



# FarmTRX<sup>TM</sup>

## Yield Monitor

Installation Guide

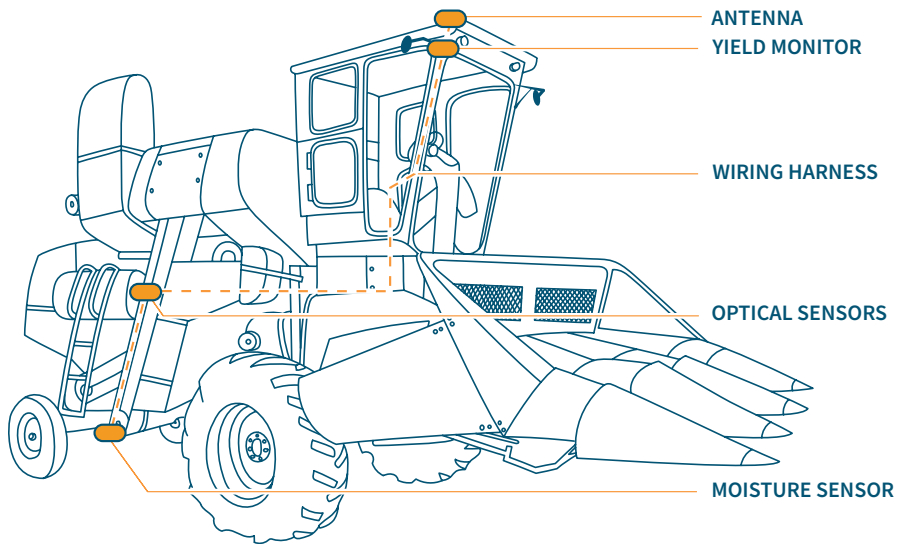
# GUIDE CONTENTS

- System Overview..... 2
- Components..... 4
- Tools Required..... 4
- 1. Optical Sensor Installation—Part One..... 5
  - 1.1 Measuring and Marking Sensor Location ..... 6
  - 1.2 Installing QuickConnect Sensors..... 11
- 2. Yield Monitor Installation..... 12
  - 2.1 Electronic Control Unit Installation ..... 13
  - 2.2 Routing the Wiring Harnesses..... 15
- 3. Optical Sensor Installation—Part Two..... 16
- Testing the Yield Monitor ..... 18
- Support and Next Steps ..... 18

This guide will demonstrate the installation of a FarmTRX Yield Monitor on a combine harvester. The installation process typically requires 2-4 hours and can be completed on any combine make or model with a clean grain elevator.

To enhance reading, we suggest pairing this guide with the Yield Monitor QuickConnect installation video found on the FarmTRX YouTube channel.

## System Overview



### 1.1 External Antenna:

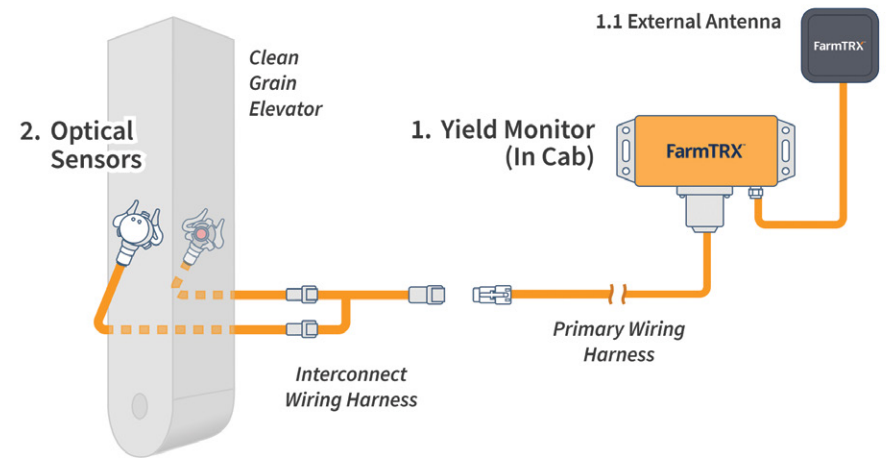
The External Antenna is connected to the Yield Monitor via an SMA connector. The antenna is mounted on the roof of the cab on the centerline of the combine.

### 1. Yield Monitor Electronic Control Unit (ECU):

The Yield Monitor ECU mounts inside the cab of the combine and will be wired into switched 12V power.

### 2. Optical Sensors:

Two sensors install on either side of the clean grain elevator: an emitter and a receiver. A light beam is sent between the two sensors, with blocked time measuring grain volume on each paddle. Sensors will be wired directly to the Yield Monitor through supplied harnesses.



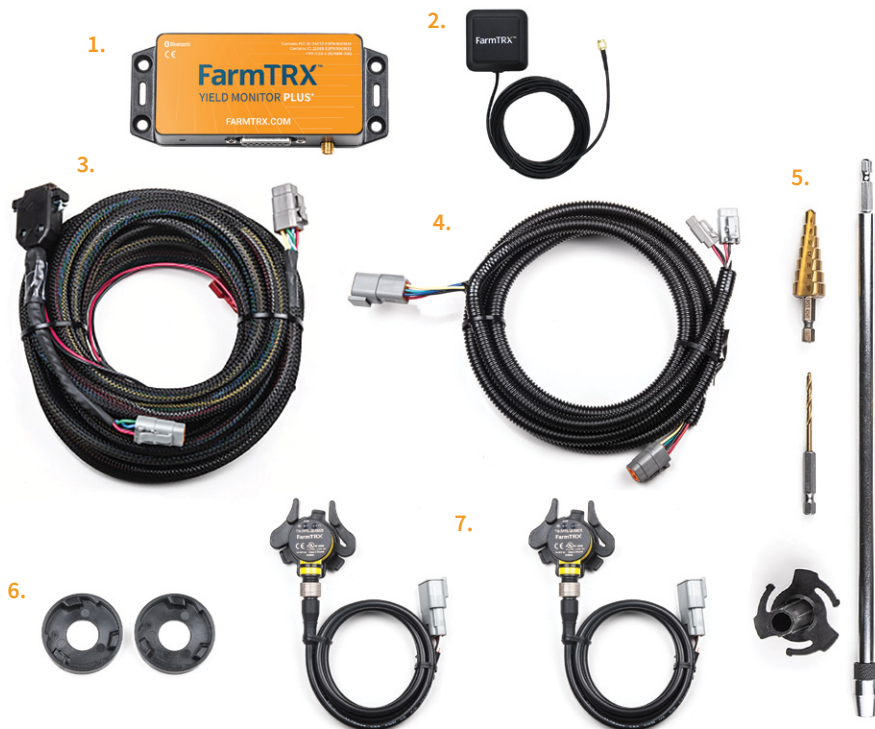
Components Layout

## Components

1. Yield Monitor ECU
2. External Antenna (Multi-band GNSS pictured)
3. 6 m (20 ft) Primary Wiring Harness
4. 2.4 m (8 ft) Sensor Interconnect Wiring Harness
5. Drill Guide Kit
6. QuickConnect Mounting Plates (2)
7. Assembled QuickConnect Optical Sensors and Mounts (2)

### Not Pictured:

- Zip Ties
- Alcohol Wipes



## Tools Required

- Power Drill
- Pliers, Vice Grips, or Side Cutters
- Center Punch
- Measuring Tape
- Marker, Pen, or Pencil
- Flat Head Screwdriver
- Masking Tape
- Round Bastard File (optional)

## 1. Optical Sensor Installation—Part One

Two optical sensors are included with your Yield Monitor and will install on opposite sides of the clean grain elevator. The 2-wire sensor is an emitter, and the 3-wire sensor is a receiver. 2 LED lights appear on the body of the receiver sensor. FarmTRX uses optical sensors to measure grain volume on each paddle.

The placement of the optical sensors should meet the following criteria:

1. Sensors should be installed as high up the clean grain elevator as reasonably possible, to reduce noise of grain falling off the paddles, in a place where the inside and outside of the elevator can be accessed. Sensor location should be out of the way of belts or other moving parts of the combine. This is typically two-thirds of the way up the elevator before entering the grain tank.
2. Sensors should be centered on the paddles of the elevator chain. Some elevator chains have brackets supporting the paddles which can interfere with the sensor beam. If this is the case, adjust the sensor location outwards to avoid the brackets. Refer to the diagrams on page 7 for examples.

Please refer to the Drilling Measurements Table on page 6 for sensor placement measurement specifications on several combine makes and models. If your combine is not found in the table, please select an appropriate sensor location based on the above two steps.

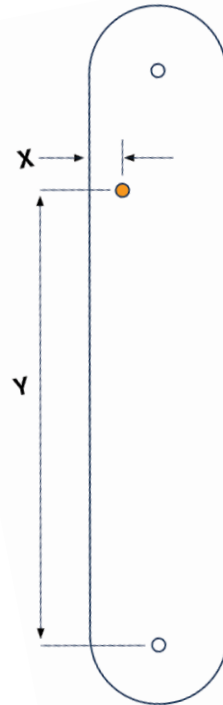
### Components used in this step:



## 1.1 Measuring and Marking Sensor Location

Next, you will need to measure and mark where to drill holes for the sensors on the clean grain elevator. On the upwards direction, the sensors will mount on the inside and outside face of the elevator (where filled paddles of grain pass by). The Drilling Measurements Table below displays the measurements for common combines:

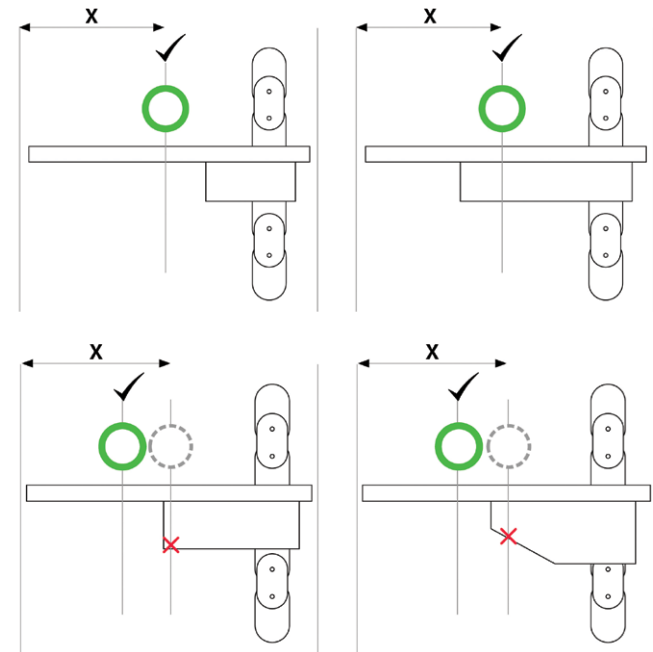
Combine	Model	Distance X (in)	Height Y (in)
Case IH	1660	1.75 in (44.45 mm)	41.5 in (1054 mm)
	1680	1.75 in (44.45 mm)	75.5 in (1917 mm)
	2X88*	1.75 in (44.45 mm)	75.5 in (1917 mm)
	7088	1.75 in (44.45 mm)	75.5 in (1917 mm)
	7120/8120	1.5 in (38 mm)	57 in (1448 mm)
New Holland	CR/CX X00, CR/CX X000	1.75 in (44.45 mm)	62 in (1575 mm)
	TR9X	1.5 in (38 mm)	43 in (1092 mm)
John Deere	9500	2.25 in (57.15 mm)	62 in (1575 mm)
	96X0	2.25 in (57.15 mm)	62 in (1575 mm)
	9X50	2.25 in (57.15 mm)	62 in (1575 mm)
	9X60	2.25 in (57.15 mm)	62 in (1575 mm)
	9X70	2.25 in (57.15 mm)	62 in (1575 mm)
Gleaner	R7X	1.25 in (31.75 mm)	56 in (1422 mm)
Challenger	670	1.5 in (38 mm)	70 in (1778 mm)
	670B	1.75 in (44.45 mm)	65 in (1651 mm)



If your model is not shown in the Drilling Measurements Table, remember the main principles for successful sensor installation:

1. Choose a sensor location that is as high on the clean grain elevator as reasonably possible.
2. Place sensors centered on the paddles of the elevator chain.

The key to achieving accurate results is to make sure the sensors are only measuring variations in grain on top of each paddle. When measuring for the X value, take note of the brackets supporting each paddle. If the X distance places the sensor too close to the edge of the supporting bracket, or if it lines up with an angle on the bracket, they must be moved slightly. The diagram below highlights several installation examples with the profile views of varying paddle support brackets and the best places to drill the sensor holes.



\* Specific models of Case IH combines may require moving the sensor location to avoid a tensioner rod. If you have specific questions for this model please contact your FarmTRX Support Team.

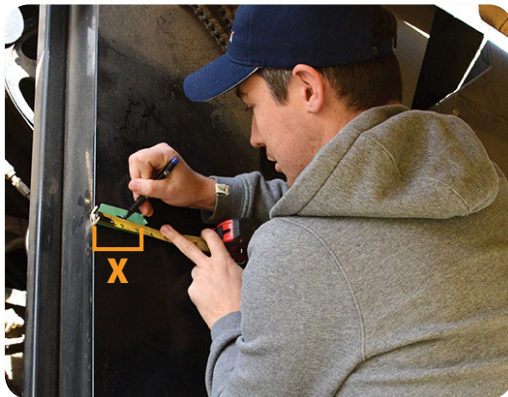
**Note:** At this stage, it is important to confirm the elevator chain and paddles are in good shape. The chain should not be noticeably loose. If loose, with paddles worn down or missing, the quality and accuracy of yield readings will be negatively impacted.

1. Measure and mark the height (Y). Measure from the center of the bearing, to height (Y), and mark. We recommend using masking tape to make marking easier. Use a framing square to trace the height (Y) across the masking tape on the clean grain elevator.



*Height (Y) from the center of the bearing to the center of the drill hole*

2. With the height (Y) marked across the clean grain elevator, measure and mark the distance (X).



*Distance (X) from the back of the clean grain elevator to the center of the drill hole*

3. At the marked location, use a center punch to mark the drilling location. Drill a pilot hole using the provided drill bit.

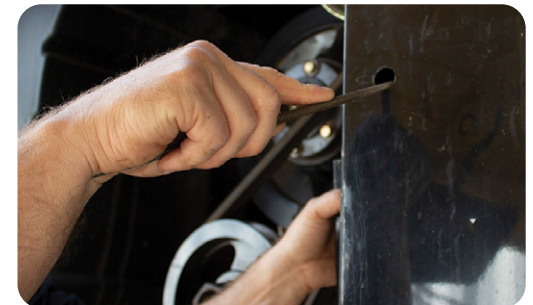


4. Transfer to the provided step drill bit and drill an 18 mm (3/4") hole.



*Step drill-bit*

5. Use a file to remove any sharp burrs from the hole.



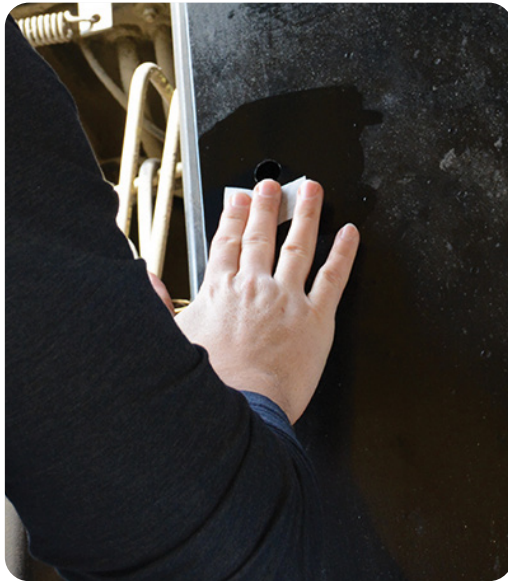
**Note:**

As stated above, it is not critical to follow the measurements table. As long as the sensors are mounted high up on the elevator while centered on the paddles, you will receive accurate results.

6. **IMPORTANT:** Use one of the provided alcohol wipes to thoroughly clean the area around the drilled hole, ensuring all oil, grease, and residue are completely removed from the elevator face.

Let the alcohol evaporate completely.

If any oxidized paint is present near the hole, use a household cleaning product to thoroughly clean and prep the area prior to using the alcohol wipe.



7. Using a flashlight, look into the elevator to ensure there is no paddle directly behind the drilled hole. If there is a paddle in the way, advance the elevator chain until the space behind the hole is clear.

**Note:**

The Sensor Mounting Plates require a clean surface to properly cure to the elevator wall.

## 1.2 Installing QuickConnect Sensors

8. Remove the backing on the adhesive side of one Mounting Plate and insert the Drill Guide into the Mounting Plate. Turn the Drill Guide clockwise to secure it in the Mounting Plate.



*Adhesive backing removed*



*Inserted Drill Guide*

9. After ensuring the area around the drilled hole is completely clean and dry (Step 6), align the Drill Guide with the hole and press the plate firmly against the side of the elevator, holding for 15 seconds minimum.



10. Leave the Mounting Plate and the Drill Guide in place on the elevator to allow the adhesive bond to cure.

To ensure there is enough time for adhesion, the next step is installation of the Yield Monitor ECU in the cab, including connecting it to power and routing the wiring harnesses from the cab to the elevator.



## 2. Yield Monitor Installation

Choosing where to install the Yield Monitor ECU is largely up to the user and we urge installers to make placement decisions based on first-hand knowledge of their machine. This guide will describe the best-practice procedure for placing your Yield Monitor to ensure the most accurate readings.

### Components used in this step:



Yield Monitor ECU



External Antenna  
(Multi-band GNSS pictured)



T-Splice Connectors

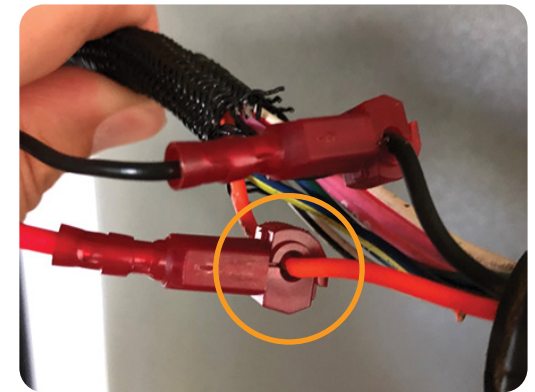


6m (20 ft) Primary Wiring Harness

The Yield Monitor installs in the cab of the combine and is powered by 12V switched power. The Yield Monitor draws less than 1 Amp of current, so splicing into the radio line is acceptable. The External Antenna included in the kit is mounted to the roof of the cab on the centerline, connecting to the Yield Monitor via an SMA connector.

## 2.1 Electronic Control Unit Installation

1. Remove any headliner panels or lights needed to access 12V switched power and create a free space to install the Yield Monitor. To ensure optimal Bluetooth® connectivity, do not place the Yield Monitor directly next to radio interference, such as a two-way radio.
2. Use the supplied T-Splice Connectors to connect to +12V and Ground. Use pliers to snap the T-Splice Connectors onto the wires. Be sure to use the correct size connector and ensure the connector “snaps” shut.
  - Use the Blue T-Splice connector for 18-14 AWG wire
  - Use the Red T-Splice connector for 22-18 AWG wire
3. With the T-Splice connectors attached to 12V switched power, attach the Red spade connector from the lead on the Primary Wiring Harness to +12V and the Black spade connector to Ground.



### Note:

It is important to ensure there is full engagement between the spade and T-Splice connectors. If connectors are not fully pressed together there is risk of intermittent power supply. Intermittent power supply or poor grounding may result in frequent Bluetooth® disconnection and missing field data.



4. Connect the 15 Pin connector of the Primary Wiring Harness to the Yield Monitor ECU and tighten the screws.

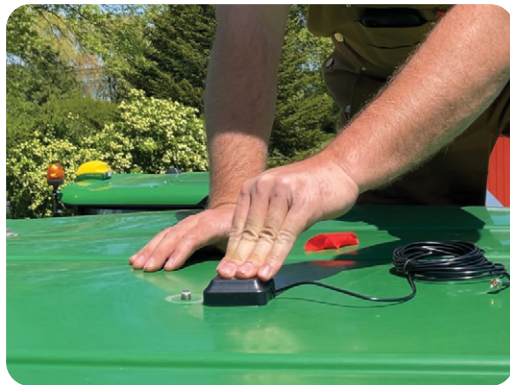


*Yield Monitor ECU connection via 15 Pin connector*

5. Mount the Yield Monitor in a safe, dry and dust-free location inside the combine cab.



6. Install the External Antenna onto the roof of the cab along the centerline of the combine by removing the adhesive backing and affixing the antenna directly to the roof.
7. Connect the External Antenna to the Yield Monitor by running the wiring from the roof, into the cab and connecting directly into the Yield Monitor ECU via the SMA connector.



## 2.2 Routing the Wiring Harnesses

1. Once the Yield Monitor ECU is mounted, the Primary Wiring Harness will need to be routed outside of the cab and towards the clean grain elevator. The Wiring Harness can exit at the base of a window if the seal allows, at an existing wiring grommet, or by drilling a new location.



*Routing of Primary Wiring Harness along inside of door post with ignition switch assembly removed for access*

2. Once the Primary Wiring Harness has been routed outside of the cab, determine a safe pathway to the clean grain elevator, avoiding any moving parts on the combine that could cause the wiring to break.
3. Attach the Primary Wiring Harness to the Interconnect Wiring Harness using the Deutsch connector.



### Note:

It is recommended to attach the Primary Wiring Harness to the main wiring path of the combine.

### 3. Optical Sensor Installation—Part Two

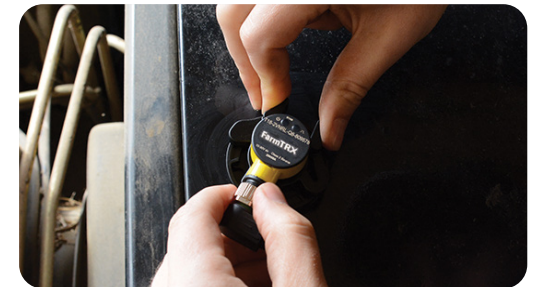
#### Components used in this step:

Use the same components as in Step 1 (page 5-11).

1. Returning to the elevator, turn the Drill Guide counterclockwise to remove from the Mounting Plate.
2. Put the Drill Guide onto the 30 cm (12”) drill extension and put into drill. Attach the provided pilot hole drill bit.
3. Insert the Drill Guide into the Mounting Plate and turn clockwise to secure in place. This will ensure straight alignment of the drill. Proceed to drill a hole into the back wall of the elevator.
4. Turn the Drill Guide counterclockwise to remove from the Mounting Plate. Remove the pilot drill bit and replace with the step drill bit.
5. Carefully align the tip of the step drill bit with the pilot hole in the back elevator wall. You will be able to feel the tip engage.
6. Insert the Drill Guide into the exterior Mounting Plate. Drill the step drill bit through the back wall.



7. Use an alcohol swab to thoroughly clean the area around the drilled hole on the back surface of the elevator, ensuring that all oil, grease, and residue are completely removed from the elevator face.
8. Remove the backing on the adhesive side of the second Mounting Plate and insert the Drill Guide into the Plate. Turn the Drill Guide clockwise to lock into place.
9. Align the Drill Guide with the hole and press firmly against the side of the elevator, pushing consistently for 15 seconds.
10. Leave in place to cure for at least five minutes, then remove the Drill Guide.
11. Insert both sensors into the mounting plates and turn clockwise to lock into place.
12. Connect the optical sensors to the Interconnect Wiring Harness.



*Front of elevator*



*Back of elevator*

#### **IMPORTANT:**

If the wires have been removed from the optical sensors, use the 2-wire Deutsch connector to plug into the transmitter sensor (1 LED), and the 3-wire Deutsch connector to plug into the emitter sensor (2 LEDs).

## Testing the Yield Monitor

Once the optical sensors are installed and connected to the Yield Monitor, the system can be tested in the following ways:

1. Power on the harvester. This should power on the Yield Monitor wired to switched 12V power.
2. To test the power: the Yield Monitor ECU status LED will go through a blink pattern as it powers on. The LED will triple blink red, green, then blue. After powering up, the ECU will be in a green blinking state (or yellow blinking state if GPS lock has not yet been acquired).
3. Test the optical sensors. With the harvester powered on (the engine does not need to be running for this), check both optical sensor LEDs to confirm they are green, this confirms they are receiving power.

## Support and Next Steps

Congratulations, your Yield Monitor is now fully installed and ready to use. You are ready to move onto the two steps below.

1. Set up the FarmTRX Harvest App on an Apple iOS or Android device, or the FarmTRX Display.
2. Register for your Web App account at [web.farmtrx.app](http://web.farmtrx.app). If your farm is located in Europe or Africa, register at [eu.farmtrx.app](http://eu.farmtrx.app).

**FarmTRX**<sup>™</sup>

[www.farmtrx.com](http://www.farmtrx.com)