LATCH

Latch C2 // Runbook
v.1.1 August 2023

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Product Overview

The Latch C2 is our first non-motorized, non-keyed, camera-free deadbolt unit, providing developers with a more compact and private smart access option with all the benefits and features that come with Latch OS.

The Latch C2 model is similar in form to the Latch C1 but is 30% slimmer and without a camera. Our latest innovation gives developers greater flexibility by offering a non-motorized and non-keyed deadbolt option—perfect for retrofit projects or projects where door alignment could present security issues, allowing Latch to expand our products across a larger subset of customers, including student housing. The Latch C2 will provide a flexible solution while also improving battery life.

Resident Use: Residents will manually lock their door with a thumb-turn on both sides of the door, giving them the tactile feedback that their door is secure. This new compact device offers the same functionality and convenience features as our previous products—including multiple ways to unlock and share access seamlessly.

Property Manager Use: By removing the motorized system, property managers eliminate future issues of residents complaining that doors either jam or do not lock properly—imposing potential security risks. Keyless locks also minimize the need for lock or key replacement, saving time and funds over issuing physical keys which become obsolete, and avoiding the conversations related to requests for physical keys.

Latch C2 - webpage

Latch C2 - Installation guide

Best Practices and Field Notes

Best Practices

1. **Inspect Mechanical Operation**
    a. Prior to service, inspect the hardware and how it functions: Is there friction or drag when operating existing hardware?
2. **Inspect Door Frame**
    a. Inspect the door frame to confirm depth is appropriate for the deadbolt (1" minimum).
3. **Consider Environmental Factors**
    a. Be mindful of any weather stripping or gaskets on the door or door frame that may produce added pressure when the door is closed.
4. **Evaluate Door Prep**
    a. Double-check door prep to confirm all boreholes are level and centered.
5. **Be Mindful of Beveled Doors**
    a. Take special care when working on a door with a door bevel. See the guide under "Using Latch C cut sheets with a door bevel."
6. **Ensure Device Handing is Configured & Configured Properly**
    a. Take care that the mechanical handing configuration has been set properly according to the installation instructions.
7. **Troubleshoot with Deadbolt in Proper Position**
    a. Start the service with the deadbolt in the position identified by the installation instructions.
8. **Do Not Torque or Over Tighten Set Screws**
    a. Do not over-tighten screws. Particularly when working on a hollow door. Overtightening can warp the locking hardware and the door, leading to misalignment.
9. **Test Thumbturn Functionality**
    a. Test the thumb turn and confirm that it turns easily. If not, the door prep might not be correct.
10. **Verify Device is Working as Intended Before Securing the Door**
    a. Test unlock and lock prior to closing and securing the door.
    b. Confirm that in the locked state, turning the thumb-turn does not retract the deadbolt.
11. **Bring Necessary Tools & Backup Latch Hardware**

a. If possible, always bring an additional Latch unit, along with hardware tools such as a Qi charger to ensure you're fully equipped to service the issue, regardless of described symptoms/issues.

Field Notes

Door prep

a. Are boreholes leveled and sized correctly?
b. Is there weather stripping creating pressure on the closed door?
c. Is there sufficient depth in the door frame for the deadbolt to fully extend?

Bent tailpiece

d. Confirm tailpiece is straight.

Confirm thumb turn extends and retracts deadbolt without added drag or resistance.

Handing selection differences between C1 & C2.

e. C1 - **Tailpiece Orientation**
f. C2 - **Set Screw Removal**

Deadbolt retracted when installed (supposed to be extended)

g. The lock always stays credentialed even when the door is supposed to be uncredentialed.
h. The user will also not be able to extend the deadbolt with the exterior thumb-turn.

Both handing screws are left inside the escutcheon

i. When the lock is credentialed, the thumb-turn won't return to center on its own when rotating to retract the deadbolt and the user will not be able to fully extend the deadbolt using the external thumb-turn.
j. When the lock is uncredentialed the lock will perform normally.

Wrong handing screw removed

k. When the lock is credentialed, the user will not be able to retract the deadbolt with the exterior thumb-turn but the deadbolt will still be able to be extended with the exterior thumb-turn.
l. When the lock is uncredentialed, the lock will perform normally.

Deadbolt retracted + wrong handing screw

m. When the lock is credentialed, the user will be able to retract the deadbolt with the exterior thumb-turn.
n. The lock always stays credentialed even when the lock should be uncredentialed.

o. The user will also not be able to fully extend the deadbolt with the exterior thumb-turn.

For Install and Service

1. **Tools**
    a. Phillips #2 Screwdriver
    b. iOS Mobile Device
        i. Supported devices
        ii. The latest version of the Latch Manager App (only available on iOS).

2. **Lockout**
    a. Drill
    b. Metal Center Punch
    c. ⅛” & ¼” size drill bits

3. **Permissions (Confirm Access)**
    a. Confirm user has the correct access permissions
    b. Latch Manager App (only available on iOS).
        i. Device Management Permissions
        ii. Unit Unlock Access
        iii. Latch App (iOS and Android)
            1. Unit Unlock Access
            2. This is needed to perform a test unlock on the unit - note PM will have to set this up.

Latch Specification Guide

Onboarding

1. **Add a device**
    a. Once you have installed the Latch device, you need to add and save the device's information:
        i. Open the Latch Manager App.

ii. Select the ‘New Door’ icon in the top right corner.
iii. You’ll then be prompted to scan the QR Code on the Latch Device.
iv. Scan the QR Code on the back panel of the device on the inside of the door.
v. Select the desired Portfolio and Property Information of the property you are installing in.

2. **Assign or create a door**
    a. If you have pre-created a door in Latch Manager you can assign it by selecting 'Door Name.’
    b. If you have not pre-created the door you’ll need to create one. To do so:
        i. Enter the door or apartment name.
        ii. Select the door type. Learn more about door types.
3. **Set Up the device**
    a. Requires at least 20% battery life on battery-powered devices
    b. Select the latest firmware version.
    c. You’ll then be prompted to go through the setup process.
    d. Select ‘Start.’
    e. The Latch Device should then start updating. (Note: The update can take 10-15 min, do not step away from the device or navigate out of the Manager app)
    f. Once successful, select 'Next.’
4. **Test unlock**
    a. You will then be prompted to test unlock by tapping ‘Tap to unlock.’
    b. Check that the device is unlocked and the door opened.
    c. Select ‘Next.’
    d. Select ‘Finish.’
5. **Test lock**
    a. Depending on the device and configuration, the door will re-lock after 5s (Latch R), 10s (Latch M, Latch R), when the thumb-turn is thrown (Latch C2), or when the lens is tapped (Latch C).
    b. Make sure that the device re-locks as expected prior to closing and securing the door.

Troubleshooting Workflow

1. **Confirm User device is functioning properly**
    a. Confirm that the device being used to interface with the Latch device.
        i. Is compatible with Latch (supported models here)
        ii. Has strong and reliable cellular or WiFi service
            1. Without adequate cellular or wifi service to the user's device, Updates and Firmware Upgrades will fail.

iii. Has Bluetooth enabled.
iv. Isn't in a protective case that may interfere with the performance.

2. Update and Firmware Upgrade

a. Ensure the Latch device has been updated with the Latch App.
b. Ensure that the Latch Device has been upgraded to the latest version of the firmware.

3. Issues with the Latch App or Latch Manager App

a. Check for any updates that may be available for your Latch App (iOS and Android) and Manager App.
b. Toggle the mobile device's Bluetooth settings off, and then back on.
c. Power cycle the mobile device (turn it off, wait for 30 seconds, and restart the device).
    i. If Android device, perform the Bluetooth cache clear and location services toggle.
d. Log out of and back into the Latch app.
e. Delete and reinstall the Latch app.
    i. Ensure your phone's Bluetooth and Location settings are on, as well as the Latch App Bluetooth and location settings.

4. Check the Lens

a. Do the LEDs on the lens light up when the lens is touched?
    i. If not, follow the power troubleshooting steps below.
b. Are any LEDs lit continuously and/or pulsing
    i. LED feedback instances
        1. Denial of Service (DoS):
            a. The LED on the Latch Lens located in the "12 o'clock" position, when illuminated indicates **that another device is connected to the lens over BLE.** If the Latch device detects continuous attempts to connect via Bluetooth, it will automatically go into DoS mode after 50 failed attempts and BLE unlock will no longer be available.

            b. DoS mode is a feature that has been incorporated into the Latch Lens functionality to prevent unauthorized blocking of a Latch device via continuous Bluetooth connection attempts.

c. Once a lock is put into DoS mode, it remains in that state for 5 minutes, or until the device is reset or a user successfully authenticates using either an NFC card or a passcode.
    i. **NOTE:** For any Geneva device, the user only needs to touch the Lens to exit DoS mode.

d. After 5 minutes of inactivity, the device will resume normal advertising in order to prevent inadvertently extended lockouts.

2. **Rate Limiting Mode (RLM):**
    a. Rate limiting mode is indicated by the digits 5 and 6 flashing on the Lens.
    b. 20 consecutive NFC or Passcode failures put the device into rate limiting mode (RLM). While in this state, the device will not accept those types of accesses for 5 minutes. After 5 minutes, SOS mode starts where NFC and passcodes will be allowed thrice before entering RLM mode again if they continue to fail.
    c. Successive RLM entries will increase the blocking access time by 5 minutes up to 25.
    d. In order to exit Rate Limiting Mode, simply enter a correct Door Code, use a valid keycard, or perform a BLE unlock via the Latch App. If one of the authentication attempts results in a successful unlock the lock moves into normal mode, if not it moves back into RLM mode.

5. Check Power

a. When a user touches the lens on the Latch device, the LEDs should light up with a numeric display.
b. If the device fails to respond attempt using a Qi Power Bank to jumpstart the C2
c. **Inductive Jumpstart**: Powering a C2 if the batteries fail
    i. The battery level of your Latch C2 updates passively after unlocking with the Latch App or actively after updating the device. In the unlikely event that the batteries fail before you can replace them, you can power the Latch C2 with a Qi-compatible power bank by following the steps below:
    ii. Get a Qi power bank

iii. Turn the power bank on and hold the charging coil over the center of the lens. Note that charging coils vary from device to device, but the center is a good bet. It is ok if you need to rotate the thumb-turn slightly to get it over the center.
iv. You will hear a buzz as the C2 boots up. This means you have found the right location. Keep holding the power bank or phone in power share mode in this location.
v. While continuing to power the lens via the power bank, perform a BLE unlock with a device that has Latch App access to the lock. You should hear a click as the C2 unlocks.
vi. Once you hear the click, you're good to remove the power bank and unlock your C2.
vii. Replace the dead batteries before closing and locking the door again.

d. Watch our Inductive Jumpstart training video here.
e. If the jumpstart is successful, the first thing to do is replace the batteries
   i. 6 AA non-rechargeable batteries.
   ii. Install batteries with the correct orientation.
   iii. The new batteries should all be the same brand name.
      1. Duracell is recommended.
   iv. Perform a door update using the Latch App (instead of the Latch Manager App).
f. Confirm that there is no damage to the cable.
   i. The cable should be free to move around and not be pinched or kinked.
   ii. Confirm that the six pins that the cable plugs into are not bent or missing.
   iii. Confirm that the lens cable is properly/fully seated in the connector.
a. If jumpstarting the device has failed and the device needs to be drilled out, please reach out to Support@latch.com for guidance.

*See the Advanced Technical Support guide for additional troubleshooting steps

6. Check for broken hardware / environmental impacts

Check for overall damage to the device

i. Are there any signs of force or any noticeable scratches, cracks, or breakage?
ii. Is there anything noticeable impacting the hardware?
   1. Is the weather stripping unusually thick, requiring the user to manually push or pull the door closed and into the secure position to be able to engage the deadbolt? If so, this is a

potential jamming risk and should be dealt with by building maintenance.

a. The deadbolt should easily glide into the frame without any noticeable drag or friction

7. Check Latch device functionality

a. Normal Unlock Sequence
   i. (Bluetooth) The user opens the app and clicks unlock (or the app automatically starts to unlock through proximity once the lock is open) OR (NFC) a card is brought up to the lens OR (Doorcode) a code is input
   ii. The center LEDs light up and then the circle of LEDS opens clockwise.
   iii. A faint clicking sound can be heard inside the device.
   iv. A user turns the thumb-turn away from the door frame to retract the deadbolt.
   v. The door should now be unlocked and will open.

Abnormal Unlock Sequence

The app outputs an error message upon an unlock sequence

1. LEDs do not light up upon lens tap (either in the center or on certain numbers) or unlock sequence.
2. No faint clicking sound can be heard when a successful unlock is shown in the app and/or on the lens LED sequence.
3. The deadbolt does not retract fully or partially when turning the thumb-turn away from the door frame.

The door does not disengage after 10 seconds after an unlock (the same faint clicking can be heard to signify this occurs) Note: This is separate from extending the deadbolt, the tailpiece has to disengage from the front thumb-turn to fully lock

RMA Process

Overview

In order to replace a defective device, receive a replacement unit, and return the defective unit to our QA team for evaluation, an RMA will need to be submitted through our RMA process.

Process Overview

1. Contact Latch Support with RMA details:
    a. support@latch.com
    b. +1 (888) 808-0670
2. Required Details
    a. Device Serial
    b. Associated Property Name
    c. Associated Door Name
    d. Issue Description / Symptoms
    e. Troubleshooting Steps Attempted
    f. Shipping Address (for a new device)
    g. Shipping Contact Name
    h. Shipping Contact Email
    i. Shipping Contact Phone Number

Advanced Technical Support Guide

NOTE: If the below troubleshooting steps do not resolve your issue, please reach out to Support@latch.com and our Support Team will be happy to assist you.

Deadbolt Operation Troubleshooting

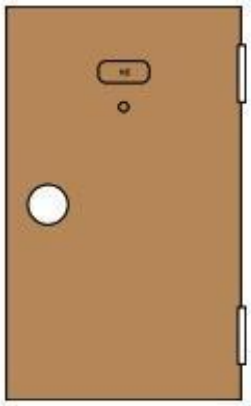
Symptoms

1. The device Fails to properly and successfully lock and unlock.
2. Deadbolt visibly does not fully extend or retract.
3. Rapid Battery Degradation.

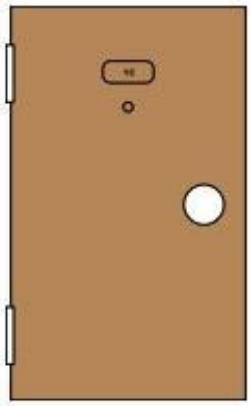
If Deadbolt is Not Extending

1. ***Test with the door open***
2. If the problem is not present with the door open:
    a. Likely a door alignment issue, not an issue with the Latch device.
    b. Move to door alignment & door prep troubleshooting
3. If a problem is present with the door open:
    a. If a problem is present with the door open:
    b. Confirm setscrew has been set correctly for the door handing (see photo)
        i. Right-handed door - Left Set Screw Should be Removed
        ii. Left-handed door - Right Set Screw Should be Removed
            1. *NOTE: See the installation guide for more diagrams if necessary.*
    c. Check battery percentage in the Manager App
    d. Verify Firmware is on the latest version.
        i. Upgrade if necessary
    e. Replace batteries (Duracell preferred) and perform a door update using the Latch App (instead of the Manager App).

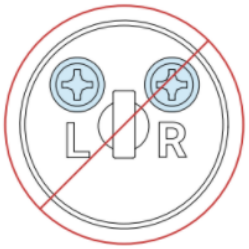
Viewing From Exterior/Outside of Unit/Door



Right-handed door
Horizontal tailpiece



Left-handed door
Vertical tailpiece



Before

After choosing
left-handed

After choosing
right-handed

Device Jamming Troubleshooting

Symptoms/Behavior

1. Deadbolt visibly does not fully extend or retract.
2. The thumb-turn clutch does not engage after a successful unlock.
3. Thumbturn engages however it cannot be turned, and exhibits “crunching” or general friction when attempting to unlock/lock.
4. The device cannot be fully unlocked/locked.

Verify Device Battery and Firmware Version

1. Check that the thumb-turn lever moves smoothly, and easily throws the deadbolt.
2. Check battery percentage:
    a. Open Latch App > My Doors > Select Door > Device Details
3. If the battery percentage is below 50%, change batteries, and re-test.
4. Confirm that the Latch C2 is on the latest Firmware version.

Evaluate with Door Open/Uninstall Device

1. Test if the deadbolt is able to extend with the door open
    a. If the deadbolt is not able to extend, there may be an alignment issue with the door frame.
        i. Ensure there is sufficient room in the door frame for the deadbolt to fully enter (1”).
        ii. Ensure there is no pressure or side load on the deadbolt. It should move freely.
        iii. If the deadbolt does not extend, make sure that the faceplate is not in the way of the deadbolt.
2. Remove the Device from the Door Entirely
3. Connect the Battery module and perform an unlock
4. If the device continues to fail when uninstalled please contact Latch Support for further assistance.

Device Replacement

Overview

In the event troubleshooting is unsuccessful and the device requires replacement, it's important that the device is replaced successfully in order to ensure access is not impacted. The next steps will outline how to properly replace a device.

Deactivate Defective Unit

Deactivating removes all accesses from the device and dissociates it from the door to which it was assigned. Once deactivated, you can assign a different door to the device.

1. Ensure you have access to the door - if you don't, ask your administrator to give you access.
2. Using the Manager App, navigate to the devices list.
3. Select the door which you want to deactivate the Latch device from.
4. Select 'deactivate.'

Activate New Device

NOTE: Ensure you select the same door name when programming the new Latch device to ensure you restore access to the right door for all the right people.

Once you have installed the Latch device, you need to add and save the device's information:

1. Open the Manager App.
2. Select the 'New Door' icon in the top right corner.
3. You'll then be prompted to scan the QR Code on the Latch Device.
4. Scan the QR Code on the back panel of the device on the inside of the door.
5. Select the desired Portfolio and Property Information of the property you are installing in.

Once the device is assigned to the door, you must:

1. Continue setting up the device via the Latch Manager App.
    a. Perform firmware upgrade
        i. **NOTE: This requires at least 20% device battery life and may take up to 15-20 minutes.**
    b. Perform test unlock.
    c. Perform test lock.

Door Prep Evaluation & Troubleshooting

Symptoms

1. Thumbturn is difficult to turn.
2. The deadbolt does not extend fully/lock into place.
3. Friction or rubbing occurring.

Evaluation/Troubleshooting

1. Check the 2” bore hole for proper clearance of hardware.
    a. You can also confirm the backset (distance from door to hole) by utilizing the cut sheet provided in the installation kit.
    b. If the hardware does not fit easily, make necessary adjustments to the door with the file or drill. *See Note in Red
2. Check the 1” side bore for proper clearance of hardware.
    a. Also, verify that the side bore is centered on the door edge.
    b. If the hardware does not fit easily, make necessary adjustments to the door with the file or drill. *See Note in Red

NOTE: If a doorknob/lock installation jig is available, this is a great way to verify the sizes and alignment of the bore and side bore from #1 and #2.

3. Check to see if any weather stripping or seals are causing misalignment or pressure.
    a. If weatherstripping is an issue, an alternative seal thickness may be used or the strike plate may be moved slightly to accommodate the thicker seal. *See Note in Red
    b. Check to ensure the hole in the door frame where the deadbolt enters is at least 1” deep.
    c. If the depth isn’t at least 1”, it could cause the device to go into jamming mode.

4. Check to ensure the door is not “sagging” and that the deadbolt is properly aligned with the hole in the door frame.
    a. You can do this by closing the door and extending the deadbolt. It should extend and retract freely. If there is an obstruction, shine a light into the crack of the door while attempting to extend the deadbolt to see at what point the obstruction is.

NOTE: If any fabrication of the door or frame is necessary, escalate to property management to advise.

Example of Door Knob/Lock Installation Jig

Firmware Upgrade Troubleshooting

Symptoms

During the Firmware Upgrade process on a Latch C2 device, you may receive a red error screen appearing on the Latch Manager app. This can happen either during the initial activation process or during a routine Firmware Upgrade after installation. This indicates that the firmware upgrade process failed.

Troubleshooting

Firmware upgrade should be reattempted after completion of each step.

1. Technicians should reattempt Firmware Upgrade at least twice after failure.
    a. Often the issue will resolve upon a second or third attempt with no further action.
2. Confirm that the iOS device is connected to WiFi. If it isn't, please connect to a WiFi network rather than using cell data.

3. Toggle the iOS device's Bluetooth settings off, and then back on.
    a. Settings > Connection Settings > Bluetooth
4. Power cycle the iOS device (turn it off, wait for 30 seconds, and restart the device).
5. Power cycle the Latch device by removing and reinstalling a battery.
6. Update the Device.
    a. Open the Latch App (instead of the Manager App) > My Doors > Select Door > Update > Press the "Update" button when close to the door/device.
    b. Detailed instructions for updating can be found in this Support Article.
7. Repeat steps 4 and 5.
8. If Firmware Upgrade continues to fail although all steps above were followed, please contact Latch technical support at support@latch.com.

Power Failure Troubleshooting

Symptoms

1. Numeric LEDs do not illuminate when the device lens is tapped
2. Unlock Failures (Latch App, Door code, Keycards)
3. Update Failures
4. The device does not lock when the device is unlocked & lens is tapped
5. Device jamming

Inductive Jump Start

In the event of a power failure, the new Inductive Jumpstart Feature allows users to utilize a wireless Qi charger to jump-start the device for temporary use.

Latch recommends using a charger with no less than 5,000mAh in power capabilities.

1. Present Qi Charger directly to lens face (charger should be touching lens face)
2. Qi charger will need to remain placed against the lens face during jump start, update, & unlock
3. If the device doesn't automatically power up, shift around the Qi charger until you hear the clutch motor engage (clicking sound), and numeric LEDs illuminate.
4. Once numeric LEDs illuminate, utilize the Latch App to update the device.
5. Once successfully updated, attempt an unlock.
6. If update and unlock are unsuccessful with the Latch App, reattempt steps using the Manager App.

7. Once the device has been successfully unlocked, move to the power failure assessment steps & battery replacement.

Lens Not Lighting Up or Unresponsive

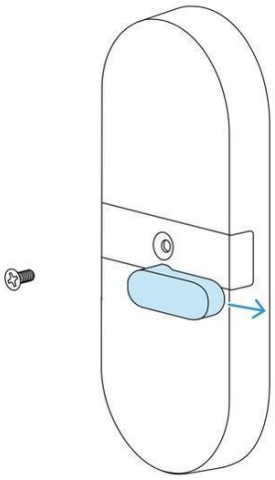
1. Install NEW batteries
    a. 6 AA non-rechargeable batteries.
    b. Install batteries with the correct orientation.
    c. The new batteries should all be the same brand name.
        i. Duracell is recommended.
    d. Perform a door update using the Latch App instead of the Latch Manager App
2. If new batteries have been installed and the unit does NOT power on:
    a. Confirm batteries have been installed with the correct orientation
    b. Remove all batteries to inspect the battery tray for noticeable damage
        i. Are all battery tray contacts in place?
        ii. Are all the metallic springs and tabs in the tray?
        iii. Is the battery tray cracked or broken?
        iv. Are there signs of battery degradation?
            1. Are they leaking?
            2. Are they expanded or split open?
            3. Is there corrosion?
        v. Are there signs of water damage?
            1. Is there water present in the battery tray?
            2. Are there signs of corrosion?
3. If the battery tray appears in order, batteries have been installed, and the unit does NOT power on: move to lens cable evaluation.

Examples of corrosion

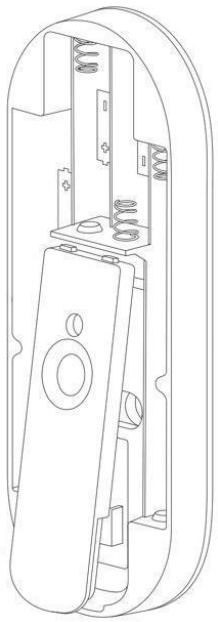
Inspecting Lens Cable

If the battery tray appears in order, batteries have been installed, and the unit does NOT power on: **Inspect the Lens Cable**

1. Remove the back escutcheon
    a. This is completed by removing the screw beneath the thumb-turn on the back of the escutcheon.

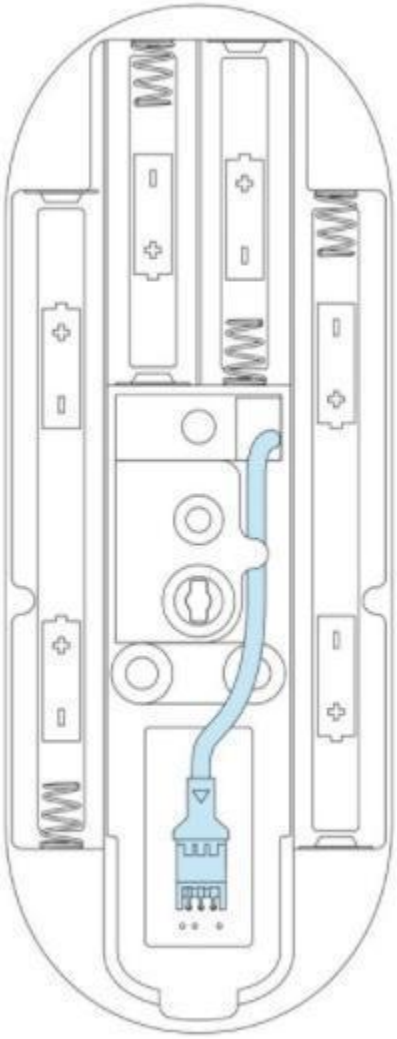


2. Remove the cable cover.
    a. Do this by lifting up the bottom of the cable cover. It should release from the bottom and have two small tabs holding the top portion in place.



3. On the battery tray under the cable cover is where the lens cable plugs into the home system.
    a. Confirm that there is no damage to the cable.
        i. The cable should be free to move around and not be pinched or kinked.
    b. Confirm that the six pins that the cable plugs into are not bent or missing.
    c. Confirm that the lens cable is properly/fully seated in the connector.

Example of good, straight pins.



NOTE: Anytime a unit is power cycled - either power is disconnected and/or batteries are removed or replaced - the unit must be updated using the Latch App (instead of the Latch Manager App) once it has rebooted.

Device Serial Number <> nRF App

In the event that a serial number needs to be identified, follow these instructions:

1. Power up the C2 device.
2. Download the nRF Connect for Mobile app on the iOS App Store.
3. Ensure that Bluetooth is enabled on your iOS device and in the nRF Connect iOS settings.

4. Tap the 'play' button in the top right corner to begin a scan.
5. The scan should show Bluetooth devices close to you. See if you can find anything with the name 'LatchHS', 'Geneva03', or 'Geneva01'. (This might be easier with only this C2 device around).
6. Tap 'Connect' on 'LatchHS', 'Geneva03', or 'Geneva01'.
7. At the top of the screen, you should see some tabs. Go to the second tab of 'Cli...' or 'Log'
8. Both of these tabs should show the long unique UUID number.
9. Write or screenshot this UUID down for us and email it to support@latch.com