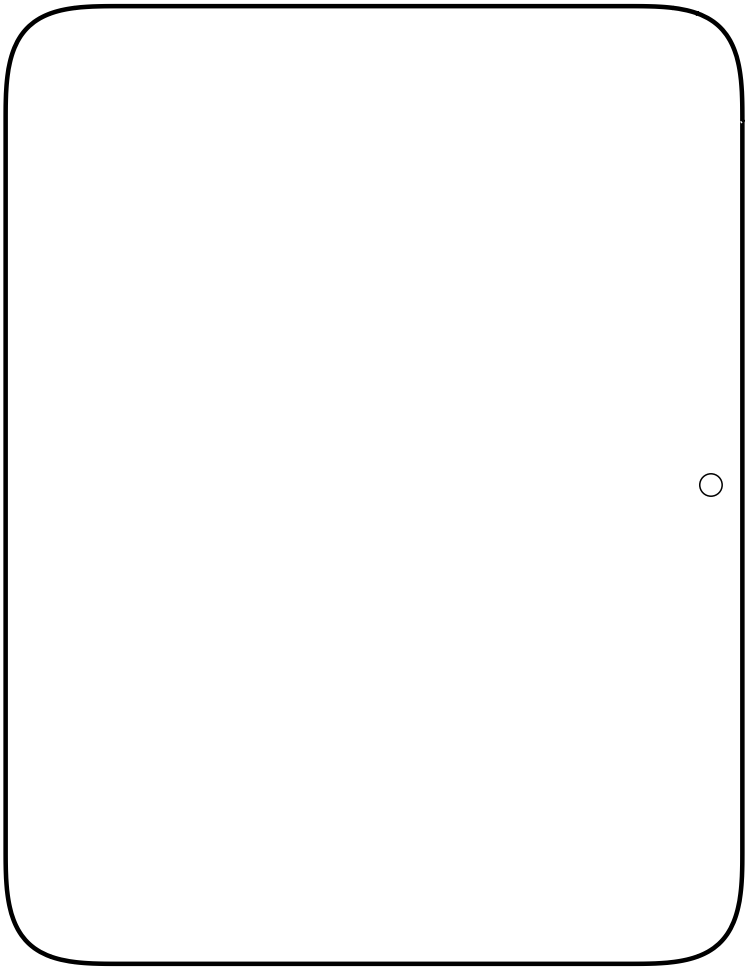
Install Guide

A**C41** Door Controller



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Document Details

⚠ Note

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.

Document Number

V1.2

Levels of Access Control

- Attack Level/Grade: Level I
- Endurance Level/Grade: Level I
- Line Security Level/Grade: Level I
- Standby Power Level/Grade: Level I

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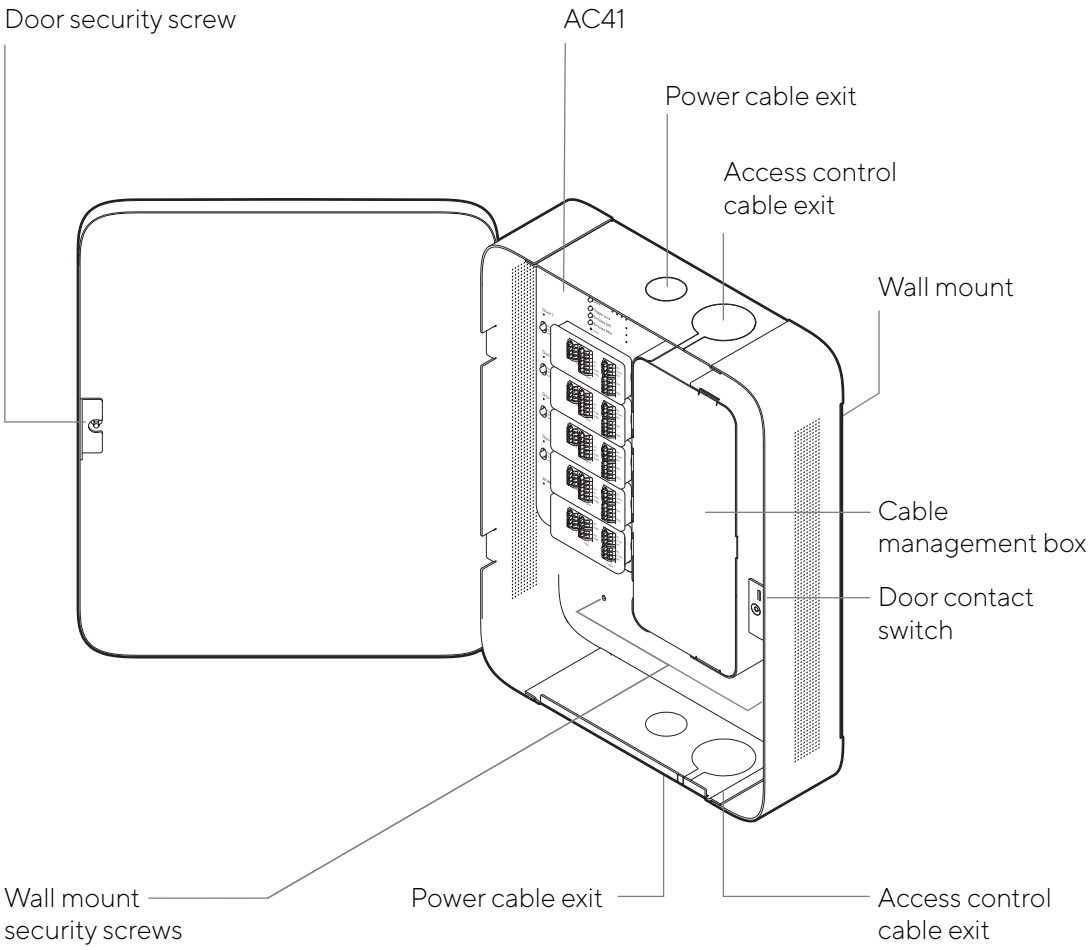
AC41 Overview



In the box

- 1 AC41 Door Access Controller (ACU)
- 1 Wall Mount Plate
- 1 T20 Security Torx Screwdriver
- 4 Mounting Screws and Wall Anchors

What you'll need

- A working wired Internet connection over Ethernet
- A smartphone or laptop
- A #2 Phillips screwdriver or power drill with a #2 Phillips driver bit
- 5/16 inch (7.9mm) drill bit for wall anchors
- 5/32 inch (4mm) drill bit for pilot holes
- A Cat5 or Cat6 Ethernet cable

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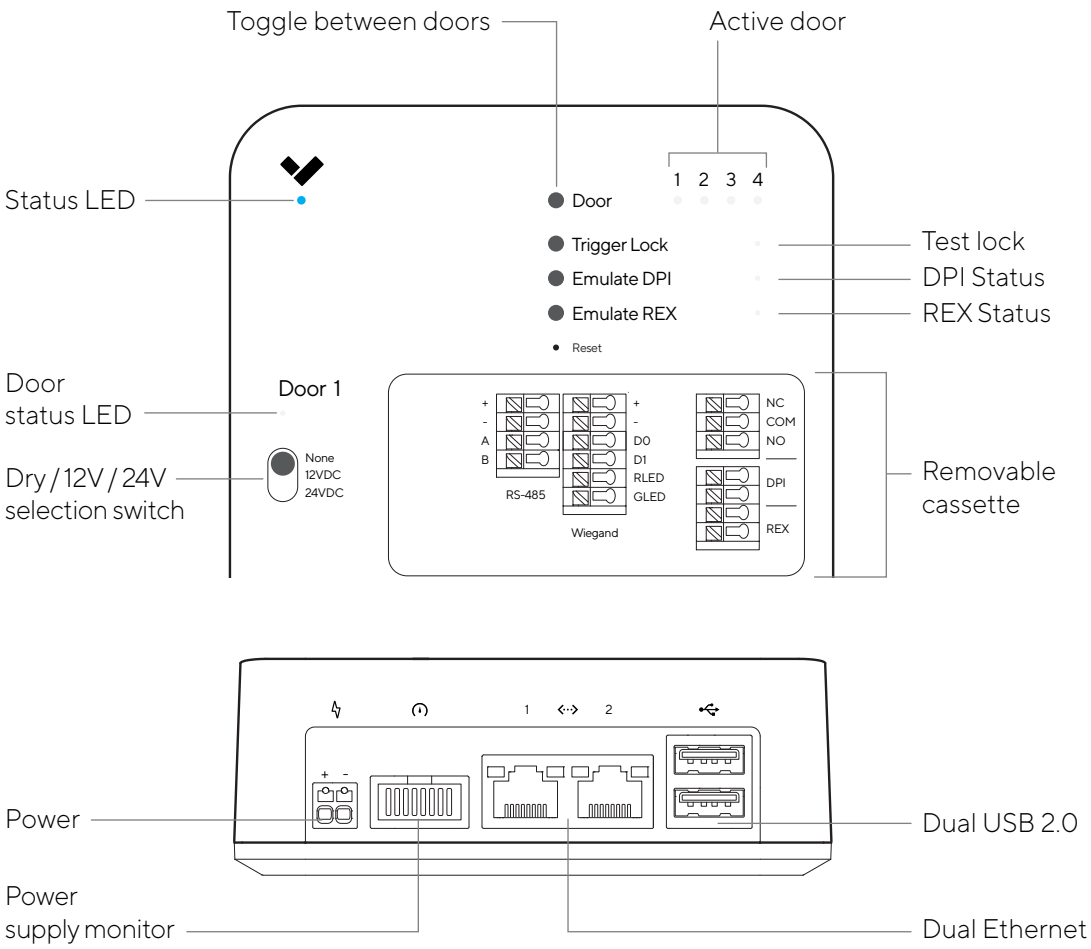
AC41 Overview



AC41 Testing Interface

To make installation easier, the AC41 has four buttons to help test or emulate different events.

- Door: Pressing the "Door" button will cycle which door is selected for testing.
- Trigger Lock: Trigger the lock relay on the selected door. When triggered, the LED will be off.
- Emulate DPI: Emulate the door position indicator. When a door is closed, the LED is on.
- Emulate REX: Emulate the request-to-exit. When the REX is triggered, the LED is on.

AC41 Status LED Behavior

Solid Orange
Controller is on and booting up

Flashing Orange
Controller is updating firmware

Flashing Blue
Controller is managing doors, but cannot reach the server

Solid Blue
Controller is managing doors and connected to the server

Flashing Pink
Identify

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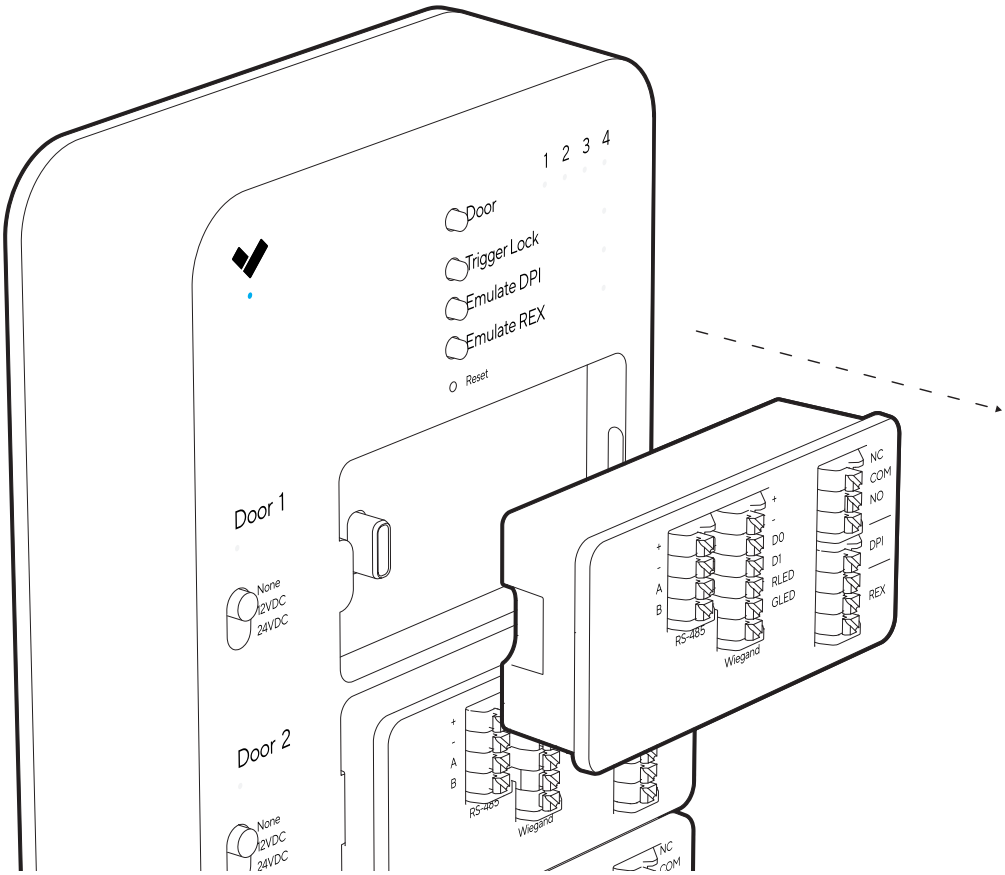
Introduction

AC41 Cassettes

These removable cassettes are designed to make the installation and cabling process quick and easy

- Remove all 5 cassettes from their packaging and insert into the AC41.
- Ensure the USB-C and other mating features are aligned for correct fitment.
- Once the AC41 has been mounted, simply remove the cassette, install the necessary wires into the cassette, and plug the cassette back into the AC41.



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Recommended Wiring

Verkada AC41 is capable of supporting Verkada Readers over RS-485 and standard wiegand readers. The following diagram shows the wire types that are recommended for use with the Verkada AC41.

Signal	AWG	Twisted Pair	Conductor	Shielded	Max Length
Reader Option 1 (22 AWG)	22	Yes		Yes	250 ft
Reader Option 2 (20 AWG)	20	Yes		Yes	300 ft
Reader Option 3 (18 AWG)	18	Yes		Yes	500 ft
Power (22 Gauge)	22		Yes	Yes	600 ft
Power (18 Gauge)	18		Yes	Yes	1500 ft
Request-to-Exit	22/18		Yes	Yes	1500 ft
Door Contact	22		Yes	Yes	1500 ft

We recommend using one twisted pair for GND and VIN (power) and one twisted pair for the data (D0/D1 or A/B).

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

⚠ Shield Wiring and Grounding

With the AC41, you must use shield wiring:

- Connect the drain (bare metal) wire from the reader to the drain (bare metal) wire in the shielded cabling. Then, connect the drain wire in the cabling to Earth ground.
- The other end of the drain wire shouldn't be connected to anything.

Required Network Settings

An Ethernet connection with DHCP must be used to connect the AC41 to the Local Area Network (LAN). You also need to configure firewall settings to communicate with the AC41.

- TCP port 443
- UDP port 123 (NTP time synchronization)

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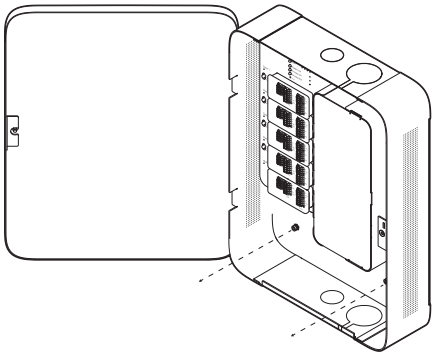
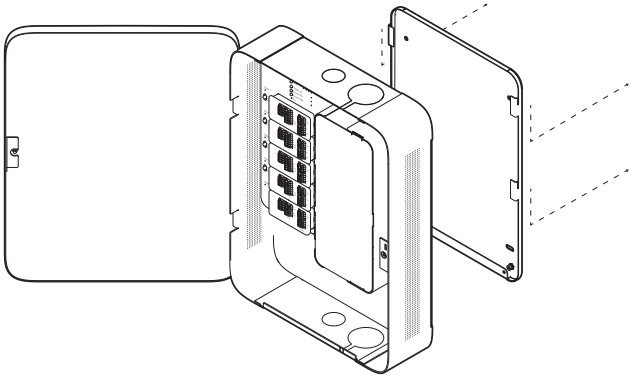
Installation

Mounting

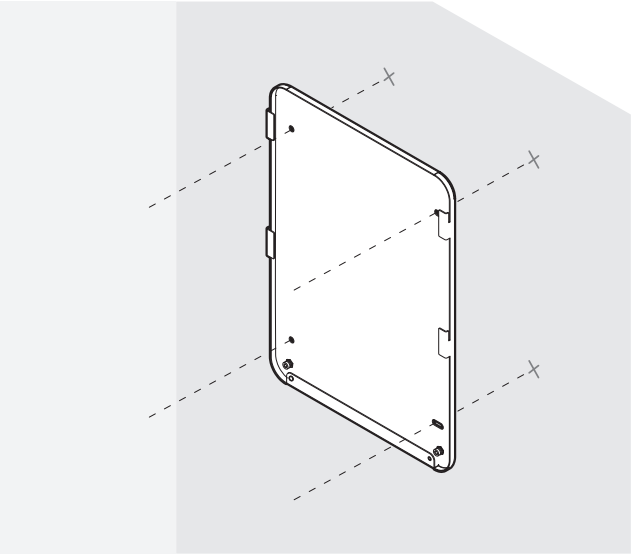
1. Disconnect the mount
To remove the wall mount, unscrew the two security torx screws from the inside.



2. Remove the mount
Once the security screws are fully removed, slide the wall mount down and away from the main enclosure.



3. Install the mount
Drill four 5/16” Ø holes into the wall. Insert the drywall anchors into the holes. Fasten the mount plate onto the wall by installing the mounting screws into the wall anchors.



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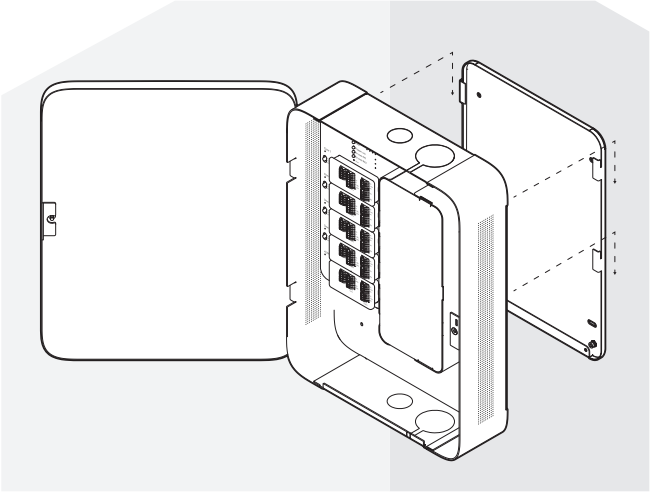
Mounting

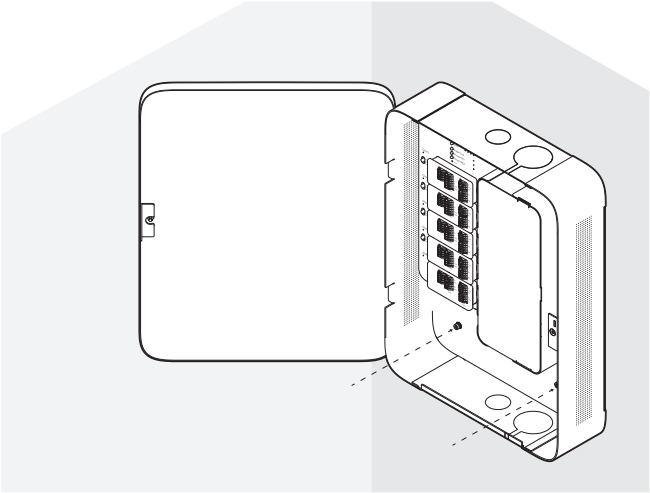
4. Install the enclosure

Place the sheet metal enclosure over and onto the mounting plate tabs.



5. Secure the enclosure

Fasten the two security torx screws to secure the enclosure to the mounting plate.



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Connecting a Door

⚠ Warning

Ensure power is disconnected from the AC41 and locking hardware before wiring, removing or inserting cassettes, readers, locks or any other peripherals.

The AC41 comes equipped with a Form C relay that can be driven dry or wet. AC41 is rated to power **12V locks up to 700mA and 24V locks up to 350mA**.

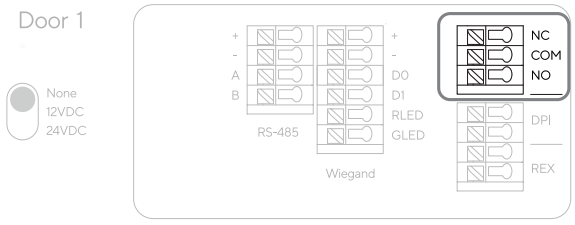
Dry
The AC41 does not provide power to the locking hardware (typically used with external power supplies).

Wet
The AC41 provides 12V or 24V power to the locking hardware.

1. Wiring Fail Secure and Fail Safe Locking Hardware

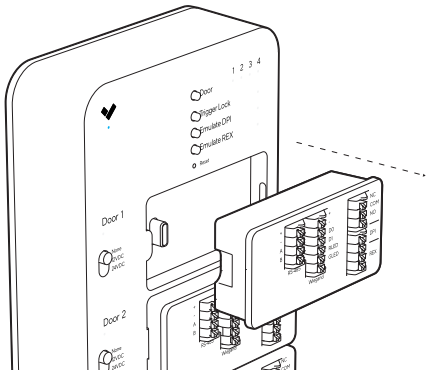
Fail secure and fail safe are ways of configuring locking hardware:

- **Fail secure** hardware **locks** when power is interrupted. Usually uses NO (Normally Open Configuration)
- **Fail safe** hardware **unlocks** when power is interrupted. Usually uses NC (Normally Closed configuration)



2. Remove the Cassettes

Begin by removing a door cassette from the AC41 by lifting it from the side tabs.



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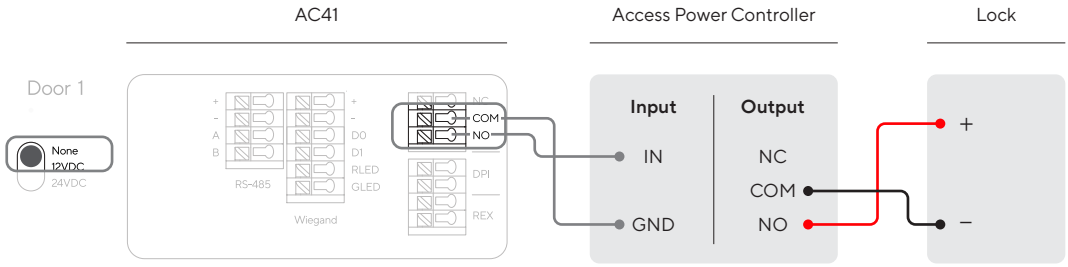
Connecting a Door

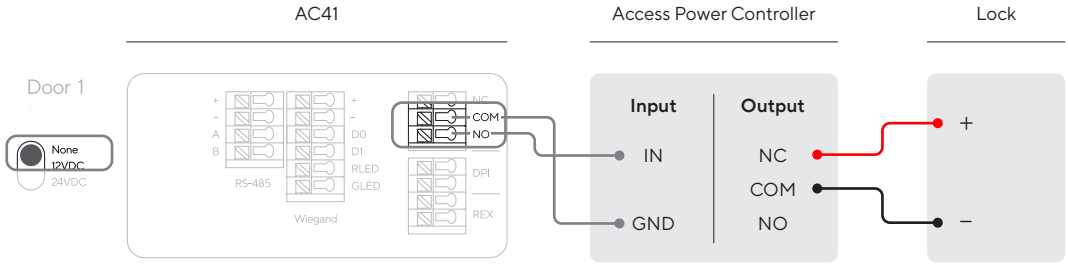
3a. Connect the Lock (Dry)

When using an Access Power Controller (APC) which uses a dry contact, ensure that “NONE” is selected on the door power selection switch.

Fail Secure



Fail Safe



3b. Connect the Lock (Wet)

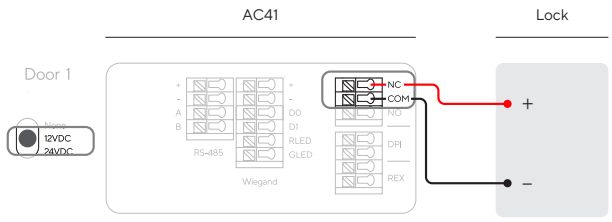
In a Wet configuration, ensure that power selection for each door is set to the correct voltage as outlined by the locking hardware specifications.

- Set it to “12VDC” for 12 Volt locking hardware
- Set it to “24VDC” for 24 Volt locking hardware

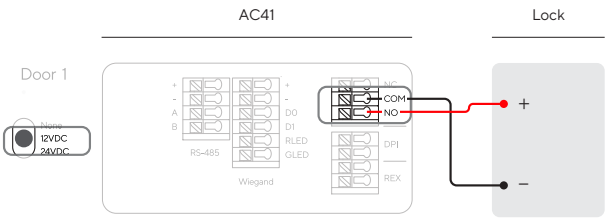
The AC41 is rated to power **12V locks up to 700mA and 24V locks up to 350mA**.

> **⚠ Warning**
>
> When connecting the lock in the WET configuration, ensure the negative of the lock goes into the COM port as shown in the diagrams below.

Fail Safe
LOCK (+) positive goes into NC
LOCK (-) negative and ground wire goes into COM



Fail Secure
LOCK (+) positive goes into NO
LOCK (-) negative and ground wire goes into COM



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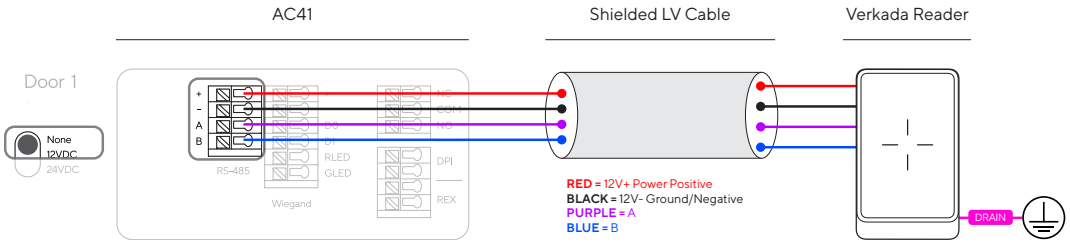
Connecting a Door

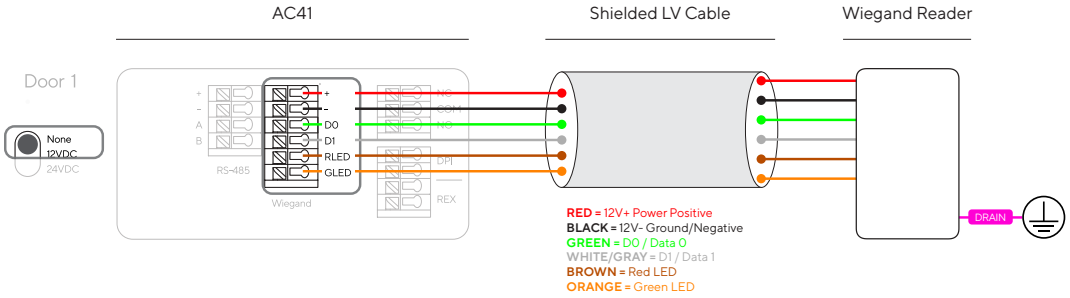
4. Connecting the Reader

The AC41 is rated to power readers at 12V up to 250mA via the + (VIN) and – (GND) connection. Verkada readers use the far left 4-port inputs while Standard Wiegand readers use the middle 6-port inputs. Drain wire should be connected to Earth ground on the reader side.

Verkada Reader



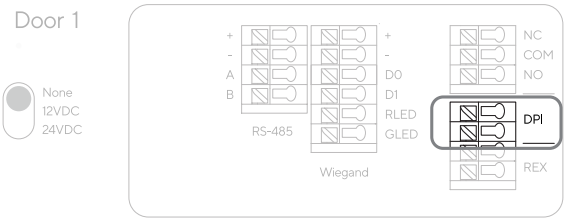
Standard Wiegand Reader



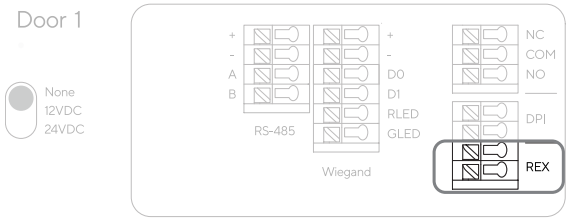
5. Connecting the Inputs

Both the DPI (Door Position Indicator) and the Request-to-Exit (REX) inputs are dry contacts. Installing these inputs is optional. They can be configured in Verkada Command. Both of these inputs are optional.

Door Position Indicator
Verkada AC41 expects the DPI to be **NORMALLY CLOSED** (NC).



Request-to-Exit (REX)
Verkada AC41 expects the REX to be **NORMALLY OPEN** (NO).



The REX can be configured to release the lock in Verkada command; most commonly seen in electromagnetic locks. The REX unlock time can also be configured.

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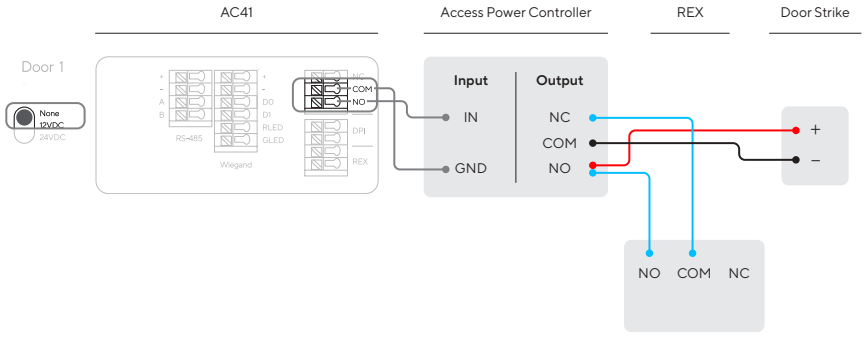
Connecting a Door

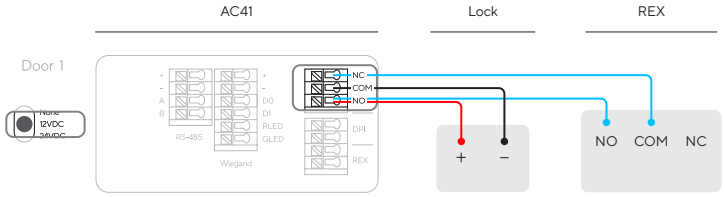
6a. Wiring the REX With the Door Strike

For safety-related applications, wire the REX in parallel with the Door Strike. You can wire additional REX switches and sensors to the door cassette if needed.

DRY Configuration



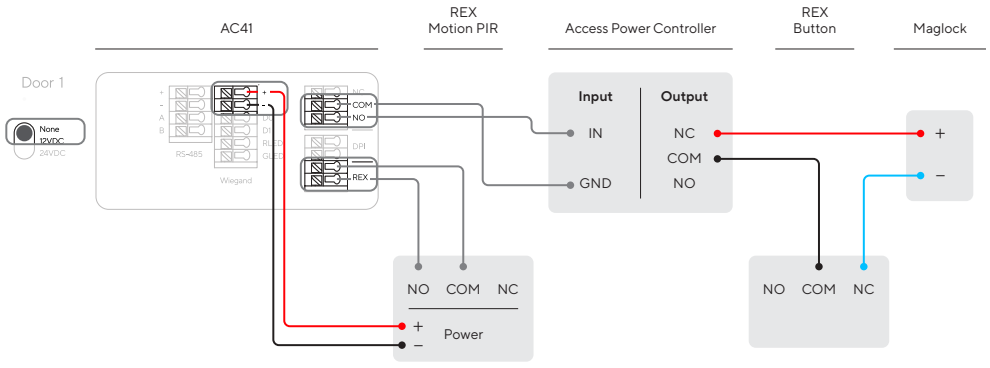
WET Configuration



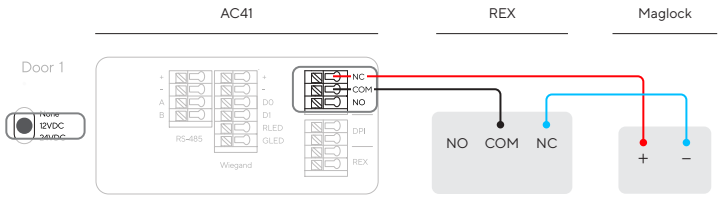
6b. Wiring the REX With an Electromagnetic Lock

For safety-related applications, wire the REX directly to the mag lock. You can wire additional REX switches and sensors to the door cassette if needed.

DRY Configuration



WET Configuration



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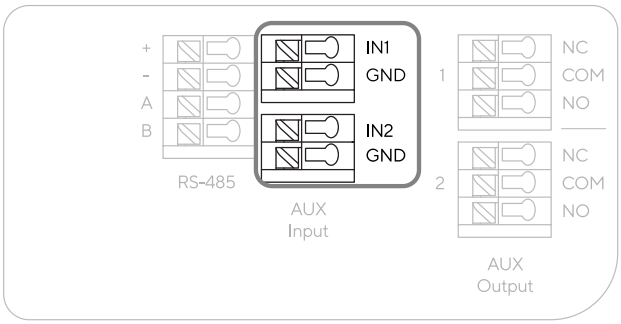
AUX Setup

AUX Inputs

The Verkada AC41 has two AUX input on the 5th cassette. These two inputs are located in the middle terminal block. The AC41 expects both AUX inputs to be **NORMALLY OPEN (NO).**

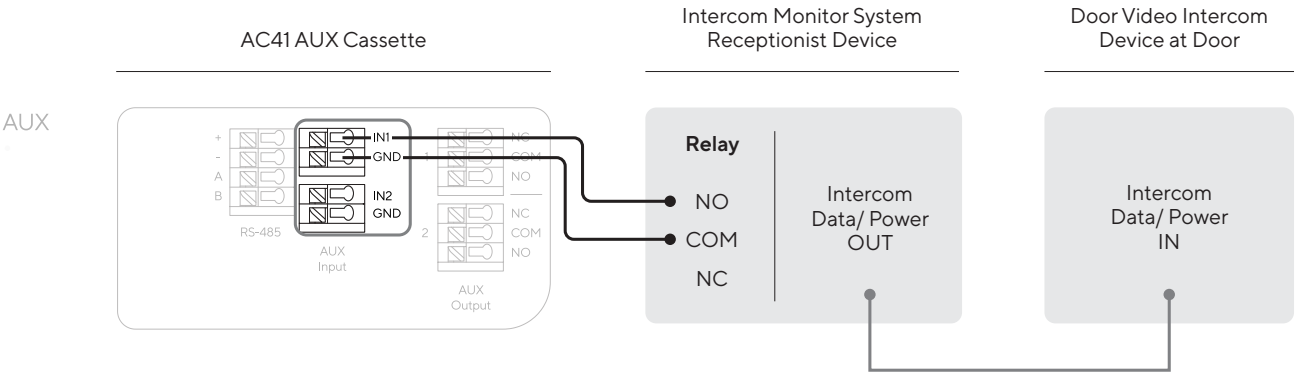
AUX



With the AC41's AUX inputs you can hook up devices such as intercoms and buttons into the auxiliary cassette of the AC41, and all associated unlock events will be logged in Command.

The AUX Inputs can be programmed in Command to initiate a lockdown or unlock a door (or a set of doors) for use with an intercom. We will be expanding support for more auxiliary devices in the future.

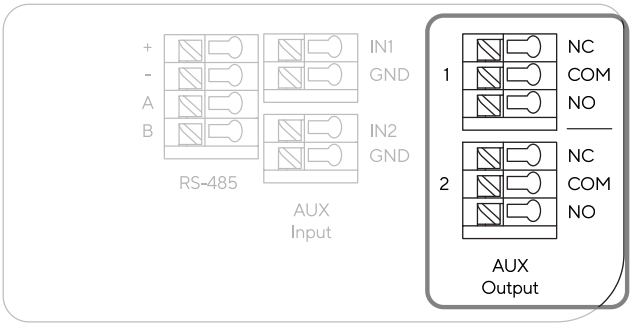
Example AUX Intercom Wiring Diagram



AUX Outputs

Additionally, the AC41 has two AUX Form C relays. These two AUX relays can be programmed to trigger during a lockdown. This allows you to wire in a dialer, strobe light, sounder, etc. to activate when a lockdown is initiated.

AUX



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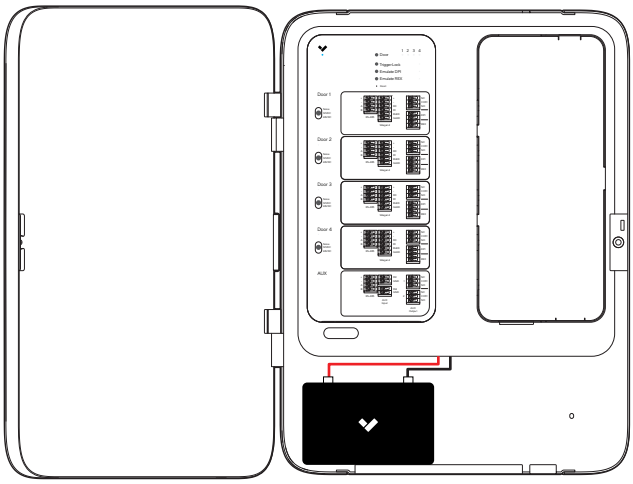
Battery Backup

> ⚠ **Warning**
>
> Do not use a 24V battery.

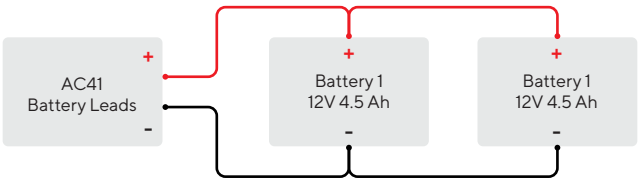


Battery Backup

A 12V Battery can be connected to the F2 connectors located at the bottom of the AC41. You can fit one or two batteries at the bottom of the AC41.

We recommend and sell a 12 Volt 4.5 Ah Sealed Lead Acid Rechargeable battery.

If you are using two batteries, ensure they are wired in parallel.



Connect

Connect the AC41 to your network using either of the Ethernet ports located at the bottom of the controller. If you are installing multiple controllers, you can connect up to 4 additional controllers via the spare Ethernet port on each controller.

Connect the AC41 power supply to your standard power outlet (120 VAC).

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