



Wiring Instructions v3

Gatekeeper h5

Technical Support

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Preface

This wiring guide is for the security technician or electrician responsible for installing the Gatekeeper h5 and door readers supplied by GymMaster.

This guide includes an overview of the hardware involved, example wiring diagrams for both Fail-Safe and Fail-Secure access, emergency buttons, as well as diagnostic tests and basic troubleshooting. A more [comprehensive troubleshooting guide](#) can be found on our [support page](#).

Please read this manual carefully before the installation of the Gatekeeper and readers.

Hardware Checklist

Gatekeeper Kit (supplied by GymMaster):

- ☐ Gatekeeper computer
- ☐ Gatekeeper power supply (basic unit provided)

Reader Kit (supplied by GymMaster):

- ☐ Desktop reader with Standard USB type A data cable (optional)
- ☐ Wall-mounted card reader with diodes, supplied with short wiring for bench testing (optional)

You will need to source the following items (not supplied by GymMaster):

- ☐ **Router with Internet Connection**, and with ability to forward ports (standard)
- ☐ **Correct length of cable connecting the Door Readers to the Gatekeeper**, we recommend standard reader cable e.g 4 core screened. Maximum length 100m (320 feet).
- ☐ **Correct length of cable connecting the Door Lock to the Gatekeeper**, we recommend standard relay cable e.g twin core 0.05mm (22-24 gauge). Maximum length 70m (230 feet).
- ☐ **Correct length of standard USB cable connecting the Reception Reader to the Gatekeeper**, the maximum length of this cable should be 3m. **Do not** use any extensions or multi-hubs. A Gatekeeper mini can be purchased if the distance is too large.
- ☐ **Standard Ethernet cable** (e.g Cat5E) to connect the Gatekeeper to router, network or switch



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- ❑ **Battery Backup** i.e [Uninterruptible Power Supply](#) (UPS) to maintain constant power for the Gatekeeper, Door Readers, Door Lock, Internet router and any network components in the event of a power outage.
- ❑ **Exit buttons** as required (exit button, emergency exit).
- ❑ **Door hardware** as required (door lock, turnstile etc) Door Lock should be preferably 12V DC magnetic lock or electric strike. Note that locks must not exceed a 30VDC rating.
- ❑ **Door Lock Power Supply**



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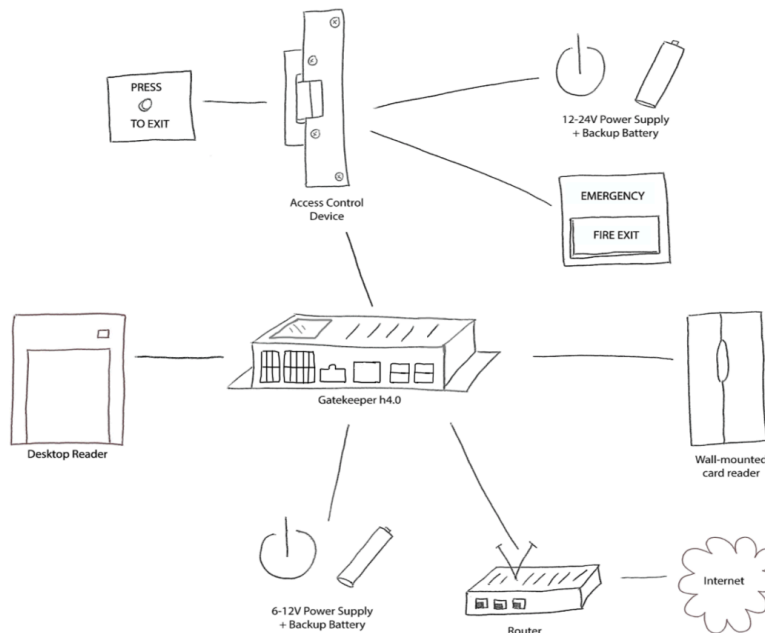
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Gatekeeper Overview

The Gatekeeper h5 contains both the Gatekeeper computer and relay unit required to operate the door locks that work with the GymMaster software. The Gatekeeper needs to be powered AND connected to the Internet to work correctly. The Gatekeeper can also be used to operate desktop readers and receipt printers, which connect to the USB ports.

We strongly recommend that you use [an Uninterruptible Power Supply \(UPS\)](#) with line smoothing to provide a constant power supply to the Gatekeeper, Door Readers, Door Lock, Internet router and any network components. The Gatekeeper has an Offline Mode that will allow access to current members during a network disconnection. Desktop PCs and other computer devices are high power-drain, and should not be connected to the UPS. The UPS will assist in maintaining normal member access and system operation in the event of a power failure or fluctuations.

You will need to check your own local and regional legal requirements for emergency entrance and exit. It is strongly recommended that you install an **Emergency Exit Button** and/or a general **Exit Button** for members in your door setup, and that you have **alternative and separate key-lock access** or similar. Ensure that egress is possible in the event of an emergency.



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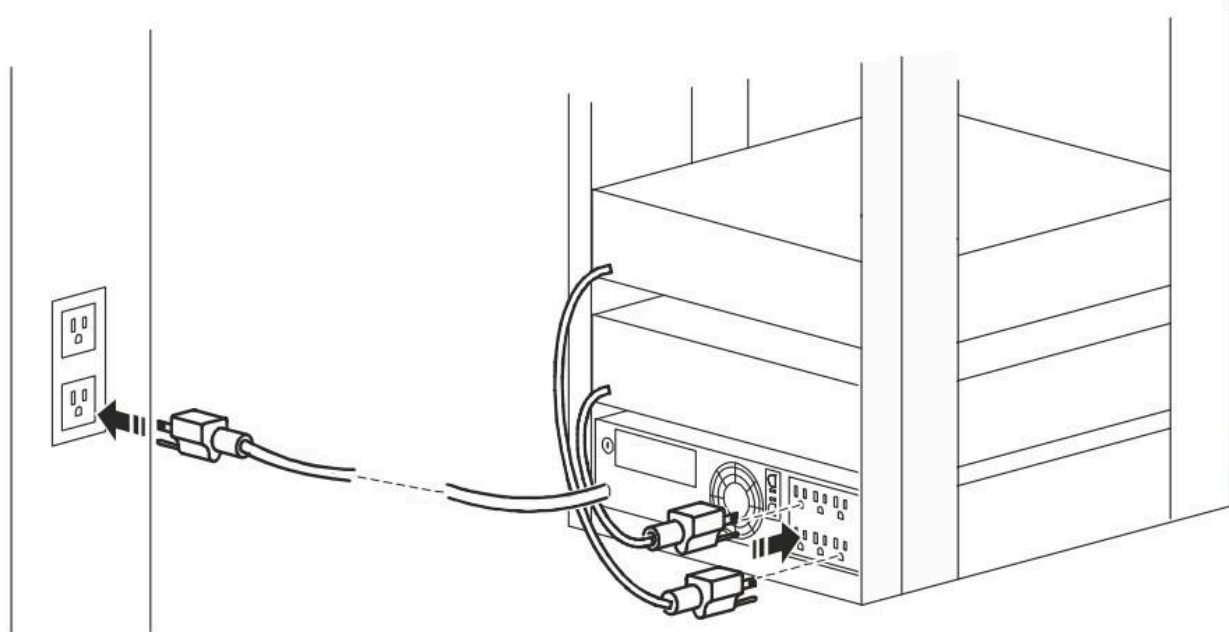
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Power Supply

The Gatekeeper requires a 12V power supply capable of at least 2A. The Gatekeeper is calibrated to work with input voltage from 9V to 12V. Do NOT use a power supply with voltage greater than 12V or current lower than 2A.

It is **strongly recommended** to use a battery backup like an Uninterruptible Power Supply (UPS) to maintain constant power for the Gatekeeper, Door Readers, Door Lock, Internet router and any network components. You can purchase a UPS that will allow you to plug in the router power supply, door lock power supply and Gatekeeper power supply directly. This must be rated above 2A to be able to power all hardware.



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Important Warnings



Do **NOT** use the Gatekeeper or the Gatekeeper power supply to power any door locks.



The Door Reader **MUST NOT** be mounted on conductive metal without an earth, or this may cause interference issues. These issues are usually not immediately apparent but will occur over time, preventing member access. You can install an insulating casing or mounting to prevent these issues if grounding or alternative surfaces are not available.



Maximum length of a standard USB cable connection is 3 metres (10 feet). Do not use multi-hubs or extensions to connect the desktop reader to the Gatekeeper. For Door Readers, ensure that the stub wiring is kept for future troubleshooting.

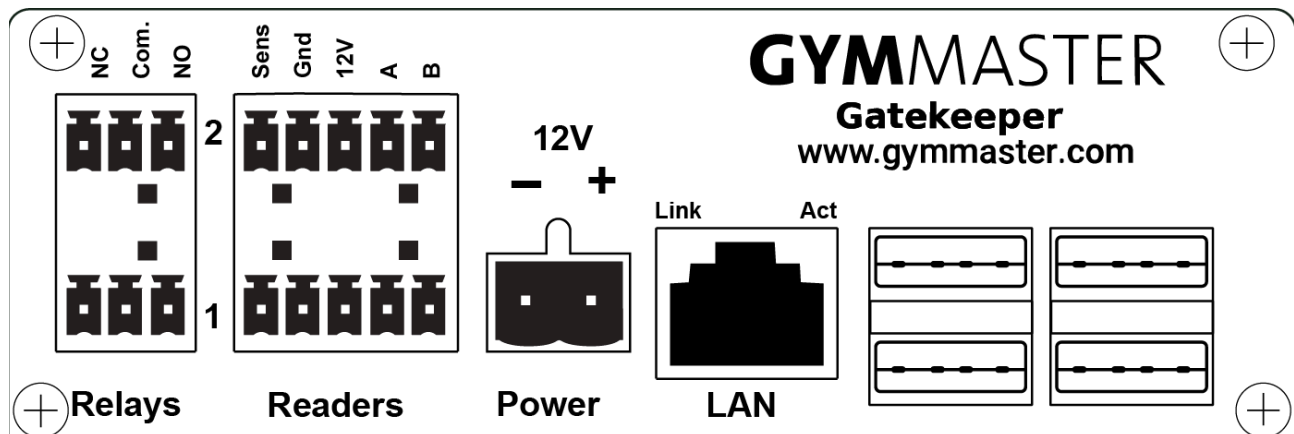


Install the Gatekeeper where it can be easily accessed by gym staff. Staff may need to access it in the event of a failure to power cycle it. If multiple Gatekeepers are installed, mark which Gatekeeper is controlling which door readers to enable troubleshooting.



Fail-secure wiring installation can trap members in the building in the event of a power outage if the UPS fails. Fail-safe wiring installation is recommended. Fail-safe wiring can leave the building unsecured in the event of a power outage if no UPS is used.

Gatekeeper Interface



Relay Terminals

These terminals are for signalling the door lock. For loads over 2A, we do not connect directly. Use a secondary relay as a buffer instead.

NO Relay normally-open contact

COM Relay common terminal

NC Relay normally-closed contact

As door lock devices are often inductive, switching off the current can cause a voltage spike on the wires to the door lock, damaging the reader. If the door lock requires a diode (consult the lock manual), wire the IN4001 diode supplied as close to the lock as possible taking particular note of the polarity. The wrong polarity will cause a short circuit, and damage the power supply.



The diode **MUST** be wired correctly according to the diagram, otherwise there may be cumulative electrical damage to the Gatekeeper board, the reader unit, or the device power supply.



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
Exit Button Terminals

The Gatekeeper expects a low level voltage trigger signal in the REX (Request to Exit) terminal to activate the relay to open the door. You can wire a normally-open push button (2 terminals) to Sensor and GND on the Door 1 or Door 2 socket, refer to the [sample wiring diagram](#).

RFID Reader Sockets

The rear of the Gatekeeper has two sockets. Up to 2 door readers can be connected. Each reader socket has 4 terminals for the reader, namely Serial A, Serial B, +12V VCC, GND.

Some RFID readers have a number of wires, but only 4 of them are used. The unused wires should be insulated from the rest. The 4 wires that are used are coloured green, white, red and black. The default connection relationships between the reader terminals and readers are:

Terminal	Wire Colour	
B (RX)	Green	
A (TX)	White	
GND	Black	
VCC	Red	

The RFID reader must be mounted in a location where the electrical noise is quiet. If there is a lot of electrical noise, read performance will be reduced. Electrical noise can be generated from sources such as other readers, motors, VSD's, switch mode power supplies, CRT monitors, fluorescent lights etc. New electrical equipment (if installed correctly) is usually ok, as it should already meet EMC requirements.

If you have two door readers, they should be physically separated by a minimum of 5 cm, or 2 inches, to avoid interfering with each other.

Network Port

The Gatekeeper requires an Internet connection via the Network port to function normally. You will need a Network cable (not supplied), one end connected to the Network port on the Gatekeeper, the other end connected to a Network port on the router or a switch. Please ensure non-firewalled Internet access for this connection. If you have an IT team that looks after the network you may need to ask them to whitelist the Gatekeeper. If the Gatekeeper does not have a working connection to the network it will not boot.

The Gatekeeper can operate for short periods in Offline Mode during a network outage, as long as the Gatekeeper, door lock components, and facility network components have electrical power. **It is strongly recommended to [use an Uninterruptible Power Supply](#) (UPS)** to maintain constant power for the Gatekeeper, door readers, Internet router and all network components, and to keep your business secure in the event of a power outage.

The Gatekeeper network port has a green/amber LED at the top left corner, and an amber LED at the top right corner. The left LED shows whether the cable is correctly inserted. The right LED shows network activity. When powered and connected to the router, you would normally expect to see a solid left LED and a flickering right LED, indicating correct connection and ongoing activity.

USB Ports

Desktop readers and receipt printers are connected by USB cable to one of the USB ports at the front of the Gatekeeper.



The Gatekeeper USB ports **MUST** be used **ONLY** for GymMaster devices. If you attempt to connect or charge any electronic device, such as mobile phone, digital camera, etc, this can cause reader faults.



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Sample Wiring Diagrams

These wiring diagrams are intended only as examples of how the relay unit and RFID device may be installed. Actual installation wiring may differ. The Gatekeeper is supplied with short wiring so that the system can be tested prior to installation.

Typically, the Gatekeeper will be positioned or mounted at or near the facility reception desk. This enables the desktop reader to be connected, and door readers to be connected by longer cabling fitted to wall and floor edges. This positioning also typically allows the Gatekeeper to use the same network cable access to the Internet router as used by the reception computer.

Fail Secure door locks will **LOCK** the door when the power goes off, and require power to unlock.

Fail Safe door locks will leave the door **UNLOCKED** when the power goes off, and require power to lock.

Check with your local fire and government regulations as to which you can use. Fail-secure systems are illegal in some areas.

Door lock, door lock power-supply, and any Push To Exit buttons are NOT supplied by GymMaster, and should be sourced in advance by installer.



Note: If you use **Fail Secure door locks**, it is **STRONGLY recommended that you have alternative means by which you can physically unlock the door** in case of outage (loss of power, or no connection to Internet for a long period, etc).



Do **NOT** use the Gatekeeper or the Gatekeeper power supply to power any door locks.



If the door lock requires a diode (consult the door lock manual), install the provided diode 1N4001 as close to the lock as possible so the kick back voltage is localised on the lock.

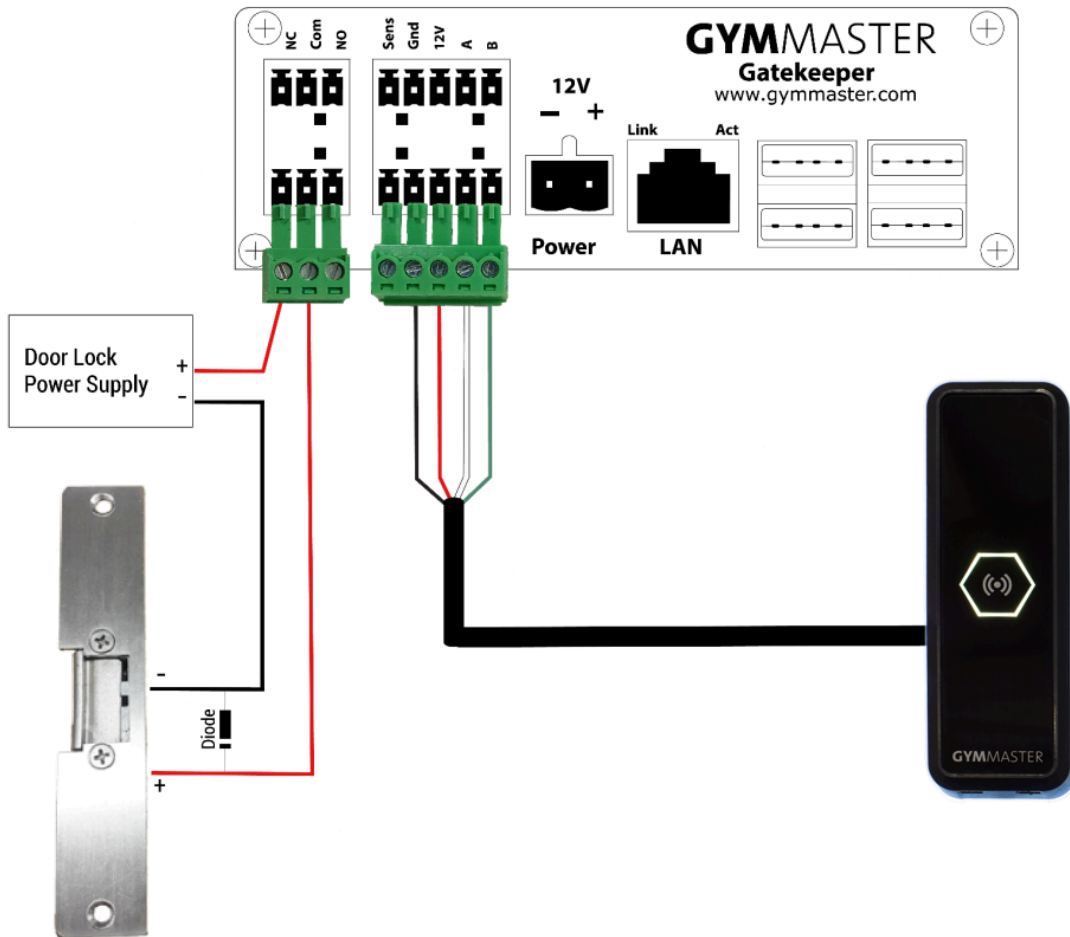


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Fail Safe

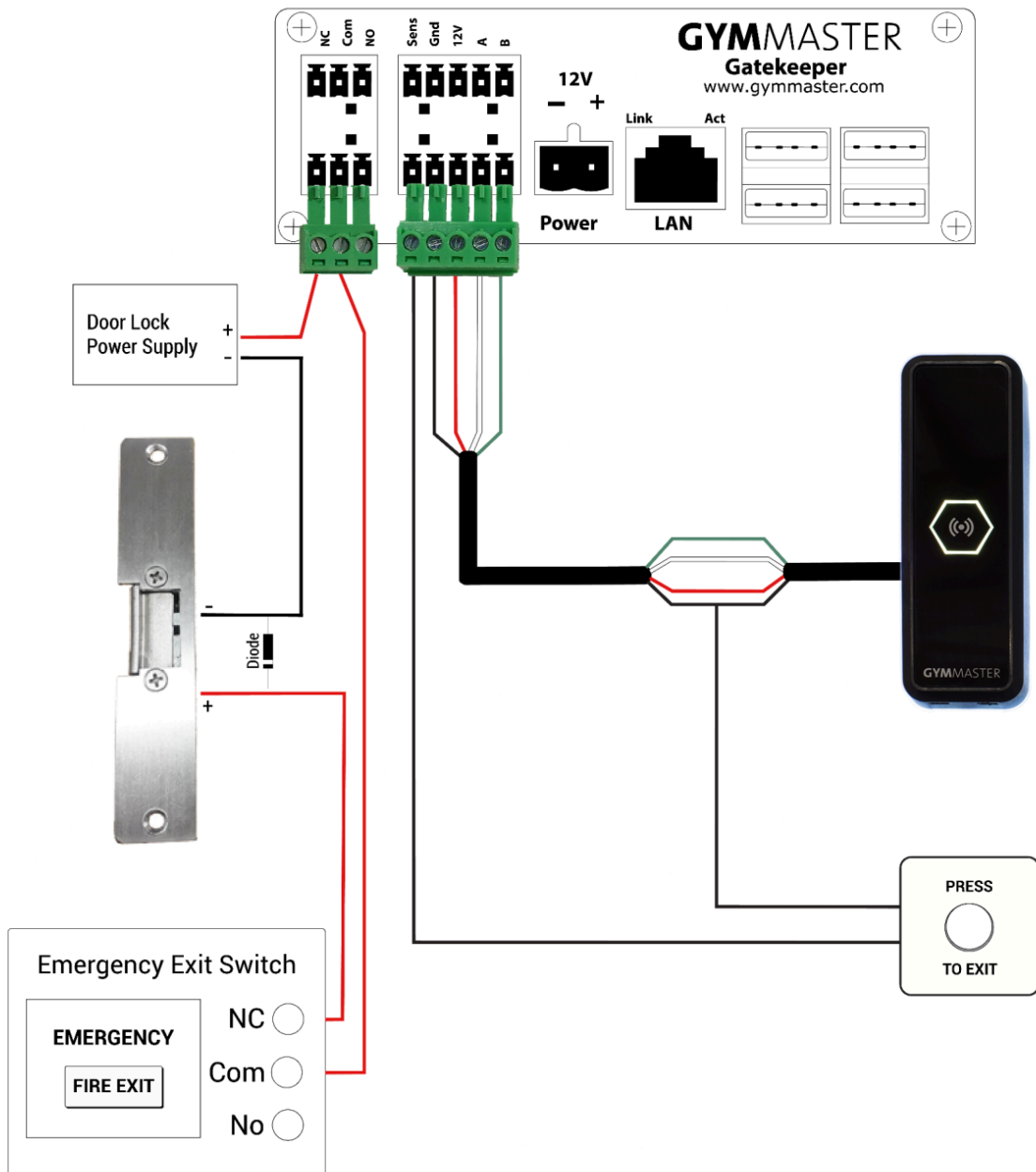


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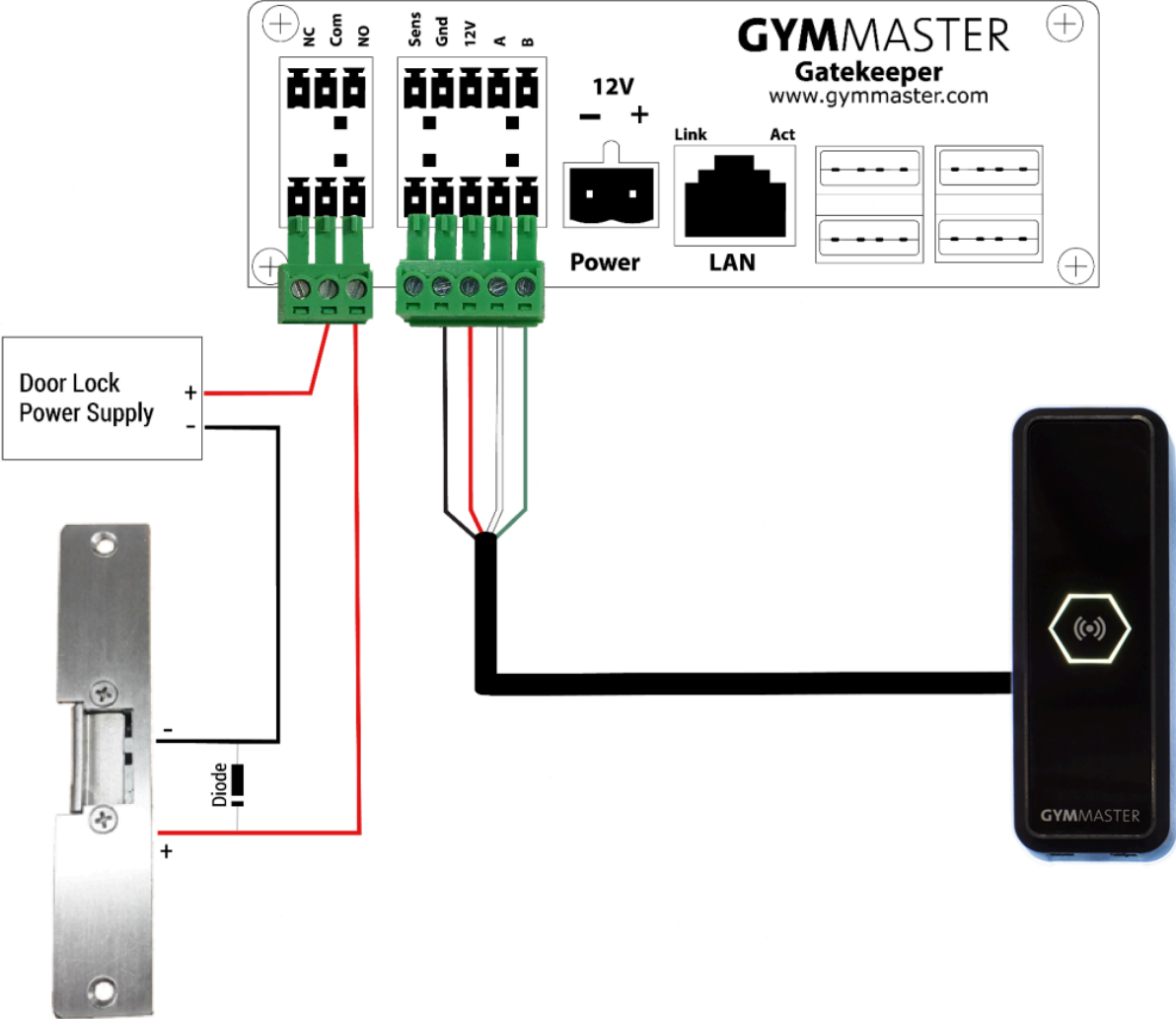
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Fail-Safe with Emergency Exit



Fail Secure

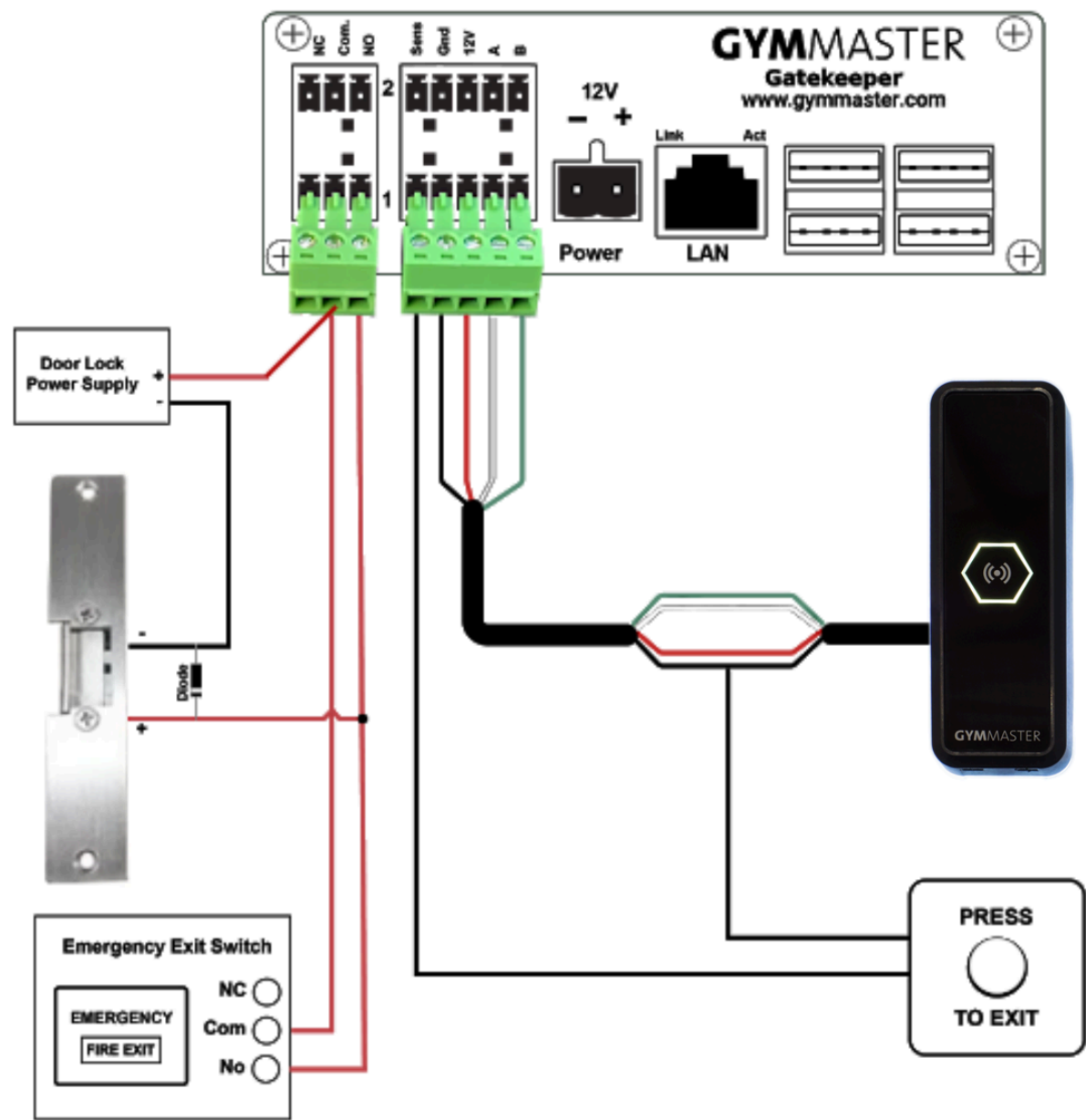


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Fail Secure with Emergency Exit



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Troubleshooting

Key Fob Assignment

To test the access control system, a test key fob is provided. If this test key fob is not available, a new one can be assigned in the GymMaster software.

For members to check in, or enter your facility using a key tag, or swipe card, they have to have one associated with them. This is the Key Fob field of the member's Details tab. When a new fob is scanned on one of your readers it will be serialised to a sequential number; the first fob being #1, the second #2 and so on. This number is represented in their **Key Fob** field. This field can be set manually by typing the number associated with the fob, or you can select the button to the right of the field with the tag icon on it. This will check for the most recent key fob that was swiped on your designated default reader, and put the fob number in the field for you. Make sure you click the **[Save]** button on the member after you set a **Key Fob**. The member will also require a **Membership** with a Door Access **Benefit**. If the installation is occurring outside the clubs open hours, you will need to update the **Membership Type** Doors Benefit to allow 24/7 access.

The screenshot shows the GymMaster software interface. The top header displays 'GYMMASTER' and 'John Jr. Smith #5120'. The left sidebar contains navigation options: Home, Add Member, Find Member, Visitors, Schedule, Point of Sale, Report & Till, Task, Stock, and Member Portal. The main content area shows the member's profile for 'John Jr. Smith' with a placeholder photo and buttons for 'Upload Photo', 'Take Photo', 'Check In', 'Visit History', 'Make Booking', and 'Make Purchase'. The 'Details' tab is active, showing fields for First Name (John Jr.), Last Name (Smith), Date of Birth (dd-mm-yyyy), and Gender (Male selected). The 'Key Fob' field is highlighted with a red box and contains the text 'Click to assign Key Fob' and a link 'Click here to buy Key Fobs'. A tooltip points to the tag icon next to the Key Fob field, stating: 'Assign a new Key Fob to the member. To deactivate a Key Fob delete the value in the field and save.'



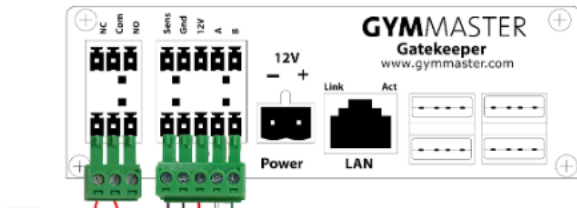
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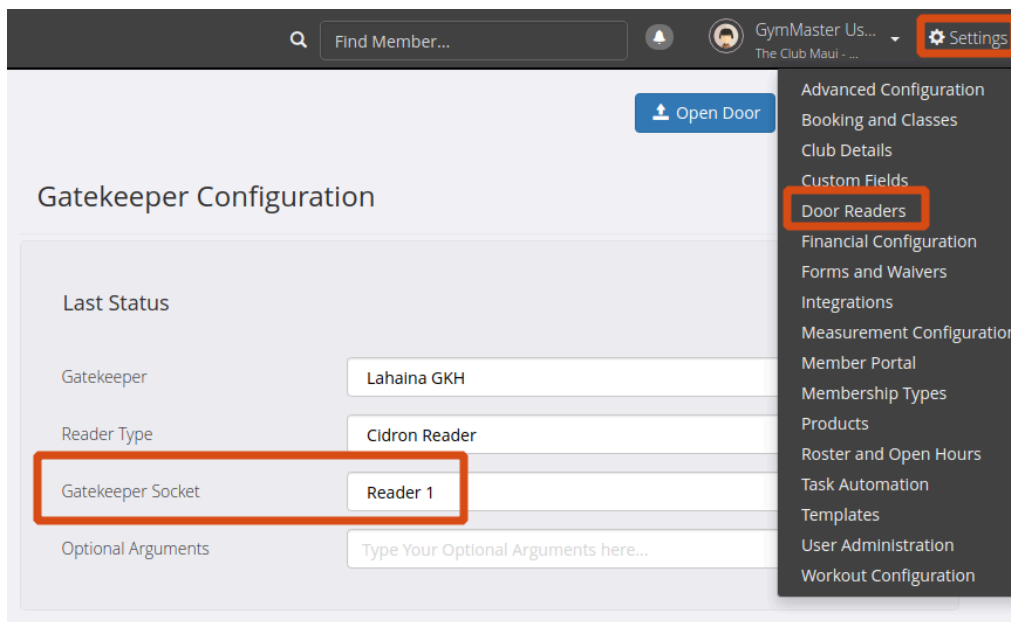
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Ensure the port on the Reader matches the port set in the software

If only one door reader is installed, the software will be set up with the assumption that you will plug the reader into port 1 on the Gatekeeper (The port farthest from the screen, as shown in the diagram). Ensure that the relay wiring is on the same level as the port you have chosen for the door reader.



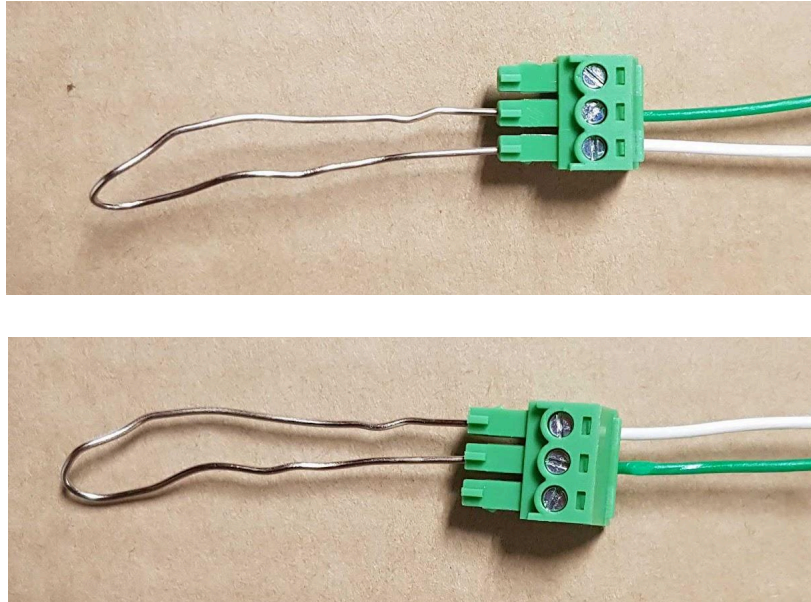
To see which port the software is configured for, navigate to **Settings > Door Readers > Gatekeeper Socket**. If you want to plug the reader into the top port of the Gatekeeper, update this field and save.



Test the relay wiring to the door lock

Once you have finished the wiring, you can test if the wiring is correct and working by using a paperclip. Do this before plugging the connector into the Gatekeeper socket.

Find a paperclip, straighten it and then bend it as depicted below. Connect the paperclip into the two holes where the two wires connect to the magnet lock. You should be able to see the door lock activate or deactivate, depending on the type of lock.



To demonstrate, if the lock mechanism is unengaged (unlocked) before you connect in the paperclip, it should be engaged (locked) after you connect the paperclip.

If the lock is engaged (locked) before you plug in the paperclip, it should become unengaged (unlocked) after the paperclip is connected.

If that does not happen, it means that the wiring has not been done correctly on the lock mechanism. Please check the power supply for the lock and other related wiring.