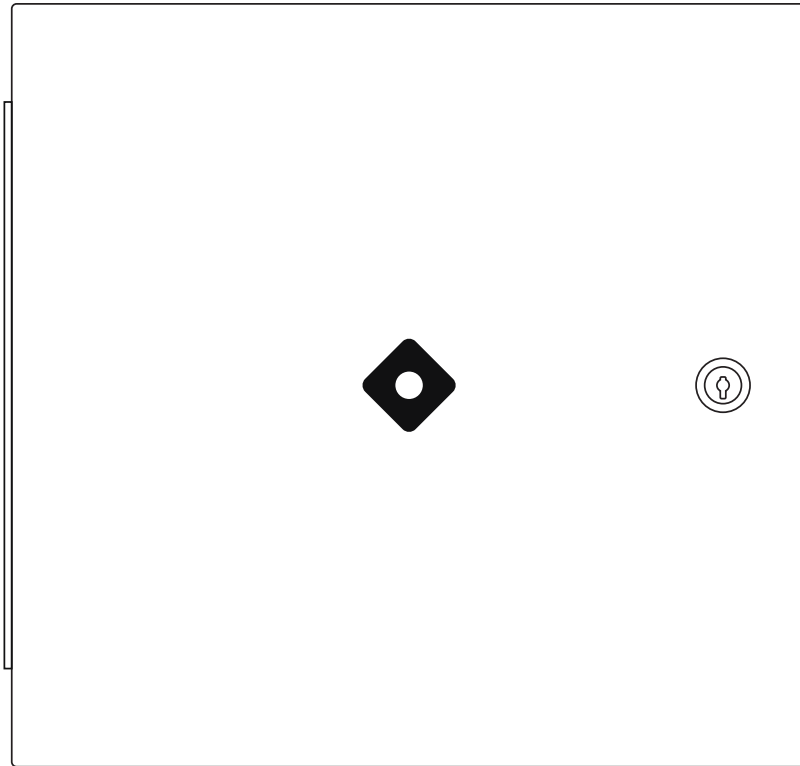


DC20 Door Controller

User Manual



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Date	Revision	Notes
9/20/2023	A	Initial Release
1/31/2024	B WIP	Draft

Service and installation should only be performed by trained personnel.

WARNING messages will be fully boxed as shown here. Failing to follow instruction may result in damage to the DC20 or other connected components.

FCC Compliance Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference 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 instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

IC Compliance Statement

This device complies with Industry Canada's license-exempt RSSs. 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.

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

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:

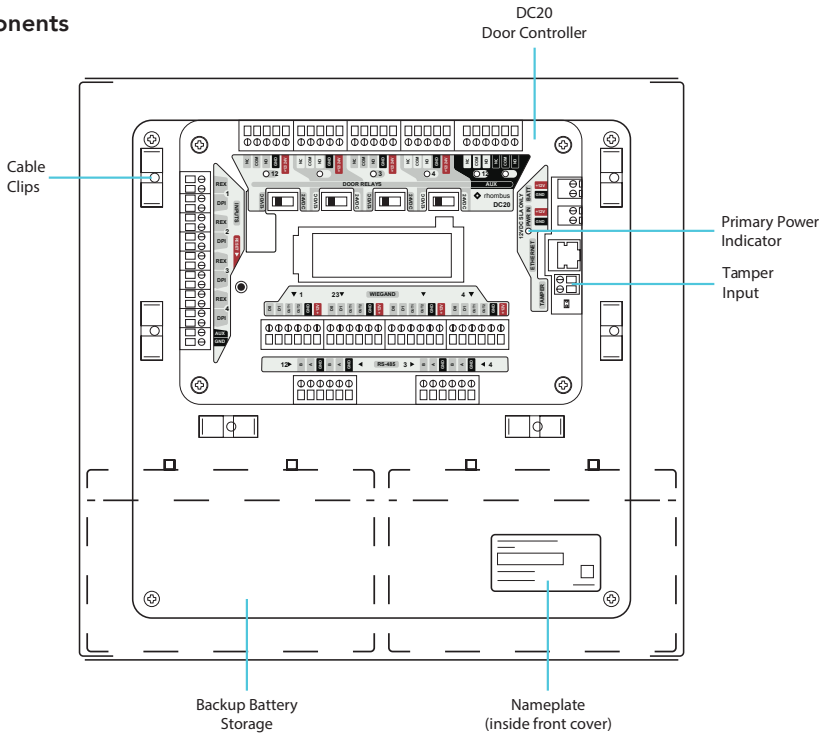
- 1. L'appareil ne doit pas produire de brouillage, et*
- 2. l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement*

L'appareil a été évalué pour répondre aux exigences générales en matière d'exposition aux RF. L'appareil peut être utilisé en condition d'exposition portable sans restriction.

DC20 Overview

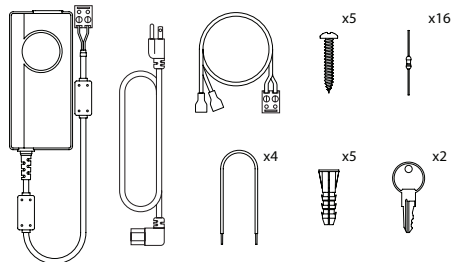
The DC20 is a 4-Door Access Controller that is cloud-managed, secure by default, and built for enterprise scalability. The DC20 pairs seamlessly with Rhombus Access Control devices and existing door hardware.

Main Components



Included in the box

- DC20 Door controller
- Power adapter and AC cord
- Battery cable
- (4) Relay jumper wires
- (5) #8 wall screws and anchors
- (16) 4.7K Ω resistors
- (2) Keys



Tools Required

- Flathead 1/8" screwdriver
- Phillips #2 screwdriver
- Pen or pencil for marking drill locations
- Power drill and 1/4" drill bit for wall anchors or 1/8" drill bit for screw pilot



Mounting Instructions

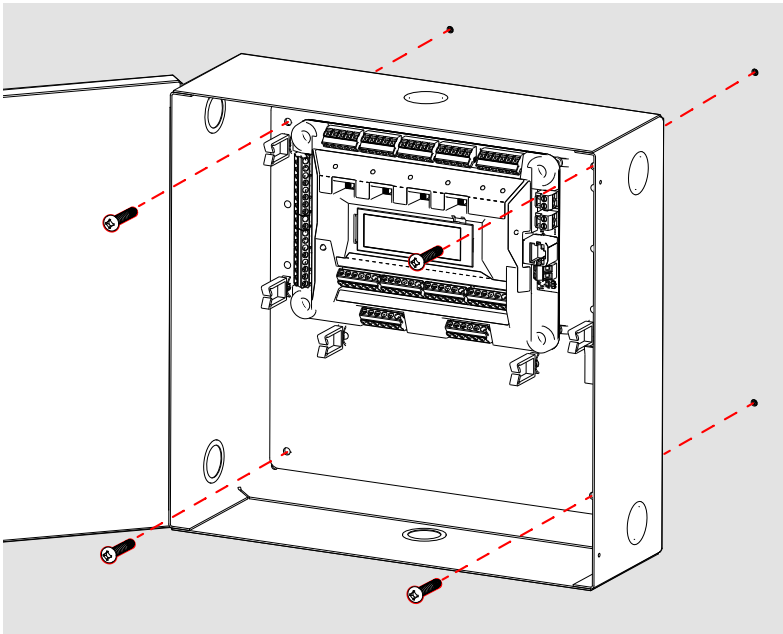
Mounting the DC20

The DC20 is intended to be wall mounted indoors in a secured area, such as a locked server room or utility closet.

To install, pre-drill pilot holes into the desired mounting surface in accordance with the mounting specifications provided (see Appendix). Note that a 3/16" pilot hole is required if using the wall anchors.

TIP: Utilize the fifth mounting screw to hang the DC20 about the center keyhole slot located towards the top on the back of the enclosure. Once levelled, the four hole locations can be more easily marked on the mounting surface and pre-drilled.

After the holes have been pre-drilled, fasten the device to the surface using the included mounting screws. The DC20 can be mounted on surfaces such as metal or concrete but appropriate #8 screws should be used.



Connecting Conduit

The DC20 contains six knockouts for wiring and conduit access throughout the enclosure. Knockouts are 3/4" US trade size and can be punched out by hand as needed.

Recommended Wiring

Wiring methods used shall be in accordance with the National Electrical Code, ANSI/NFPA 70.

All wiring of the DC20 should be performed prior to connecting power. Power should be removed before attempting to service the DC20 or any of its connected devices.

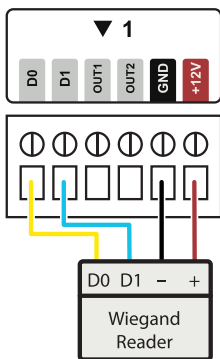
WARNING: Failure to remove power prior to servicing the DC20 may result in damage to connected devices.

Wire Type and Size

	Wire Type	Twisted Pair	Shielded	Minimum Size	Maximum Length
Lock Power	Solid or Stranded	—	—	18 AWG	300 ft
Reader Power		—	Yes	18 AWG	300 ft
Reader Data		Yes	Yes	24 AWG	300 ft
Inputs		—	Yes	24 AWG	300 ft

Wiegand Readers

DC20 is compatible with third-party Wiegand readers.

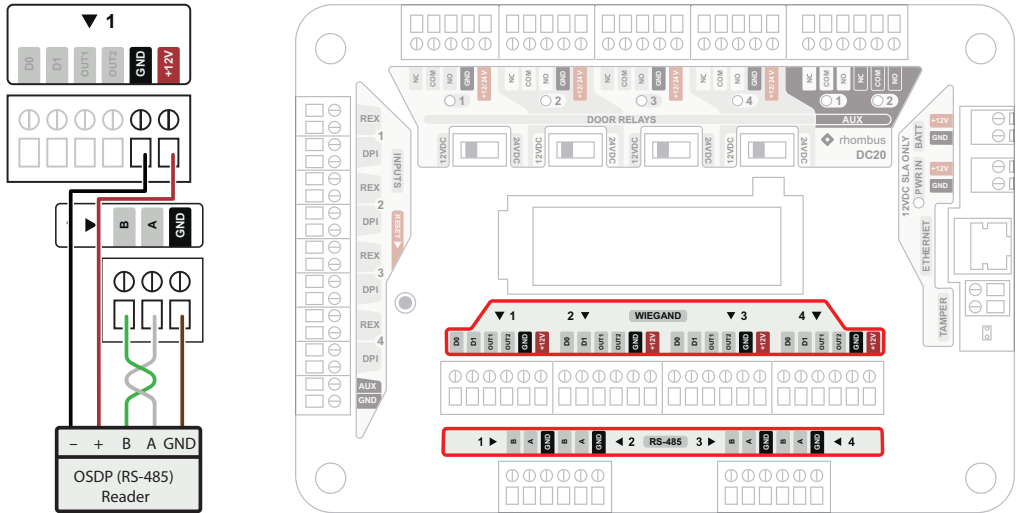


The 12VDC reader power supplies are rated to 660mA each. Terminals [OUT1] and [OUT2] are configurable in Rhombus Console to support LEDs and buzzers.



RS-485 Readers

DC20 is compatible with Rhombus DR20 Reader, DR40 Video Reader, and certified third-party door readers using OSDP protocol over RS-485.



The 12VDC power supply in the “WIEGAND” section can be used for RS-485 readers and powered input devices up to 670 mA per output.

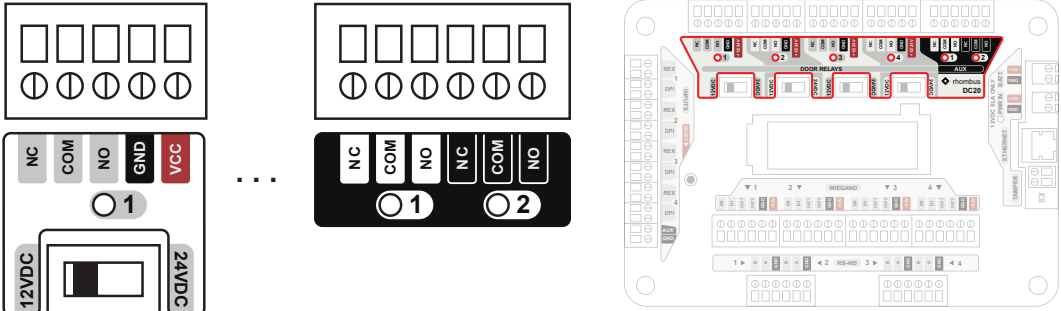
POWERED REMOTELY: In the case that an RS-485 reader is not powered by the DC20, a ground wire must still be wired back to a [GND] terminal on the “RS-485” section of the DC20.

Relays

DC20 is equipped with six Form C relays with both Normally Open (NO) and Normally Closed (NC) contacts that can be used to control door locks and auxiliary devices. Four of the relays can be used alongside four individually selectable 12VDC or 24VDC power supplies to control power delivered to locking hardware. Maximum current per output is limited to 830mA at 12VDC and 415mA at 24VDC.

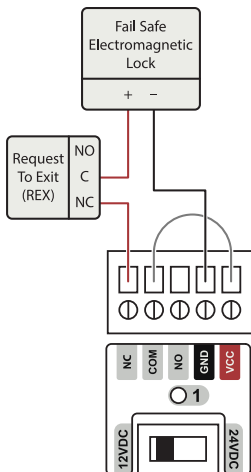
Before powering the DC20, be sure to select the appropriate voltage [12VDC] or [24VDC] for your end device.

WARNING: Failure to select the appropriate voltage for each door power output may result in damage.

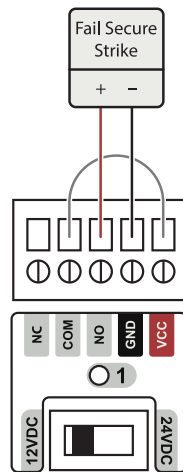


The following wiring diagrams demonstrate some common configurations of locking hardware that can be supported.

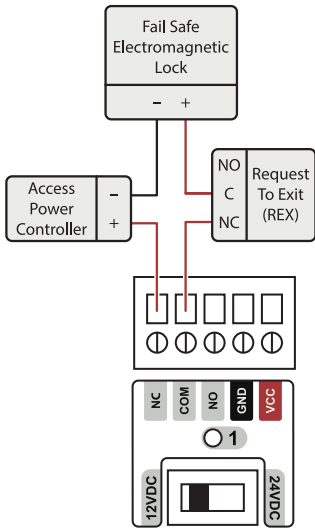
Fail Safe Electromagnetic Lock



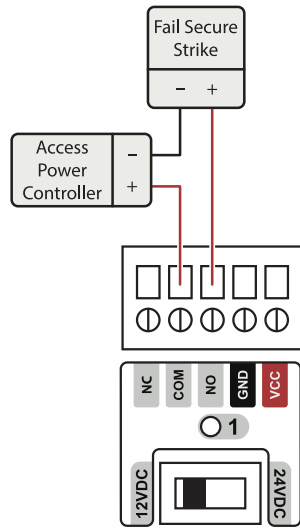
Fail Secure Strike



Fail Safe Electromagnetic Lock (Externally Powered by an APC)



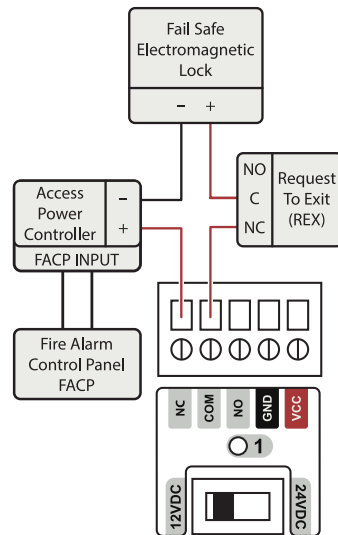
Fail Secure Strike Lock (Externally Powered by an APC)



Fire Alarm Control Panel (FACP) Interface

With the addition of an Access Power Controller (APC), the DC20 can be deployed in applications with an existing Fire Alarm Control Panel (FACP) by the means of the dry relays. In the event of a fire alarm, the FACP sends a signal to the APC, which immediately disconnects the power supply of all locking hardware connected through the DC20. In the absence of power, doors that are wired as fail safe will unlock.

Once the alarm has been dismissed, the APC will reconnect power to locking hardware. Refer to the documentation provided with the APC and follow all manufacturer instructions related to your specific application. Consult Federal, State and local authorities for applicable regulations related to access control integration with fire alarm systems.

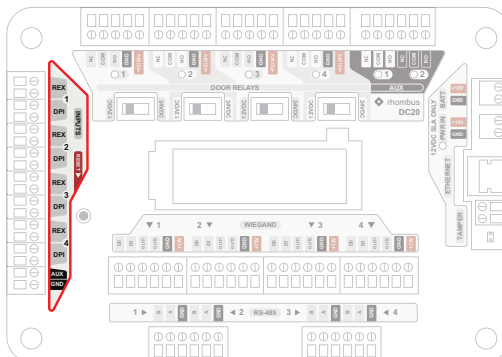
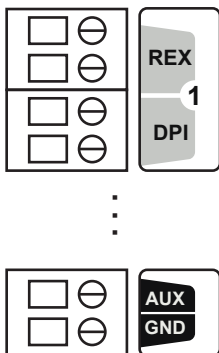


DPI/REX/AUX Contact Inputs

Two inputs for Door Position Indicator (DPI) and Request to Exit (REX) devices are provided for each door. DC20 inputs are compatible with contact-type devices with a NO or NC state.

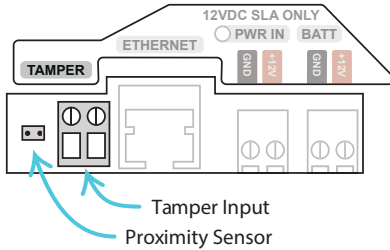
An auxiliary input labeled [AUX] can be used to receive contact-type inputs from devices such as intercoms or intrusion alarm panels and can be used to trigger events created in the Rhombus Console.

To connect a device to the input, simply connect the two output wires of the end device to the input. The default state (NO or NC) can be configured through the Rhombus App or Console.



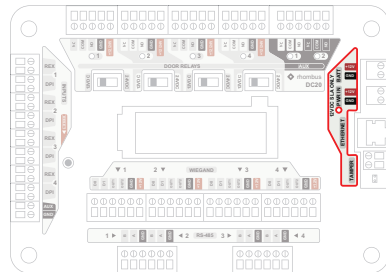
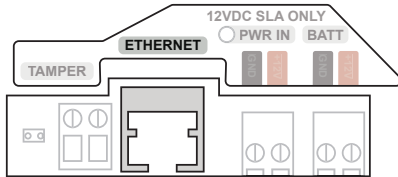
Tamper

An onboard accelerometer and proximity sensor will detect any significant movement of the DC20 and the enclosure cover. A 2-position terminal is also available to connect an optional wired contact sensor. Movement detected by any of the 3 sensor types can be configured to generate an event in the Rhombus Console. Before powering up the DC20, ensure cables are not obstructing the view of the proximity sensor.



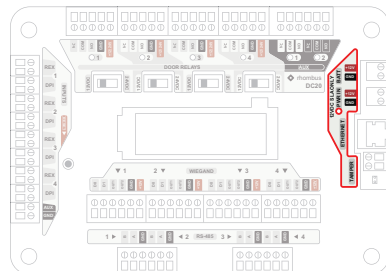
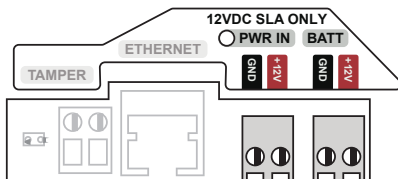
Ethernet

The DC20 supports 10/100BASE-TX ethernet. Use a CAT5 or CAT6 cable with RJ45 connector. Plug a network connected ethernet cable into the RJ45 jack.



Power

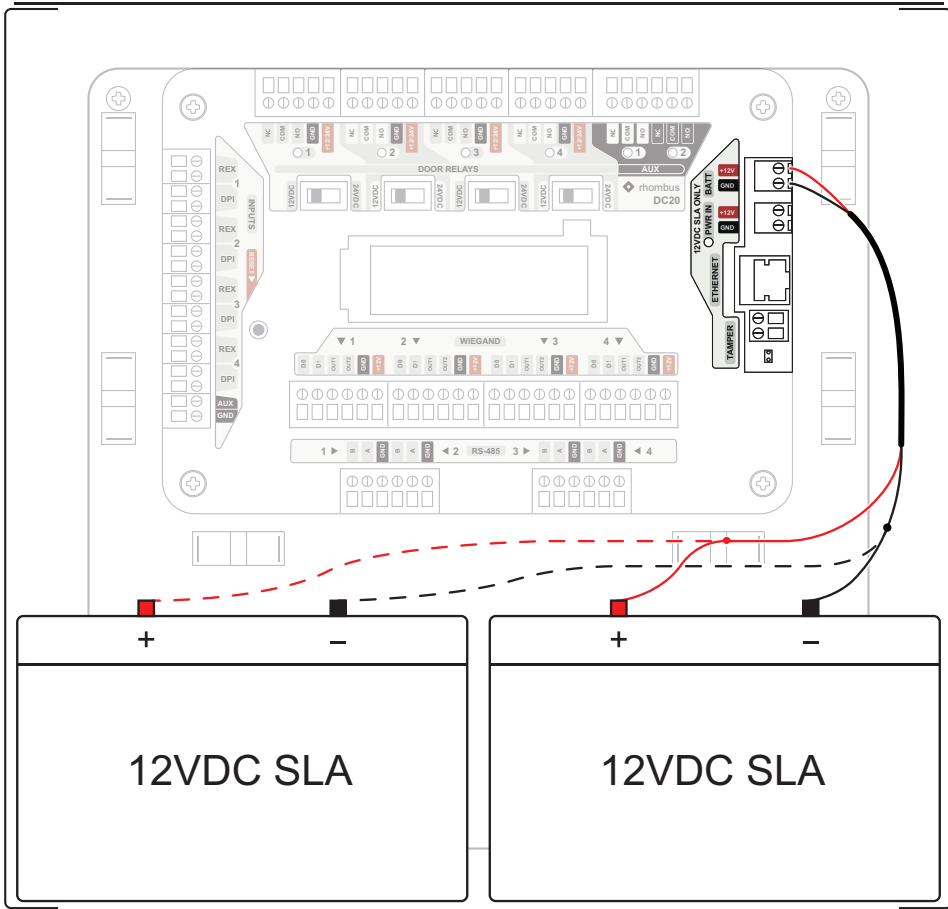
Power to the DC20 is provided by the included 100-240VAC to 12VDC power adapter. The power cord is secured to the main board by a pluggable screw terminal. Once all other connections have been made and terminal contacts are screwed firmly in place, ensure the pluggable terminal end of the power adapter is connected before plugging the adapter's power cord into a 100-240VAC, 50/60Hz 1.3A MAX wall outlet. Do not connect to a receptacle controlled by a switch.



Sealed Lead Acid (SLA) Backup Battery

The DC20 has provisions for a backup battery to support offline mode in the case of a loss of primary power. The battery must be 12V Sealed Lead Acid (SLA) type, with F1 or F2 style connectors. The maximum space reserved for a standby battery(s) is 300mm L x 80mm W x 110mm H. Two new and unused batteries of the same make and model may be wired together in parallel to increase standby capacity.

The battery capacity should be sized appropriately based on the power consumption of the overall system and the desired run time during an outage. Many factors including, but not limited to, the type of powered devices used (locks, readers and other power accessories), unlock frequency, battery age, and even ambient temperature can affect the total backup duration.

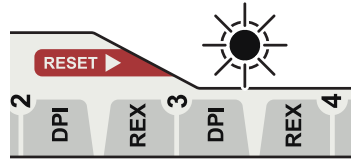


--- Up to 2 new and unused batteries of the same size, make, and model can be wired in Parallel.

Troubleshooting

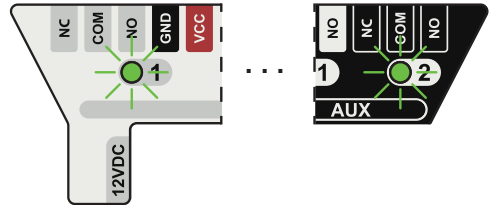
Reset Button

Press the RESET button when you are instructed by the controller display or a technical support representative to reset the DC20.

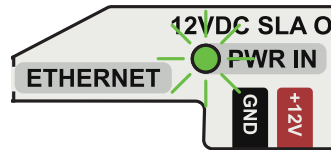


LED Indicators

Each relay on the DC20 has a green status LED indicator. When the relay is in an energized state, the indicator will illuminate. Conversely, the indicator will extinguish when the relay is de-energized.



The green LED indicator adjacent to "POWER IN" terminals on the Power side of the DC20 indicates the presence of primary DC power from the provided power adapter. If the primary power is removed, as would be in the case of an AC power outage, the indicator will extinguish.



NOTE: This behavior remains constant when a backup battery is connected.

Display Messages

A character display will present useful information during installation and operation about the state of the controller.

Real Time Clock (RTC) Battery Replacement

The DC20 is equipped with a coin cell battery (CR1225) to maintain system time during and after prolonged power outages before the network time can be re-established. The recommended replacement interval for this battery is 5 years. A notification will be generated when the battery reaches a low level of charge. Replacement of the RTC battery should only be performed by certified partners or with specific guidance provided by Rhombus Customer Support.

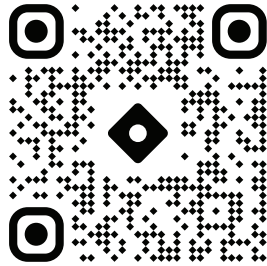
Registration

Getting Started

To get started, scan the QR code provided with the DC20 or visit www.rhombus.com/setup/dc20.

Support

For more information, go to www.rhombus.com/support or email us at support@rhombus.com.



Specifications

General

4-Door Controller

Rhombus Cloud Connected

Lockable Wall Mounted Enclosure

Offline Mode (SLA Battery not included)

Dimensions: 330 mm x 313 mm x 113 mm
[13.0 in x 12.3 in x 4.4 in]

10 Year Warranty

Connectivity/Power

3.5W Power Consumption (Standby)

Power Adapter (100-240VAC, 500/60Hz, MAX 1.3A)

Ethernet 10/100BASE-TX, Auto MDI-X

BLE for Mobile Registration

Environmental

Operating Temperature: 0°C to 50°C [32°F to 122°F]

Operating Humidity: 10% to 90% RH

UL Type I Metal Enclosure

Compliance: FCC, IC, NDAA

Hardware

(6) Form C Dry Relays max 3A at 24V AC/DC

(4) Power for Locking Hardware: 830mA @ 12VDC
and 415 mA @ 24VDC

(8) DPI/REX Inputs

(1) AUX Input

(4) Power for Reader: 660mA @ 12VDC.

(4) Wiegand Reader Ports

(4) RS 485 Reader Ports

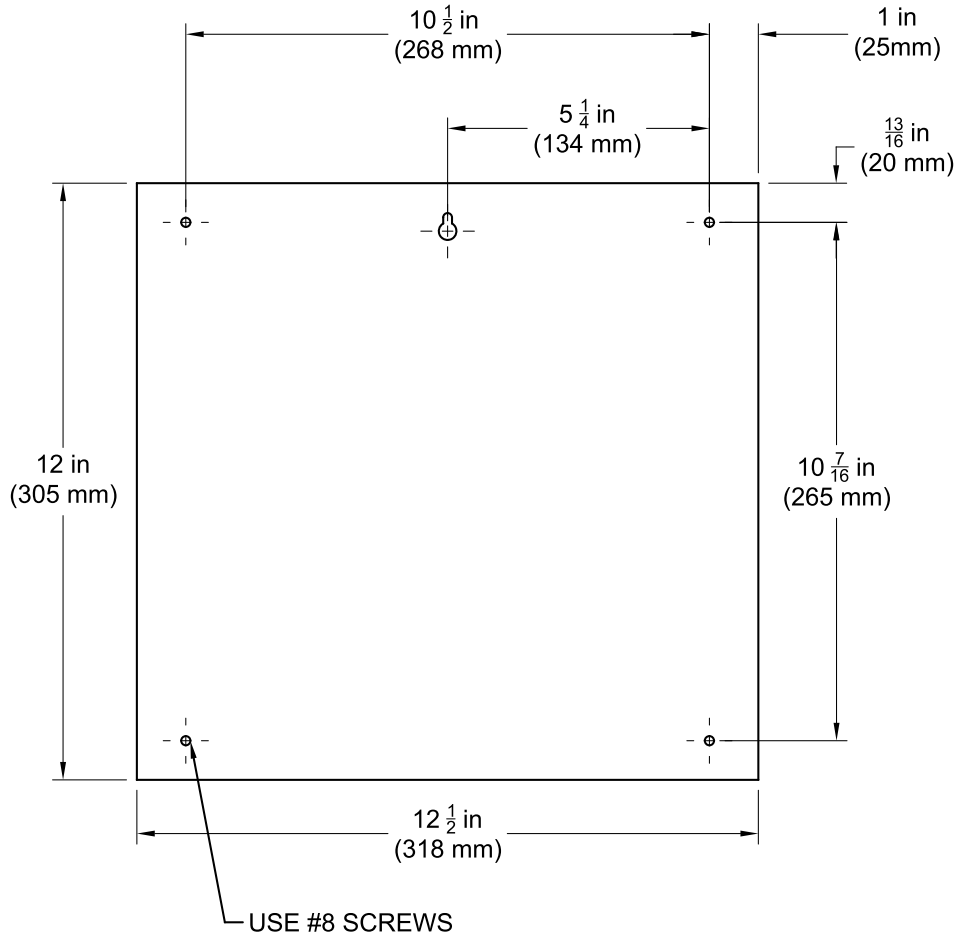
Tamper Switch

OLED Character Display

Status LEDs

Appendix

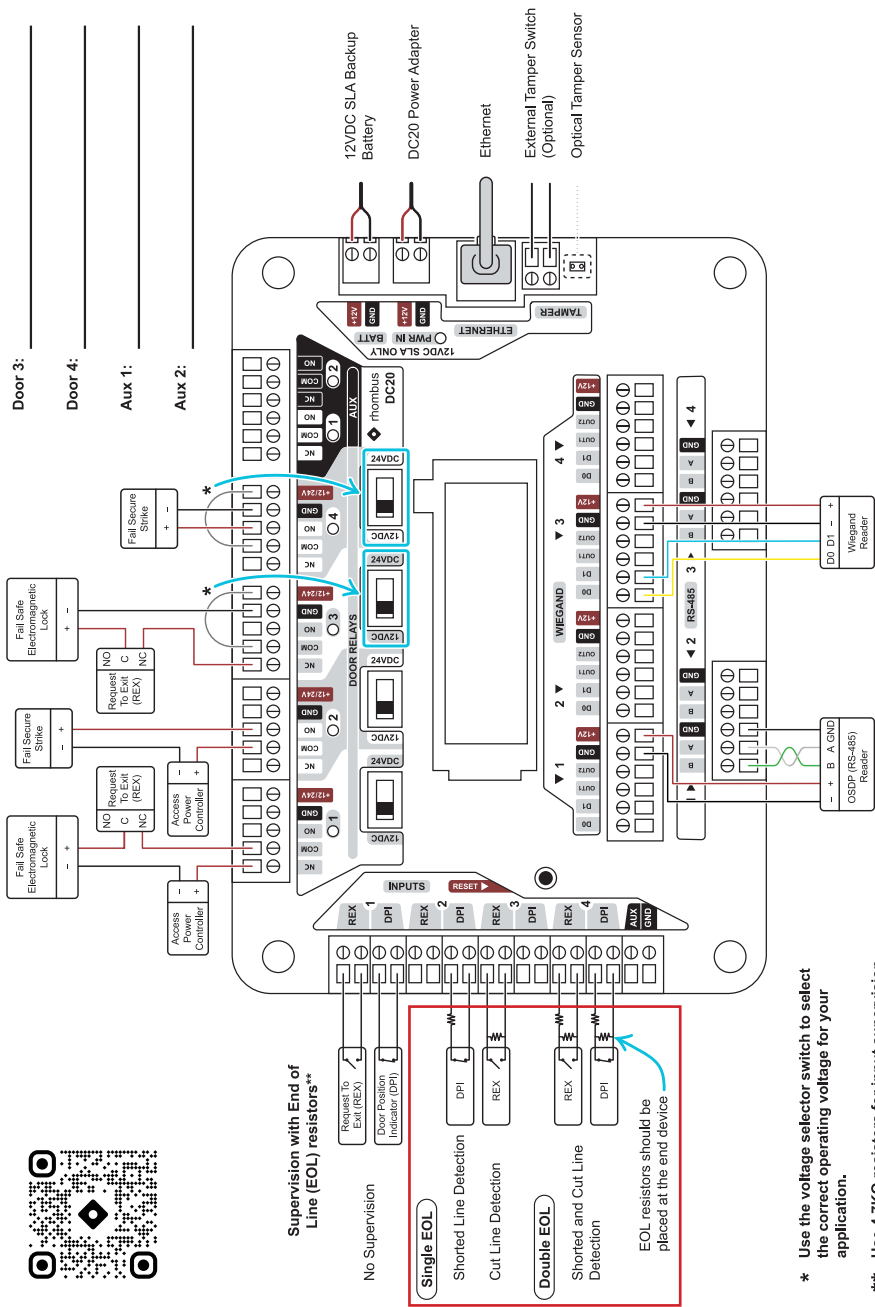
Mounting Dimensions



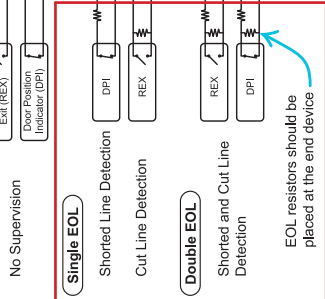
Door 1: _____
 Door 2: _____
 Door 3: _____
 Door 4: _____
 Aux 1: _____
 Aux 2: _____



To get started, scan the QR code or visit <https://www.rhombus.com/setup/dc20>



Supervision with End of Line (EOL) resistors**



Please note that input supervision is not yet available. It will be coming soon.

* Use the voltage selector switch to select the correct operating voltage for your application.

** Use 4.7kΩ resistors for input supervision.





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