FarmTRX™

Yield Monitor

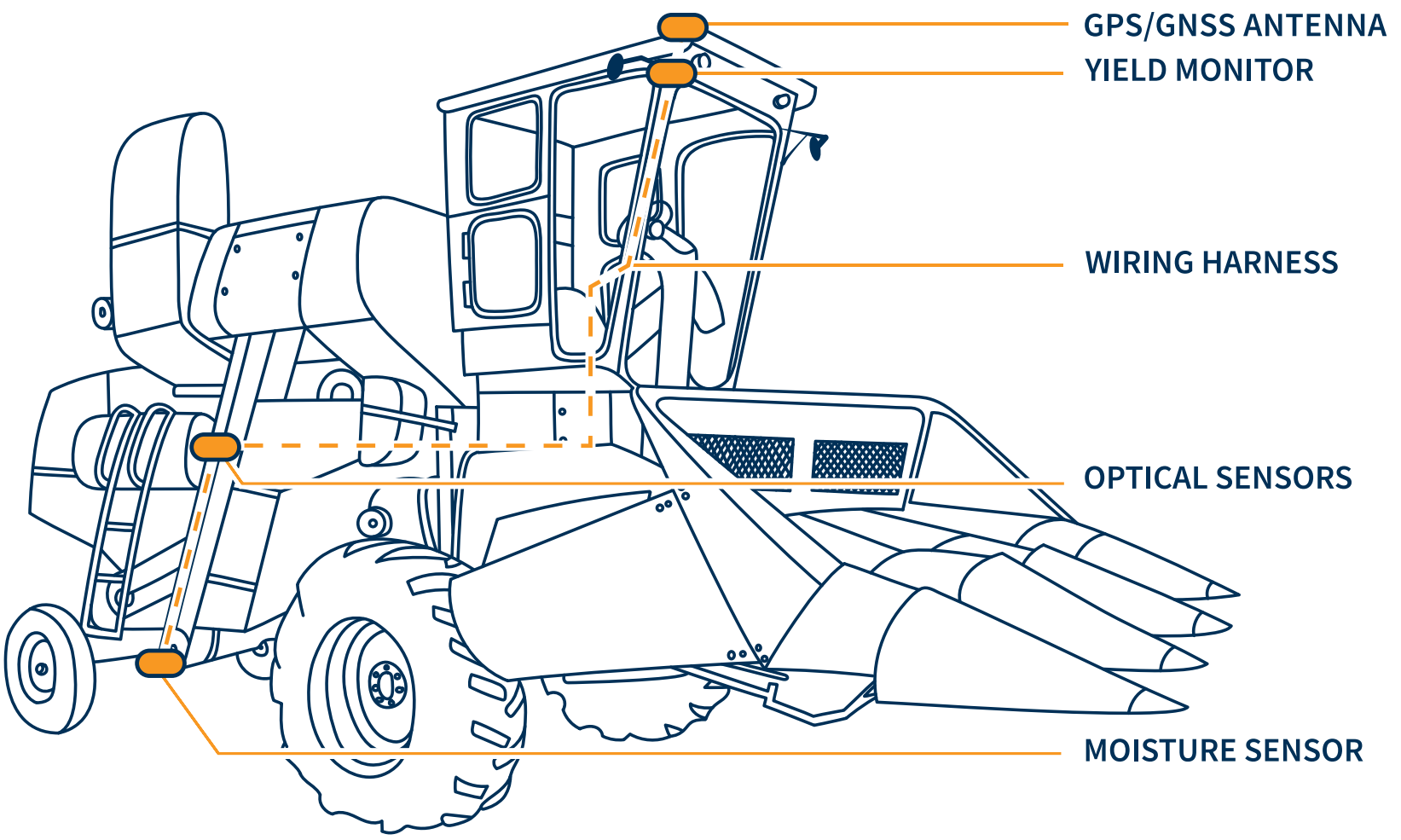
Installation Manual

GUIDE CONTENTS

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 (multi-band GNSS or GPS):

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 centreline of the combine.

1. Yield Monitor Electronic Control Unit (ECU):

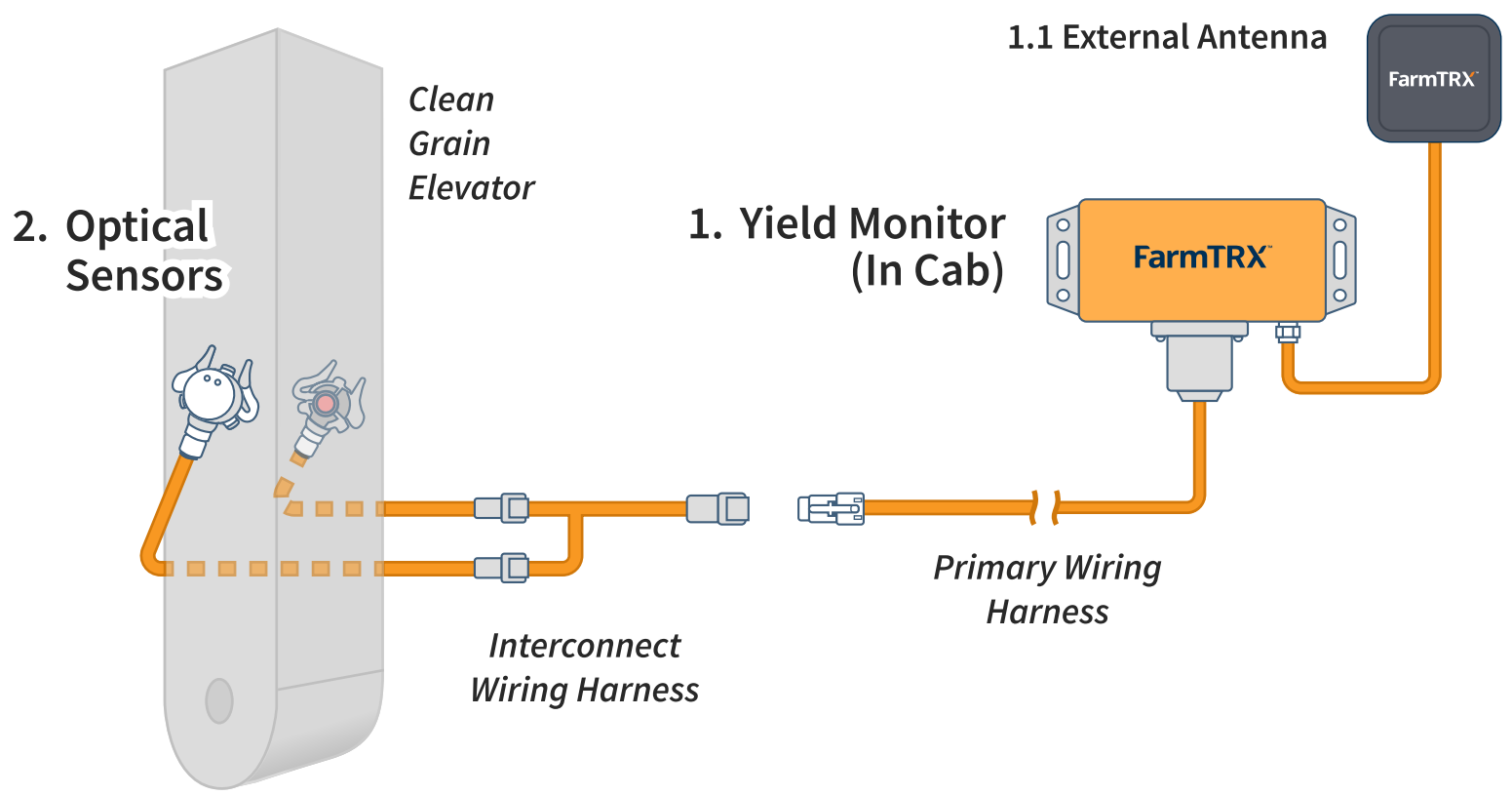
The ECU features:

- 32 GB of on-board storage
- Bluetooth© connectivity for pairing with a smartphone or tablet

The Yield Monitor 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: a transmitter 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 OVERVIEW

1. Yield Monitor ECU
2. External Antenna (multi-band GNSS pictured)
3. 20 ft. (9 m) Primary Wiring Harness
4. 8 ft. (2.4 m) 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

1.

2.

3.

4.

5.

6.

7.

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 by recording sensor blocked-time.

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.
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.

Please refer to the Drilling Measurements Table on **page 9** 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.

Still unsure of best sensor placement? Send a photo to support@farmtrx.com with your planned sensor location and we can provide feedback.

Components used in this step:

Drill Guide Kit

Assembled QuickConnect Optical Sensor

Sensor Interconnect Wiring Harness

QuickConnect Mounting Plate

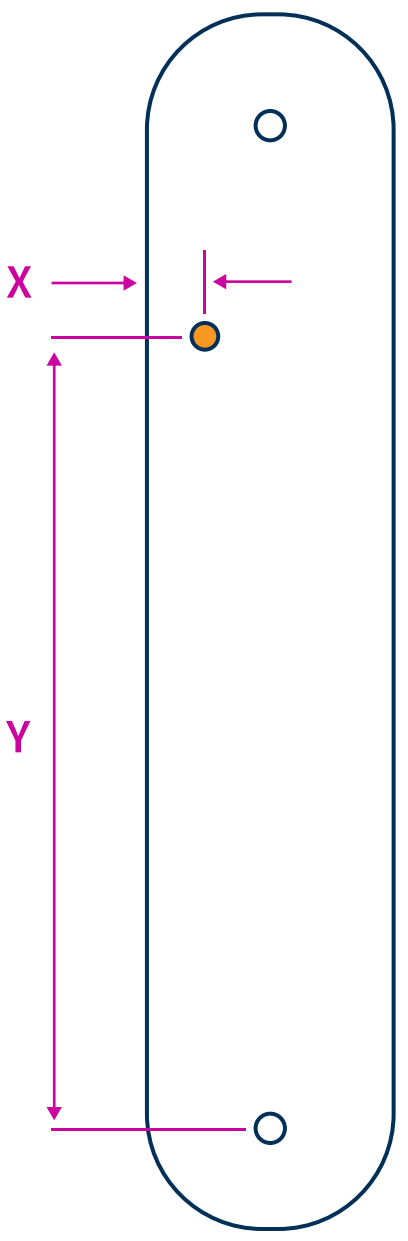
QuickConnect Drill Guide

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	41.5
	1680	1.75	75.5
	2X88*	1.75	75.5
	7088	1.75	75.5
	7120/8120	1.5	57
New Holland	CR/CX X00, CR/CX X000	1.75	62
	TR9X	1.5	43
John Deere	9500	2.25	62
	96X0	2.25	62
	9X50	2.25	62
	9X60	2.25	62
	9X70	2.25	62
Gleaner	R7X	1.25	56
Challenger	670	1.5	70
	670B	1.75	65

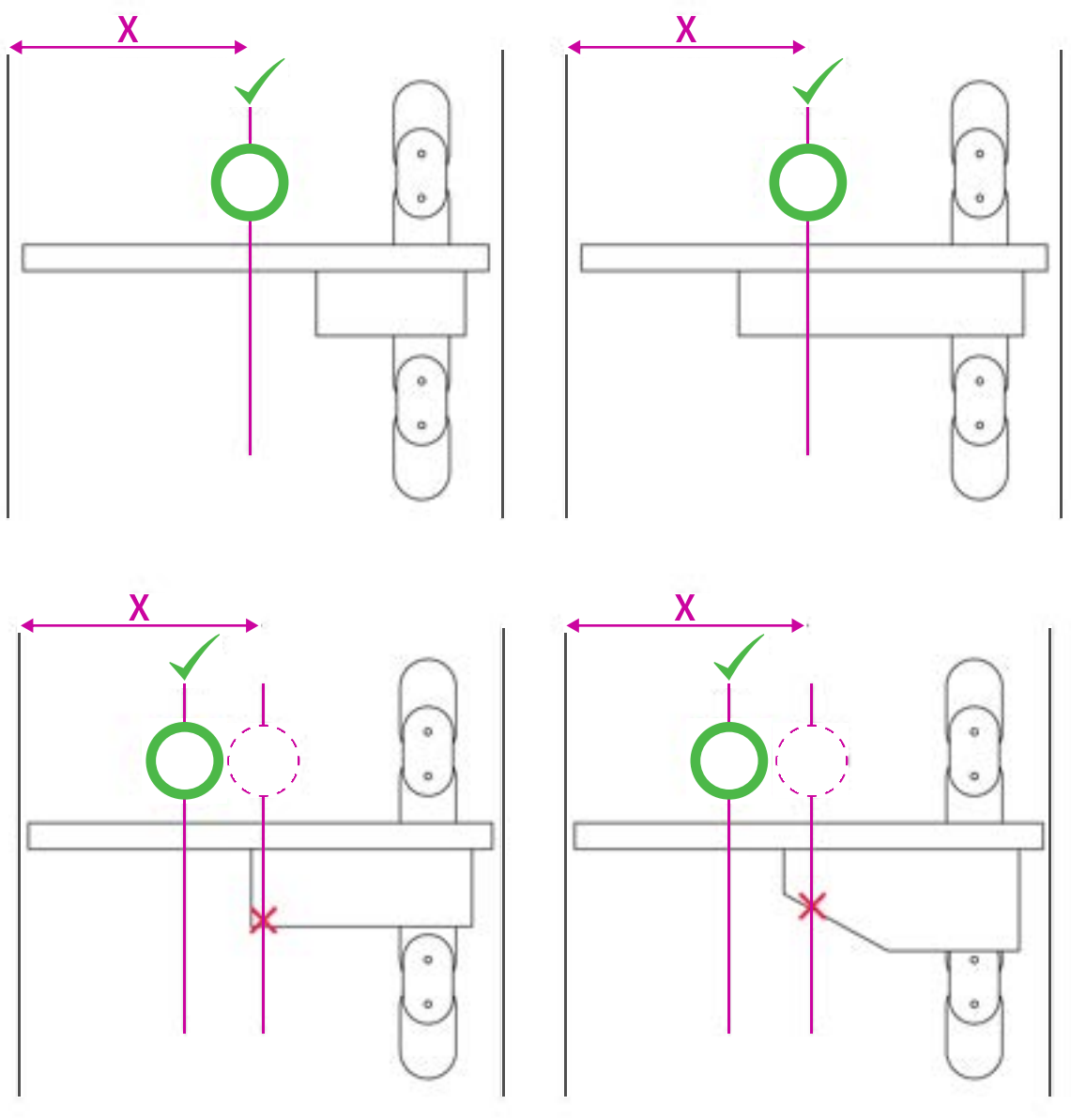


* *Specific models of Case IH combines may require moving the sensor location to avoid a tensioner rod. If you have specific questions for this model please email support@farmtrx.com or call 1-800-991-5136.*

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 from your sensors 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.



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

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

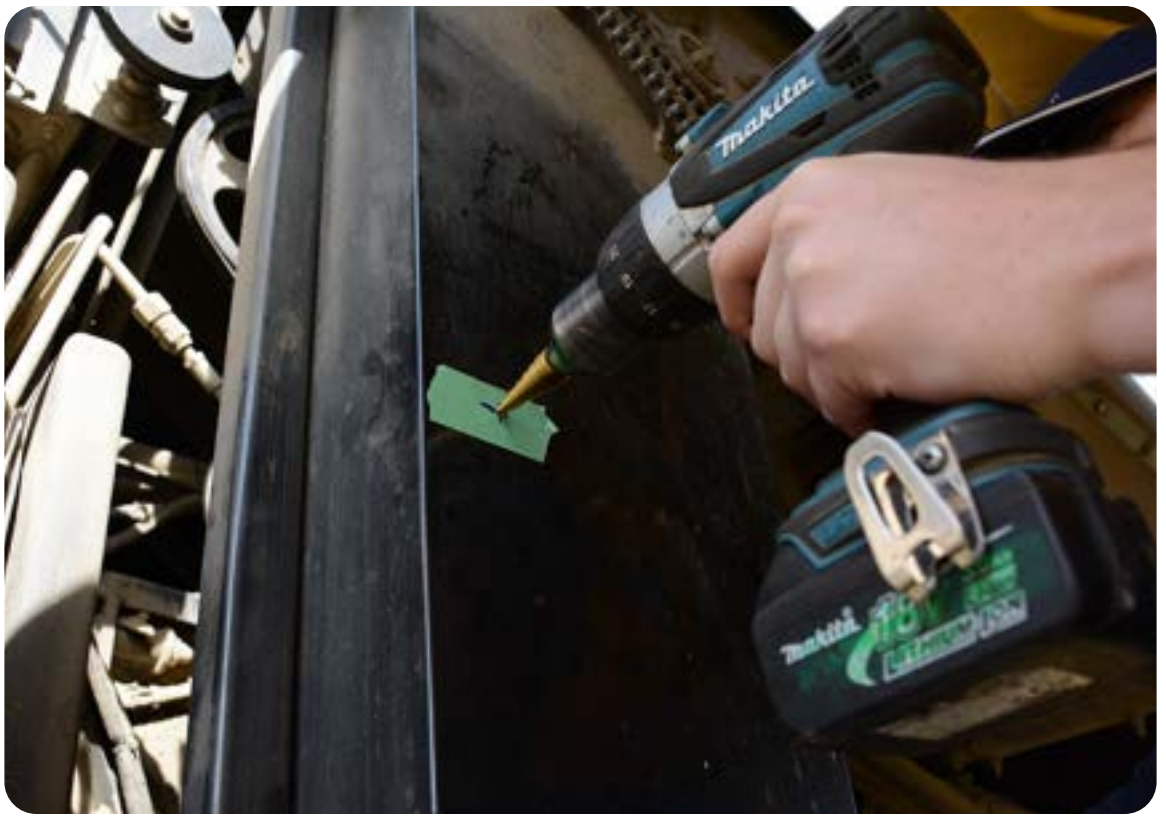
Distance (X) from the back of the clean grain elevator to the center of the drill hole

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

2. With height **(Y)** and distance **(X)** marked, use a center punch to mark the location for drilling the sensor mount pilot holes.

3. At the marked location, drill a pilot hole using a 1/8” drill bit.

4. Transfer to the provided step drill bit and drill an 18 mm or 3/4” hole.



Step drill-bit

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

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.

> **Note:** The Sensor Mounting Plates require a clean surface to properly cure to the elevator wall.

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

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 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. If at any point you are unsure of how to proceed with installation, reach out to our support team at support@farmtrx.com or call 1-800-991-5136.

Components used in this step:

Yield Monitor ECU

20 ft. Primary Wiring Harness

T-Splice Connectors

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 into the Yield Monitor ECU.

2.2 Routing the Wiring Harnesses

1. Once the Yield Monitor 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.

> **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 7-8)**.

1. Returning to the elevator, turn the Drill Guide counterclockwise to remove from the Mounting Plate.

2. Put the Drill Guide onto the 12” (30 cm) drill extension and put into drill. Attach the 1/8” (3 mm) pilot bit.

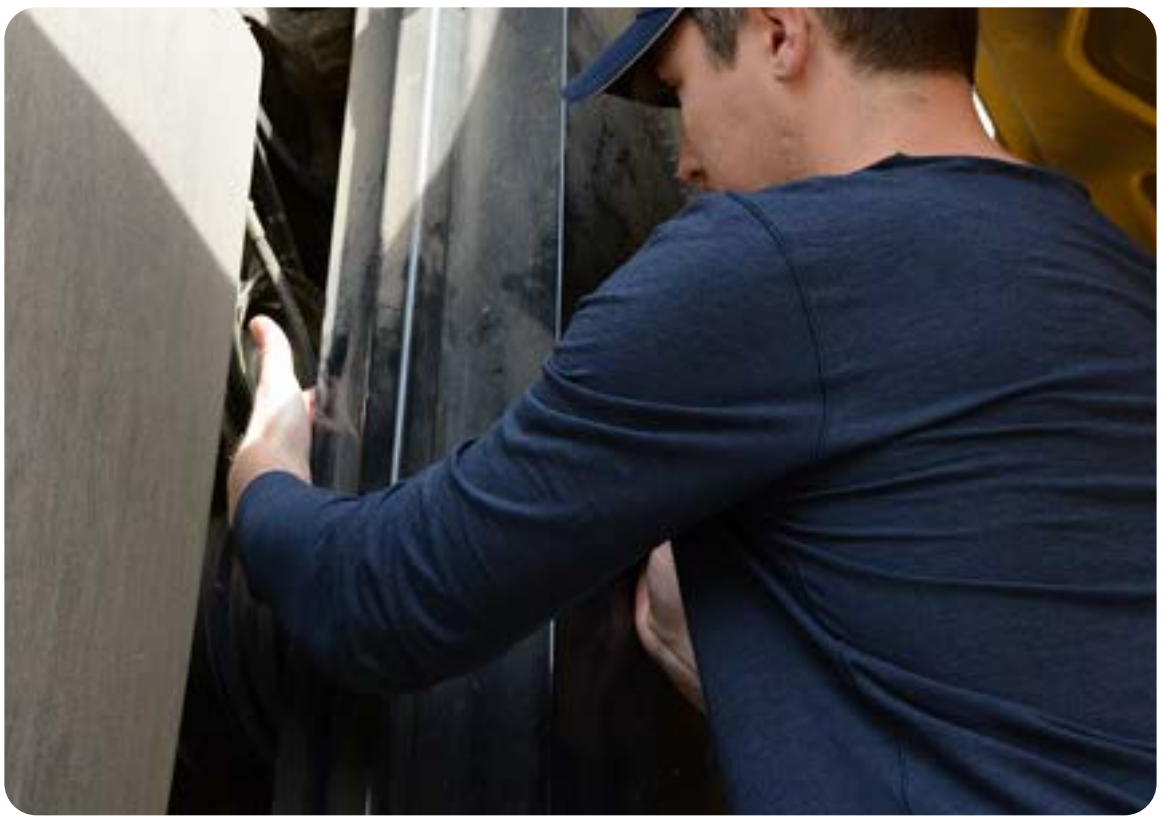
3. Insert the Drill Guide into the Mounting Plate and turn clockwise to secure in place. This will ensure straight alignment of the drill. Proceed to drill a hole into the back wall of the elevator.

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. If necessary, deburr the back hole.

5. 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 and turn clockwise to secure in place. Connect the sensors to the Wiring Harness.

Front of elevator

Back of elevator

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: Using your smartphone or tablet, download and open the FarmTRX Harvest App on the Apple App store or Google Play store. Navigate to the Connection page to search/scan for Bluetooth© devices. A device called “YM:___” should appear under Available Devices. If it does not appear, try pressing the refresh button. If it still does not appear you may need to cycle Bluetooth© on your phone or tablet off and on.
2. Test the optical sensors. With the harvester powered on (the engine does not need to be running for this), go to the clean grain elevator and turn the thresher drive by hand. When the empty paddles pass by the optical sensors, the sensor with the LED lights will blink. If blinking occurs then the optical sensors are powered on and in alignment.

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. Setup of the FarmTRX Harvest App on an Apple iOS or Android device.
2. Register for your FarmTRX Web Application account. If your farm is located in the Americas, register at https://web.farmtrx.app. If your farm is located in Europe, the Middle East or Africa, register at https://eu.farmtrx.app.

FarmTRX™

farmtrx.com
support@farmtrx.com
1-800-991-5136