

Quick Start Guide

AGRICULTURE

June 2022

TRIMBLE RESELLER CONFIDENTIAL

IMD-900 IMU: Set Up as AutoSense Steering Sensor

The IMD-900 inertial measurement device (IMU) can be configured as a gyroscopic steering sensor for Autopilot™. Mounting of the device is very similar to the Trimble® AutoSense™ device. This document provides instructions for how to set up the IMD-900 IMU as an AutoSense steering sensor:

- **Precision-IQ™:** GFX-750™ display system, TMX-2050™ display
- **FmX® Plus:** TMX-2050™ display
- **Autopilot ToolBox II:** CFX-750 display, FmX integrated display

IMD-900 Setup Requirements	
Component	Version
NavController III	v13.75 or higher
TMX-2050™ firmware	v5.61 or higher
GFX-750 firmware	v1.61 or higher
Autopilot ToolBox	v4.50 or higher

IMD-900 IMU Cabling

The IMD-900 cabling, although similar using the 4-pin DTM, is no longer an analog signal into the NavController III, but rather communication is accomplished over CAN. With this configuration, a bus must be developed between the NavController III and the IMD-900 IMU that has communications (CAN HI and LO) and power with terminators on both ends of the branch.

The 57407-05 kit has all the parts necessary to complete the setup by using a 12-pin connector to plug into P12 and the terminator next to it. Additionally, the IMD-900 adapter cable and the associated terminator are on the other side:

IMD-900 Cabling Kit
(Part Number 57407-05)



IMD-900 Cabling Kit
Connected to NavController III



<http://agpartners.trimble.com>

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The device is mounted on the machine in the same fashion as AutoSense. This example shows a setup that has both AutoSense and IMD-900 IMU as the steering sensor:

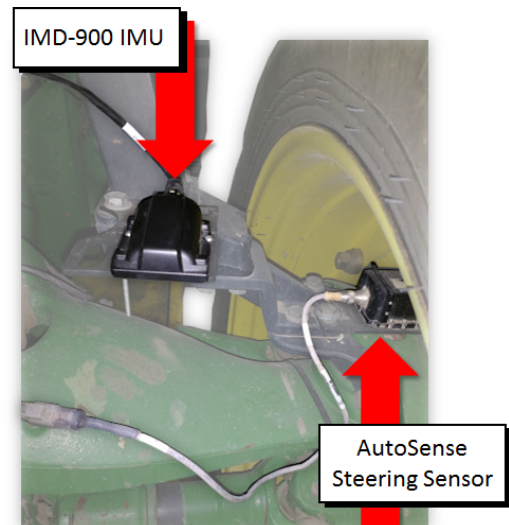
Caution!



Do not plug Autosense Steering Sensor cabling into an IMD-900 IMU.

Do not plug IMD-900 IMU cabling into an Autosense Steering Sensor.

The cables are **not** interchangeable.



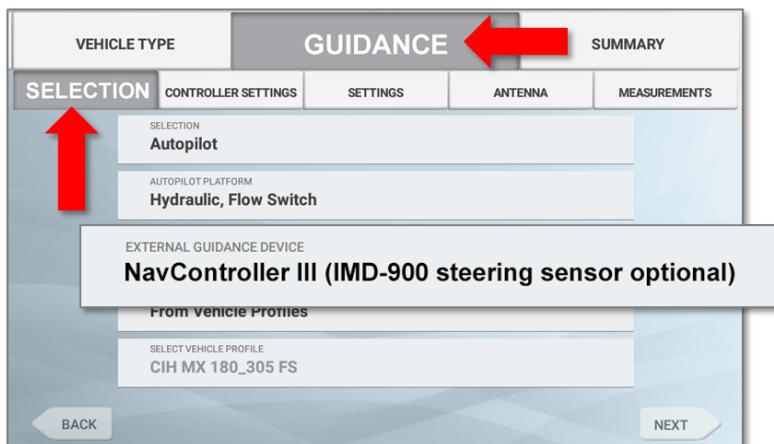
Follow the instructions specific to the vehicle being installed on:

- Set Up an IMD-900 using Precision-IQ
- Set Up an IMD-900 using FmX Plus
- Set Up an IMD-900 using Autopilot Toolbox II

Set Up an IMD-900 using Precision-IQ

Supported Displays: GFX-750 Display System, TMX-2050 Display

1. Verify that the display has the following version of Precision-IQ:
 - TMX-2050: version 5.61 or higher.
 - GFX-750: version 1.61 or higher.
2. On the Precision-IQ Home screen, tap the **Vehicle** tile. Then select a vehicle from the list of available vehicles and tap **Edit**. Tap **Guidance** and then **Selection**.
3. In the External Guidance Device field, verify that the proper selection is made depending on the system being installed/updated - the example below has NavController III (IMD-900 Steering Sensor Optional) selected for an GFX-750/NAV-900 system using an external NavController III with an IMD-900 as a steering sensor.



Options vary between GFX-750 display systems and TMX-2050 display systems due to the NAV-900 with the GFX-750.

For a **GFX-750 display system** with Precision-IQ:

- **IMD-900 Cab Roll compensation:** Use this when an IMD-900 is going to be used for cab roll compensation with the NAV-900 internal IMU
- **IMD-900 IMU Replacement:** This option is used when an IMD-900 is to be used as the primary IMU instead of the NAV-900 internal IMU
- **IMD-900 IMU Replacement with IMD-900 Cab Roll Compensation:** This option is used when both the internal IMU in the NAV-900 will be replaced by an external IMD-900 and an additional IMD-900 will be used for cab roll compensation
- **NavController III (IMD-900 steering sensor optional):** This selection is used when an external NavController III is being connected to the NAV-900. The guidance controls and IMU in the external NavController will be used in place of the internal NAV-900 controls and IMU.

Note: An IMD-900 can optionally be connected to the external NavController III and be used as a steering angle sensor.

- **NavController III with IMD-900 Cab Roll Compensation:** This selection is used when an external NavController III is being connected to the NAV-900. The guidance controls and IMU in the external NavController will be used in place of the internal NAV-900 controls and IMU. Additionally, an external IMD-900 is also connected to the external NavController to be used for cab roll compensation.

Note: A second IMD-900 can optionally be connected to the external NavController III and be used as a steering angle sensor.

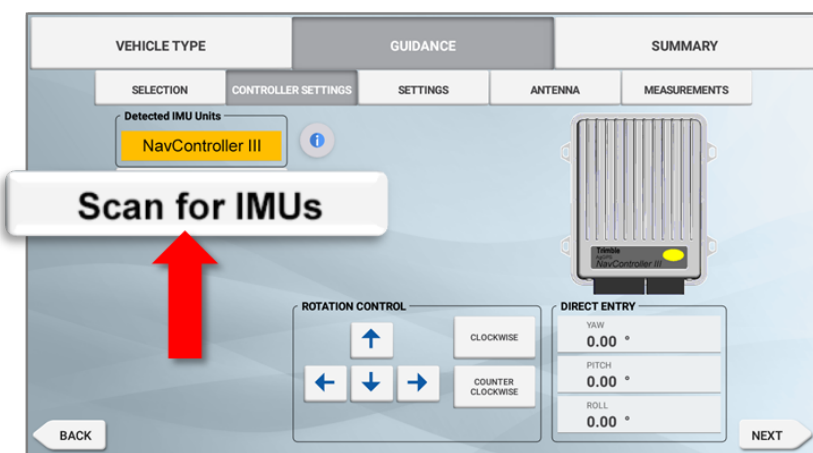
- **None:** This selection uses the internal controls and IMU from the NAV-900

For a **TMX-2050 display** with Precision-IQ:

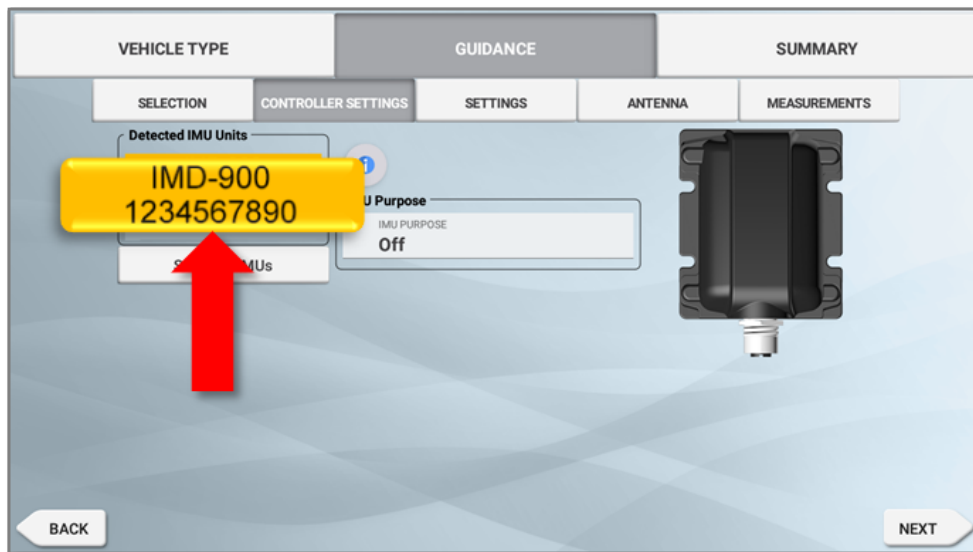
- **None:** NavController III internal IMU used as primary IMU. An IMD-900 can optionally be connected to the external NavController and be used as a steering angle sensor
- **IMD-900 Cab Roll Compensation:** Use this when an IMD-900 is going to be used for cab roll compensation in association with the primary IMU in the NavController III.

Note: A second IMD-900 can optionally be connected to the external NavController III and be used as a steering angle sensor.

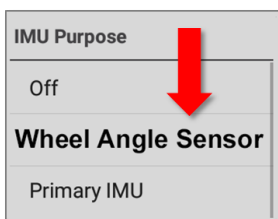
4. Once the proper selection is made, tap **Next**.
5. On the Controller settings page, tap the **Scan for IMUs** button:



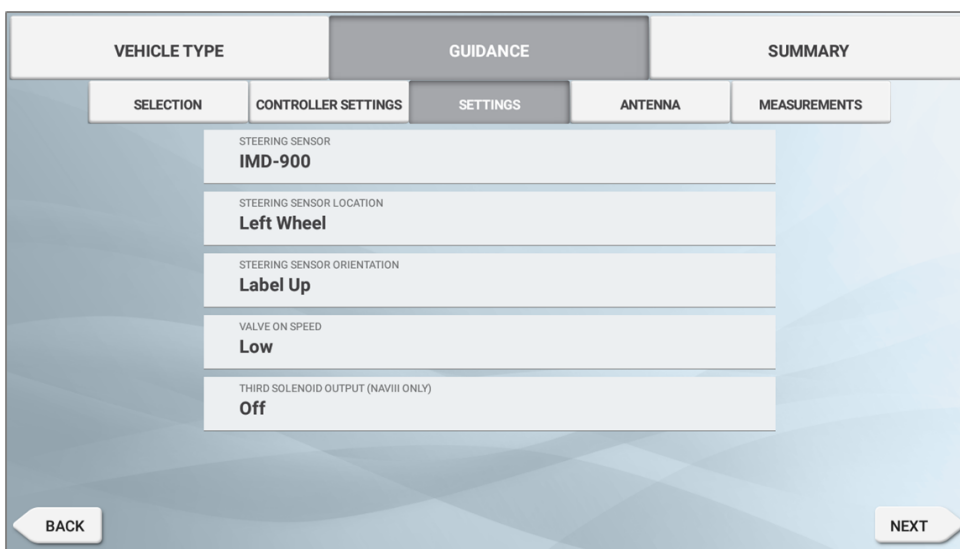
6. From the list of Detected IMU Units, select the serial number of the IMD-900 that is being used as a steering sensor:



7. Tap the **IMU Purpose** field and select **Wheel Angle Sensor** from the pop-up window:

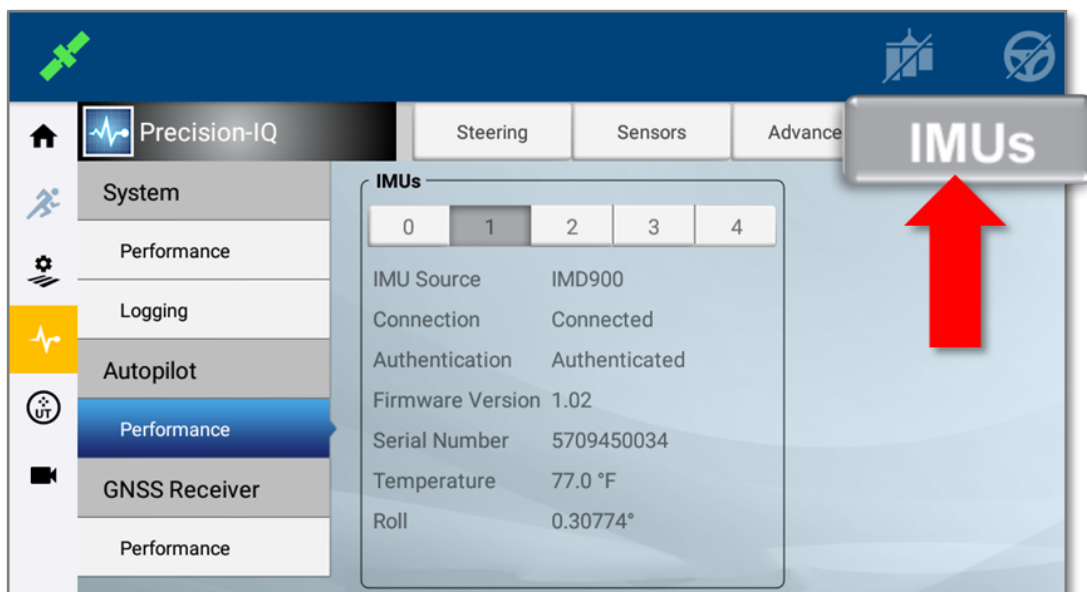


8. Tap **Next**.
9. On the Guidance Settings screen, verify that the normal steering sensor settings are correct for the vehicle:



Note: The label containing the serial number is on the opposite side of the IMD-900 IMU vs Autosense.

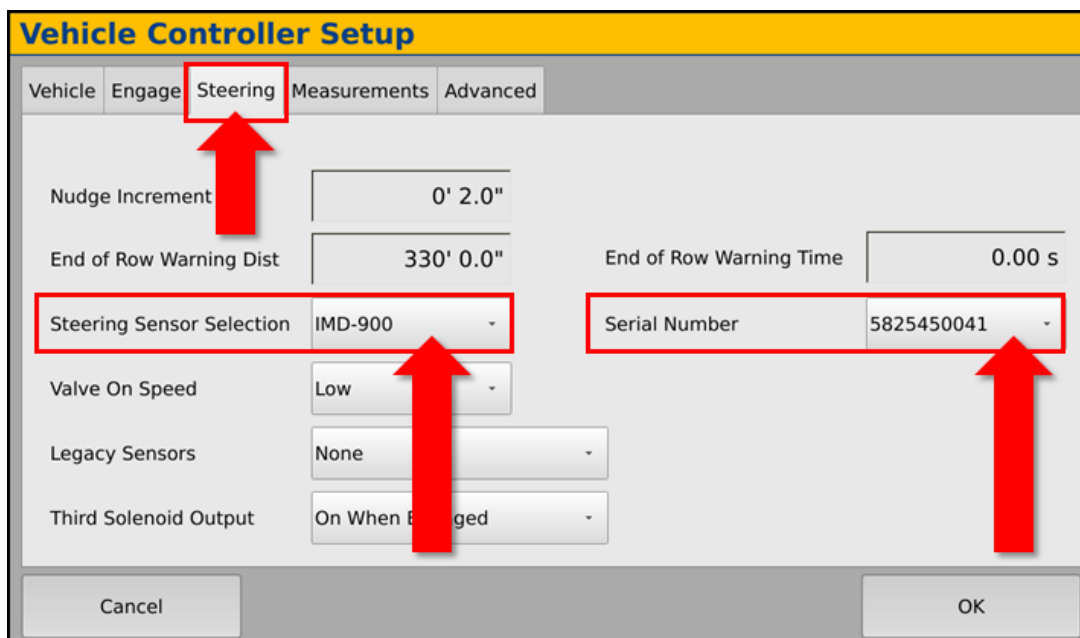
When the IMD-900 is used as a steering sensor, an IMD-900 tab will show in the Diagnostics screen. Selecting the desired IMU will show its connection status:



Set Up an IMD-900 using FmX Plus

Supported Displays: TMX-2050 Display

1. Verify the following firmware versions:
 - TMX-2050: v5.61 or higher.
 - NavController III: v13.75 or higher
2. On the Vehicle Controller Setup screen, tap **Steering**. Then change the Steering Sensor Selection to **IMD-900**. Verify that the serial number of the IMD-900 is shown at the right:



If no serial number is displayed, then check cabling and NavController III firmware version.

3. Tap **OK**.

4. Under the Autopilot Diagnostics page, a tab for IMU data will populate. The Pitch and Roll angles will be **N/A** as these are not applicable for steering sensor implementations.

Vehicle Controller Diagnostics - Guidance

Guidance | Steering | Details | CAN Diagnostics | Status | Wheel Mode Status | **IMD-900** | Advanced

Connection State: Connected

Authentication: Authenticated

Firmware Version: 1.02

Serial Number: 5825450041

Temperature: 73.40 °F

Roll Angle: n/a

Pitch Angle: n/a

View Fault Log | View Warning | [Warning Icon] | OK

5. Just like AutoSense, the setup for the IMD-900 is in Autopilot calibration:

Vehicle Controller Calibration

Select Model: JDeere 8000W

Controller Orientation

Manual Override

AutoSense/IMD-900 Calibration

Automated Steering Deadzone

Steering Gain

Roll/Antenna Compensation

Line Acquisition

OK

6. Set the proper wheel location and orientation as per legacy AutoSense setup:

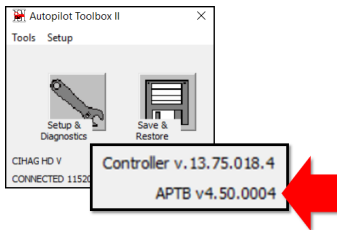
Notes:

- Since the IMD-900 is a CAN device as opposed to an analog signal, a pseudo-voltage is displayed as opposed to the actual sensor voltage in the diagnostics page.
- When sitting still, the voltage value will read 0, and the steering angle will drift to the maximum angle (to one side – just like the current Autosense does). Upon movement, the voltage will fluctuate based on rotations felt.

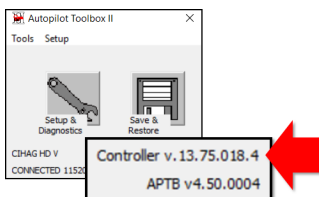
Set Up an IMD-900 using Autopilot Toolbox II

Supported Displays: CFC-750, FmX Integrated Display

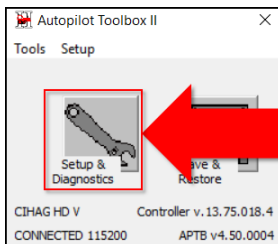
1. Verify that the computer has **version 4.50** or higher of AutoPilot Toolbox II installed:



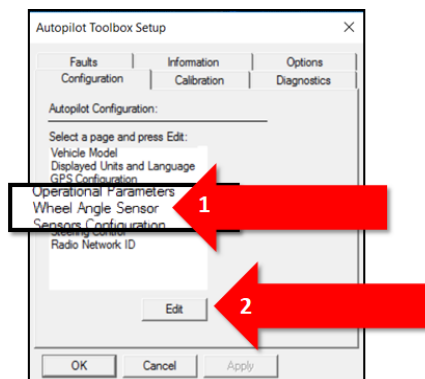
2. Using a serial-to-USB cable, connect to the serial port on the 54602 cable.
3. Once the computer is connected to the NavController III, verify that the NavController III has **version 13.75** or higher of firmware installed:



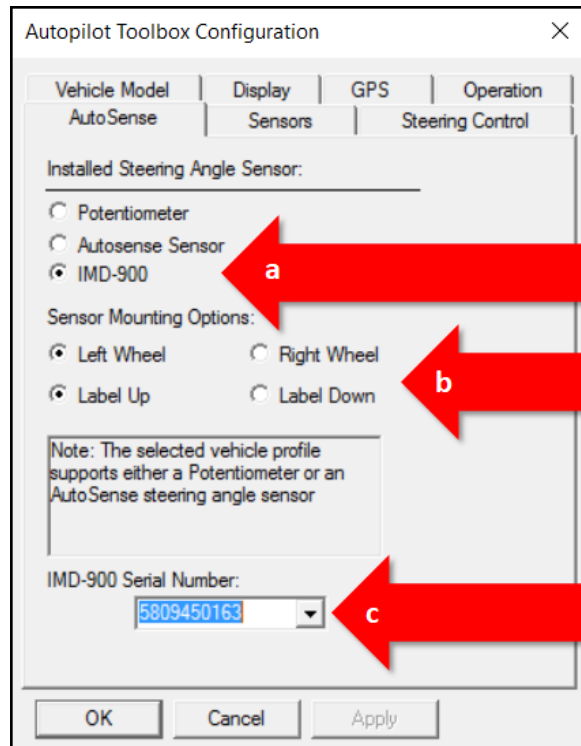
4. Click **Setup & Diagnostics**:



5. On the Autopilot Toolbox setup pop-up, under the **Configuration** tab, select **Wheel Angle Sensor**, then click **Edit**:



6. Click the **AutoSense** tab, then update the following configurations:
 - a. In the Installed Steering Angle Sensor section, select the **IMD-900** option.
 - b. In the Sensor Mounting Options, select the correct orientation of the IMD-900.
The label on the IMD-900 is on the opposite side of the sensor from the old AutoSense sensor.
 - c. In the IMD-900 Serial Number section, click the drop-down arrow and select the correct serial number for the IMD-900.



For More Information

Contact your local Trimble Regional Sales Manager.

Note: Always check with the Trimble Store or contact your local Trimble Regional Sales Manager for the most current pricing and part number details.

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