Auto Guidance Setup

AGRICULTURE

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TRIMBLE RESELLER CONFIDENTIAL

Auto Guidance Setup

Trimble offers assisted and automated steering options to help keep your farming vehicles on line - so you can focus on other farming tasks. With the added benefit of terrain compensation technology, you can operate in difficult terrain conditions while minimizing skips and overlaps and maintaining consistent guess rows.

This document describes how to set up a variety of supported auto guidance systems.

http://agpartners.trimble.com www.trimble.com

Trimble Autosteer Comparison

The following table shows a comparison between the current autosteer offerings:

Feature	EZ-Pilot Pro	Autopilot Motor Drive	Autopilot
License name required	EZ-Pilot Pro	Auto Guidance	Auto Guidance
Max Approach angle	45°	90°	90°
Engage/Disengage Off line Distance	¼ of the implement width	No limit	No limit
Minimum actuation speed*	Minimum: 1 mph constant operation (minimum actuation speed 0.5 mph/1.6 kph)	0.3 kph	**Normal:** 0.4 m/s, 0.9 mph, 1.4 km/hr **Low:** 0.1 m/s, 0.223 mph, 0.36 km/hr **Ultra-low:** 0.02 m/s, 0.044 mph, 0.072 hm/hr
Stay engaged when stopped	15 sec max	No limit	No limit
Reverse operation	15 sec max	No limit	No limit
OnSwath™ (line acquisition)	Supported	Supported	Supported
Continuous reverse operation	No	Yes	Yes
NextSwath™ (End-of-row turns)	No	Yes - license required	Yes - license required

* *Minimum velocity at which the system will command the hydraulic valve or send curvature commands over CAN - based on the **Minimum Valve on Speed** setting.*

Note: Speeds below 300 meters/hour may require a steering potentiometer. Some Autopilot interfaces utilizing a CANbus connection may not allow operation down to this speed. Check your vehicle user guide for minimum speed capabilities.

Configure Precision-IQ Settings for Auto Guidance

The following sections describe how to adjust the various settings within Precision-IQ to use the available auto guidance features:

- Steering and Guidance Settings
- Safety and Alarm Settings
- Auto Guidance Setup
- Controller Setup
- Sensor Setup
- Vehicle Measurement Settings

Steering and Guidance Settings

From the Home screen, tap the **Settings** button. Then on the Settings screen, tap **Steering and Guidance**. Configure the following settings:

Setting	View/Change
Lightbar	Chevron (LED) spacing.
Display Mode	Options are: ● Show Correction ("Chase") ● Show Error ("Pull")
Adjustments	**Nudge Increment:** The increment used to nudge the guidance system with each tap. You can incrementally nudge a pattern in a perpendicular direction relative to the pattern. Nudging a pattern helps adjust for satellite drift. **Implement Draft Increment:** The increment used to nudge the implement to the current guidance line. **Remark Reset with Import:** Remove all re-mark entrees with an import.
Guidance	**End of Row Distance:** Distance for the end of row warning to display. **Vehicle Direction Detection:** Turn on or off
Autoguidance	**Autosteering Lockout:** When lockout is on, the Precision-IQ application does not offer an option to use auto guidance. **Aggressiveness Increment:** The increment used to change aggressiveness.

Safety and Alarm Settings

Precision-IQ provides a safety feature where you can set a timeout for when you want Precision-IQ to automatically disengage an auto steering operation.

To set the timeout option:

1. From the Home screen, tap the **Settings** button. Then tap **Safety and Alarms** to display the Safety and Alarms options.
2. Tap **Autosteering Operator Timeout** and set a time (in minutes). By default, **5.0** minutes is entered.

   The value you enter is the amount of time before Precision-IQ disengages auto guidance and stops applications when there is no user response to a shutdown message.
3. Tap **OK** to save your changes.
4. Tap the Android **Back** button at the bottom of the screen to return to the Home screen.

Auto Guidance Setup

WARNING!

Auto guidance systems cannot avoid obstacles in a field. Make sure you are adequately trained to operate the auto guidance system.

1. On the Home screen, tap the **Vehicle** tile to display the Vehicle screen.
2. From the list of available vehicles, tap the name of the vehicle you want to edit. Then tap the **Edit** button.
3. Tap the Guidance tab at the top of the screen, then tap **Selection**.
4. Complete the following settings:

Setting	Description
Selection	Autopilot or EZ-Pilot Pro
Autopilot Platform	Choose **Autopilot Motor Drive** if a SAM-200 motor is installed onto the steering column. Choose **Hydraulic** if a valve/manifold assembly and hose kit was installed on your machine.
External Guidance Device	Select **NavController II/III** (if attached), otherwise choose NONE.
Vehicle Profile Origin	Choose the source of the vehicle profile: ● **From Vehicle Profiles:** use the factory profile from the display's built-in vehicle database (recommended). ● **Import from NavController:** use the machine profile already existing in the NAV-900, or NavController II or III. ● **Import from USB:** use `*.CFG` or `*.VDB` profile stored on a USB drive (AgData/Profiles folder). If you select to import a profile, tap Retrieve Vehicle Profile to import the vehicle profile from either the NavController or USB device. **CAUTION!** If you select a Vehicle Profile that is not suitable for your machine, you may experience degraded system performance.

5. Continue to Controller Setup.

Controller Setup

To set up the controller, you must indicate the position/orientation of the controller as it is currently installed in the vehicle.

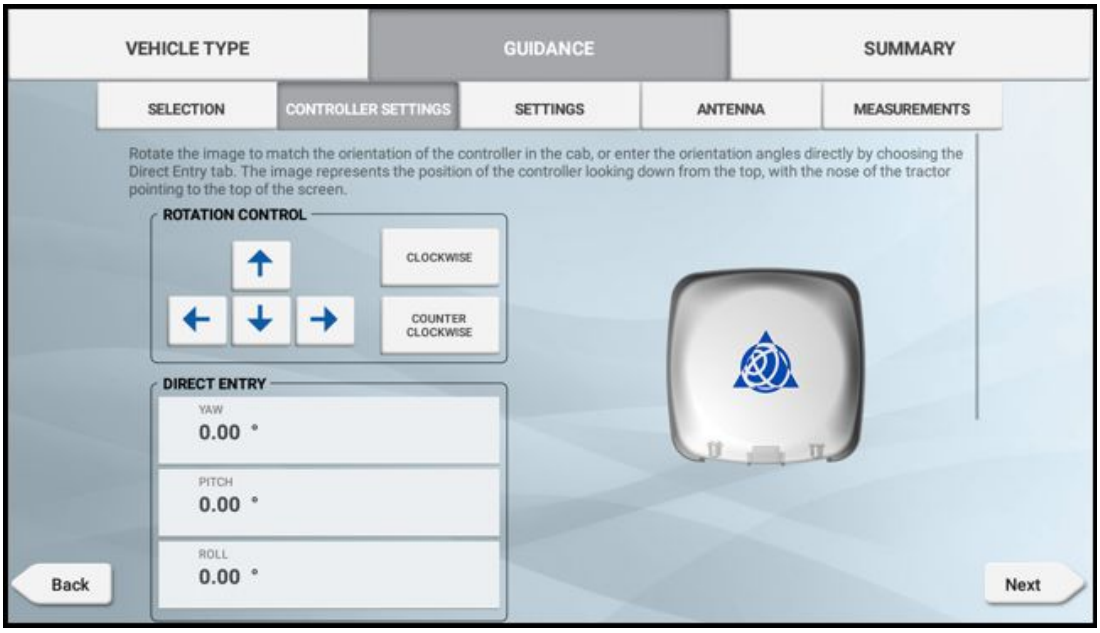
For example, if the controller is positioned with the connectors of the controller facing to the left side of your vehicle, you indicate this in Precision-IQ.

The CONTROLLER SETTINGS section of the vehicle setup panel shows an image of the controller as though you are looking down on the vehicle from above, with the front of the vehicle at the top of the screen.

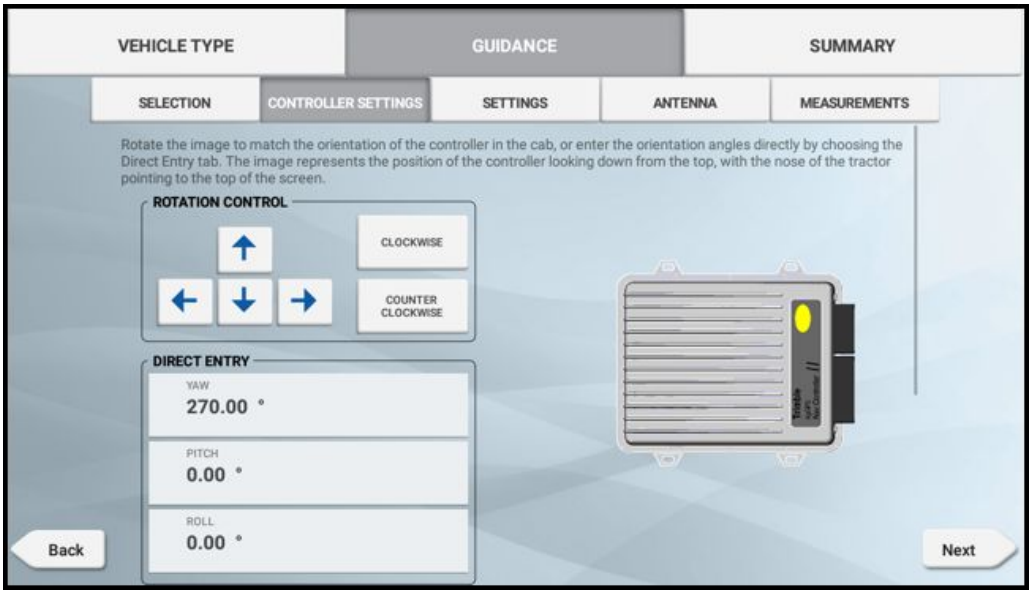
1. On the Home screen, tap the **Vehicle** tile to display the Vehicle screen.
2. From the list of available vehicles, tap the name of the vehicle you want to edit. Then tap the **Edit** button.
3. Tap **Guidance** at the top of the screen, then tap Controller Settings.

> **Note:** The onscreen picture changes based on the autosteer type selected.

NAV-900 guidance controller:

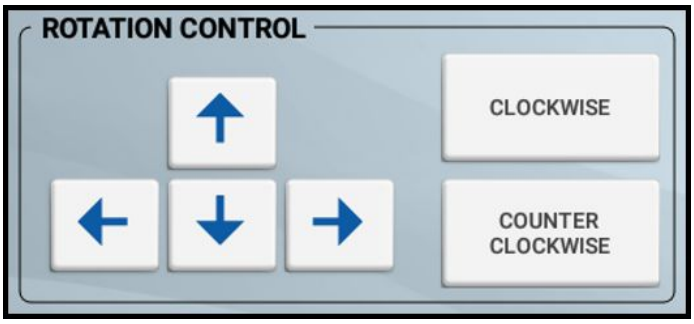


NavController II or III:



4. Rotate the onscreen controller to match the position of the actual controller in the vehicle as you are looking down from the top, with the nose of the tractor point to the top of the screen.

   Tap the arrow buttons to move the on-screen navigation controller clockwise or counterclockwise:



5. Optionally, you can directly enter the degrees of the position by tapping **Yaw**, **Pitch** and **Roll**. By default, the values for the NAV-900 navigation controller module is **0°**. Enter a value between **0** and **360** to manually set the position. You can use an angle finder tool for precise measurement.
6. When the controller position on the screen matches the controller installed in the vehicle, continue to Sensor Setup.

Sensor Setup

1. On the Home screen, tap the **Vehicle** tile to display the Vehicle screen.
2. From the list of available vehicles, tap the name of the vehicle you want to edit. Then tap the **Edit** button.
3. Tap Guidance at the top of the screen, then tap **Settings**. Complete the setup:

> **Note:** Not all sensor options will be available for all vehicles.

Setting	Description
Steering Sensor	Select the type of wheel angle sensor installed on the vehicle: ● Potentiometer (for hydraulic Autopilot) ● AutoSense™ (for hydraulic Autopilot) ● None (for EZ-Pilot Pro or Autopilot Motor Drive)
AutoSense Location	Select the location of the AutoSense device: ● Left Wheel ● Right Wheel
AutoSense Orientation	Indicate the direction the AutoSense label is facing: ● Label Up ● Label Down
Valve On Speed	Select valve on speed. For vehicles operating at very slow speeds, select **Low** or **Ultra Low**. ● Normal: 0.89 mph (0.14 kph) ● Low: 0.2 mph (0.32 kph) ● Ultra Low: 0.05 mph (0.08 kph) ● EZ-Pilot Pro: minimum 0.5 mph (0.8 kph) ● John Deere CAN: minimum 0.9 mph (1.4 kph)

4. Continue to Vehicle Measurement Settings.

Vehicle Measurement Settings

Note: ***Do not*** change vehicle measurements unless they are not correct.

CAUTION!

The dimensions of the vehicle itself and antenna location are critical for autosteer accuracy.

1. Before you take measurements, park the vehicle on level ground. Make sure the vehicle is straight, with the centerline of the body parallel to the wheels.
2. On the Home screen, tap the **Vehicle** tile to display the Vehicle screen.
3. From the list of available vehicles, tap the name of the vehicle you want to edit. Then tap the **Edit** button.
4. Tap **GUIDANCE** at the top of the screen, then tap **Antenna**. Based on your selections up to this point, some measurements will be pre-filled. Set a value for the following antenna measurements:
    a. **Antenna height:** The distance from the base of the antenna to the ground.
    b. **Antenna left/right offset:** The distance from the center of the antenna to the centerline of the vehicle.
    c. **Antenna to rear axle:** The distance the antenna is positioned in front of or behind the fixed axle. If the antenna is forward of the axle, then the value should be a ***positive*** number. If the antenna is behind the axle, then the value should be a ***negative*** number (for example, **-1.0 ft 3.0 in**).

    Note: For Self Propelled Sprayers, enter the axle to boom/mast offset. This is used as the offset point of the implement.

5. Tap **MEASUREMENTS** (or **Next**). Based on your selections up to this point, some dimensions will be pre-filled. Confirm all pre-filled measurements and enter the others.

    Note: A yellow warning triangle indicates a non-zero number is required.

6. Tap **Next**.
7. Tap the **Save** icon to store the newly created vehicle with auto guidance setup.

For More Information

Contact your local Trimble Regional Sales Manager.