Farmblox

COP-R-LOCK

Trigger Sensor

Product Manual v1.1

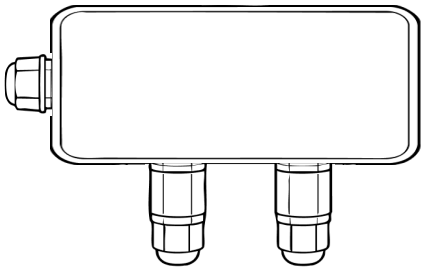
COP-R-LOCK Trigger Sensor

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

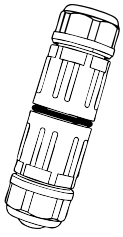
Key features include:

- **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. The Trigger Sensor and Termination Cap support standard thermostat wire or cable with two wire strands that are a minimum of 8 AWG (≈3 mm diameter).
- **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 compatible cable (see **Trigger Sensor Cable Specifications**). Typically 50’ of cable 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.

Trigger Sensor Cable Specifications

General cable requirements

- Shielded twisted pair, 1 pair (2 conductors)
- 18 AWG copper
- Shielded with drain wire (foil, braided, or both)
- Terminate the shield/drain wire at the trigger sensor end only. Leave the Trigger Wire Termination Cap end unterminated.

DO NOT USE:

- Loose individual wires (not in a cable)
- Unshielded cable of any kind

Site specific cable requirements

- Sunlight resistant jacket, if installed in an sunlight exposed or uncovered location.
- 600V rated cable, if the Trigger Sensor cable runs alongside wiring rated 300V or higher (e.g. 480V VFD power).
- 300V rated cable, if the Trigger Sensor cable runs alongside wiring rated less than 300V, or does not run alongside any other power wiring (e.g. installed on a fence).

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	5.7” x 4.6” x 1.5” (143 mm x 116 mm x 37.3 mm)

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

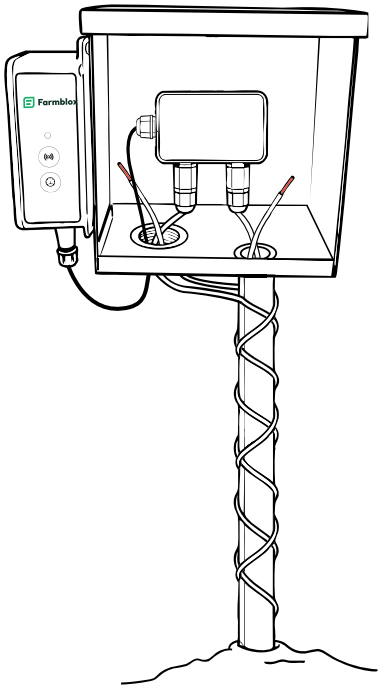
Please read all instructions thoroughly before installing the Trigger Sensor.
Improper installation may result in false alarms or failure to detect tampering events.

Preparation

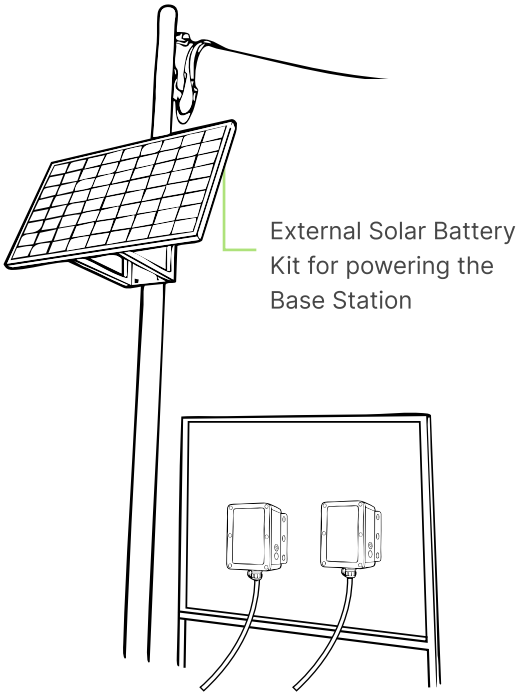
- **Verify power is fully shut off** at the electrical panel and all standard high-voltage safety procedures are followed.
- **Confirm adequate clearance** inside the electrical panel for mounting the Trigger Sensor.
- **Confirm available conduit capacity** to ensure sufficient space for routing the 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.



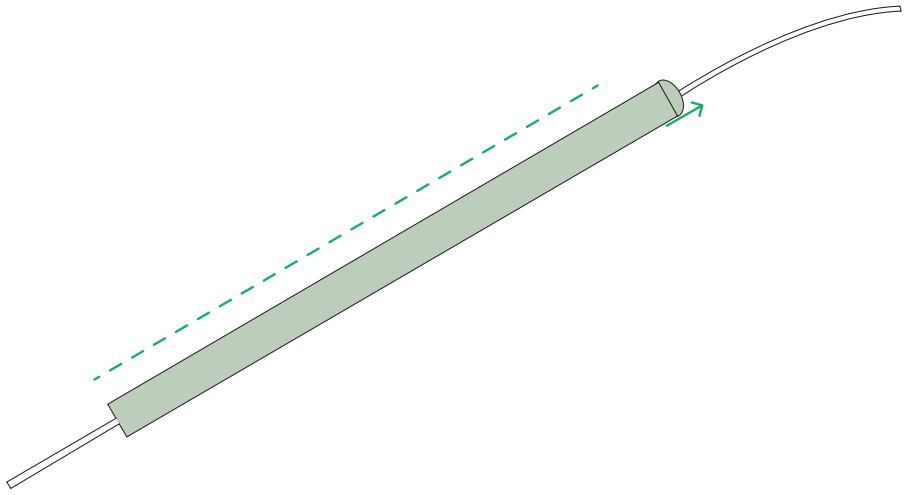
3. **Remove a knockout** from the bottom of the electrical panel, or from the panel side closest to the conduit being protected. **Install a liquid-tight connector** or equivalent weatherproof fitting. The connector must have a minimum 3/4 in internal diameter **(NOT 3/4" knockout size)** to allow sensor 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 on a rear mounting board using screws, adhesive, wire, or equivalent hardware. Connect the sensor cable by aligning the white index dots on the connectors, and route the cable so it exits downward from the monitor to form a drip loop, . Refer to the examples showing the monitor mounted on the exterior of the electrical panel (above) or on a rear mounting board (right).

Installing Trigger Wire Inside of the Conduit

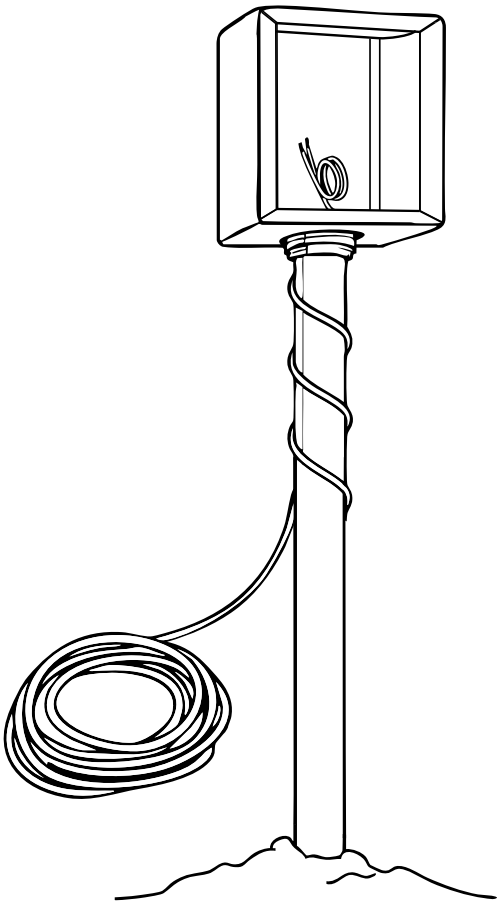
1. Measure & Cut the Correct Trigger Wire length.
    - The Trigger Wire should route from the Trigger Sensor mounting location inside of the electrical panel, to the opening of the conduit inside the panel, down the full length of the conduit, and extend 6 inches below ground (or past the section to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

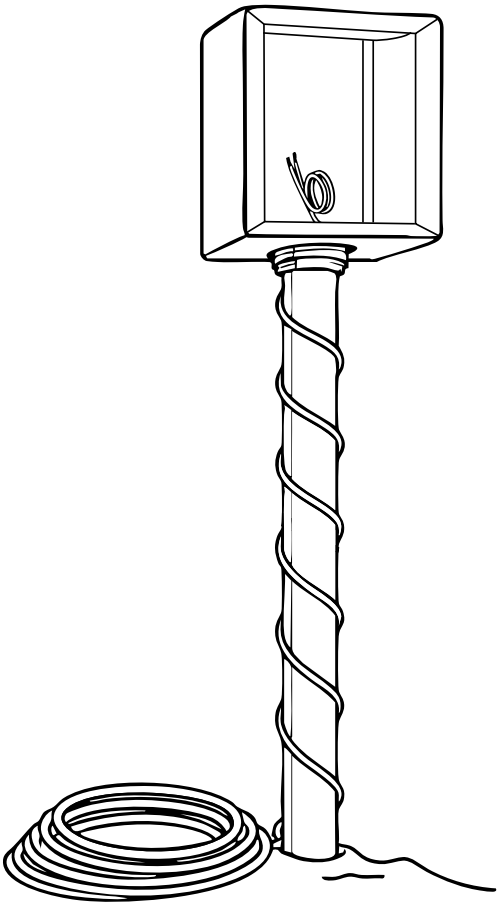


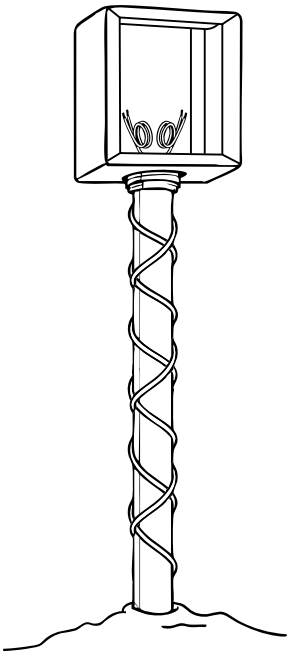
2. Install Trigger Wire in Conduit
    - **Measure the portion of Trigger Wire** required to reach the Trigger Sensor mounting location, then **fold the remaining wire length in half.**
    - **Insert the folded Trigger Wire fully into the conduit** until it reaches the end of the protected conduit section.
    - **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.

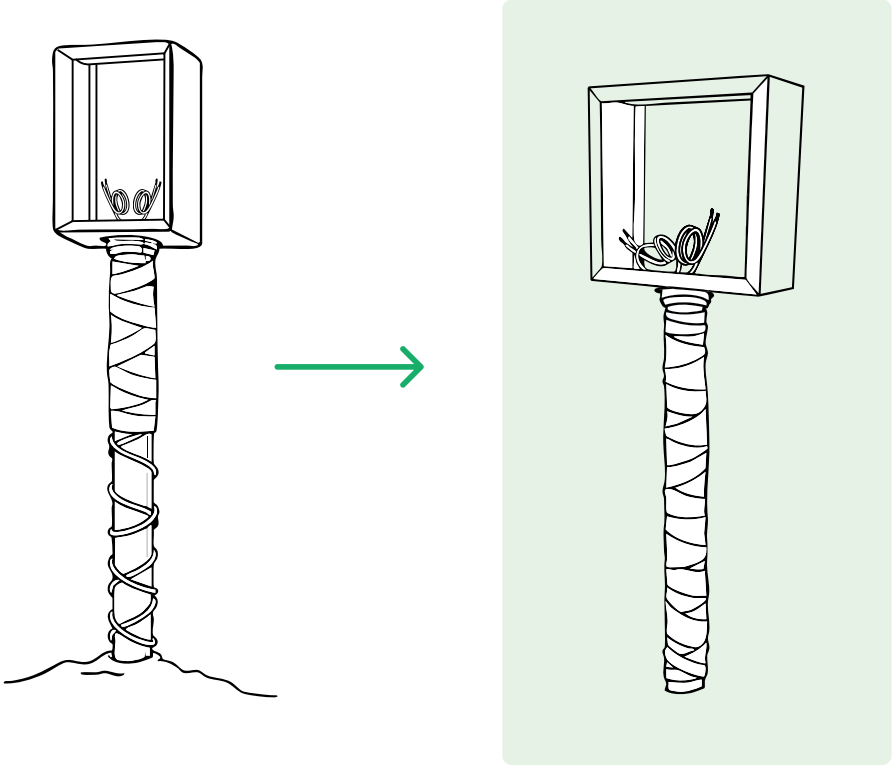






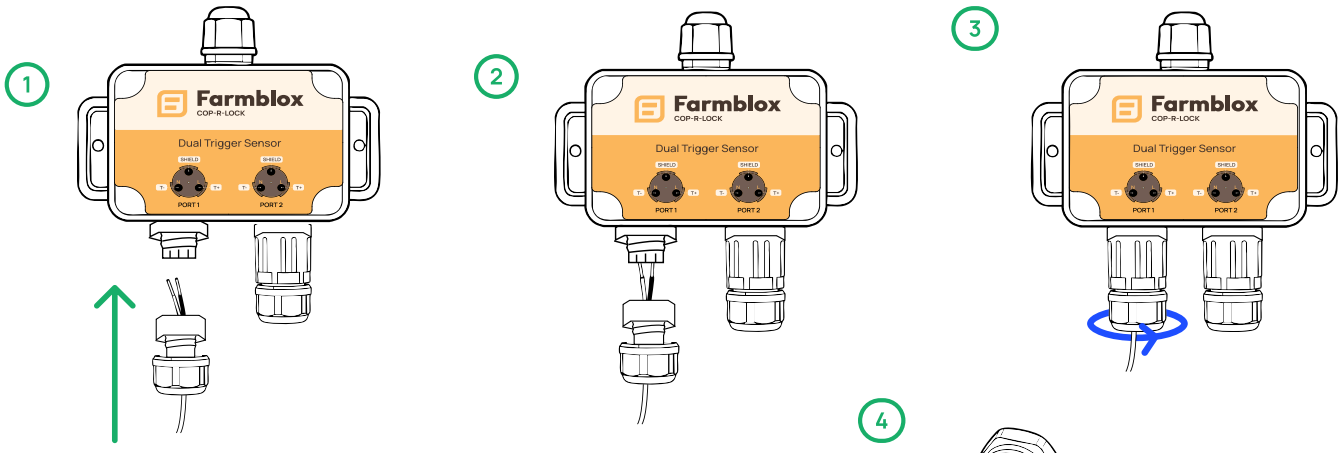
3. **Secure the bottom wrap** by applying electrical tape around the lowest wrap of Trigger Wire.
4. **Continue wrapping the Trigger Wire back up the conduit** toward the electrical panel, maintaining 3–4 inches vertical spacing between wraps.
5. **Secure the top wrap** by applying electrical tape around 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.

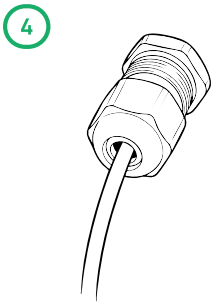


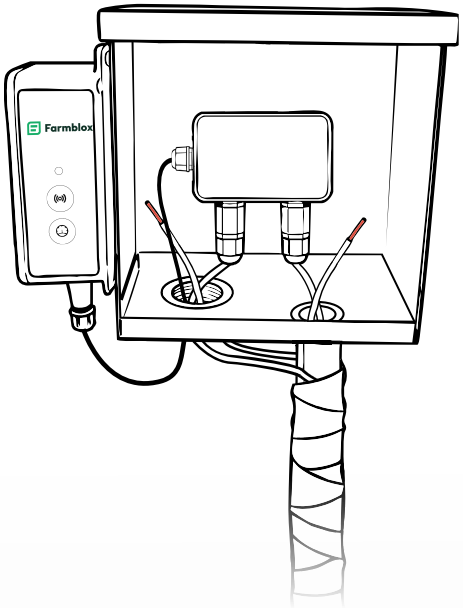
Connect the Trigger Wires to the Trigger Sensor

1. **Connect the first Trigger Wire lead** to the ports on the Trigger Sensor. Remove the waterproofing cap and connect the trigger wire to the T+ and T- ports. Polarity does not matter. Terminate the shield/drain wire at the trigger sensor end only. Leave the Trigger Wire Termination Cap end unterminated.



2. **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.



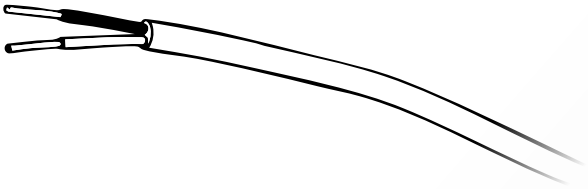


3. Confirm that the complete routing of the Trigger Wires to the Trigger Sensor, and the sensor cable to the Universal Monitor, matches the configuration shown below.

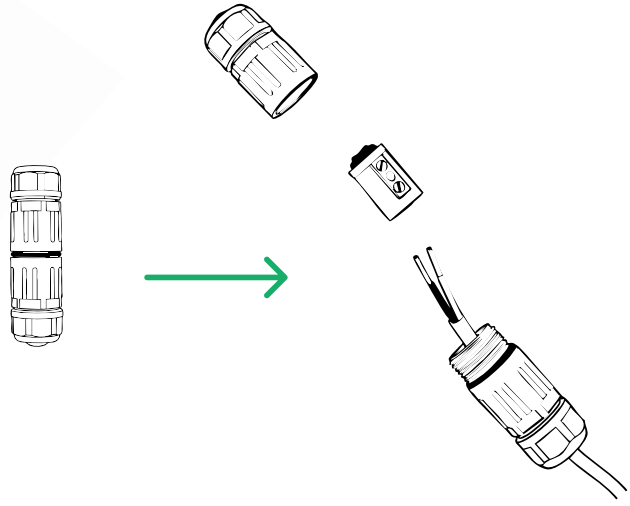
4. **Secure a Trigger Wire along the backside of each cable at risk**, following the full cable length inside the electrical panel. Do not route Trigger Wires over or across circuit breakers. This ensures that if the panel is opened and cables are cut inside the panel, the Trigger Wire will also be cut 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 the end of both Trigger Wires, 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

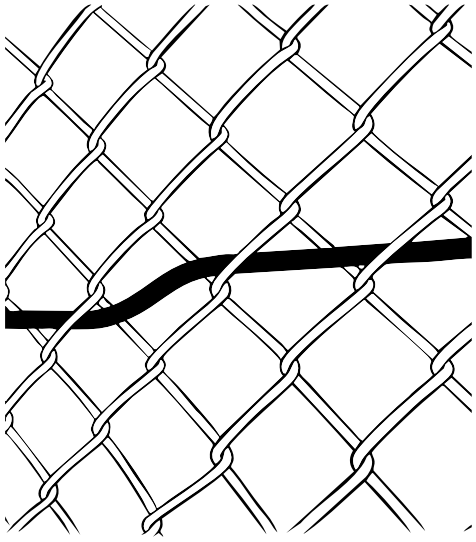
This flexibility allows installers to tailor install based on fence height, layout, and tamper risk.

Preparation

- **Plan the Trigger Wire layout** for each trigger wire port (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

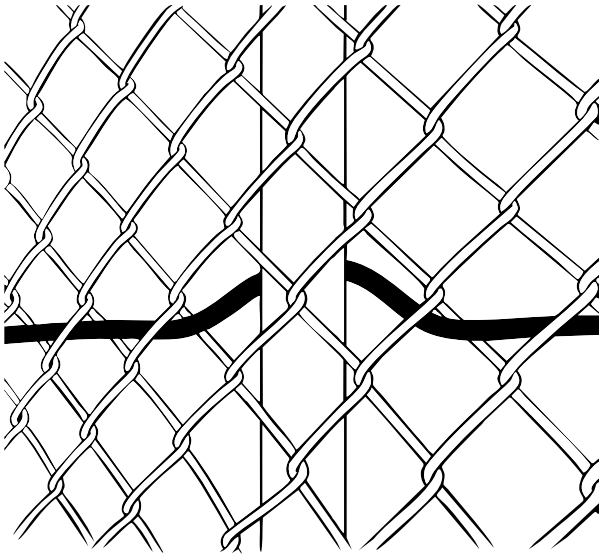
1. **Mount the Trigger Sensor** on or near the fence at the starting point of the Trigger Wire weave.
2. **Mount the Universal Monitor vertically** inside the fenced area, within reach of the Trigger Sensor cable and with adequate sunlight exposure. Select a location that is not easily accessible from 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 Deutsch Connectors or similar weatherproof connectors (customer-supplied), ensuring secure and continuous electrical connections.

5. At fence posts, complete the weave to the inside 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 Deutsch Connectors or similar weatherproof connectors (customer-supplied). Install the connector 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.**

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Get Help

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