

# APMD and EZ-Pilot Pro

AGRICULTURE

February 2019

TRIMBLE RESELLER CONFIDENTIAL

## Autopilot Motor Drive (APMD) and EZ-Pilot Pro

**Note:** This feature is optional and requires a license.

Combining the accuracy of the NAV-900 guidance controller with the ease of installation of SAM-200 motor brings high levels of performance.

Contents			
<a href="#">Benefits</a>	<a href="#">Dependencies</a>	<a href="#">System Layout (EZ-Pilot Pro or Autopilot Motor Drive)</a>	<a href="#">Autopilot Motor Drive and EZ-Pilot Pro Setup</a>

### Benefits

- Sub-inch accuracy inertials from the NAV-900 guidance controller.
- Slow speed and reverse operation for a limited time.
- Eliminates the requirement for a steering angle sensor.
- Autopilot performance without the requirement for hose or hydraulic manifold installation.
- Automatic steering for vehicles not factory equipped with auto guidance.

### Dependencies

EZ-Pilot Pro auto guidance requires an **EZ-Pilot Pro** license installed into the NAV-900 guidance controller and managed through the display.

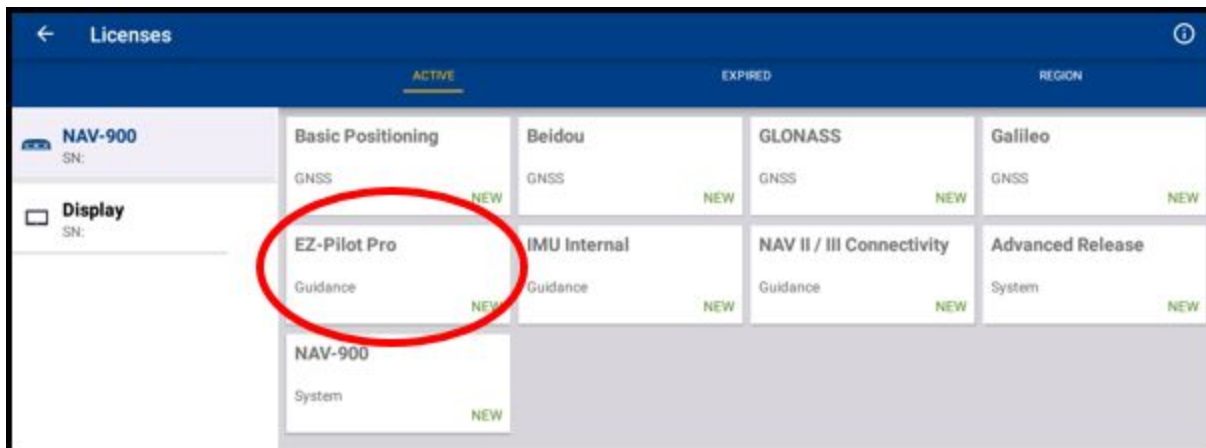
**Note:** EZ-Pilot Pro is only compatible with the GFX-750/XCN-1050 display.

The license is found in App Central:

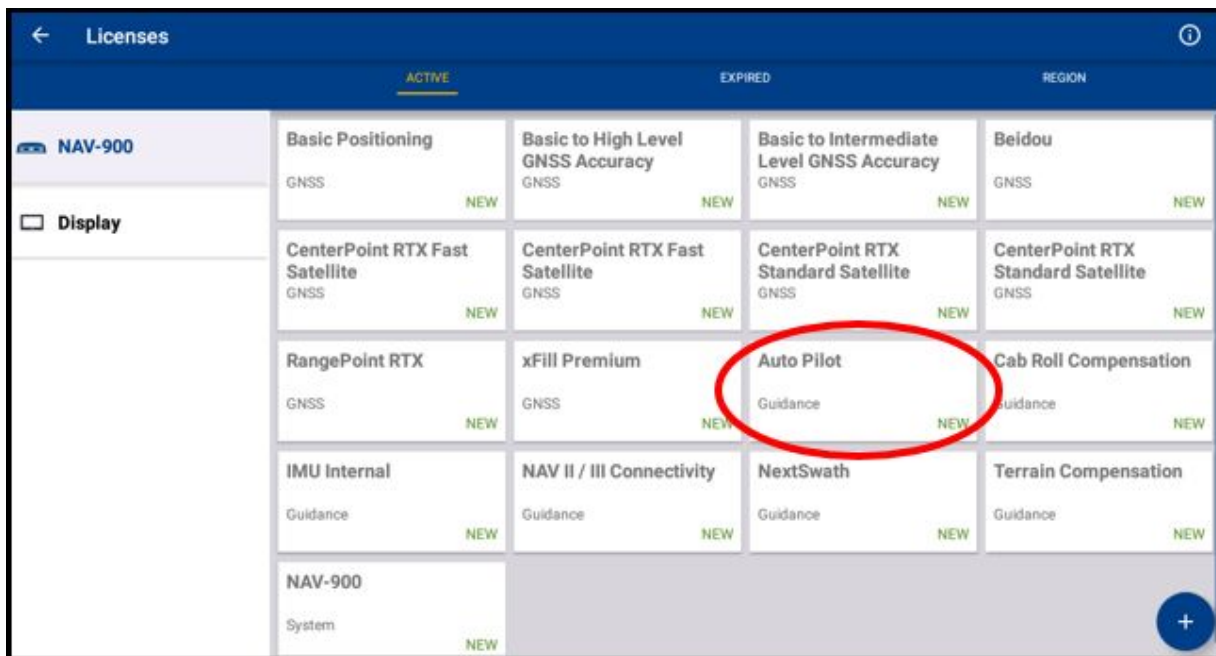
<http://agpartners.trimble.com>

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

© 2019, Trimble Inc. All rights reserved. Trimble, the Globe & Triangle logo, CenterPoint, EZ-Pilot, and Autopilot are trademarks of Trimble Inc., registered in the United States and in other countries. GFX-750 and Precision-IQ are trademarks of Trimble Inc. All other trademarks are the property of their respective owners.

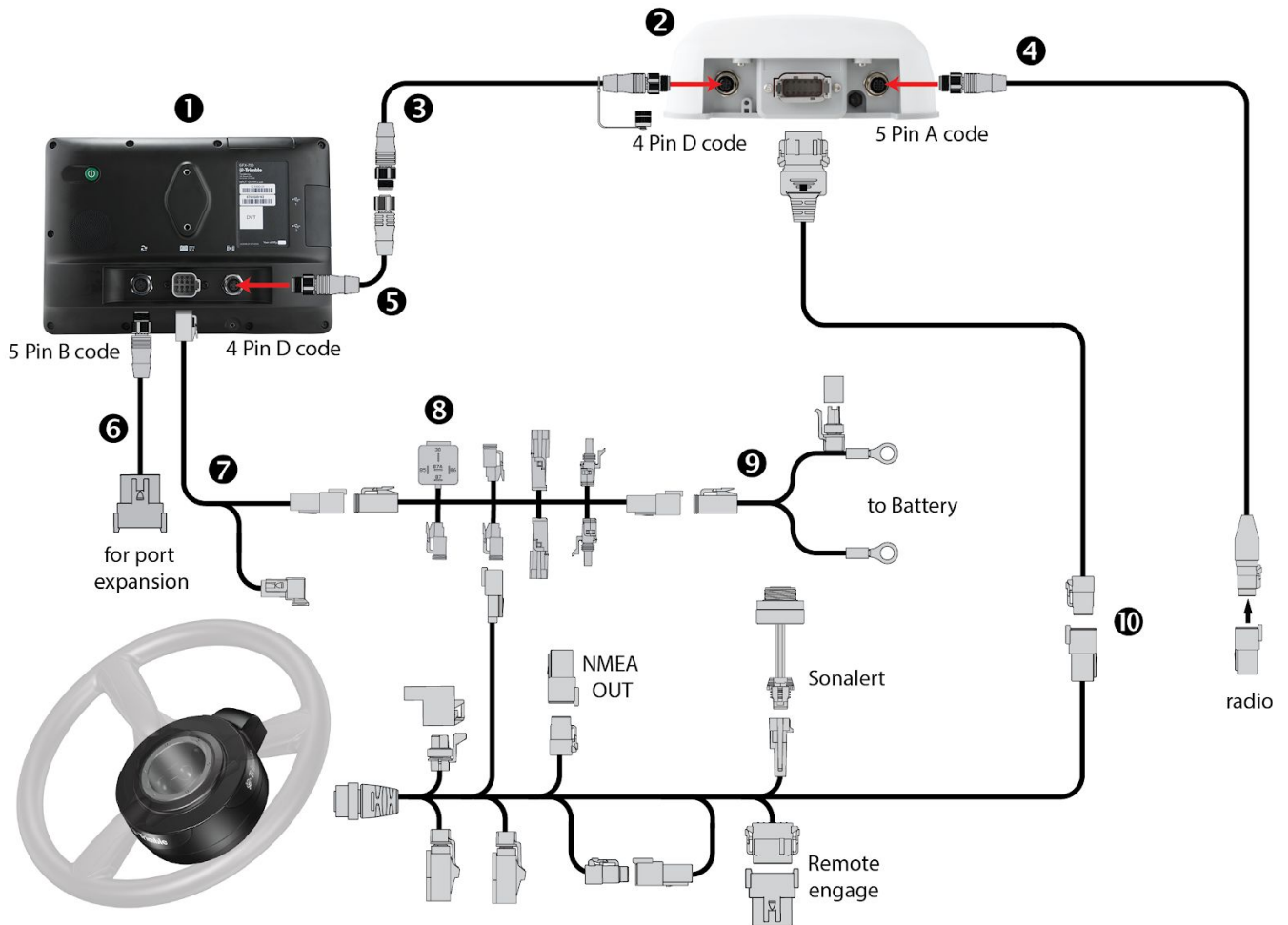


Autopilot Motor Drive requires an **AUTOPILOT** license installed into the NAV-900 guidance controller and is managed through the display. The license is found in App Central:



**Note:** The EZ Pilot Pro and Autopilot licenses cannot be present on the NAV-900 at the same time. You can only do one or the other.

## System Layout (EZ-Pilot Pro or Autopilot Motor Drive)



Item	Description	Part Number
1	GFX-750 display, with Precision-IQ Application	121000-XX
2	NAV-900 Guidance Controller	108993-XX
3	Cable Assy, GFX-750/XCN-1050 to NAV-900, Power/Ethernet (BRR), 5 m	110540
4	Cable Assy, NAV-900 to in-cab RTK Radio, DTM06, 4.5 m	110544
5	Cable Assy, GFX-750/XCN-1050 to NAV-900, Power/Ethernet (BRR) Extension, 2.5 m. Optional extension for large vehicles	112082
6	Cable Assy, GFX-750/XCN-1050, Expansion Port Basic, RS-232, Dig I/O, 2.5 m	110545
7	Cable Assy, GFX-750, Power to display, CAN, 2.5 m	110551

8	Cable Assy, GFX-750/CFX-750/FM-750/XCN-1050/FmX/FM-1000 Power with Relay and Switch (Acc)	67259
9	Cable Assy, GFX-750/CFX-750/FM-750/XCN-1050/FmX/FM-1000 Basic Power, 4 m	67258
10	Cable Assy, NAV-900 to SAM-200, Motor Drive	110549

## Autopilot Motor Drive and EZ-Pilot Pro Setup

1. On the Precision-IQ Home screen, tap the **Vehicle** tile to display the Vehicle screen.
2. On the Vehicle screen, tap the **New** button. Then tap the machine type you want to configure.

For Autopilot Motor Drive and EZ-Pilot Pro, the available supported vehicle types are:

- Harvester
  - Tractor - 2WD/4WD-MFWD
  - Tractor - Articulated 4WD
3. Tap **Next** to continue with the vehicle setup.
  4. Tap the **Make**, **Series**, **Model**, and **Option** fields. Enter information about your machine:

Field	Description
<b>Make</b>	Vehicle manufacturer
<b>Series</b>	Vehicle series (when applicable)
<b>Model</b>	Vehicle model number
<b>Option</b>	Vehicle options factory installed from the manufacture. (Examples: Super Steer, ILS, ISO CAN Ready, AccuGuide Ready)
<b>Vehicle Name</b>	The name of the vehicle is pre-filled from the options you selected for Make, Series, and Model. You can change this name.

5. Tap the **Selection** field. Setup of Selection, Autopilot Platform, and External Guidance Device (if applicable) is based on the autosteer system installed:
  - EZ-Pilot Pro.
  - Autopilot Motor Drive + NAV-900 guidance controller.
  - Autopilot Motor Drive + NavController III + NAV-900 antenna.

For example:

SELECTION	<b>Autopilot</b>
AUTOPILOT PLATFORM	<b>Autopilot Motor Drive</b>
EXTERNAL GUIDANCE DEVICE	<b>NavController II/III</b>
VEHICLE PROFILE ORIGIN	<b>From Vehicle Profiles</b>
SELECT VEHICLE PROFILE	<b>CIH Puma 115_160 APMD</b>

**Note:** The display contains a database of Trimble-supported platforms for Autopilot Motor Drive and EZ-Pilot Pro.

If the Selection does not list Autopilot Motor Drive or EZ-Pilot Pro, then there are two possibilities:

- Your display is missing a license to enable Autopilot Motor Drive or EZ-Pilot Pro. Check the installed NAV-900 licenses shown in **App Central** for your display. If Autopilot Motor Drive or EZ-Pilot Pro licenses are not shown, contact your Trimble dealer with your NAV-900 serial number. The license is available for purchase.
  - The selected vehicle chosen for Make/Series/Model/Option does not support Autopilot Motor Drive or EZ-Pilot Pro. Tap **Back** and choose a different name for Make/Series/Model/Option. Pick a similar sized vehicle compared to your actual machine. Remember, the vehicle name can be changed.
6. Tap **Next** to continue.
  7. Set the controller mounting orientation. The on-screen picture changes based on autosteer type selected:
    - EZ-Pilot Pro or Autopilot Motor Drive + NAV-900 guidance controller:

VEHICLE TYPE	GUIDANCE		SUMMARY	
SELECTION	CONTROLLER SETTINGS	SETTINGS	ANTENNA	MEASUREMENTS

Rotate the image to match the orientation of the controller in the cab, or enter the orientation angles directly by choosing the Direct Entry tab. The image represents the position of the controller looking down from the top, with the nose of the tractor pointing to the top of the screen.

**ROTATION CONTROL**

↑

← ↓ →

CLOCKWISE

COUNTER CLOCKWISE

**DIRECT ENTRY**

YAW  
0.00 °

PITCH  
0.00 °

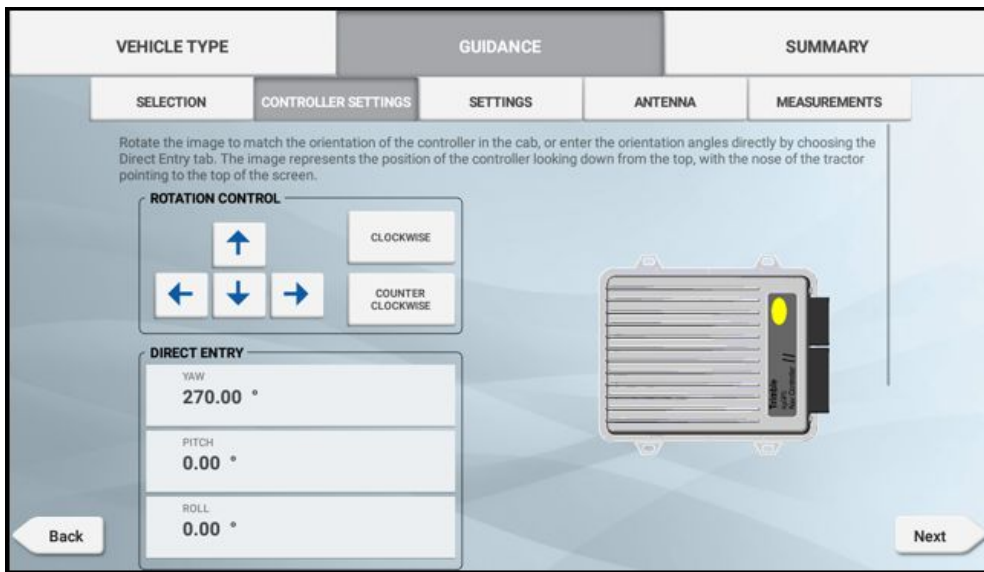
ROLL  
0.00 °



Back

Next

- Autopilot Motor Drive + NavIII controller + NAV-900 antenna:



8. Tap **Next** to continue.
9. The Steering Sensor cannot be changed.

**Note:** The SAM-200 motor has a built-in sensor that measures steering angle.

Tap **Next** to continue.

10. Enter antenna location dimensions on machine. Make certain the values are correct.

Tap **Next** to continue.

11. Enter all measurements of the machine. Make certain the values are correct.

**Note:** A yellow warning triangle indicates the dimension is required, you cannot proceed to the next setup until the value is entered.

12. Tap **Save** to save the new machine configuration and return to the Vehicle screen.
13. Tap the new machine name listed and tap the **Select Vehicle** button to select it.
14. From the list of available vehicles, tap the name of the vehicle you want to edit. Then tap the **Calibrate** button.
15. Run Auto Cal calibration as described in Enable Auto Cal or Auto Cal. Return to this step when completed.

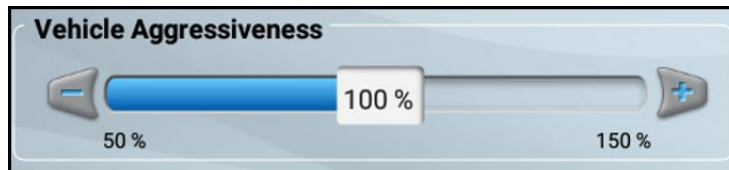
**Note:** Only attempt this calibration on a dry field surface. Do not attempt this calibration in a field with snow, mud, frost, or rain.

16. Calibrate Steering Proportional Gain.

**Note:** The process for EZ-Pilot Pro and Autopilot Motor Drive is different than the Autopilot hydraulic installations.

- a. From the Home screen, tap the **Run** button to enter the Run screen.
- b. Create a new, straight guidance line.

- c. In the activity bar, tap the **Diagnostics** icon to go to the Diagnostics screen.
- d. Find AUTOPILOT or EZ-PILOT PRO on the left side and tap **Performance**. Tap **Steering** at the top of the screen.
- e. Tap the **Vehicle Aggressiveness** slider. Set value to **100%**.



- f. Watch the cross track error at top of screen. Note the largest value seen. Drive a normal field speed.
- g. Tap the **Steering Proportional Gain** slider at bottom of screen. Move the percentage slider to the left or right. Tap the plus (+) or minus (-) buttons:



- h. Drive forward, re-engage auto-steering, and watch the cross-track error at the top of the screen:
  - If the maximum value observed is larger, then **decrease** the p-gain.
  - If the maximum value is getting smaller, then **increase** p-gain.

**Note:** There is limit to improving steering accuracy using p-gain. You can make steering accuracy worse by using a value that is too high or too low for your machine. Typical range of values for Autopilot Motor Drive or EZ-Pilot Pro is **12-19**. If you notice the motor jerking the steering wheel, decrease the p-gain value. Only attempt this calibration on a dry field surface. Do not attempt this calibration in a field with snow, mud, or frost.

17. Calibrate Roll Correction as described in Roll Correction. Return to this step when completed.
18. Adjust Line Acquisition as described in Line Acquisition.

**Note:** Autopilot Motor Drive and EZ-Pilot Pro use only OnSwath line acquisition.

## For More Information

Contact your local Trimble Regional Sales Manager.