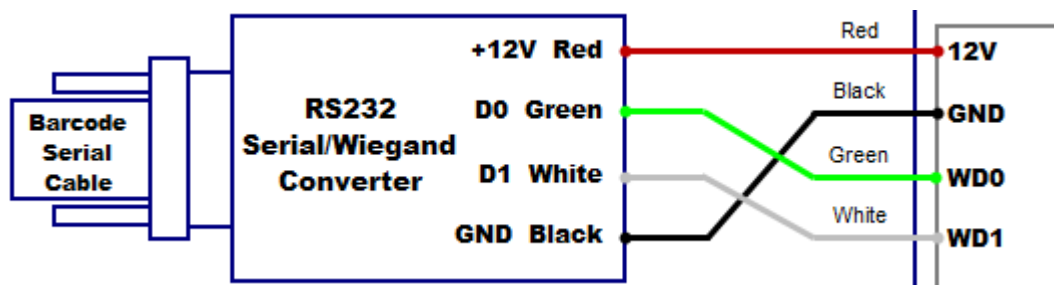
A Serial/Wiegand Converter changes the serial (RS232) output from the legacy reader to a Wiegand output. The Wiegand convert connects directly to the controller with four wires: 12V and Ground for power, and 2 wires for the data.

Disconnect your serial barcode reader from the old USB/Serial adapter. You can also disconnect the USB/Serial from the computer and set it aside. You will no longer need it.

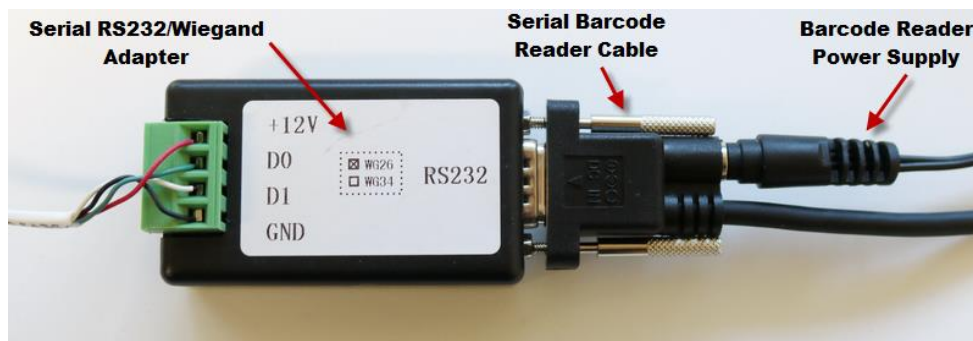


Disconnect serial barcode reader cable from old USB/Serial adapter

Take the remaining length of 4-conductor wire and connect the Serial RS232/Wiegand Converter to the controller as shown below and in the wiring schematic above. Be sure to connect to the WGPORT1 side, unless you intend to use Door2.



Now connect the Serial Barcode Reader cable to the Serial RS232/Wiegand Converter as shown below.



Testing the Reader

Connect the reader according to the appropriate wiring schematic above.

When the reader has power it should beep and the reader LED should light up.

Scan a card or fob. The reader should beep, which indicates that it got a good scan.

A card value should appear in GateKeeper. If nothing appears in GateKeeper, then confirm the reader wiring.

GateKeeper may report “**Unknown Scan: XXXXXXXX**”. This is expected if you scan a card that is not yet assigned to a member.

If the **Unknown Scan** number does not correspond to the number printed on the card:

- Check the **Reader Type** selected in **Settings / Access Points**. Try a different setting to see if the correct card number will appear.
- If changing **Reader Type** does not fix the issue, then check try reversing the green/white (WD0/WD1) wire connections. If these wires are reversed, GateKeeper will see a card number, but the card number will always be wrong.

If the GateKeeper reports “**Controller says ‘Card Not Found’, but GateKeeper allows access**”:

- If GateKeeper has not finished uploading all cards to the controller, this is OK. Wait until all cards are uploaded and try again.
- Check that the reader is attached to the correct port on the controller (**WG Port 1** or **WG Port 2**) and that the correct Door Relay is selected in GateKeeper).

Connect the Lock

What type of lock do you have?

Wiring configuration is determined by the type of lock.

A **Door Strike** is a mechanism that releases the door when power is supplied. The mechanism may be in either the door frame or in the door itself. If your door latches shut and you can exit by turning the doorknob or pressing on a crash bar then you have a Door Strike. A door strike is always locked until power is applied.

A Door Strikes is most often used on a door that already includes a physical latch that can lock the door automatically when it is closed.

A **MagLock** system includes a magnet mounted at top of the door frame and a steel plate attached to the door itself. When the magnet is powered (energized) the door plate will “stick” to the magnet. When you pull on the door handle the magnet will hold the door firmly. If the power is turned off then the door opens freely.

A MagLock system must always include a way to Exit, which may include an Exit Button (mounted next to the door) or a Motion Sensor (mounted above the door). When you press the exit button or trigger the motion sensor the magnet power is turned off momentarily to allow you to exit.

A MagLock is most often used on a door that can not self-latch, such a storefront with only a deadbolt. A maglock system includes more components than a door strike, including a battery backup that will keep the door locked in the event of a power outage.

Connect a Door Strike (Normally-Open Circuit)

Note that the controller does not supply power to the door lock. The controller provides a dry-contact relay that opens and closes a circuit. You should have a separate power supply for the lock and test the lock connected directly to the lock to ensure that the lock/power circuit is correct. The controller power supply is intended only to provide power for the controller electronics.

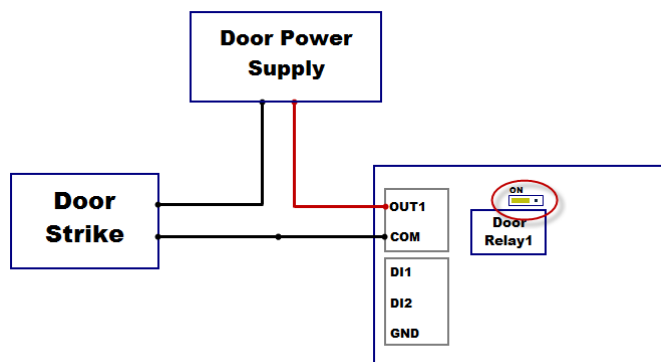
If you need to supply power from the controller see “Tapping Power from Controller for Door Lock” below.

First test the wiring for the door lock.

Confirm that the door strike is unlocked by trying to move the strike with your fingers. It should not move.

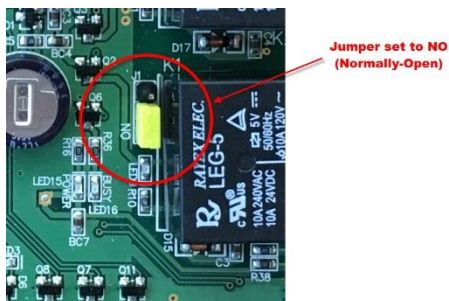
Connect the lock power supply direct to the door strike, and the door strike should unlock. Again, confirm by trying to move the strike with your fingers. The strike should open easily when power is supplied to the strike.

Now connect the door power supply to the lock and controller:



- Connect the lock power supply positive (red) to the controller OUT1 terminal.
- Connect one wire from the lock to the controller COM terminal.
- Connect one wire from the lock to the lock power supply negative (black).

Confirm that the Door Relay jumper is set to **NO** (Normally-Open) position.



Confirm that door is normally locked, and that it unlocks when you click the **Open Gate** button in GateKeeper or scan a valid member card.

Connect a MagLock (Normally-Closed Circuit)

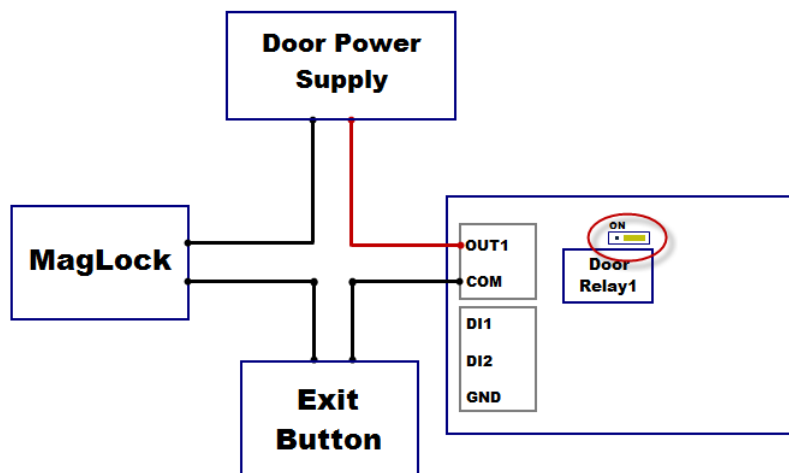
Note that the controller does not supply power to the door lock. The controller provides a dry-contact relay that opens and closes a circuit. You should have a separate power supply for the lock and test the lock connected directly to the lock to ensure that the lock/power circuit is correct. The controller power supply is intended only to provide power for the controller electronics.

If you need to supply power from the controller see “Tapping Power from Controller for Door Lock” below.

Before connecting the maglock to the controller confirm that the maglock and the maglock exit functions are working correctly. The maglock should allow exit completely independent of the Gym Assistant controller.

You should have two wires from the maglock circuit that will lock/unlock the door. When the two wires are touching the door is locked, and when the two wires are separated the door unlocks.

Now connect these two wires to the **OUT1** and **COM** terminals on the controller.



Confirm that the Door Relay jumper is set to **NC** (Normally-Closed) position, with the **NO** jumper pin exposed as in the picture below.

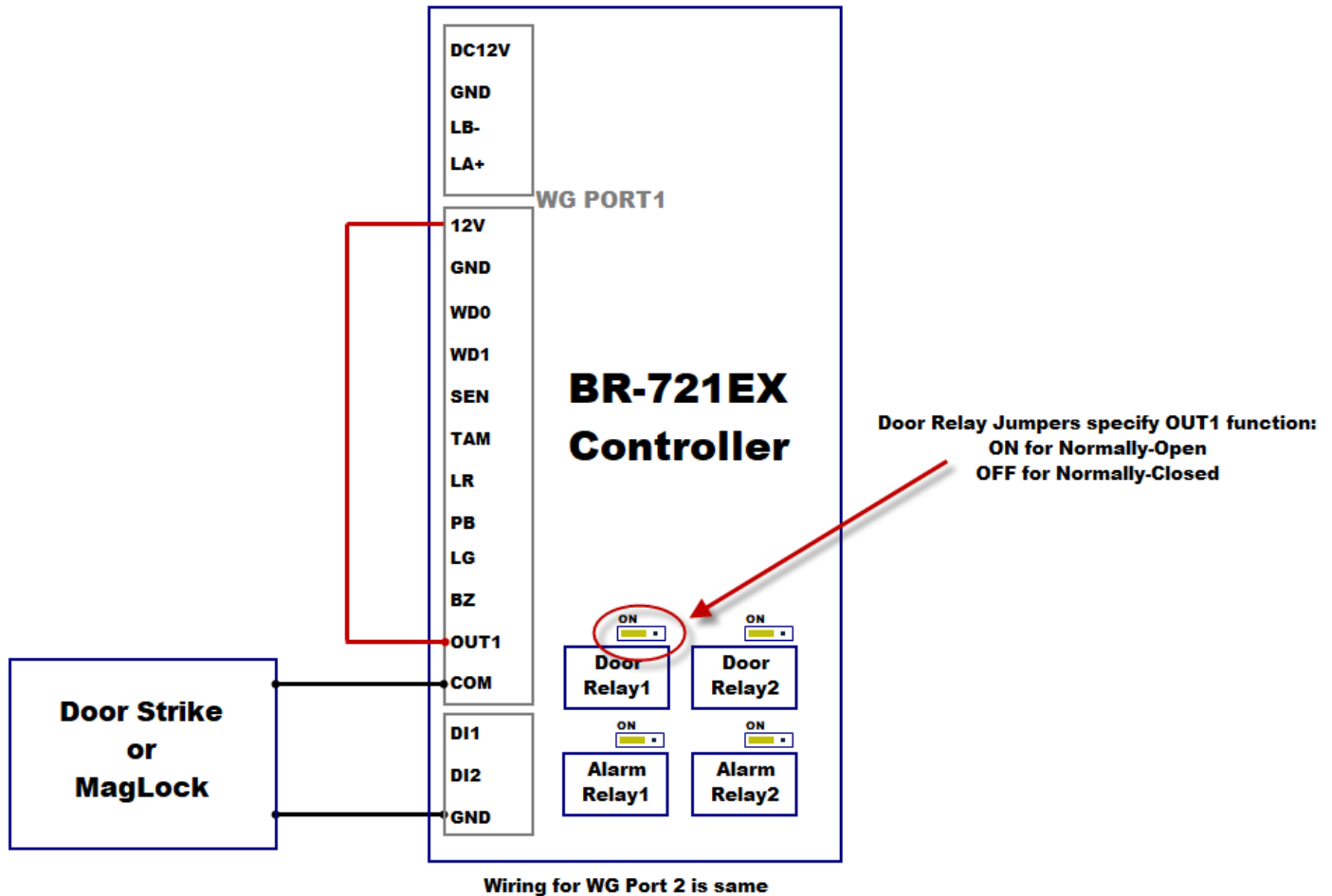
Confirm that door is normally locked, and that it unlocks when you click the **Open Gate** button in GateKeeper or scan a valid member card.



Tapping Power from Controller for Door Lock

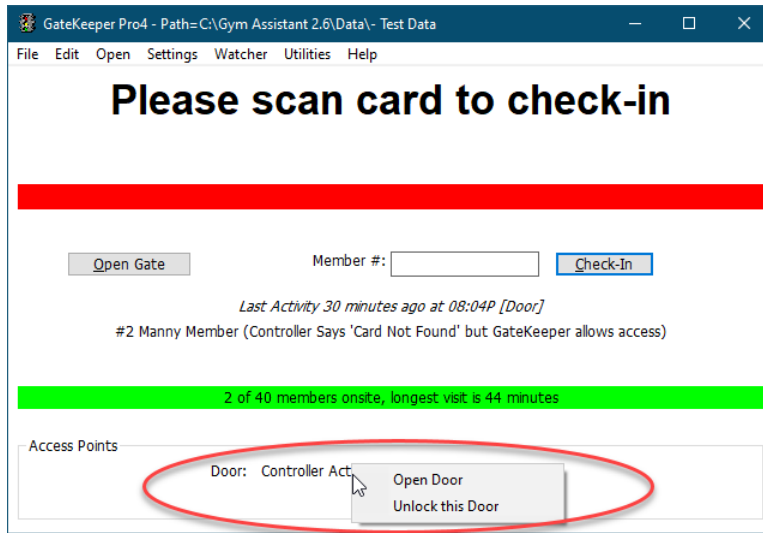
If you need to supply power for the lock from the controller, get 12VDC from the 12V terminal for the reader, and connect to the door strike or maglock as shown below.

721EX Access Controller Wiring Schematic with door lock power from controller



Manually Unlocking/Locking the Door

Click on the door status in Access Points to bring up the door menu.



Select **Open Door** to trigger the door to open for the specified delay time. While the door is unlocked the door status will show **Relay is Open**.

Select **Unlock this Door** to keep the door unlocked. While the door is unlocked the door status will show **Relay is Open Unlocked**. To lock the door again click on the door status and select **Re-Lock this Door**.