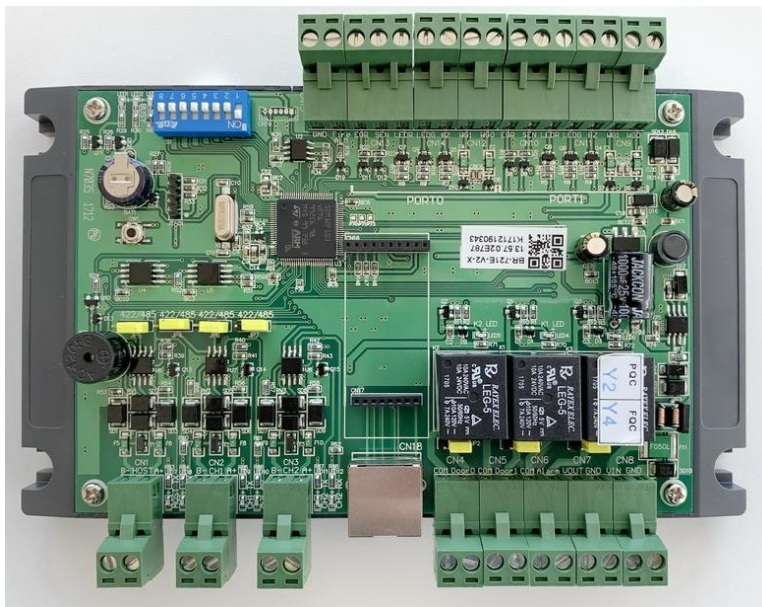


721V2 Access Controller Installation

May 19, 2024



721V2 Controller

Standalone Controller Specifications

Card Capacity: 16,000 cards
Computer Connection: Network or 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
- 6 foot network cable
- 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)

Components included with 721V2 controller



Controller Power Supply
with female pigtail connector
(Found in controller enclosure)



Cat5 Network Cable



USB/RS485 Converter
(Connects controller to computer, with included 4-
conductor wire)



Crimp Connectors
(Found in controller enclosure)



Varistors (2)
(Pre-installed in controller)



5VDC Voltage Regulator
Only for Wiegand Barcode Reader
(Pre-installed in controller)

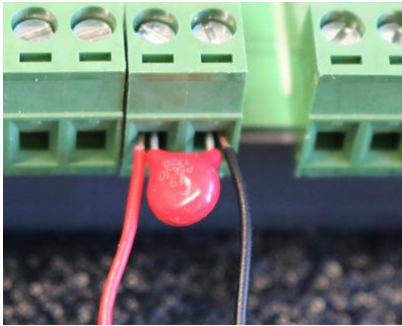


Serial/Wiegand Adapter
Only for Legacy Barcode Reader upgrade
(Converts Serial/RS232 connection to Wiegand
connection)

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

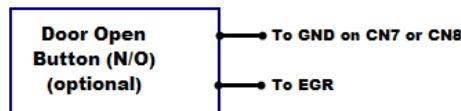
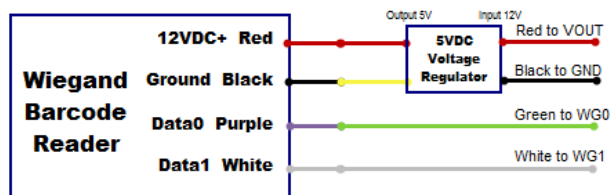
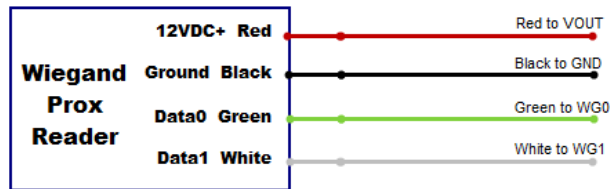
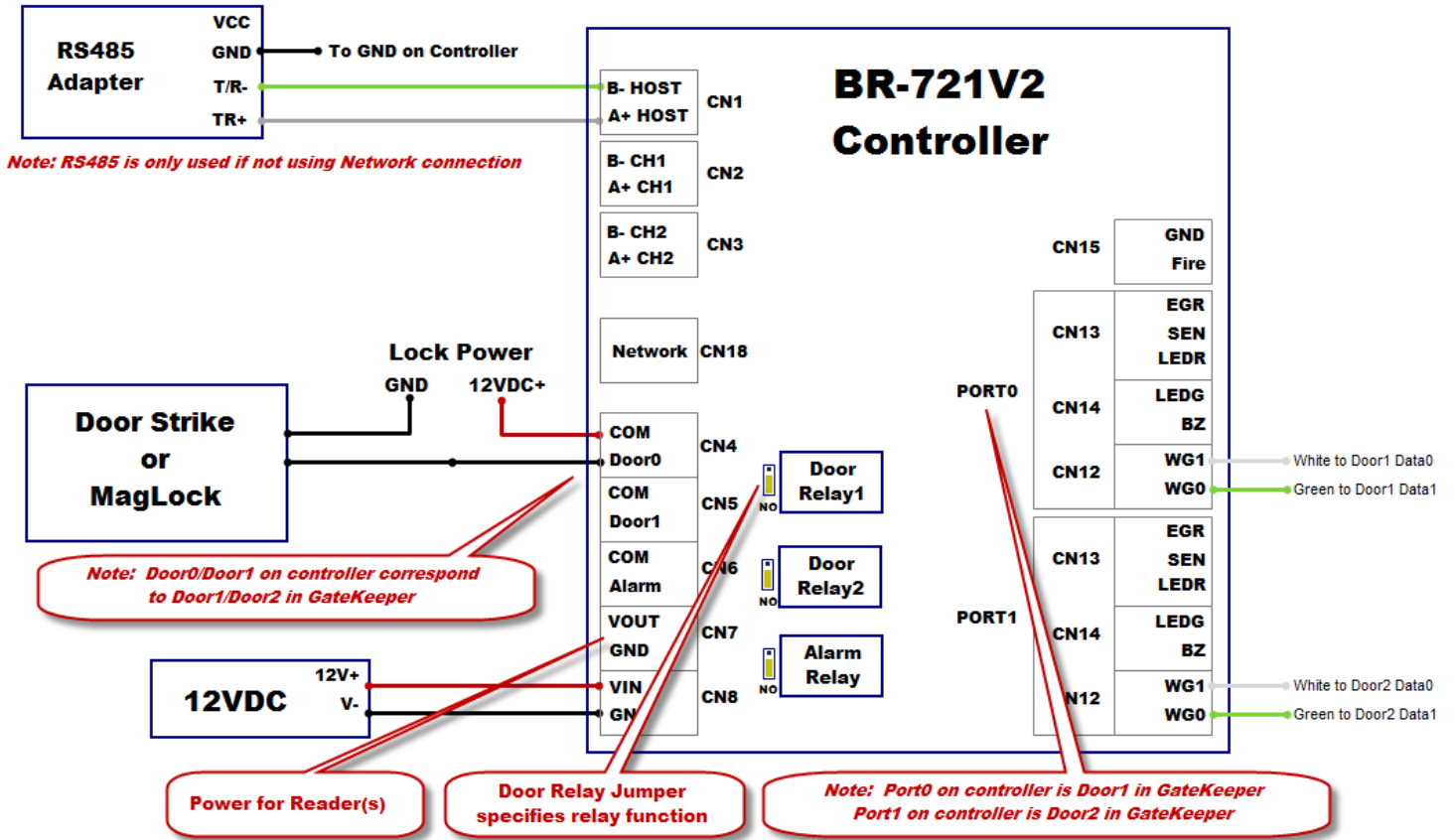
Note: The Wiegand Barcode Reader requires 5VDC power, but the controller provides 12VDC.

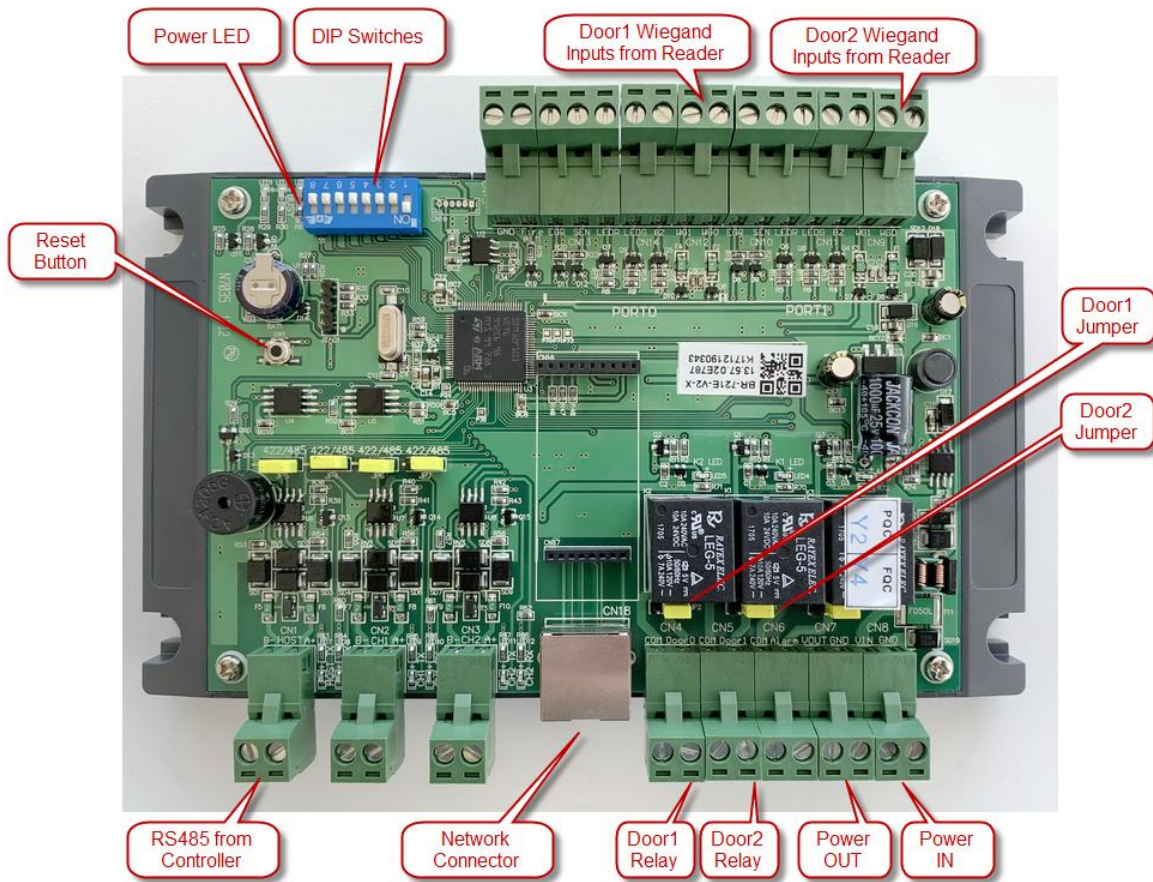
DO NOT attach 12VDC power to the Wiegand Barcode Reader! If you do attach 12V power to the reader then you will experience smoke and flames from the reader. This is a bad thing, so just don't do it. It will also obviously void the reader warrantee. Fried readers will not be replaced free of charge.

Please see wiring diagram below for details.



BR-721V2 Access Controller Wiring Schematic





Installation Notes

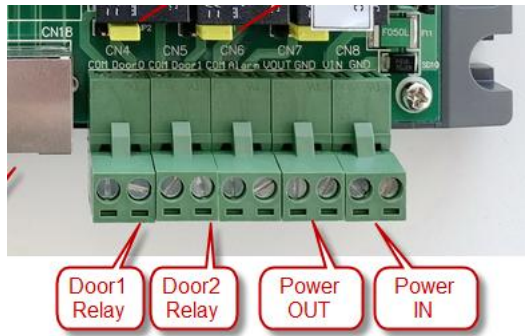
- Use crimp connectors when connecting wires together.
- When connecting wires to the controller board terminals, be sure to loosen the terminal screw (counter-clockwise) completely before inserting the wire. This lowers the metal piece that will clamp onto the wire. Then tighten the screw to raise up the metal clamp against the wire. Note that the wire will be inserted above the clamp, not below.
- *Note: Inputs/Outputs on controller labelled "Door0" / "Door1" and "Port0" / "Port 1" correspond to GateKeeper settings for "Door 1" / "Door 2".*

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.

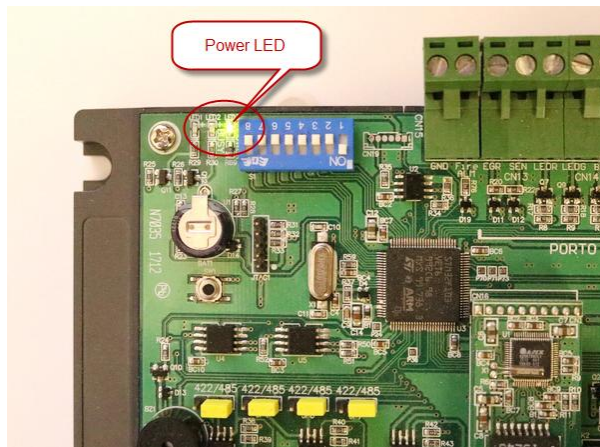
Connect Power to the Controller

Connect 12VDC power to Power IN terminals labelled below.



Connect the 12VDC power supply with red/black wire pigtail to the VIN/GND terminals on the controller.

Power	Color	Controller Terminal
12VDC (+)	Red	VIN (CN8)
Ground (-)	Black	GND (CN8)



When you turn on power to the controller, the Power LED (shown above) should light up next to the blue DIP switches. After 5-10 seconds the controller will sing its startup song. (Enjoy the music!)

After a few more seconds the red LEDs near the network connector may also blink continuously. This is normal.

Connect the Controller to your Computer

You will connect the controller to your computer in one of two ways:

- 1) Network (Cat5) cable (recommended)
- 2) USB/RS485 adapter

Network Connection

Connect the controller to your wired network, then cycle the controller power by unplugging the power adapter.

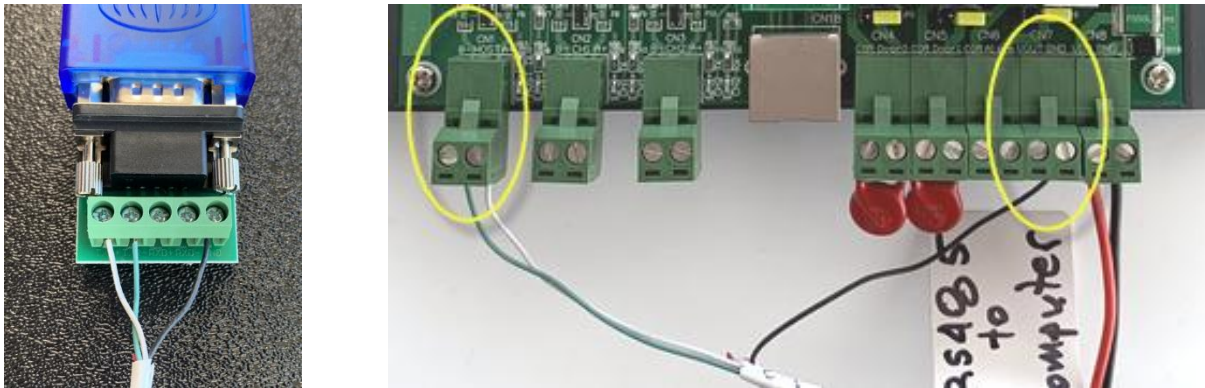
The green and yellow LEDs on the network connector should blink on/off continuously, which indicates that the controller has established a connection with the network.

USB/RS485 Connection

You will need to run a short length of 4-wire cable from the RS485 adapter to the controller.

You will not be using the red wire, so cut the wire connector at both ends.

Connect the USB/RS485 Adapter to the Controller as follows:



RS485 Adapter	Wire Color	Controller
T/R+	White	Host A+ (CN1)
T/R-	Green	Host B- (CN1)
GND	Black	GND (CN7)

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

Cycle the Controller Power

Now disconnect and then reconnect the controller power to reboot the controller.

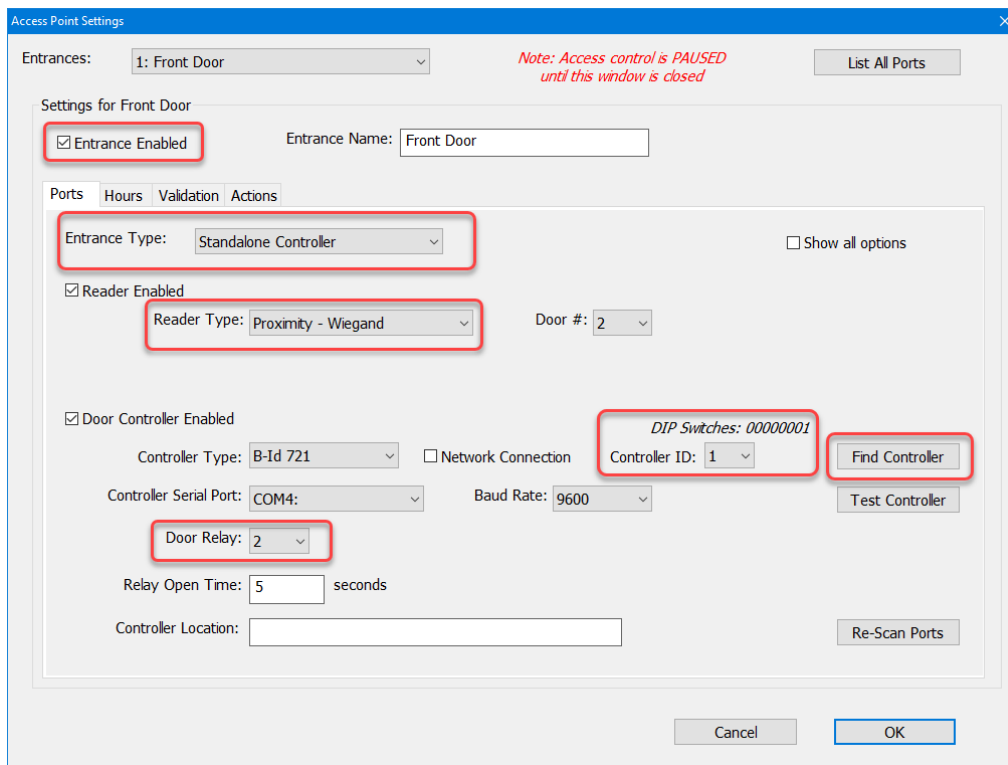
Configure GateKeeper Settings

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

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

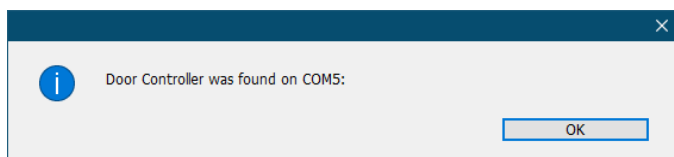
Set the **Entrance Type** to **Standalone Controller**.

Select the **Reader Type**.



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:

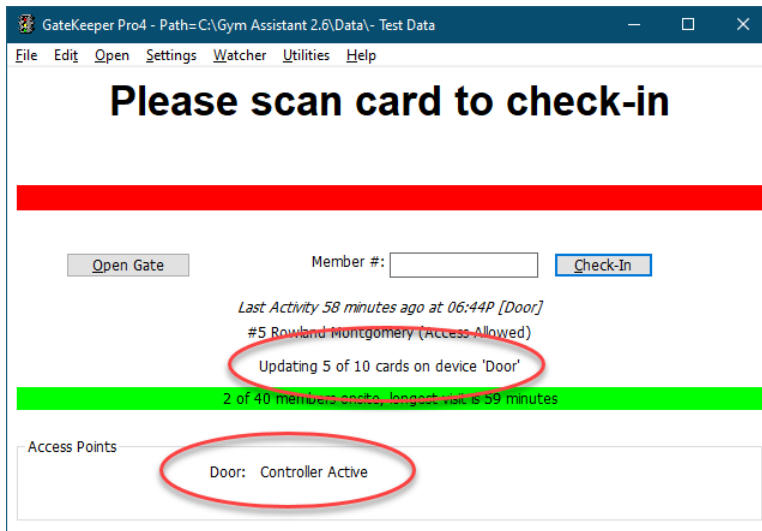
- Set Door Relay to 1 if the reader is connected to the terminals labeled “Port0”.
- Set Door Relay to 2 if the reader is connected to the terminals labeled “Port1”.

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 door 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 green Relay LED should light up. After 5 seconds the relay should click again and the Relay LED should 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.

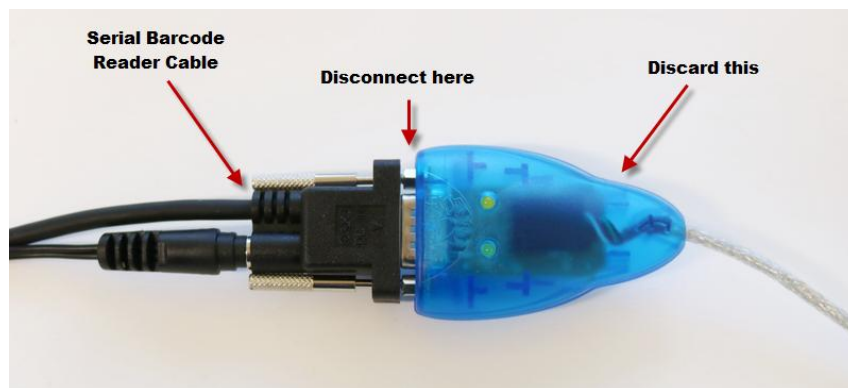
Wiegand Barcode Reader

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.

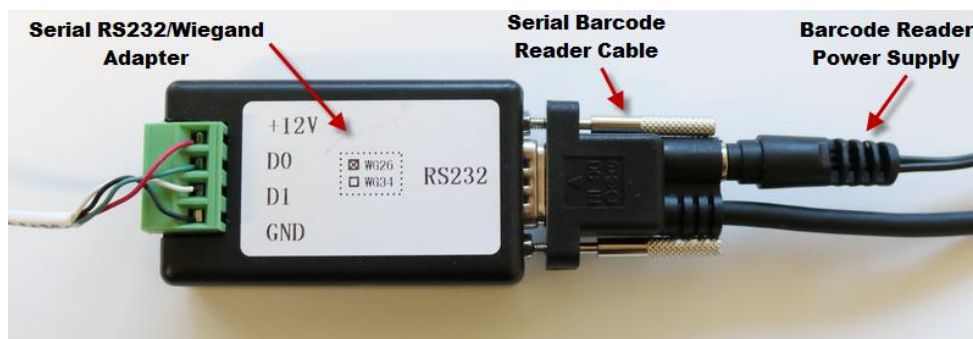
Disconnect your serial barcode reader from the old USB/Serial adapter. You can also disconnect the USB/Serial from the computer and set it aside. You will no longer need it.



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 above for Wiegand Proximity Reader. Be sure to connect to the PORT0 section for GateKeeper Door1, or PORT1 section for GateKeeper 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 (or that the correct Door Relay is selected in GateKeeper).

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.

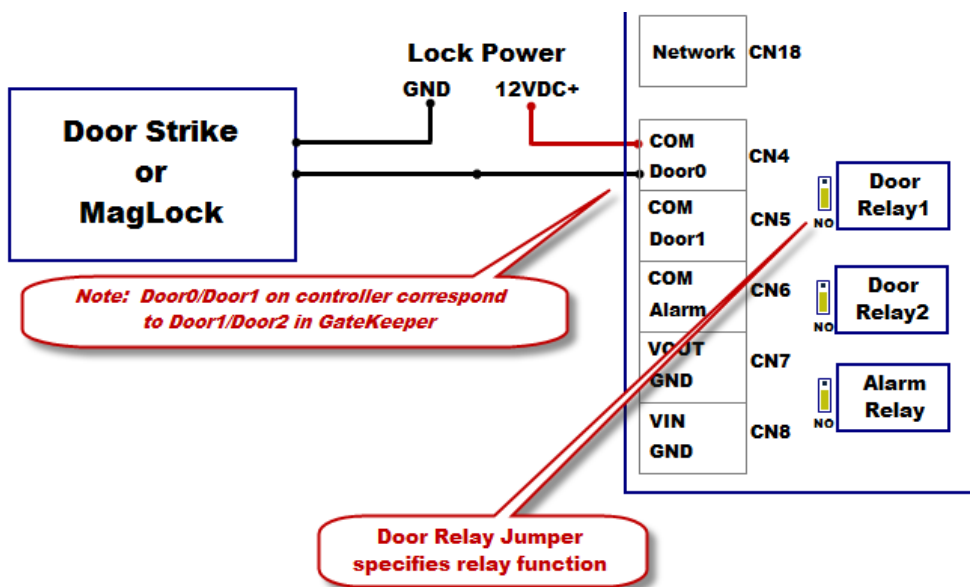
What is the red capacitor thing? The red circular thing (we like to call it the “red doo-dad”) is a varistor. It acts to dampen the spark that occurs when the relay opens and closes the circuit (like an on/off switch). The varistor prevents the relay from burning out over time, and it should be left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

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 COM terminal.
- Connect one wire from the lock to the controller Door0 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.

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.

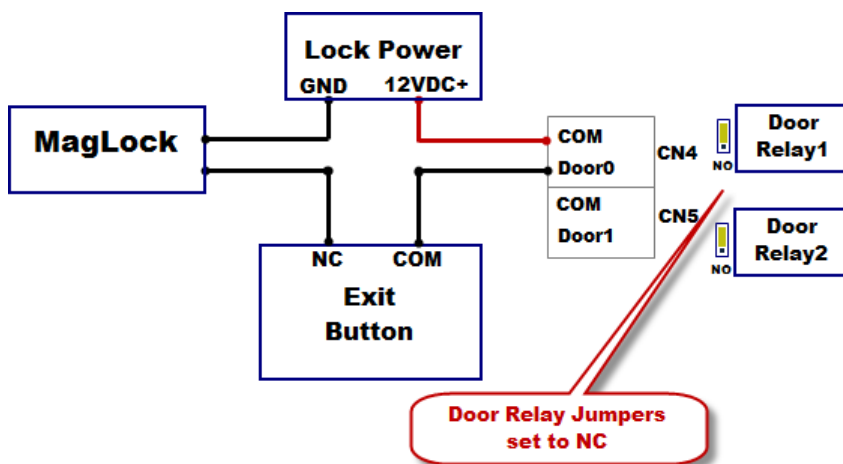
If you need to supply power from the controller see “Tapping Power from Controller for Door Lock” below.

What is the red capacitor thing? The red circular thing (we like to call it the “red doo-dad”) 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.

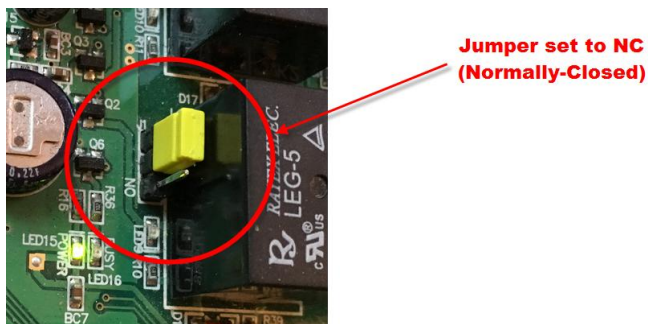
Before connecting the maglock to the controller confirm that the maglock and the maglock exit functions are working correctly. The maglock should allow exit completely independent of the Gym Assistant controller.

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.



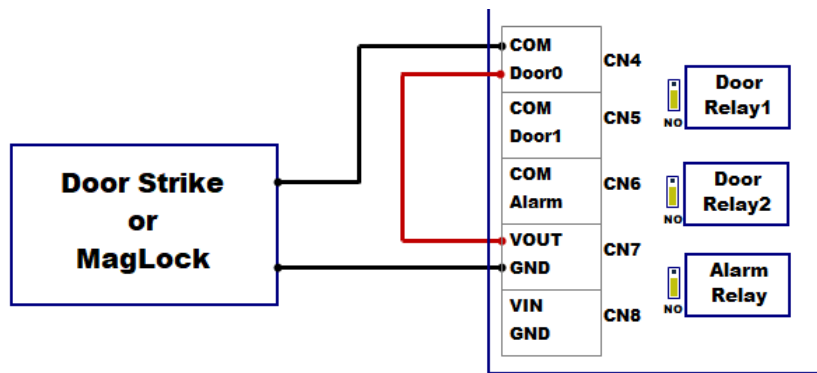
Confirm that the Door Relay jumper is set to **NC** (Normally-Closed) position, with the **NO** jumper pin exposed as in the picture below.



Confirm that door is normally locked, and it unlocks when you click the **Open Gate** button.

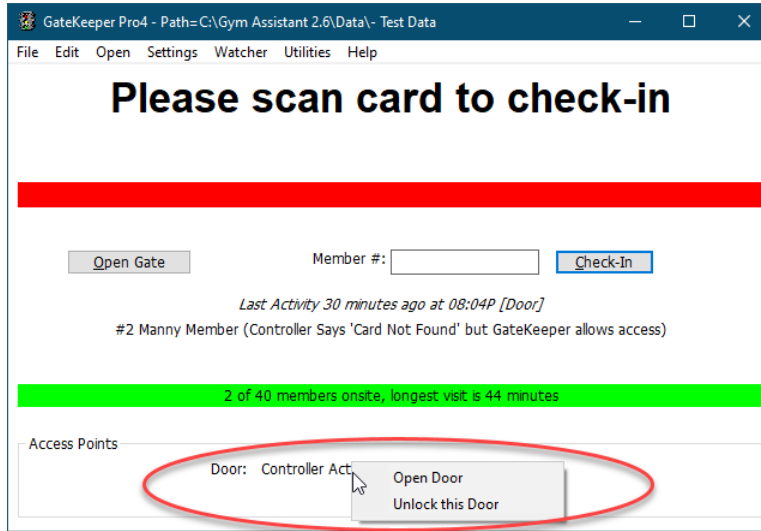
Tapping Power from Controller for Door Lock

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.



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**.