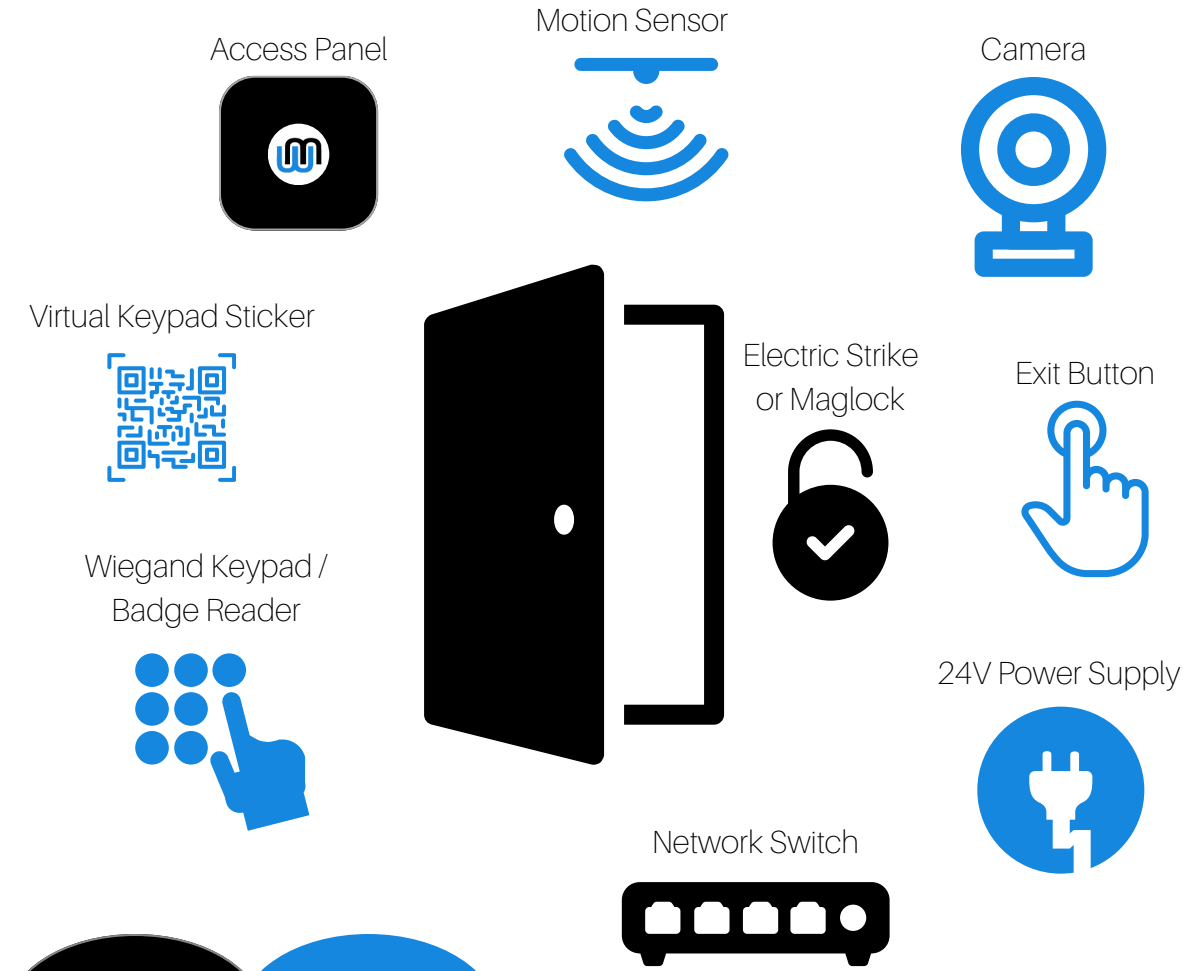
# Watchmark Installation

## Design Overview




### Simplest Electric Strike Design

- Watchmark access panel
- Network switch provides Power Over Ethernet (PoE) to panel
- Fail-secure strike controlling door
- Mechanical crashbar or paddle provides egress

### Simplest Maglock Design

- Watchmark access panel
- Network switch provides PoE to panel
- Magnetic lock controls door
- Request to Exit button
- Motion sensor Recommended

Consider all local building and fire codes when designing an access control system!

**Required Component** **Optional Component**

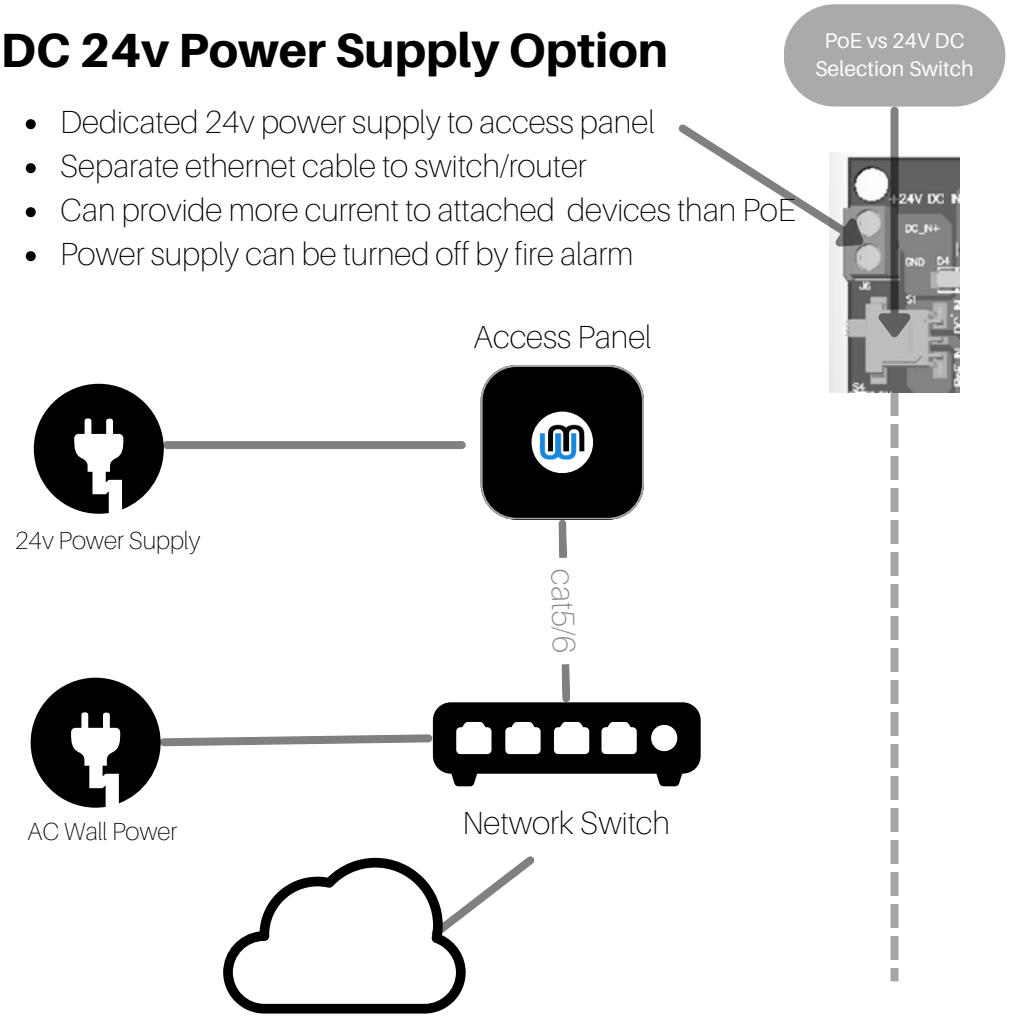
When running ethernet to the panel, it's safest to run an extra 2-conductor wire along with it in case DC24v is needed

# Powering the Access Panel

## And Reaching the Internet

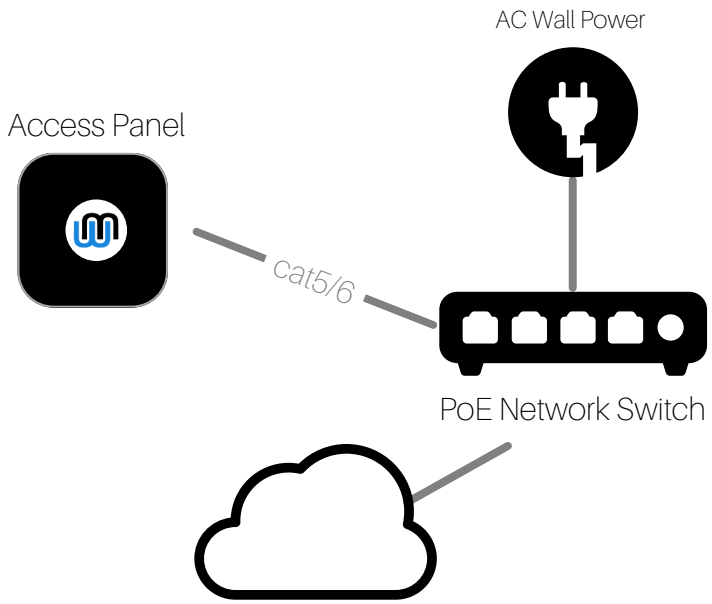
### DC 24v Power Supply Option

- Dedicated 24v power supply to access panel
- Separate ethernet cable to switch/router
- Can provide more current to attached devices than PoE
- Power supply can be turned off by fire alarm




### Power over Ethernet Option

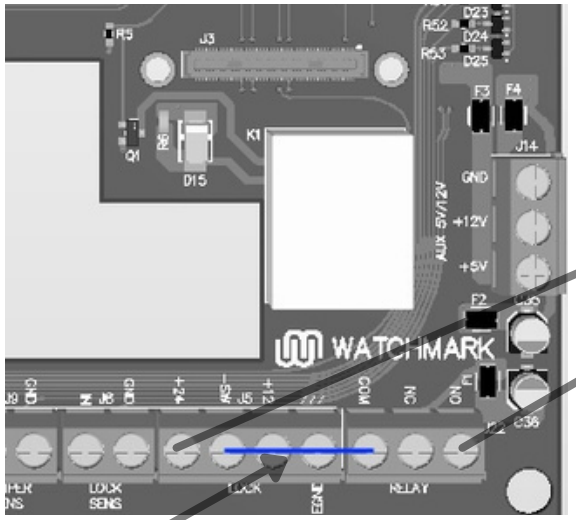
- One Cat5/Cat6 ethernet cable provides both power and network access
- PoE (IEEE 802.3af) and PoE+ (802.3at) compatible
- PoE specifies 100 meters maximum cable length
- Should not be used when panel must power high-current devices (e.g. large maglocks)



# Powering the Lock

## Onboard Power Supply Option

- Watchmark access panel produces 12v and 24v DC
- Can be used to power electric strikes and small maglocks with low current draw
- Overcurrent protected by fuses
- Relay Common is wired to EMF protected ground (with factory-installed jumper wire)
- Lock path to ground is connected to NO or NC

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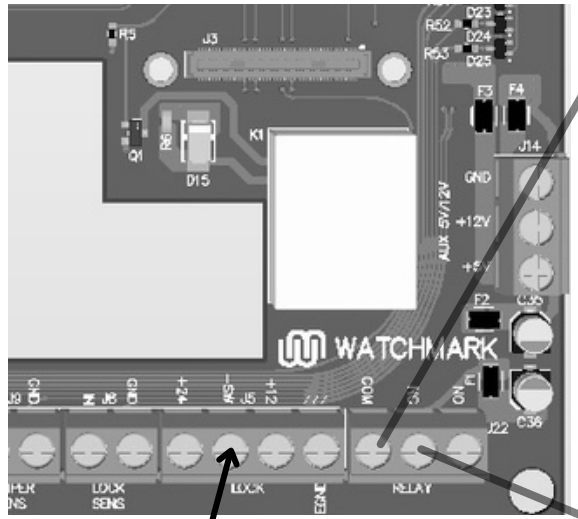
Electric Strike
(24v example)

Jumper Wire From Factory

Max current draw for onboard supply:
500mA @ 12v DC  250mA @ 24v DC

## External Power Supply Option

- Factory-installed jumper wire is removed, making the relay a dry relay no longer connected to panel ground
- Lock can draw large amounts of current from external power supply
- Panel controls the lock by interrupting power
- Max relay switching current: 12A
- Max relay switching current:: 277VAC/28VDC

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Maglock

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Power Supply

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Jumper Wire Removed

# Access Methods

| | Wiegand Keypad / Badge Reader | Virtual Keypad | Mobile App | Browser | API |
|---|---|---|---|---|---|
| Installation | Install a physical keypad and/or badge reader on the exterior of the building . | Apply the included QR code in a window next to the door. | After downloading the mobile app, log in using username / password.<br>*or*<br>Click a secret link on your phone that logs you into the app. | Login (users) or click a secret link (passes) to open doors from the browser. | Generate API credentials, which can be used by developers or cloud-based applications to manage your account and open doors. |
| Works Offline | ☑ | ☑ * | ☑ | | |
| Components Required | Keypad/Reader | Included QR code | Free iOS/Android app | Modern web browser | Developers or an existing integration |

* Virtual Keypad works offline  if app is already installed

Max current draw
500mA @ 12V DC
250mA @ 24V DC

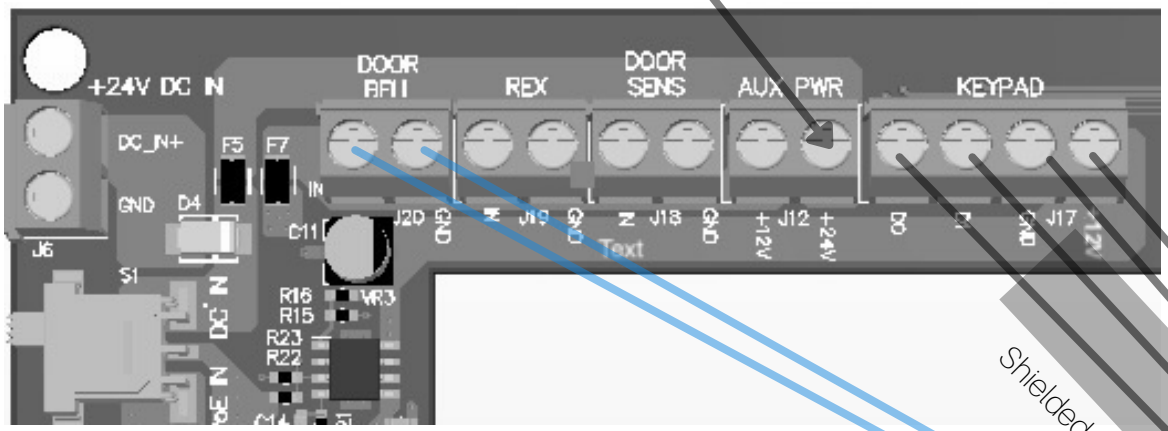
# Wiegand Keypad / Reader

## optional

Use for 24V Keypad

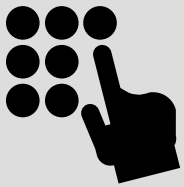
optional connection
required connection

20AWG solid core wire recommended




Shielded Cable

Wiegand Keypad /
Badge Reader



Power +
Power -
Data1
Data 0
Doorbell
Doorbell

Shielded cable is recommended for
Data0 and Data1

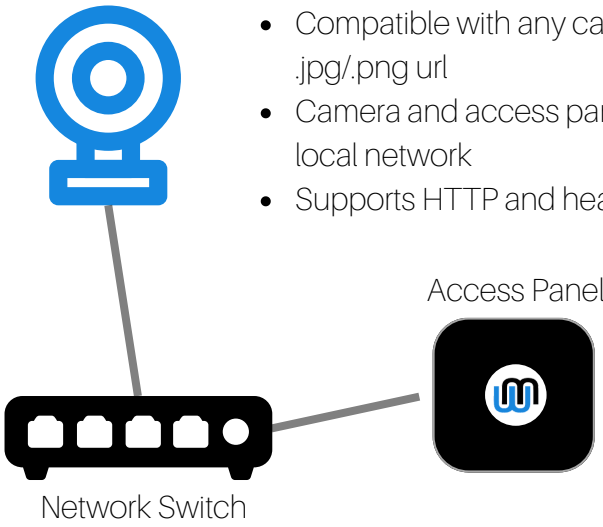
Cable shield should only be grounded on panel end

# Other Features

## optional

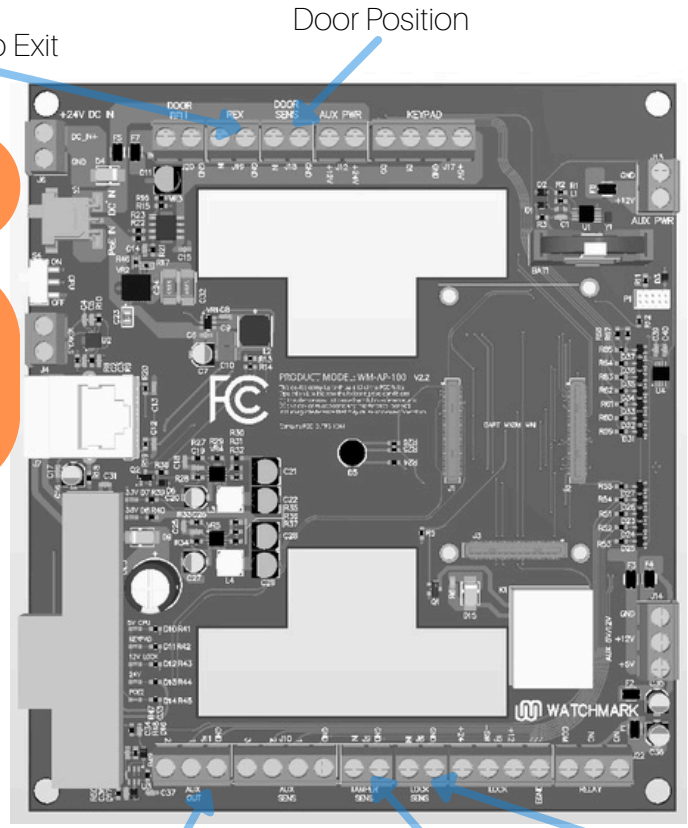
## Snapshots

- Can be attached to selected access events
- Compatible with any camera that exposes a .jpg/.png url
- Camera and access panel must share the same local network
- Supports HTTP and header authentication



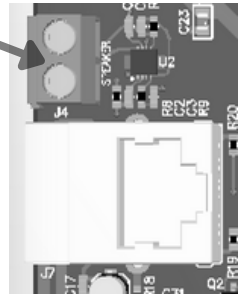

REX will not work until unit is fully booted

Do not depend on REX to meet fire code (instead, interrupt power to lock with UL-listed button with timer)



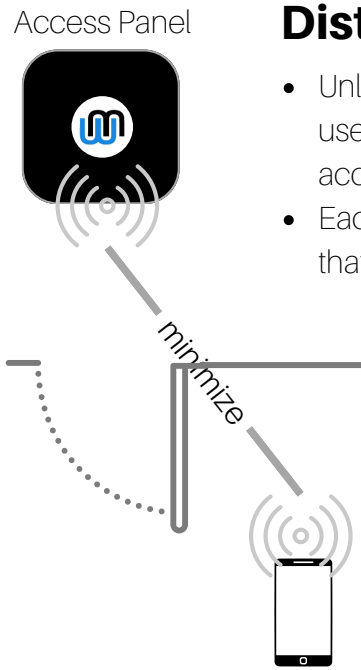

## Sound & Speakers

- Doorbell sensor can trigger a doorbell sound
- Door/lock position sensors can trigger a door-left-open alarm
- Medium-volume onboard speaker, or connect to powered external speaker



Do not connect to an unpowered external speaker

# Physical Design
## considerations




### Distance from panel to door

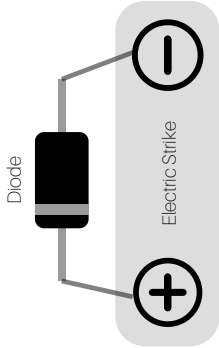
- Unlike most access control systems, Watchmark uses no central controller - there's one small access panel installed per door
- Each panel should be installed near its door so that it can be unlocked via Bluetooth

Take brick walls, metal barriers, and other materials which dampen/block Bluetooth into consideration

### Kickback voltage spikes

- Install a diode/MOV as close as possible to the lock
- Choose a diode/MOV appropriate to the voltage of the lock used
- Diode is installed "backwards" with the cathode (-) connected to the positive terminal (+) on the strike
- MOVs have no polarity

A Metal Oxide Varistor (MOV) is usually superior to a Diode and easier to install




### Electromagnetic Interference

- Keep panel and wires away from 120v AC and other noise sources, if possible
- Wiegand data wires are especially sensitive
- Properly ground shielded cable on only one end

### Panel status indicator

- Booting
- Not connected to internet
- Door locked
- Door unlocked
- Data syncing from cloud

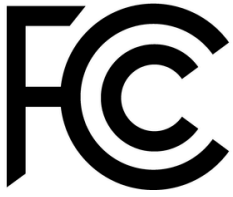
Watchmark LLC

Regulatory Contact
support@watchmark.cloud

## PRODUCT NAME: Watchmark Access Control Panel
## PRODUCT MODEL: WM-AP-100

This device complies with part 15 of the FCC Rules.
Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) this device must accept any interference received,
including interference that may cause undesired operation.

Contains FCC ID: TFB-1004



### FCC Compliance Statement

CAUTION: The manufacturer is not responsible for any changes or modifications not expressly approved by the party responsible for compliance. Such modifications could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.