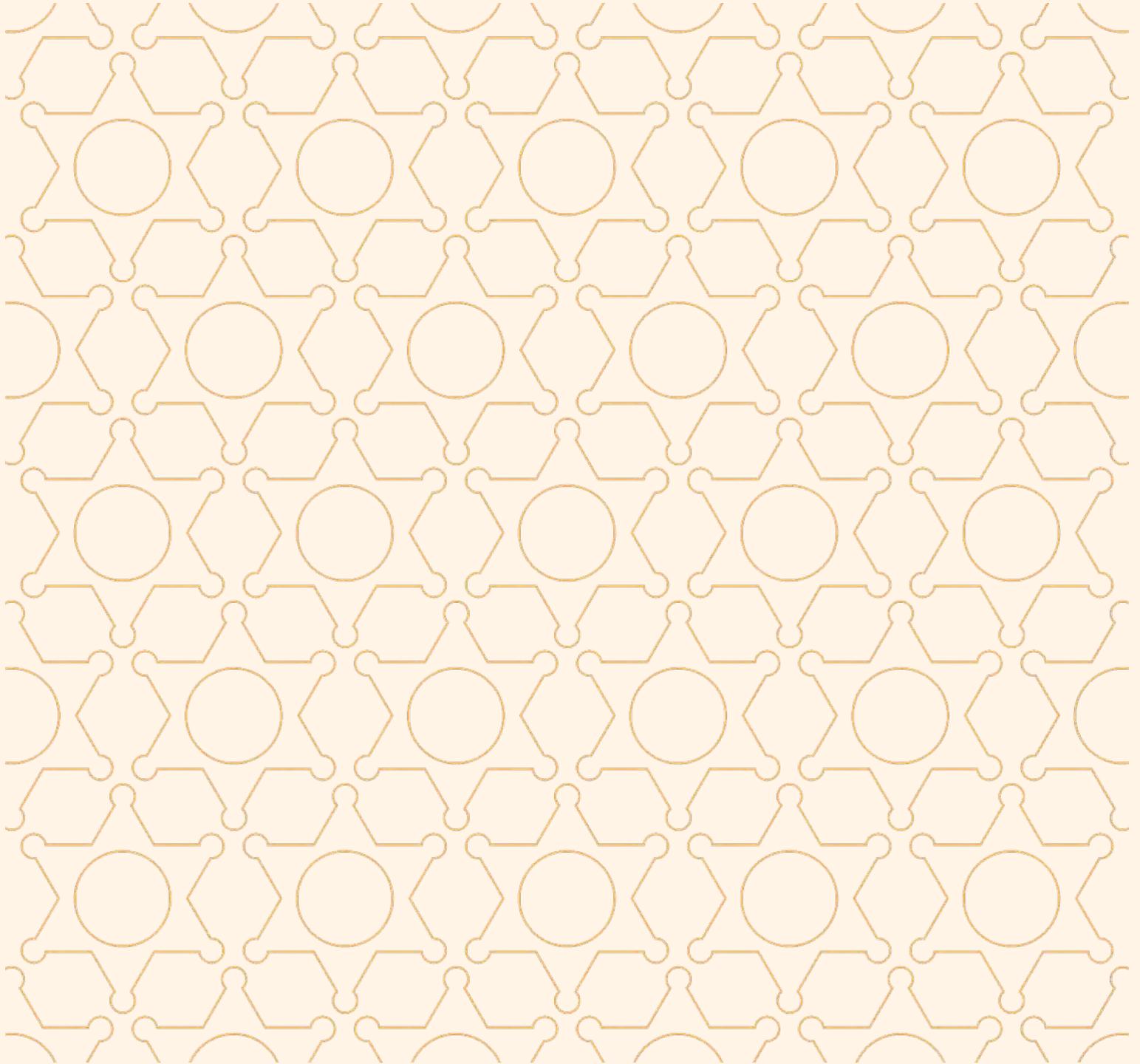




Farmblox

COP-R-LOCK



Trigger Sensor

Product Manual

v1.1

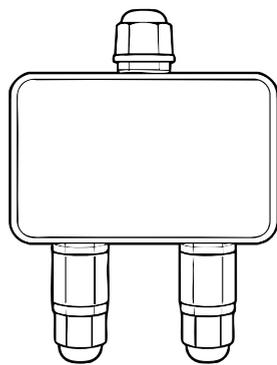
COP-R-LOCK Trigger Sensor

The COP-R-LOCK Trigger Sensor provides enhanced security of remote assets with automatic tamper detection of electrical systems, fencing, gates, wind machines, equipment and more. The COP-R-LOCK Trigger Sensor consists of the: Trigger Sensor, Trigger Wire, and Trigger Wire Termination Cap.

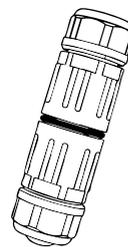
Key features include:

- **Rapid fault detection:** Alerts users immediately upon tampering; status auto-update within 10 seconds (typically 2 seconds) of a tamper event.
- **Versatile deployment:** Suitable for electrical systems, networking and power infrastructure, fencing and gates, wind machines, and other equipment.
- **Customizable installation:** Trigger Wire length is field-configurable. Trigger Sensor and Termination Cap support standard thermostat wire or any two wires with minimum diameter of 1/8" (3mm).
- **Durable construction:** Built for reliable operation in harsh outdoor environments.
- **Seamless integration:** Connects with the Farmblox Universal Monitor for real-time cloud alerts and automatic activation of the COP-R-LOCK Alarm Kit when tampering is detected.

Package Contents



Trigger Sensor x1



Trigger Wire
Termination Cap
(includes 1 spare) x3

Required Tools & Materials

- (1) Liquid-tight connector per Trigger Sensor (or equivalent watertight sealing method). 3/4 in internal diameter minimum required to accommodate sensor cables routed into the electrical panel from outside.
- Reel(s) of thermostat wire or equivalent cable. Typically 50' of wire are needed per Trigger Sensor when installing at electrical panels or irrigation pumps. For fences, refer to your fence length in linear feet. Ensure the cable diameter will work for your application.
- (1) Reel of 2–3 in wide pipe wrapping tape.
- Shovel for clearing soil.
- Utility knife, scissors, or similar cutting tool for tape.
- Channel-lock pliers.
- Precision screwdriver set.
- Wire strippers and cutters.

Technical Specifications

Parameter	Specification
Monitoring Method	Resistance-based
Fault Detection Types	Open circuit, short circuit, internal fault
Alert Interval	Instant. Upon tamper event status auto-updated within 10 seconds (2 seconds typical)
Operating Temperature	-20 °C to 60 °C (-4 °F to 140 °F)
Dimensions	2.5" x 6.25" x 4.75" (60mm x 158mm x 120mm)

Electrical Panel Installation

Overview

When using the COP-R-LOCK Trigger Sensor to protect cables routed through conduit connected to an electrical panel, pump peckerhead, or similar equipment, both the **interior and exterior of the conduit must be protected**.

The Trigger Sensor supports **two Trigger Wires** for this application:

- Internal Trigger Wire: Routed inside the conduit from within the panel or enclosure
- External Trigger Wire: Wrapped around the outside of the conduit

This dual-wire configuration provides the highest likelihood of detecting tampering. In most tamper events, the **external Trigger Wire is cut first**, triggering the COP-R-LOCK Alarm and notifications before the conduit or internal cables are damaged. If the external wire is bypassed, the **internal Trigger Wire provides secondary detection**.

Precaution

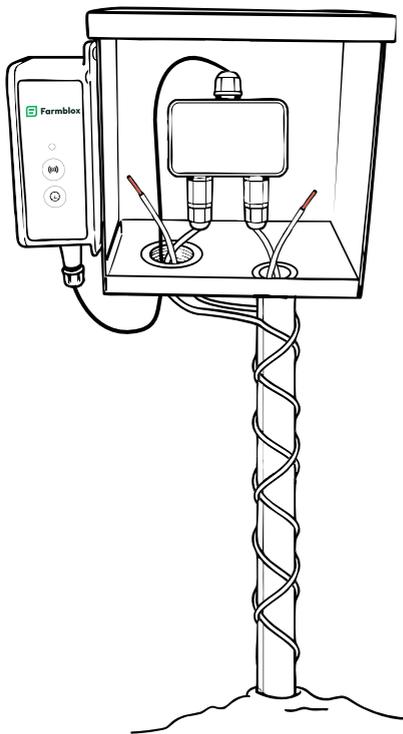
Please read all instructions thoroughly before installing the Trigger Sensor. Improper installation may result in false alarms or failure to detect tampering events.

Preparation

- **Verify power is fully shut off** at the electrical panel and all standard high-voltage safety procedures are followed.
- **Confirm adequate clearance** inside the electrical panel for mounting the Trigger Sensor.
- **Confirm available conduit capacity** to ensure sufficient space for routing the Trigger Wire.
- **Clear soil** from around the base of the conduit, exposing 4–6 in below grade.

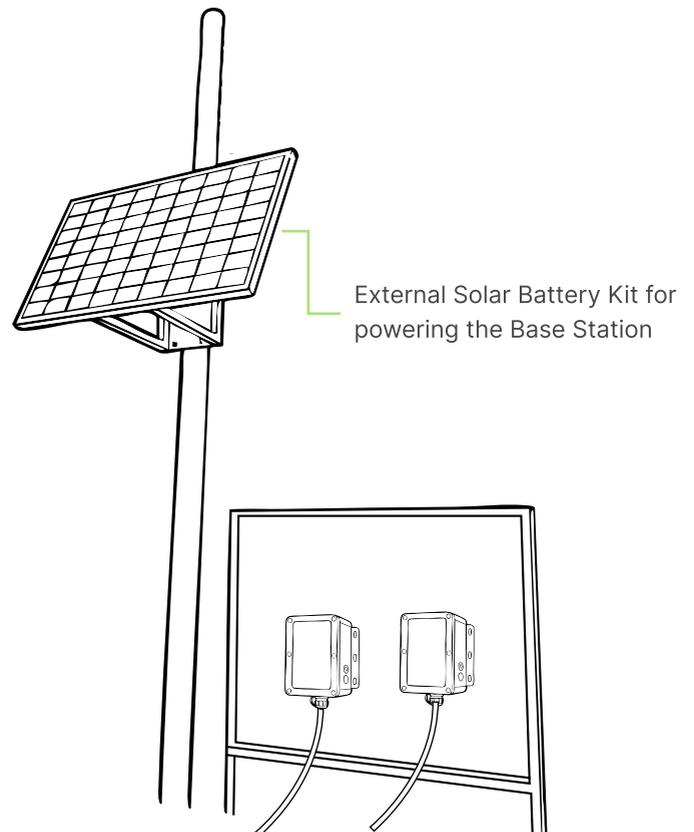
Mounting the Trigger Sensor and Universal Monitor

1. **Select a mounting location** inside the electrical panel near the conduit being protected, ensuring adequate clearance for the Trigger Sensor. This will likely be in the bottom portion of the panel.
 - The location must avoid routing the Trigger Sensor power cable or Trigger Wires over circuit breakers from the conduit to the Trigger Sensor.
2. **Secure the Trigger Sensor** using zip ties, screws, or adhesive.



3. **Remove a knockout** from the bottom of the electrical panel, or from the panel side closest to the conduit being protected. **Install a liquid-tight connector** or equivalent weatherproof fitting. The connector must have a minimum 3/4 in internal diameter (**NOT 3/4" knockout size**) to allow sensor cables and connectors to pass through.
4. **Route the Trigger Sensor cable connector** through the liquid-tight connector from inside the electrical panel to the outside, ensuring the cable is not pinched or stressed. If the connector does not fully seal against the wire, use silicone or another means of waterproofing the resulting gap.

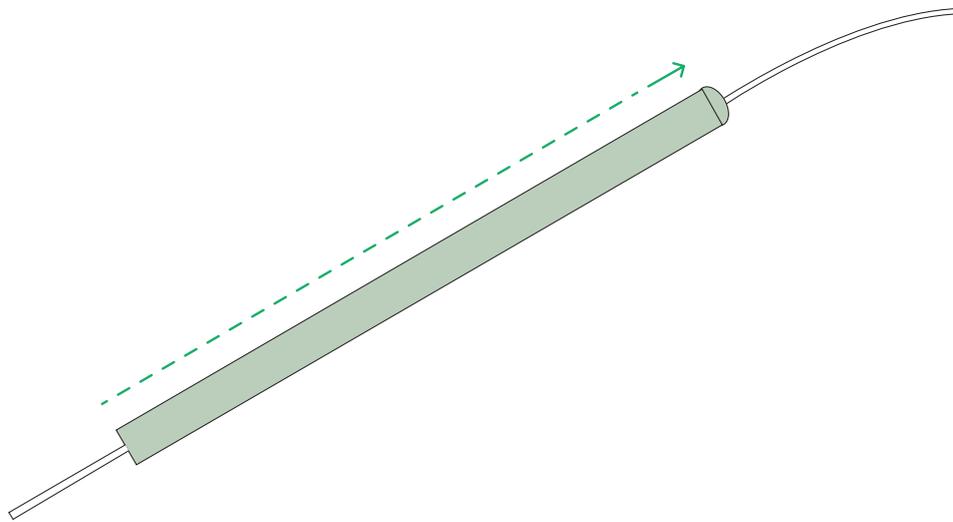
5. **Install the Universal Monitor:** Select a mounting location within reach of the Trigger Sensor cable and with adequate sunlight exposure. Mount the Universal Monitor vertically on the side of the electrical panel or a rear board using screws, adhesive, wire, or equivalent hardware. Connect the sensor cable, aligning the white index dots on the connectors, and ensure the sensor cable exits downward from the monitor to reduce strain and moisture ingress. See examples of monitor mounted on the outside of the electrical panel (above), or rear board (right).



Installing Trigger Wire Inside of the Conduit

1. Measure & Cut the Correct Trigger Wire length.

- The Trigger Wire should route from the Trigger Sensor mounting location inside of the electrical panel, to the opening of the conduit inside the panel, down the full length of the conduit, and extend 6 inches below ground (or past the section to be monitored). The Trigger Wire should then return back up the conduit, leaving approximately 12 inches of slack inside of the electrical panel.

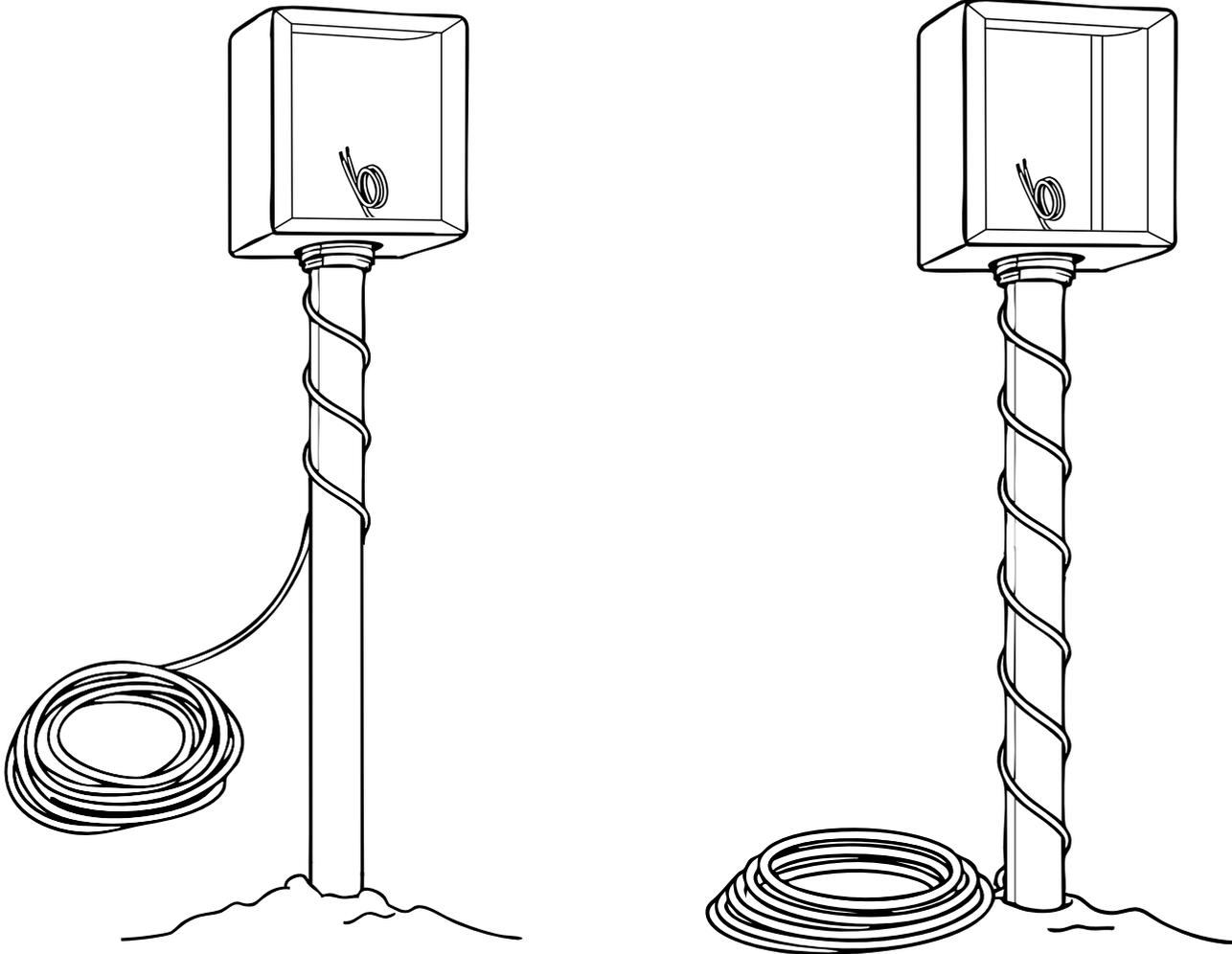


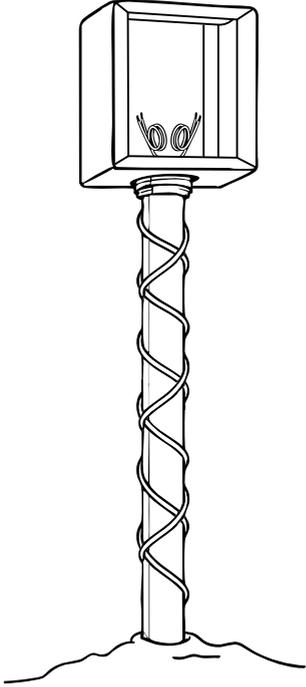
2. Install Trigger Wire in Conduit

- **Measure the portion of Trigger Wire** required to reach the Trigger Sensor mounting location, then **fold the remaining wire length in half**.
- **Insert the folded Trigger Wire fully into the conduit** until it reaches the end of the protected conduit section.
- **Use a fiberglass fish rod if needed** to guide the wire through the conduit and prevent binding or damage.
- **Use wire pulling lubricant if needed** for tight conduit.

Wrapping Trigger Wire Around Conduit

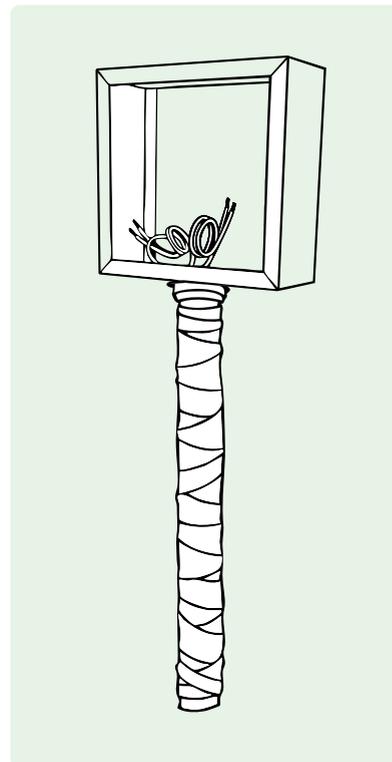
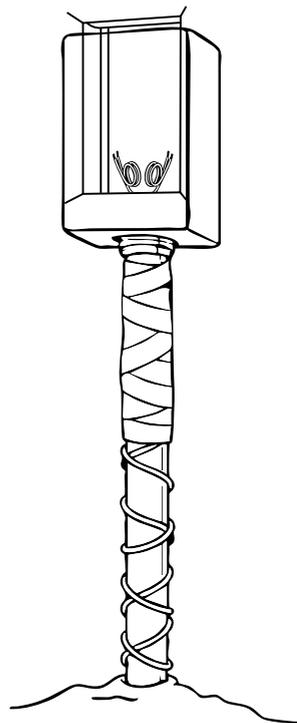
1. **Feed wire** from outside the panel, through the liquid-tight connector, and into the electrical panel. Include enough wire to reach the Trigger Sensor mounting location, allowing for service slack.
2. **Wrap the Trigger Wire tightly around the exterior of the conduit**, working downward to 4–6 inches below grade. Maintain 1–2 inches vertical spacing between wraps. Tighter spacing increases the likelihood of detecting tampering before conduit damage occurs.





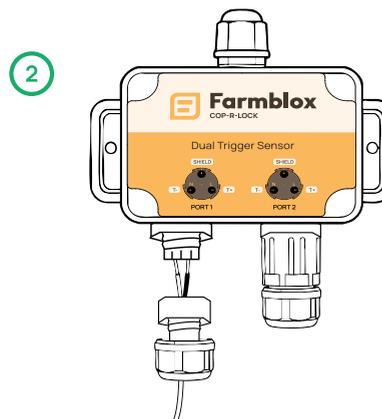
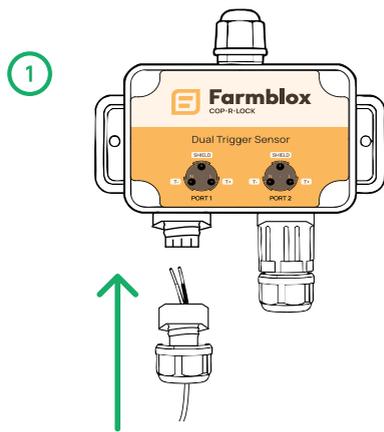
3. **Secure the bottom wrap** by applying electrical tape around the lowest wrap of Trigger Wire.
4. **Continue wrapping the Trigger Wire back up the conduit** toward the electrical panel, maintaining 3–4 inches vertical spacing between wraps.
5. **Secure the top wrap** by applying electrical tape around the uppermost wrap near the electrical panel.
6. **Measure and cut the Trigger Wire** so it can be routed back through the liquid-tight connector into the electrical panel, leaving approximately 12 in of slack inside the panel.

7. **Overwrap the entire Trigger-Wire-wrapped section of conduit** with pipe wrapping tape. This protects the Trigger Wire from environmental exposure, discourages accidental contact, and makes tampering or removal very difficult.

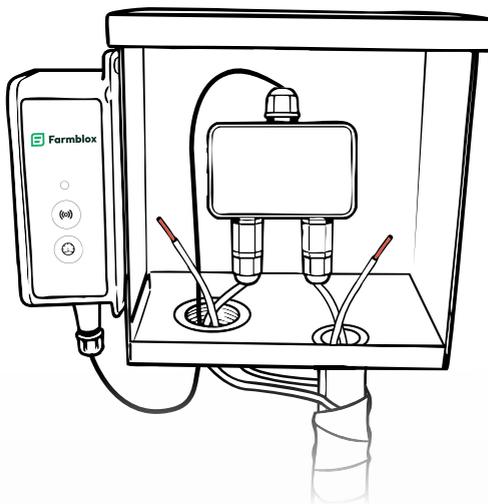
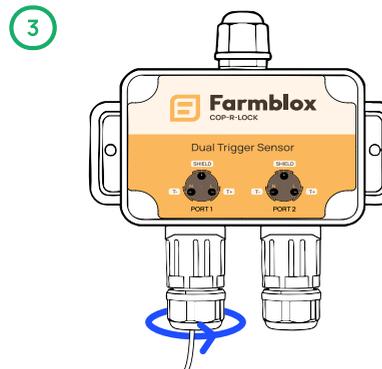


Connect the Trigger Wires to the Trigger Sensor

1. **Connect the first Trigger Wire lead** to the ports on the Trigger Sensor. Remove the waterproofing housing and connect the trigger wire to the T+ and T- ports on the Dual Trigger Sensor. Polarity does not matter. If the cable is shielded, connect the shield to the ground terminal.

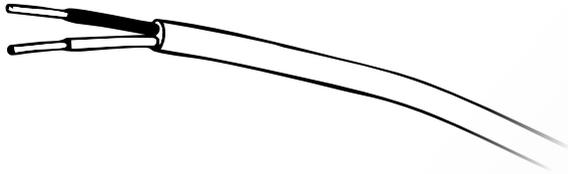


3. **Tighten the liquid-tight connector** (or equivalent sealing fitting) to fully seal around the cables and Trigger Wire, ensuring a secure, weatherproof entry into the electrical panel.



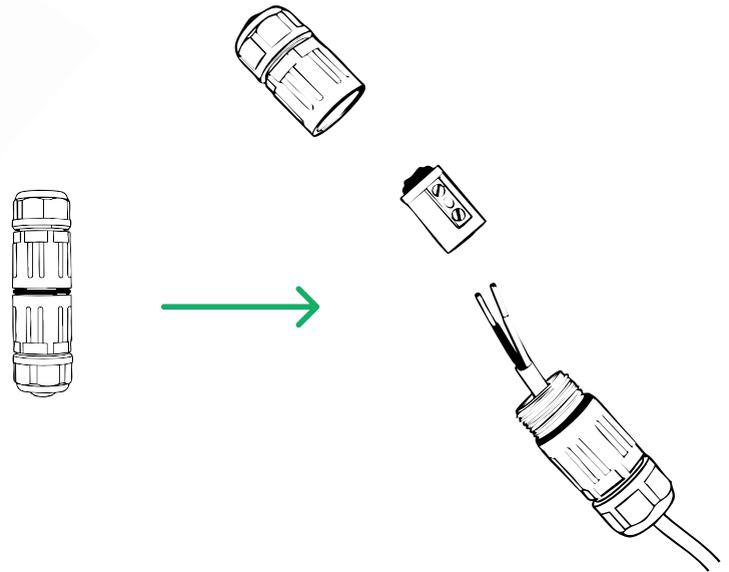
4. Confirm that the complete routing of the Trigger Wires to the Trigger Sensor, and the sensor cable to the Universal Monitor, matches the configuration shown below.
5. **Secure a Trigger Wire along the backside of each cable at risk**, following the full cable length inside the electrical panel. Do not route Trigger Wires over or across circuit breakers. This ensures that if the panel is opened and cables are cut inside the panel, the Trigger Wire will also be cut and the alarm will activate.
 - Best practice: Wrap the Trigger Wire directly around each cable and secure with electrical tape. Zip ties may be used for faster installation.

Installing the Trigger Wire Termination Caps



1. For both ends of the Trigger Wire, strip the sheath approximately 3/4" and the wires to 1/2".

2. Unscrew the Trigger Wire Termination Cap and pass the stripped Trigger Wire through the end of the cap with an opening.
3. Reassemble the Trigger Wire Termination Cap, ensuring the wires are fully enclosed and strain-free.



Fence Installation

Overview

When using the COP-R-LOCK Trigger Sensor to protect chain-link fencing, route the Trigger Wire by weaving it through the fence mesh and around fence posts. This prevents removal or sectioning of the fence without cutting the Trigger Wire and triggering an alarm.

The Trigger Sensor supports two independent Trigger Wires, allowing flexible installation layouts. Common configurations include:

- Trigger Wire 1: Left side of fence run
- Trigger Wire 2: Right side of fence run
- Trigger Wire 1: Woven through the upper third of the fence
- Trigger Wire 2: Woven through the lower third of the fence

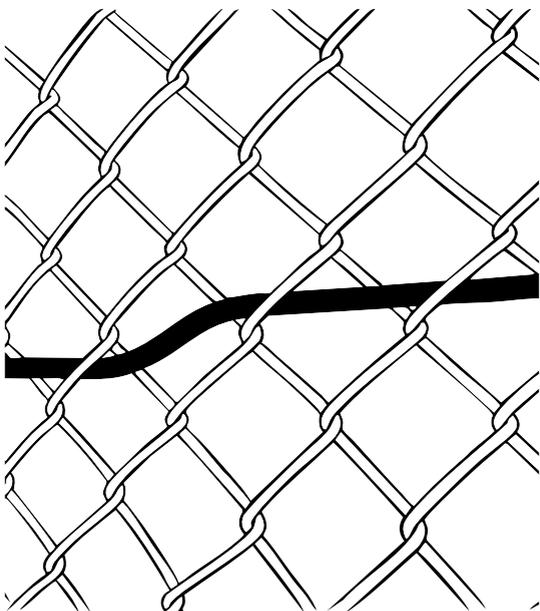
This flexibility allows installers to tailor coverage based on fence height, layout, and tamper risk.

Preparation

- **Plan the Trigger Wire layout** for each channel (e.g., left vs. right fence runs, upper vs. lower fence sections).
- **Measure the total fence length** to be protected. While the Trigger Sensor supports Trigger Wire lengths up to 1,000 ft, an optimal maximum of 400 ft per wire is recommended for ease of installation and reliability. Weaving longer runs can be cumbersome. For large fence perimeters, install additional Trigger Sensors, or divide the run into shorter sections using weatherproof connectors (customer-supplied). Note that reliable electrical continuity cannot be guaranteed when multiple sections are linked, which may result in false alerts or notifications.
- **If installing multiple Trigger Sensors**, use a clear and consistent **naming convention** for each associated Universal Monitor when configuring devices in the **Farmblox app**.

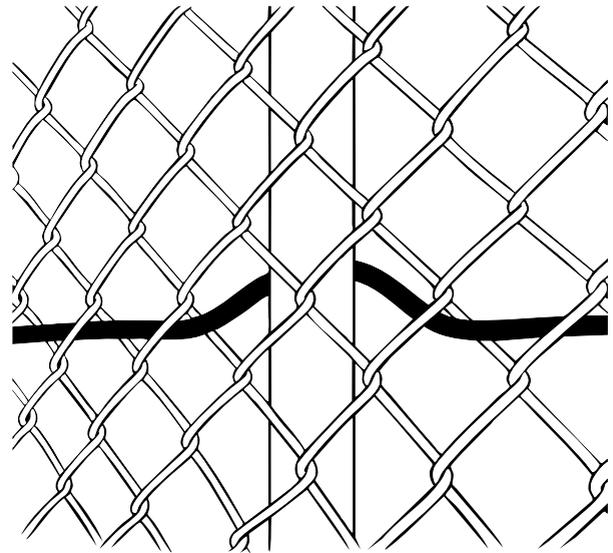
Installation

1. **Mount the Trigger Sensor** on the fence at the starting point of the Trigger Wire weave.
2. **Mount the Universal Monitor vertically** inside the fenced area, within reach of the Trigger Sensor cable and with adequate sunlight exposure. Select a location that is not easily accessible from outside the fence to reduce tampering risk (e.g., a post or existing structure).
3. Refer to the **Connect the Trigger Wires to the Trigger Sensor section** under **Electrical Panel Installation** before continuing.



4. **Weave the Trigger Wire through every third fence link, alternating** from inside to outside of the fenced area. Weaving through the mesh more significantly deters removal of the Trigger Wire.
 - a. If dividing the run into shorter sections, connect sections using weatherproof connectors (customer-supplied), ensuring secure and continuous electrical connections.

5. At fence posts, complete the weave to the outside of the fence, then route the Trigger Wire around the back side of the post before passing it back through the fence on the opposite side. This prevents fence sections from being rolled or removed without cutting the Trigger Wire.
6. Refer to the Installing the Trigger Wire Termination Caps section under Electrical Panel Installation to complete installation.



Installation Across Gates

To route a Trigger Wire across a gate, use weatherproof quick-disconnects (customer-supplied). Install the quick-disconnect at the gate opening on the swinging side, connecting the two Trigger Wire sections. If the connection is opened during normal operating hours (as configured in the app), no alert or alarm will be generated. If opened during active hours, the Trigger Sensor will trigger an alarm and notifications.

***Important:**

Farmblox cannot guarantee reliable electrical continuity when quick-disconnects are used. Performance depends on installation quality, connector reliability, environmental exposure, and moisture ingress. **Improper or degraded connections may result in false alerts or notifications.**

Notification Setup

First, follow the instructions in the Universal Monitor Installation Guide to download the Farmblox app from the iOS App Store or Google Play Store, create an account, and add a Universal Monitor.

Alerts can be configured in the Farmblox app using any of the following methods:

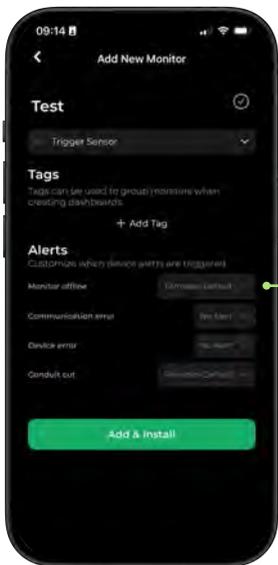
1. During Universal Monitor setup, when adding the device as a Trigger Sensor.
2. From the Universal Monitor device details page after it has been installed and configured as a Trigger Sensor.
3. Via bulk configuration for multiple Universal Monitors through the app settings.

Alert types definitions

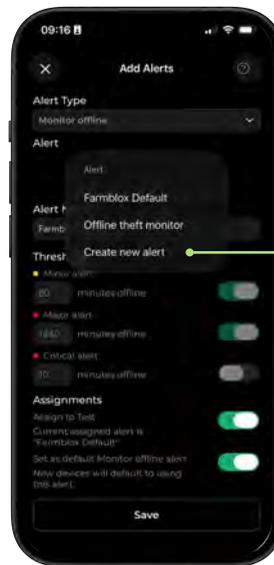
Parameter	Description	Recommended Setting for Trigger Sensors
Monitor Offline	Triggers if the Universal Monitor remains offline for an extended period. This may occur due to device damage during a tampering event, theft of the Universal Monitor, poor wireless coverage, or temporary signal loss. Minor signal fluctuations are normal for any radio-based device, so an offline alert does not always indicate tampering. Installing additional Farmblox Base Stations in the area improves network stability and increases the likelihood that an offline alert indicates a true tamper event.	Farmblox Default: Alert after 60 minutes offline. Alternatively, create a custom Offline Monitor alert threshold. To reduce false positives, a 15-minute or longer interval is recommended. Refer to the instructions below for configuration.
Communication Error	Not applicable to Trigger Sensor installations.	
Device Error	Not applicable to Trigger Sensor installations.	
Cut Detected	Triggers immediately if either Trigger Wire is cut , indicating a tampering event. This is a binary alert (cut or intact).	Farmblox Default (no customization required).

Setting up alerts during installation

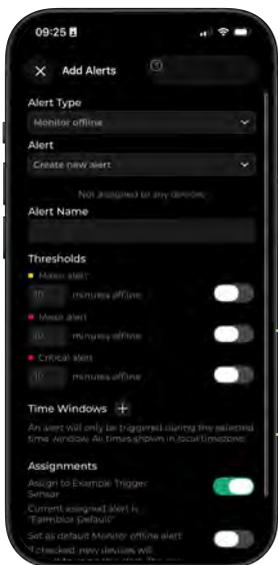
1. Navigate to the **Alerts** section in the Farmblox app.
2. Verify the Monitor Offline alert is set to Farmblox Default or to your preferred custom alert profile. See the instructions below for creating custom alerts.
3. Confirm the Communication Error and Cut Detected alerts are set to Farmblox Default.
4. Apply device Tags. Tags are used to create Dashboards for organizing and viewing devices. Dashboards filter devices based on applied Tags, allowing a single device to appear on multiple dashboards. Choose Tags intentionally to support long-term organization.



1. Create a custom alert threshold (optional):
 - a. Select the drop-down menu next to the alert you want to customize (this will display Farmblox Default or No Alert).
 - b. Select Farmblox Default to open the Add Alerts page, where custom thresholds can be configured (e.g., for **Monitor Offline** alerts)



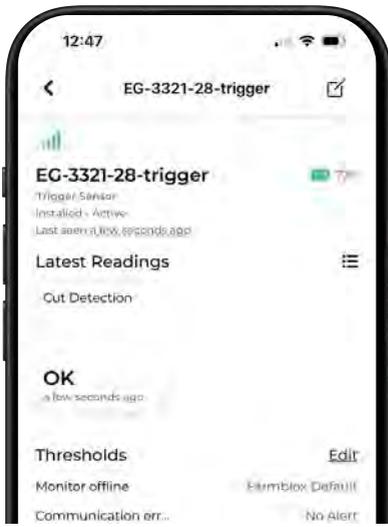
- c. Click the Alert drop-down menu, then select Create New Alert. When creating a Monitor Offline alert, the drop-down will initially display **Farmblox Default**.



- d. Configure the custom alert threshold and time window, then enable the alert to activate it. To reduce false positives, a 15-minute or longer interval is recommended.

As shown in the Farmblox app with "Dark Mode" activated

- e. Enable **Assign to [device name]** to apply the custom alert to the selected Universal Monitor.
- f. Optional: To apply this alert as the default for all new monitors added to your Farmblox organization, enable Set as default **Monitor Offline** alert.
- g. Select **Save** to apply the changes.



Alert Setup from the Universal Monitor's device details page

1. Scroll to Thresholds and select Edit.
2. Select the Alert Type you want to edit, then choose the alert to apply to the device.
3. Select Save to apply the changes.

Bulk Alert Configuration (Settings Page)

1. From the Home page, open the Settings menu using the icon in the top-right corner.
2. In the Settings menu, select Customize Device Alerts.
3. Choose the alert type to apply in bulk, then select the alert profile.

Example: Select Cut Detected as the alert type, then Farmblox Default as the alert.

4. Use the Alert tab to edit alert thresholds and time windows, if needed.
5. Select Save to apply the changes.



Alert & Incident Notification Setup

Alert thresholds are now configured. To receive notifications when these alerts are triggered, enroll in Alert Notifications or create Incidents in the Farmblox app.

Type	Description	Recommended Use
Incident Notification	When an alert is triggered, a simple email or SMS notification is sent to all users who have opted in. A notification is sent anytime the status of any affected device changes. The message is non-customizable and includes the device name, latest reading, and event timestamp. Notifications auto-resolve when the device returns to a normal state. No notification history is retained.	<ul style="list-style-type: none"> Monitoring individual devices Situations where basic awareness is sufficient Events that do not require action When a simple, non-customizable message is acceptable
Incident Notification	An Incident groups multiple alerts and devices into a single event. If any selected alert occurs on any included device, one consolidated notification is sent. Incident notifications are customizable and may include location details, contact information, or instructions. Incidents remain active until manually resolved by an authorized user. Resolution history is saved, including who resolved the incident and when.	<ul style="list-style-type: none"> COP-R-LOCK deployments Situations where action is required When team visibility and accountability are important Use cases requiring event history and documentation

Enrolling in Notifications

1. From the app Settings page, navigate to **Notification Preferences**.
2. Enable email and/or SMS notifications, enter the appropriate contact details, and select the alert types you want to receive notifications for.

Creating Incidents

1. From the Home page, select the “+” icon in the bottom menu.
2. Select Incident, then Set Up an Incident.
3. Configure the incident by setting the name, selecting the triggers (alerts that will activate the incident), and choosing the devices to include. Use the following example:
 - Name: Pump Site EG-3321-28
 - Triggers: Select the alerts that should activate the incident (e.g., *Cut Detected*, *Monitor Offline*).
 - Devices: Select the Universal Monitor(s) installed at Pump Site EG-3321-28.
4. **When deploying COP-R-LOCK devices across multiple locations or sites**, it is recommended to create a separate incident profile for each site. This allows the incident name and description to include site-specific details, such as GPS location, access notes, or the appropriate contact for first-responders to use for that specific location.
5. Select Create Incident to save and activate the incident.

Viewing Notifications & Incidents

- Use the mailbox icon in the bottom menu to view notifications and active or past incidents.

Periodic Checks

- Inspect all cables and connections for damage, wear, or loose terminations.
- Verify the Trigger Sensor and Universal Monitor remain securely mounted and properly oriented.
- Keep the Universal Monitor solar panel clear of dirt and debris to maintain optimal charging performance.



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Get a Quote

sales@farmblox.ag