CNHi AG-392 Receiver

USER GUIDE

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Trimble Agriculture
Easier Farming with Precision

Legal Notices

Agriculture Business Area

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AG-392 Receiver Overview

- Introduction
- GNSS and ProPoint Support
- Supported Correction Services
- Basic System Diagram
- Components and Accessories for Mounting the AG-392 Receiver
- AG-820 Radio Connection
- RV55 Modem Connection
- CNHi Factory Modem Connection

Introduction

This document describes details about AG-392 GNSS receiver and how it is used with the CNHi display. The AG-392 is a GNSS receiver with an integrated Inertial Measurement Unit (IMU) and auto-guidance controller. In some CNHi applications, the IMU and auto-guidance controller is not being used, and only the GNSS receiver is used.

- When an AG-392 is connected to an external NavController III guidance controller, it will use the NavController III's IMU.
- When an AG-392 is connected to a SAM-200 electric steering motor with a CNHi display, it will use the internal IMU of the AG-392.



GNSS and ProPoint Support

GNSS (Global Navigation Satellite System) is a satellite system that is used to pinpoint the geographic location of a user's receiver anywhere in the world. The AG-392 receiver will connect to the factory CNHi system to provide access to all available GNSS constellations.

GNSS satellites are in continuous motion as they orbit the earth twice per day in a repeated pattern. Satellites transmit signals that the GNSS receiver translates to compute its position.

By default, the ProPoint™ GNSS engine is included with the AG-392 receiver. ProPoint is designed to specifically reduce drop outs and position jumps, improve convergence/reconvergence times when using Trimble RTX, and perform better under trees, near buildings, and in harsh environments. ProPoint supports GPS, GLONASS, Galileo, QZSS and BeiDou satellite constellations providing improved positioning, especially along treelines, and more reliable uptime for continuous guidance availability.

ProPoint GNSS technology is designed to incorporate any GNSS signals available today and in the future. This allows for flexible signal management, which helps mitigate the effects of signal degradation and provides a GNSS constellation-agnostic operation.

For example, when individual frequencies and constellations are affected by local interference, the receiver continues to provide positioning using available measurements. These include:

- **GPS:** L1 C/A, L1C, L2E, L2C, L5
- **GLONASS:** L1 C/A, L1P, L2P, L2 C/A, L3 CDMA
- **Galileo:** E1, E5A, E5B, E5AltBOC
- **BeiDou:** B1C, B1i, B2i, B2A
- **QZSS:** L1 C/A, L2C, L5

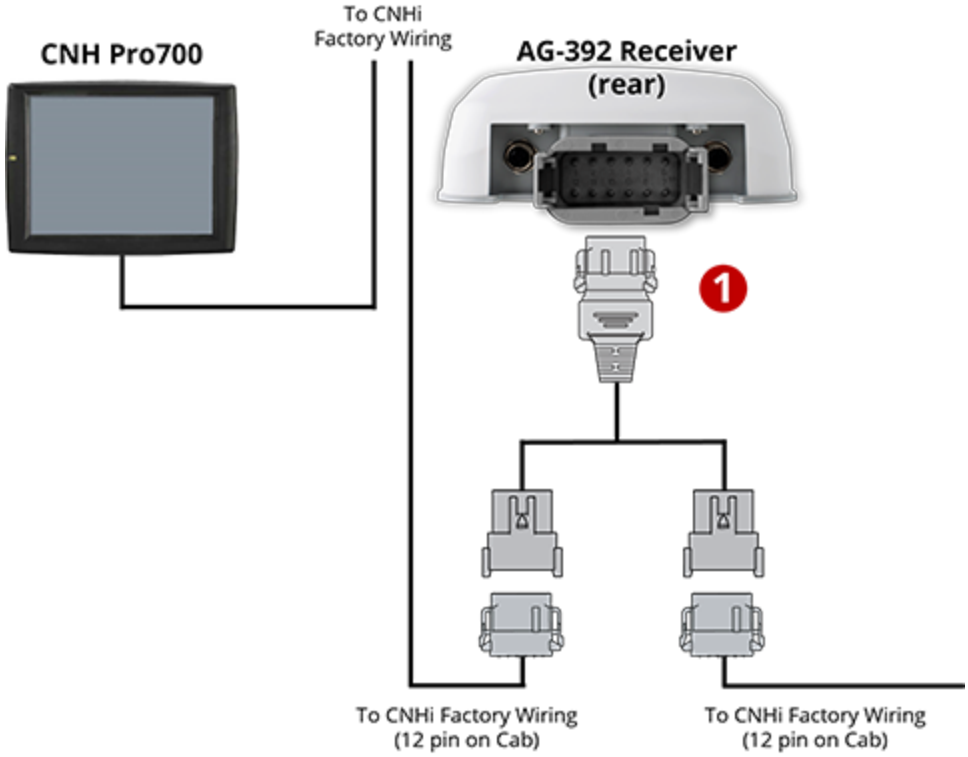
Supported Correction Services

The AG-392 supports a variety of correction services including, but are not limited to:

- SBAS Corrections
- RangePoint RTX Corrections
- CenterPoint® RTX Corrections
- CenterPoint VRS Corrections
- RTK Corrections
- xFill®
- xFill Premium

Learn more about Trimble Correction Services: https://agriculture.trimble.com/solutions/correction-services/

Basic System Diagram



	CNHi Part Number	Description
1	91706603	Cable Assy, CNH 392 to CNH AG-372 Connections Adapter (128117)

Components and Accessories for Mounting the AG-392 Receiver

Required Components

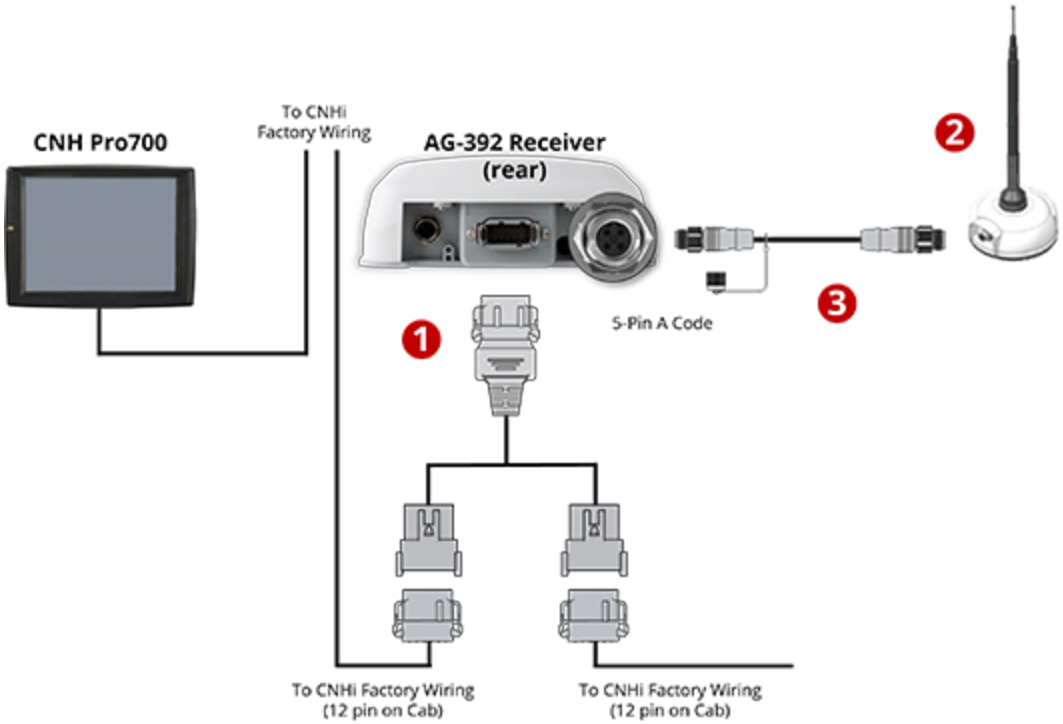
CNHi Part Number	Description
917xxxxx	AG-392 GNSS Receiver (208993-xx)
91706602	AG-392, Mount, CNH Quick Release Adapter (128606)
91706603*	Cable Assy, CNH 392 to CNH AG-372 Connections Adapter (128117)

* *Most applications require the CNHi part number 91706603 (128117) adapter cable for the AG-392 to communicate to the CNHi factory display, but some combine platforms will not require this adapter.*

Optional Accessories

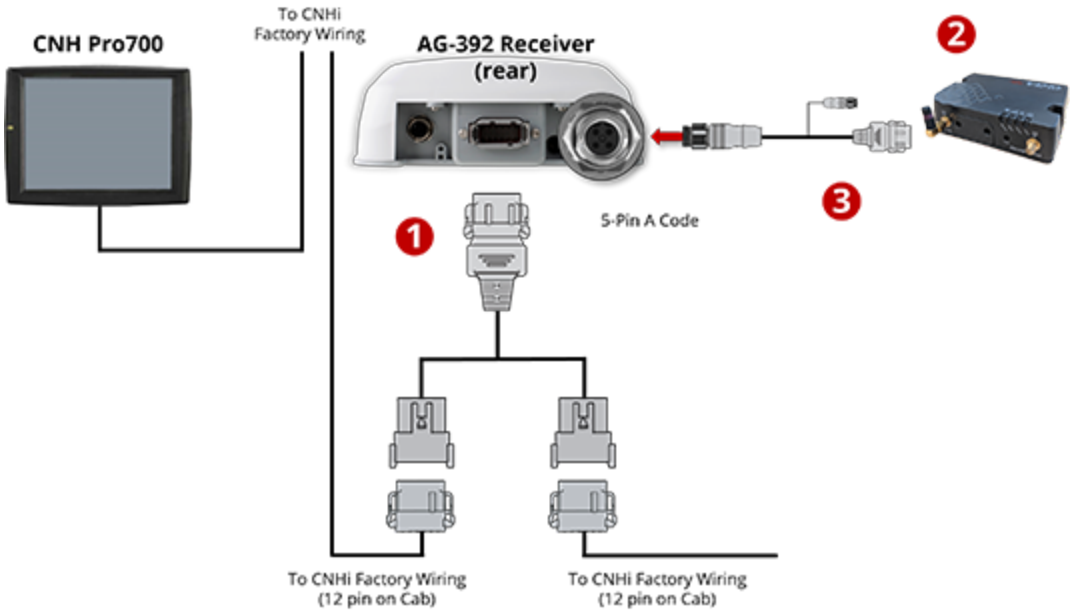
CNHi Part Number	Description
91729063	Cable Assy, CNH AG-392, Factory Modem Adapter (128475)
91752549	Adapter CABLE ASSY, AG-392 to AG-820 (113295)
ZTN118084	Cable Assy, Serial, RV55/GX450 Modem To AG-392 (118084)

AG-820 Radio Connection



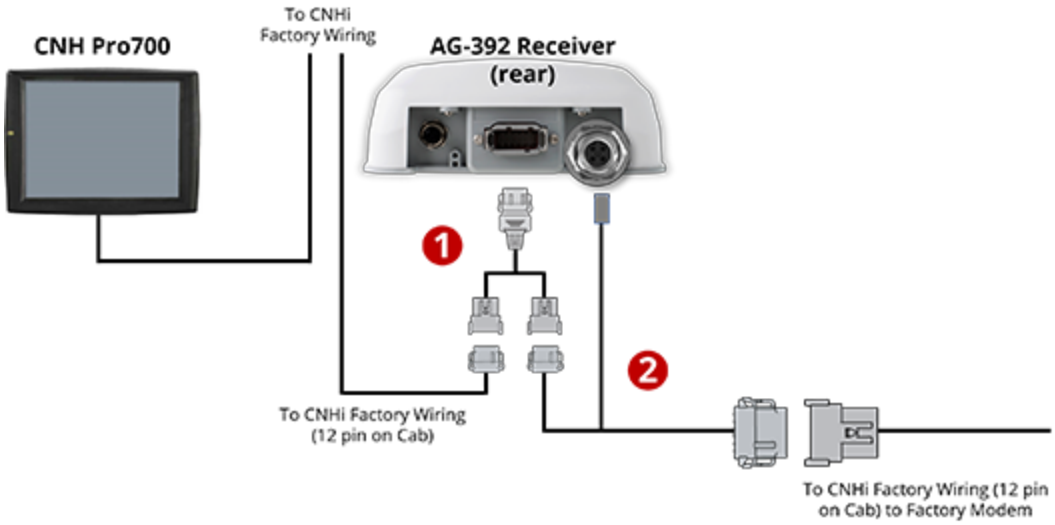
	CNHi Part Number	Description
1	**91706603**	Cable Assy, CNH 392 to CNH AG-372 Connections Adapter (128117)
2	**51536781**	Ag-820 Radio Kit w/ OEM Integration UL, 430-450 MHz: X-RTK Radio (123550-44)
	51415534	Ag-820 Radio Kit w/ OEM Integration UL, 450-470 MHz: X-RTK Radio (123550-46)
	51415542	Ag-820 Radio Kit w/ OEM Integration UL, 900 MHz: X-RTK Radio (123550-90)
	ZTN123500-44	Ag-820 Radio Kit, 430-450 MHz (123500-44)
	ZTN123500-46	Ag-820 Radio Kit, 450-470 MHz (123500-46)
	ZTN123500-90	Ag-820 Radio Kit, 900 MHz (123500-90)
3	**91752549 or ZTN113295**	AG392 to Ag-820 cable (113295)

RV55 Modem Connection



	CNHi Part Number	Description
1	**91706603**	Cable Assy, CNH 392 to CNH AG-372 Connections Adapter (128117)
2	**ZTN109992-50**	Sierra Wireless RV55 CAT 12 Global Modem Kit (109992-50)
	ZTN109992-60	Sierra Wireless RV55 CAT 4 EMEA Modem Kit (109992-60)
3	**ZTN118084**	Cable Assy, Serial, RV55/GX450 Modem To NAV-900 (118084)

CNHi Factory Modem Connection



	CNHi Part Number	Description
1	**91706603**	Cable Assy, CNH 392 to CNH AG-372 Connections Adapter (128117)
2	**91729063**	Cable Assy, CNH AG-392, Factory Modem Adapter (128475)

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Technical Data

- AG-392 Receiver Data Sheet
- AG-392 Receiver Pinout Information
- LED Indicators

AG-392 Receiver Data Sheet

Physical	
Dimensions	213 mm (length) x 213 mm (width) x 80 mm (height) 8.39 in (length) x 8.39 in (width) x 3.15 in (height)
Weight	1.2 kilograms (2.6 lbs)
Housing Material	Low-profile, chemical-resistant plastic casing with UV-resistant paint

Electrical	
Power	9 VDC to 16 VDC external power with over-voltage protection on input ports
Power Consumption	5.5 watts 17.5 watts with external accessories connected
Power Out	12 VDC (nominal), 1 amp limit for external radio = 12 watts

Connectors	
Not Used	M12 4-pin connector
To External Radio	M12 5-pin connector
Display and I/O	Deutsch 12-pin connector

Operational Range	
Operating Temperature	-40 °C to 70 °C (-40 °F to 158 °F)
Storage Temperature	-40 °C to 85 °C (-40 °F to 185 °F)
Humidity	up to 100%, condensing
Ingress Protection	IP66, dustproof, waterproof, IPx9K

Inertial Measurement Unit (IMU)[1]	
Gyroscope	3-axis, 200 Hz
Accelerometer	3-axis, 200 Hz

[1] *When using in auto guidance with the CNHi display, the internal IMU is not being used. The system is using the IMU from the NavController III. But while using Autopilot Motor Drive (APMD) or EZ-Pilot Pro (EZPP), the system is using the internal IMU.*

Communication and I/O	
Bluetooth®	Bluetooth 4.1
Serial Ports	3[1]
CAN Ports	2[1]
Radar Output	Yes
Remote Engage	Yes
Sonalert	Yes
PPS	Yes[2]
NMEA Output Serial (NMEA 0183)	Yes
NMEA Output CAN (NMEA 2000)	Yes
Roll Corrected NMEA Output from Receiver	Yes[3]

[1] *Indicates total number of ports and some may be required for specific features and functions.*

[2] *Not required or used with CNHi NavController III and CNHi AG- 392.*

[3] *Requires Roll Corrected Manual Guidance License (P/N ZTN96552-17) for feature (Not planned to support on CNHi Pro700/ IntelliView IV displays).*

GNSS Receiver Specifications	
Constellations	**GPS:** L1 C/A, L1C, L2E, L2C, L5 **GLONASS:** L1 C/A, L1P, L2P, L2 C/A, L3 CDMA **Galileo:** E1, E5A, E5B, E5AltBOC **BeiDou:** B1C, B1I, B2I, B2A **QZSS:** L1 C/A, L2C, L5
Satellite Corrections	CenterPoint® RTX Fast CenterPoint RTX RangePoint® RTX SBAS (WAAS, EGNOS, MSAS) xFill® xFill Premium No OmniSTAR support
Land-Based Corrections	RTK CenterPoint VRS
Correction Formats	CMR+, sCMR+, sCMR+ with SecureRTK, CMRx, RTCM 3.0, RTCM 3.1, RTCM 3.2, RTCM 3.3

Guidance	
Electric	Autopilot™ Motor Drive (APMD) and EZ-Pilot® Pro (EZPP)
Guidance Ready	Serial Connection to NavController III
Hydraulic	Serial Connection to NavController III

AG-392 Receiver Pinout Information



The AG-392 has three connectors on the back side of the receiver:

Connector 1: M12 D Key, 4 Pin – not used

Connector 2: Deutsch A Key, 12-pin – main interface port

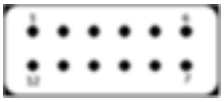
Connector 3: M12 A Key, 5 Pin – RTK radio/modem connection

Connector 1: M12 D Key, 4 Pin- Not Used



Pin	External Signal Name	Signal Description
1	BroadR-Reach +	
2	Power In	12V
3	BroadR-Reach -	
4	GND	Ground in

Connector 2: Deutsch DTM A Key, 12 Pin



Pin	External Signal Name	Signal Description
1	CAN A HI	NMEA2000 /J1939
2	Port A RS232 TX	APTB/AGREMOTE
3	Port A RS232 RX	APTB/AGREMOTE
4	DIGI/IO/Analog in 1	Radar Out (AG-392 default), Sonalert, or PPS 12V
5	Signal GND	APTB/AGREMOTE or sonalert ground
6	CAN B Hi	NMEA2000 /J1939
7	CAN B Lo	NMEA2000 /J1939
8	Port B RS-232 TX	NMEA 0183 out
9	AD I/O or Port B RS-232 RX	Port B RS-232 RX. Remote engage (AG-392 default)
10	V+	12V - battery power
11	V-	Battery Ground
12	CAN A Lo	NMEA2000 /J1939

Connector 3: M12 A Key, 5 Pin



Pin	External Signal Name	Signal Description
1	Port C RS-232 TX	Radio TX
2	Power Out	12 volt Nominal, 1 A limit
3	Port C RS-232 RX	Radio RX
4	GND	Ground out
5	Signal GND	

LED Indicators

The status of the M12 4-pin display connector is shown with three LED colors: Red, Orange, and Green.



Different modes indicate different status conditions for the receiver varying between hardware issues, firmware issues, and the GNSS fix status (varies by selected correction type).



Fatal Error

A fatal error will be indicated by the following repeating cycle:

- Rapidly flashing Red > Solid Orange
- Possible flashing Orange > Rapidly flashing Red

LED States

LED Color: None

LED State: Off
HW/FW Indication: No power
Corrections: N/A

- Autonomous
- SBAS
- Rangepoint RTX
- CenterPoint RTX (FS/SS)
- CenterPoint RTX (Cell)
- CenterPoint RTK/VRS

LED Color: Red 🔴

LED State: Solid
HW/FW Indication: Unit has failed. Send in for service
Corrections: N/A

- Autonomous
- SBAS
- Rangepoint RTX
- CenterPoint RTX (FS/SS)
- CenterPoint RTX (Cell)
- CenterPoint RTK/VRS

LED State: Flashing 1 HZ
HW/FW Indication: Unit is in Monitor mode. FL200 must be used to load valid main firmware
Corrections: N/A

- Autonomous
- SBAS
- Rangepoint RTX
- CenterPoint RTX (FS/SS)
- CenterPoint RTX (Cell)
- CenterPoint RTK/VRS

LED State: Rapid red then solid orange
HW/FW Indication: Boot Monitor Activity with Main Firmware loading while unit is initializing
Corrections: N/A

- Autonomous
- SBAS
- Rangepoint RTX
- CenterPoint RTX (FS/SS)
- CenterPoint RTX (Cell)
- CenterPoint RTK/VRS

LED State: Boot Monitor Activity with Main Firmware loading while unit is initializing
HW/FW Indication: Firmware is uploading or Flash File system is being formatted
Corrections: N/A

- Autonomous
- SBAS
- Rangepoint RTX
- CenterPoint RTX (FS/SS)
- CenterPoint RTX (Cell)
- CenterPoint RTK/VRS

LED Color: Red / Orange

LED State: Rapid red then solid orange
HW/FW Indication: Boot Monitor Activity with main firmware loading while unit is initializing
Corrections: N/A

- Autonomous
- SBAS
- Rangepoint RTX
- CenterPoint RTX (FS/SS)
- CenterPoint RTX (Cell)
- CenterPoint RTK/VRS

LED Color: Red / Green

LED State: Alternating red and green
HW/FW Indication: Firmware is uploading or Flash File system is being formatted
Corrections: N/A

- Autonomous
- SBAS
- Rangepoint RTX
- CenterPoint RTX (FS/SS)
- CenterPoint RTX (Cell)
- CenterPoint RTK/VRS

LED Color: Orange

LED State: Rapid red then solid orange
HW/FW Indication: Boot Monitor Activity with Main Firmware loading while unit is initializing
Corrections: N/A

- Autonomous
- SBAS
- Rangepoint RTX
- CenterPoint RTX (FS/SS)
- CenterPoint RTX (Cell)
- CenterPoint RTK/VRS

LED State: Fast flash
HW/FW Indication: N/A
Corrections: No position

- Autonomous
- SBAS
- Rangepoint RTX
- CenterPoint RTX (FS/SS)
- CenterPoint RTX (Cell)
- CenterPoint RTK/VRS

LED State: Slow Flash
HW/FW Indication: N/A
Corrections:

- Autonomous: *N/A*
- SBAS: *Autonomous* | *No SBAS signal*
- Rangepoint RTX: *Autonomous/DGPS* | *No RTX signal*
- CenterPoint RTX (FS/SS): *Autonomous/DGPS* | *No RTX signal*
- CenterPoint RTX (Cell): *Autonomous/DGPS* | *Not connected to RTX server*
- CenterPoint RTK/VRS: *Autonomous/DGPS* | *No CMR or RTCM3 corrections*

LED State: Solid
HW/FW Indication: N/A
Corrections:

- Autonomous: *N/A*
- SBAS: *Autonomous* | *Has SBAS signal*
- Rangepoint RTX: *Autonomous/DGPS* | *Have RTX signal*
- CenterPoint RTX (FS/SS): *Autonomous/DGPS* | *Have RTX signal*
- CenterPoint RTX (Cell): *Autonomous/DGPS* | *Connected to RTX server*
- CenterPoint RTK/VRS: *Autonomous/DGPS* | *CMR or RTCM3 corrections arriving*

LED Color: Green 🟢

LED State: Alternating red and green
HW/FW Indication: Firmware is uploading or Flash File system is being formatted
Corrections: N/A

- Autonomous
- SBAS
- Rangepoint RTX
- CenterPoint RTX (FS/SS)
- CenterPoint RTX (Cell)
- CenterPoint RTK/VRS

LED State: Fast flash
HW/FW Indication: N/A
Corrections:

- Autonomous: *N/A*
- SBAS: *DGPS, no SBAS signal* | *Using old corrections*
- Rangepoint RTX: *Converged/Unconverged* | *Using old corrections*
- CenterPoint RTX (FS/SS): *Converged/Unconverged* | *Using old corrections*
- CenterPoint RTX (Cell): *Converged/Unconverged* | *Using old corrections*
- CenterPoint RTK/VRS: *Fixed/Float* | *Using old corrections*

LED State: Slow Flash
HW/FW Indication: N/A
Corrections:

Autonomous: *N/A*
SBAS: *DGPS, no SBAS signal | Using recent corrections*
Rangepoint RTX: *Unconverged*
CenterPoint RTX (FS/SS): *Unconverged*
CenterPoint RTX (Cell): *Unconverged*
CenterPoint RTK/VRS: *Float*

LED State: Solid
HW/FW Indication: N/A
Corrections:

Autonomous: *Autonomous position*
SBAS: *DGPS, have SBAS signal*
Rangepoint RTX: *Converged*
CenterPoint RTX (FS/SS): *Converged*
CenterPoint RTX (Cell): *Converged*
CenterPoint RTK/VRS: *Fixed*

3

Mounting the AG-392 Receiver

- Orientation of the Receiver
- Attaching the Base Mounting Plate
- Factory-Fitted Specific Mounting Options

Orientation of the Receiver

This device is required to be mounted rigidly and in a neutral 0°, 0°, 0° (Roll, Pitch, Yaw) orientation, with the dome up and the connectors facing backwards toward the rear of the vehicle/ machine.

Attaching the Base Mounting Plate

The receiver has a base mounting plate (CNHi p/n 91706602 or Trimble p/n 129606) for adapting factory CNHi mounting fixtures. It is attached to the bottom of the receiver using four M6 SS flat head screws that are provided with the mounting plate. Tighten the four M6 fasteners to 7.0 ± 0.4ft-lbs (10.0 ± 0.5 N-m). Take care not to over-tighten the bolts as damage may result.



Factory-Fitted Specific Mounting Options

Machines that come factory ready are fitted with a quick release mount for the 252/262/372 receivers, this will not be able to be reused. There is a specific NAV-900/AG-392 guidance controller mount plate that will need to be used for these vehicles (CNHi p/n 91706602 or Trimble p/n 129606).

Case IH Flagship Combine Install: (Case IH 9120 pictured)







Case IH Tractor Install: (CIH Magnum 340 pictured)





New Holland Tractor Install: (NH T8 pictured)



Note: When fixing the AG-392 unit to the mounting plate, tighten the four M6 fasteners to 7.0 ± 0.4ft-lbs (10.0 ± 0.5 N-m). Take care not to over-tighten the bolts as damage may result.

4

AG-392 Receiver Licensing

- Purchasing Licenses
- Retrieving Licenses
- Installing Licenses

The AG-392 uses license files to make upgrades to the receiver.

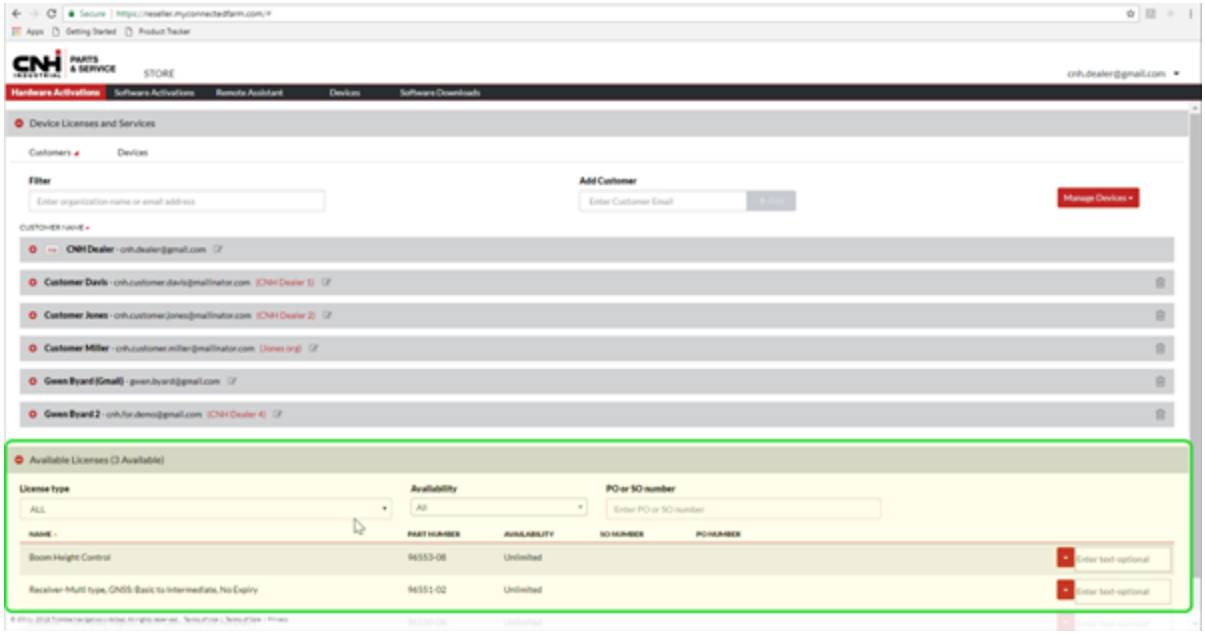
Purchasing Licenses

The CNHi dealer will purchase these licenses through the standard EDI system just as they would normally purchase precision farming accessories.

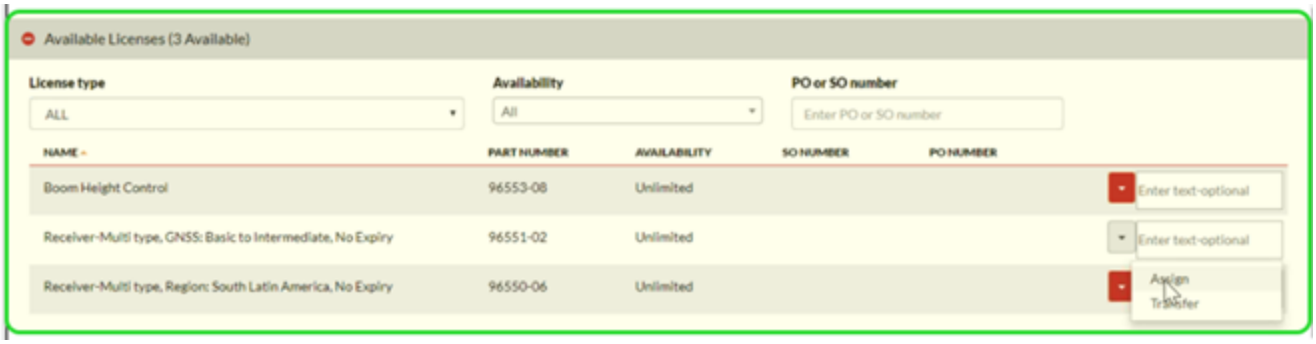
Retrieving Licenses

The license retrieval process is the same as if you were purchasing a license for a XCN-2050 display, XCN-1050 display, or a NAV-900 guidance controller. If a license is purchased, the dealer may retrieve this license by going to the CNHi Admin site that all CNHi dealers have access to. This admin site is located at https://reseller.trimbleag.com

1. The reseller would log on to the website account. Navigate to the Hardware Activations tab in the upper left. From this page you will find all available licenses that are purchased by the dealership.



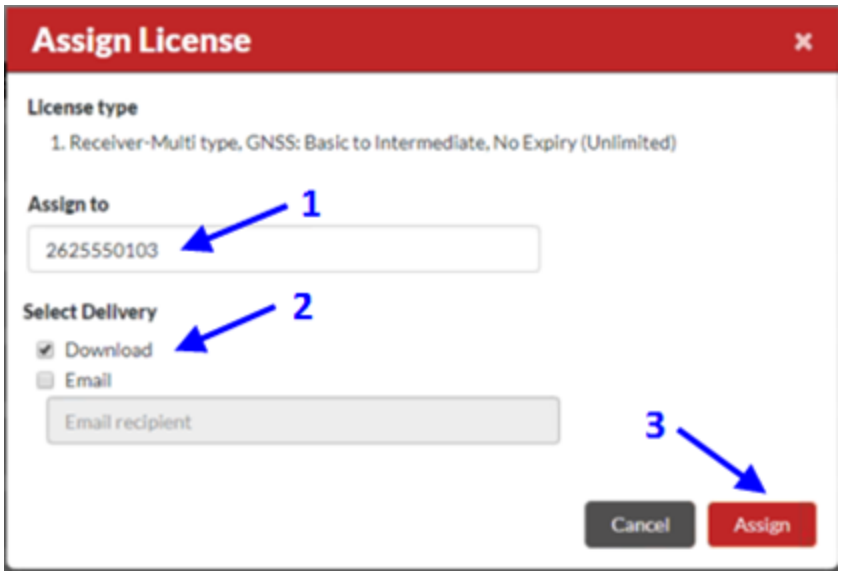
2. Within this Available License category, you will see a list of all previously purchased licenses. From this location the reseller can now assign a license to specific hardware by clicking on the dropdown that correlates to the specific license that was purchased.



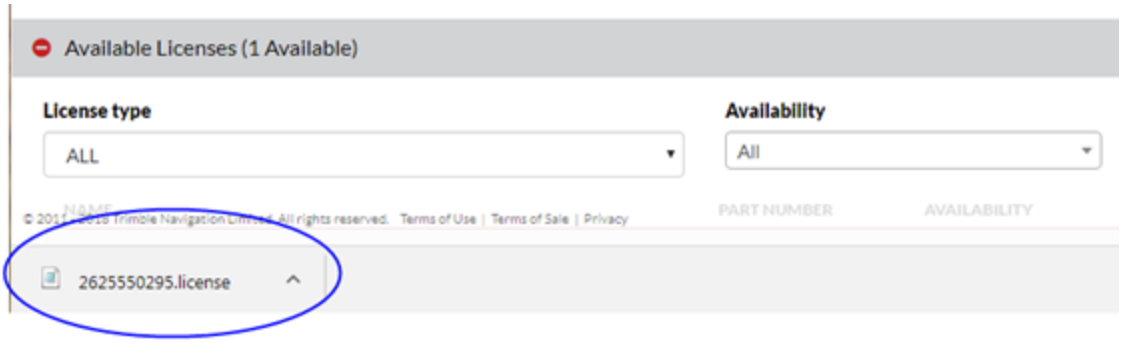
3. Here the reseller will have three steps to assign the license to the device:
   a. Enter the serial number of AG-392 receiver.
   b. Click **Download** and the *Selected Delivery* method.

> **NOTE –** The download method is the only option that will work when using a CNHi Display/AG-392. The email option will not work for retrieving the purchased license because it will email you only a QR code which cannot be scanned into the CNHi display.
>
> This option only works with XCN-2050 or XCN-1050 displays.

   c. Click **Assign**.



4. Depending on the browser being used to location may vary but a license file will download and be produced. Save this file to a USB so it can be transferred to the CNHi display



Installing Licenses

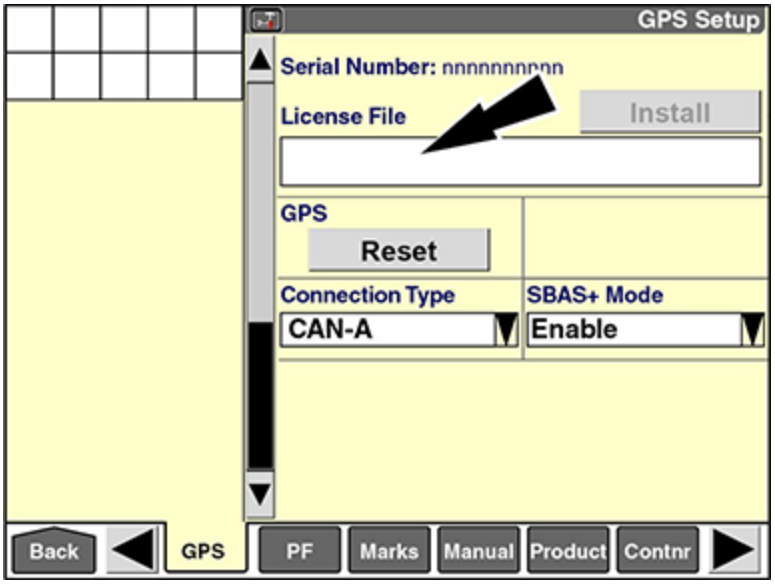
The user shall install the license file using the CNHi Display (Pro-700/ Intelliview IV) using the following procedure. This procedure was copied from the *CNH EZ-Pilot Pro Software Operating Guide* (Software Version 31.21.*) (part Number 51563869) in section 3-9 (page 29). For more detailed information, refer to this document.

License File

Use the *License File* window to activate options for the guidance controller such as:

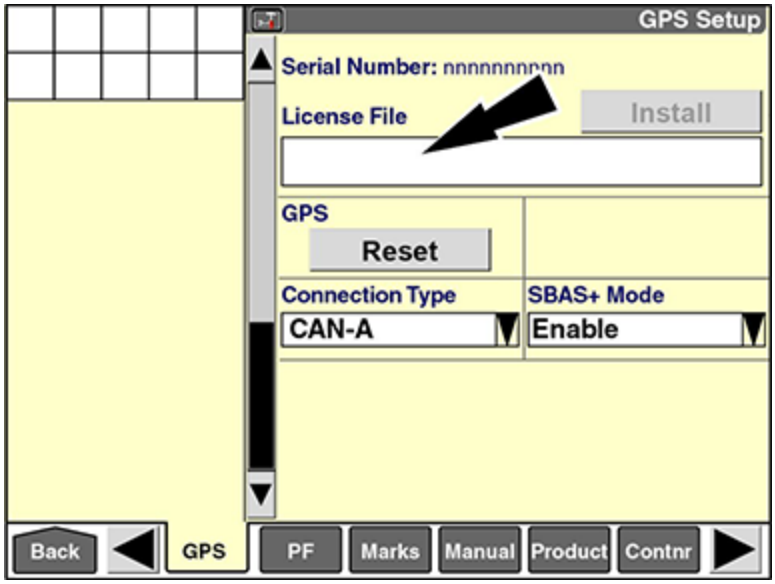
- Real Time Kinematic (RTK) correction signal
- CenterPoint™ RTX™ correction signal
- RangePoint™ RTX™ correction signal
- xFill™ Premium backup correction signal
- EZ-Pilot® Pro guidance feature
- AccuGuide Motor Drive advanced feature

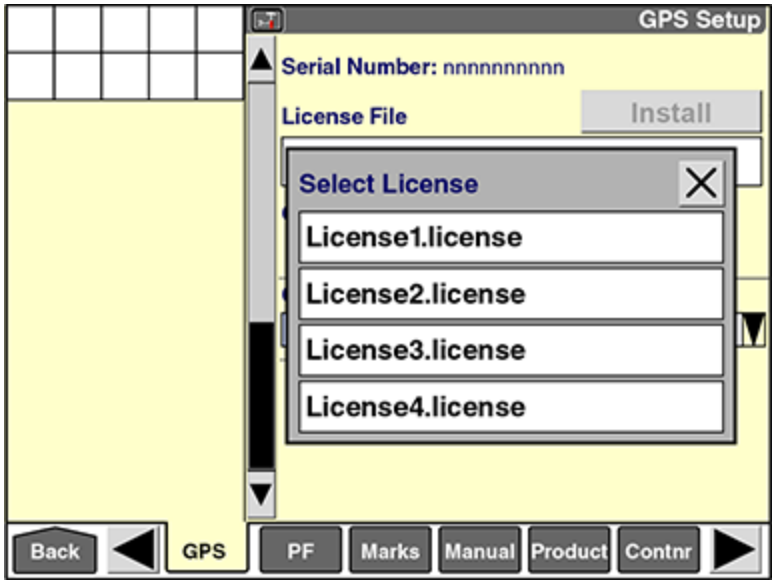
NOTE – Contact your CNHi dealer for a license file. Your dealer will require the serial number of your AG-392 guidance controller. The serial number of your AG-392 guidance controller displays at the top of this window for your convenience.



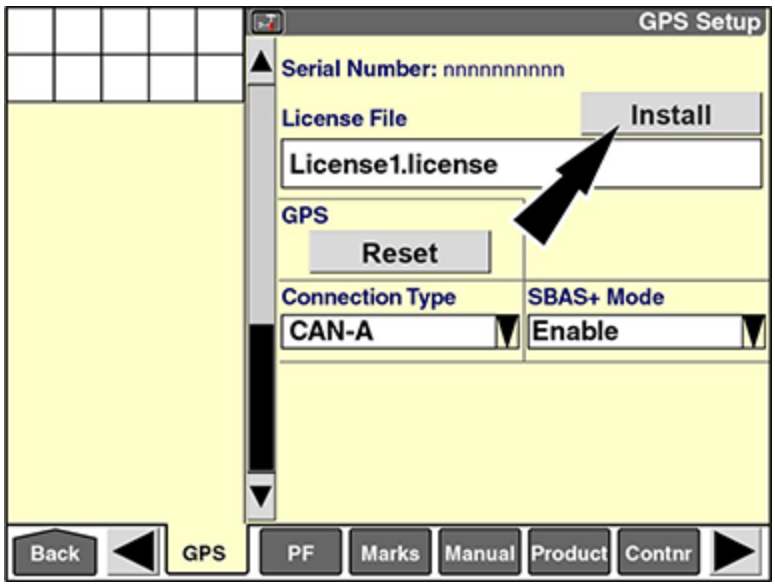
Install a License File

1. Obtain the license file from your CNHi dealer.
2. If your USB memory stick is not already formatted, perform this procedure to format it by the display:
   - Ensure the display is powered down. (The USB memory stick must be in the display on power up to format it, so that the *Trimble License* folder will be created.)
   - Insert the USB memory stick into the display.
   - Power on the display. Do not remove the USB memory stick from the display while powering up.
   - Turn the display off, and then remove the USB memory stick from the display.
3. Insert the USB memory stick that has been formatted by the display into your laptop or PC containing the license file and upload the license file into the *Trimble License* folder on your USB memory stick.
4. Insert USB memory stick back in to CNHi Display while powerd off, then power on the display.
5. Touch the white selection box below the **Install** button to access the pop-up options window where you can select your license file.

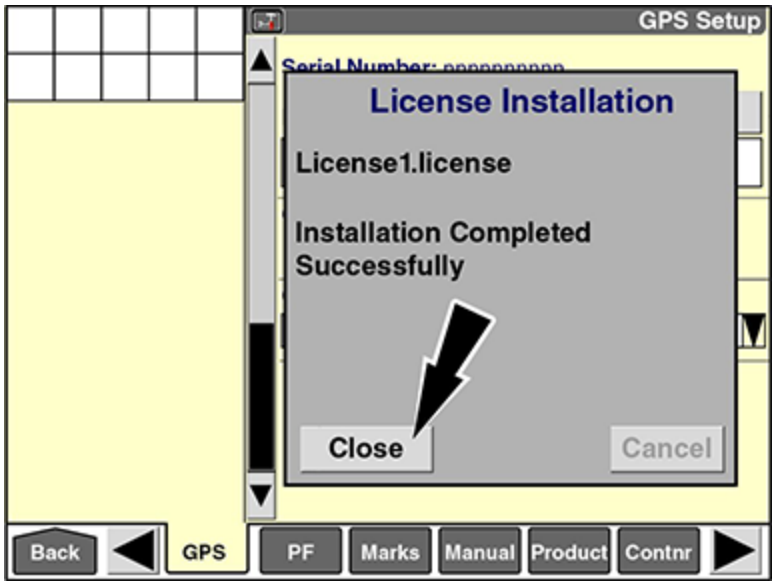




6. Once you select the appropriate license, press the **Install** button.



7. A pop-up message displays *Installation Completed Successfully*. Press **Close** to dismiss the message. The newly activated feature is now available.



5

Configuring the Receiver

- Receiver Setup/Configuration
- Updating Firmware
- AgRemote Map

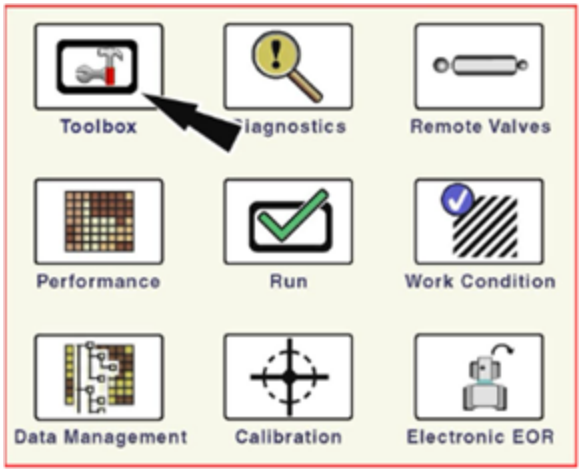
Receiver Setup/Configuration

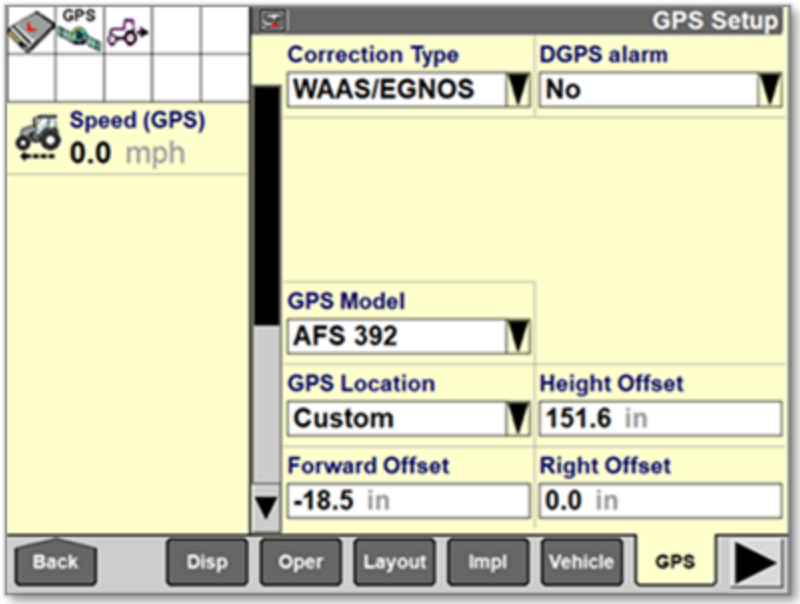
The AG-392 receiver can be configured through a couple of methods.

1. Configuring the Receiver Using the Setup Screens in the CNHi Display *(recommended method)*.
2. Configuring the Receiver Using the Display's RDI Interface or AgRemote Utility.

Configuring the Receiver Using the Setup Screens in the CNHi Display

For detailed information on how to configure the display through the display's GPS setup screen, refer to the CNH display's *Software Operating Guide* for specific details.



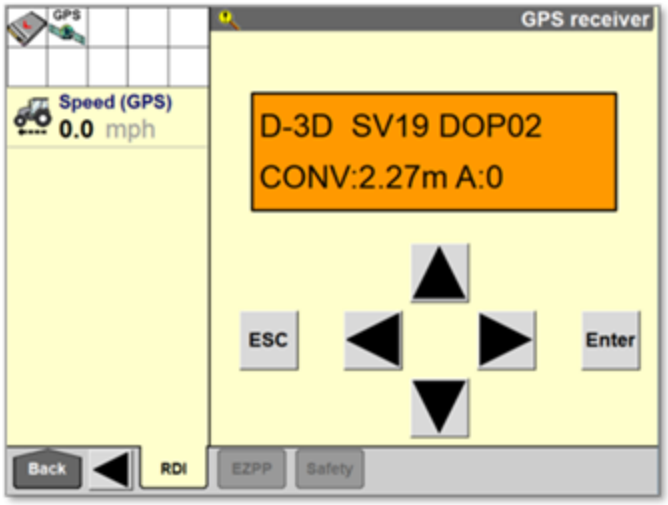


Configuring the Receiver Using the Display's RDI Interface or AgRemote Utility

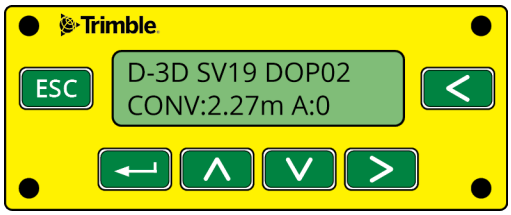
Use either the RDI screen on the CNHi display or the Trimble AgRemote utility to change configuration settings in the AG-392 GNSS receiver. The RDI screen and the AgRemote utility look different but they have the exact same functionality.

Download the AgRemote utility

RDI Screen (example)



AgRemote Utility (example)



Configuring Differential GNSS

For the receiver to output GNSS position coordinates of submeter accuracy, you must first select a differential signal from one of the following sources:

• WAAS/EGNOS – free service, limited availability

The Wide Area Augmentation System (WAAS) augments GNSS with additional signals for increasing the reliability, integrity, accuracy, and availability of GNSS in the United States. The European Geostationary Navigation Overlay System (EGNOS) is the European equivalent of WAAS.

WAAS/EGNOS

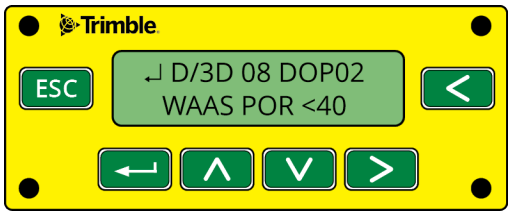
WAAS is a free satellite-based DGNSS service that is available only in North America; EGNOS is a free satellite-based DGNSS service that is available only in Europe.

To use the WAAS/EGNOS DGNSS signal, you must first configure the receiver.

1. Connect the AG-392 GNSS receiver to the computer. Turn on the receiver and start the AgRemote utility.
2. In AgRemote, select **Configuration / DGPS Config**.
3. Set the *Source Select* field to **WAAS**.
4. Press **[>]** then **[^]** to complete the procedure.

To enable WAAS reception in the field:

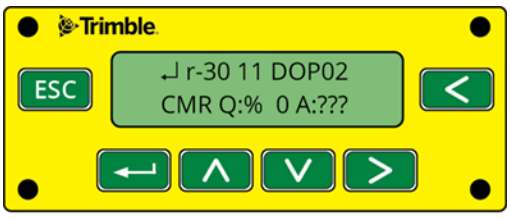
1. Take the receiver outside. Make sure that it has a clear southeast and southwest view of the sky.
2. Turn on the receiver. WAAS activation can take two or more minutes. Once activation succeeds, the *Home* screen displays **D/3D**:



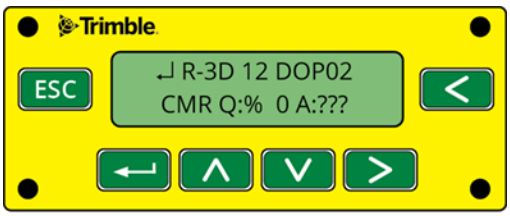
Configuring for CenterPoint RTX

Configuring the Receiver for RTX (std-sat)

1. Ensure that the receiver is unlocked to either the *Intermediate* accuracy level or to the *High* (RTK) accuracy level.
2. Acquire an RTX license.
3. Enter the license using the display (see Installing Licenses).
4. Use the arrow keys to select **DGPS config / DGPS Source / Set to RTX**.
5. Use the arrow keys to select **RTX Config / Mode / set to CenterPoint RTX**.



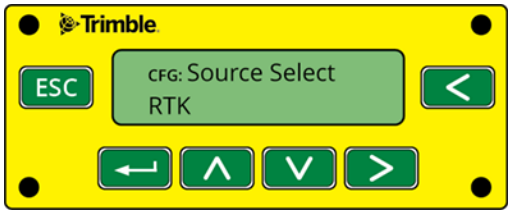
RTX Standard Converging



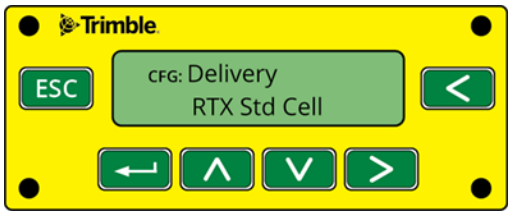
RTX Standard Converged

Configuring the Receiver for RTX (std-cell)

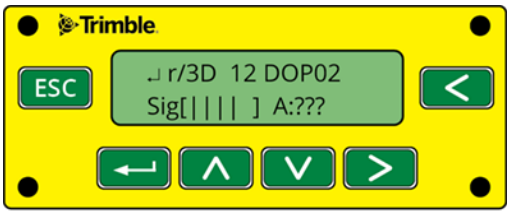
1. Press **[<]** until you reach *Configuration*, press **[v]** once and then press **[>]** once to reach *DGPS Config*.
2. Press **[v]** once to reach *Source Select* and then press **[>]**.
3. Once the cursor is flashing, press **[^]** or **[v]** to change the source to RTX and then press the **Enter** key:



4. Press **[ESC]** to return to *DGPS Config* and then press **[>]** to go to *RTX Config*.
5. Press **[v]** to go to *Mode*.
6. Change the delivery to *RTX Standard Cell*:



You should see the following when converging:



While Converging

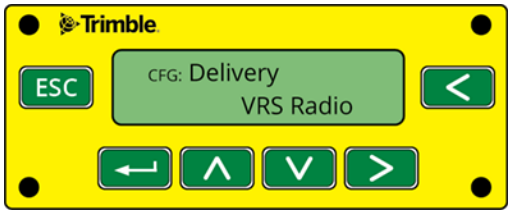
Configuring for RTK

Use the AgRemote utility to configure the Trimble AG-392 GNSS receiver for operation in RTK mode. To configure the receiver:

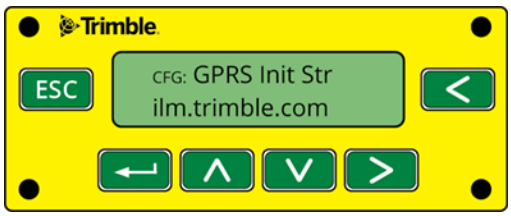
1. Connect the Trimble AG-392 GNSS receiver to the computer. Turn on the receiver and start the AgRemote utility.
2. In AgRemote, select **Configuration / DGPS Config**.
3. Set the *Source Select* field to **RTK**.
4. Press **[>]** then **[^]** to complete this part of the procedure.
5. For RTK operation, connect the radio to a port. Change the port input settings for that port to **RtkLnk**.

Configuring for VRS

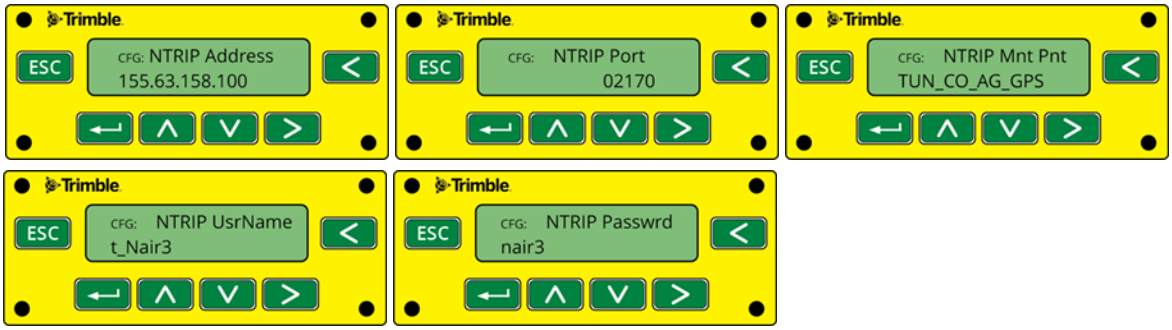
1. Navigate to *DGPS Config* and then press **[>]** to go to *RTK Config*.
2. Press **[v]** to go to *Delivery*.
3. Change the delivery to **VRS Radio** and then turn off and then turn on the receiver.



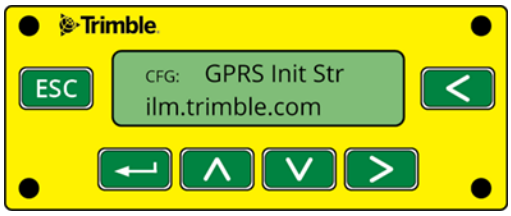
4. When the receiver reboots, press **[<]** until you reach the *RTK Config* menu and then press **[v]** to reach *GPRS settings*.
5. Make sure that the correct *Initialization String, GPRS User Name,* and *Password* (if required) are entered and then turn off and then turn on the receiver.
6. Press **[v]** once to reach *Source Select* and then press **[>]**.
7. Once you have turned on the receiver, navigate to the *RTK Configuration* menu and then press **[v]** to reach *Delivery*.
8. Change the delivery to **VRS**.



9. Enter appropriate information for the following items. The screen shots show example values only—make sure that the values are correct for your data connection supplier.



10. In the *RTK Config* menu press the down arrow until you reach *GPRS settings*. Make sure that the correct *Initialization String, GPRS User Name,* and *Password* (if required) are entered.



Configuring the Communication Ports

If the Trimble AG-392 GNSS receiver is to be connected to an external device, configure Ports **A** and **B** so that the proper data type is input to and output from the receiver.

Configure RS-232 Serial Port A

1. Connect the Trimble AG-392 GNSS receiver to the computer. Turn on the receiver and start the AgRemote utility.
2. In AgRemote, select **Configuration / Port A Config**.
3. Use the menu commands to configure the communication ports. Ensure that the receiver outputs the correct GNSS position data type for the hardware device or software program that is connected to the receiver.

Configure RS-232 Serial Port B

1. Connect the Trimble AG-392 GNSS receiver to the computer. Turn on the receiver and start the AgRemote utility.
2. In AgRemote, select **Configuration / Port B Config**.

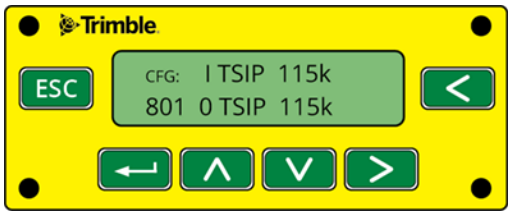
3. Use the menu commands to configure the communication ports. Ensure that the receiver outputs the correct GNSS position data type for the hardware device or software program that is connected to the receiver.

CAN Configuration for NMEA2000 or SAE J1939

1. Connect the Trimble AG-392 GNSS receiver to the computer. Turn on the receiver and start the AgRemote utility.
2. In AgRemote, select **Configuration / CAN A Config** or **CAN B Config**.
3. Use the menu commands to configure the communication ports. Ensure that the receiver outputs the correct GNSS position data type for the hardware device or software program that is connected to the receiver. Message types shown in upper case are being output; message types shown in lower case are not.

Configuring Input/Output Communication

The port input and output settings appear in the first screen. In the following figure, the port is set to **accept TSIP inputs** at a baud rate of **115,000** with a parity of **8-Odd-1**. The outputs are **TSIP**, also at a baud rate of **115,000**.



Configure the Port Input/Output communication settings for communicating with the Autopilot, other external hardware devices, and software programs. The following table describes the port input settings:

Setting	Description
None	Inputs nothing to the receiver.
TEXTB	The receiver can accept ASCII data from an external device, such as a chlorophyll meter, on Port A, merge it with NMEA GNSS data, and output the combined data on Port B. The incoming data must be limited to 66 ASCII characters and terminated by a carriage return and line feed (hex characters 0x0D 0x0A). The NMEA string outputs as: $PTNLAG001,<up to 66 ASCII characters>*<2 digit checksum><CR><LF> For the receiver to output the combined NMEA string, NMEA must be selected as the output protocol on Port B.
TEXTA	See the description for the TEXTB setting (above). TEXTA input outputs text on Port A. The default port settings are 8-N-1 TSIP 38.4 K. These may vary by product.
RTCM	The receiver can accept RTCM data from an external DGNSS device, such as an external radio.
TSIP	The receiver can accept or output TSIP data packets from the port when using the optional AgRemote program.
RtkLnk	The receiver can accept real-time corrections (CMR data) from an external device such as a Trimble radio.

The default port settings are:

		Port A	Port B
Baud rate	**In**	TSIP 38,400	TSIP 38,400
	Out	TSIP 38,400	TSIP 38,400
Data bits		8	8
Parity		None	None
Stop bits		1	1

NOTE – The AgRemote utility, when connected to a Trimble AG-392 GNSS receiver receiver, automatically resets the receiver port communication settings to 8-O-1 TSIP 115 K. This enables optimal communication with an office computer. If the receiver is to work with an Autopilot system, however, the receiver port communication settings must be 8-N-1 TSIP 38.4 K. To work with some other devices and software programs, the receiver port communication settings must be 8-N-1 NMEA 4800. If AgRemote has changed the settings, you will need to change them back manually.

When using a Trimble AG-820 radio, make sure that the communication settings are correct in the receiver.

The default settings to use with the AG-820 radio are:

Setting	Description
Baud rate	38,400
Data bits	8
Parity	None
Stop bits	1

Changing the Input or Output Port Settings

1. From the *Port C Config* screen, press **[v]** until the *Port-A Input/Output* screen appears.
2. Ensure that the receiver is configured for **RTK**:
   - **Input:** RTKLNK 38.4K, 8N1
   - **Output:** RTKLNK 38.4 K
3. Press **[<]** to activate the cursor.
4. Press **[v]** or **[^]** to change the value.
5. Press **[<]**.
6. Repeat Step 3 through Step 4 until you have set all the required values.
7. Press **[>]** to save all the changes.
8. Press **[>]** to move to the next screen.

NMEA 0183 Settings

Three screens (**NMEA1, NMEA2,** and **NMEA3**) show what NMEA 0183 messages are output from the port. Message types shown in upper case are being output; message types shown in lower case are not.

Port Output Rate

This setting can be used to vary the NMEA 0183 and TSIP output rate. A setting of 1 outputs one position each second.

ASAP equals the rate selected on the Filter and Position Rate screen under the *GNSS Config* menu. A setting of ASAP outputs positions five or ten times every second. The default (factory) setting is **1 Hz**.

Configuring the Frequency Settings

Required Equipment and Software

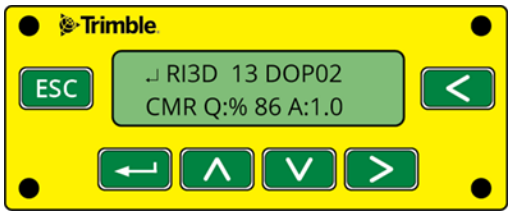
- AG-820 radio antenna
- Base station transmitter
- Power / data cable (P/N 50166)
- AgRemote utility, version 3.04 or later

Configuring the Radio Frequency, Protocol, and Radio Link in AgRemote

1. Ensure that the radio is correctly installed to the AG-392 GNSS receiver.
2. Use the power/data cable to connect the AG-392 GNSS receiver to the computer.

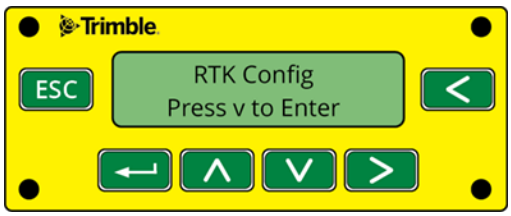
   NOTE – The receiver is connected to the computer, not to the radio. The radio uses the AG-392 connection to communicate with the computer.

3. Once connected, run the AgRemote utility:

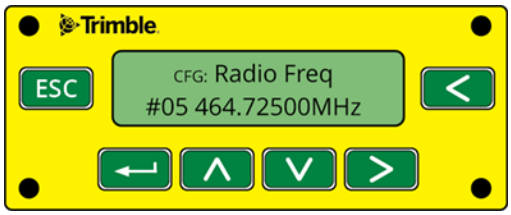


   NOTE – To return to the home screen at any time, press **[ESC]**.

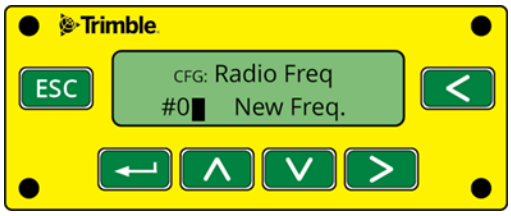
4. Press **[>]** until you reach *Configuration*, press **[v]** as required to reach *DGPS Config* and then press **[>]** until *RTK Config* shows on the screen:



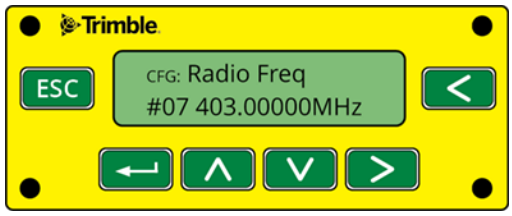
5. Press **[v]** until you reach *Radio Freq* and then press **[>]** until the cursor blinks:



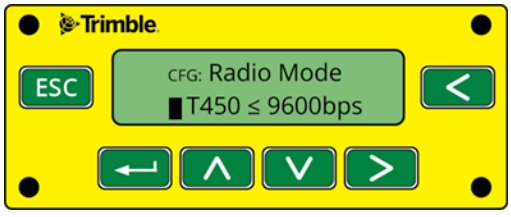
6. Press **[^]** to cycle through the frequencies until *New Freq* appears:



7. Press **[>]** to change the frequency—when the cursor blinks:
   - Press **[^]** to enter the first three digits (whole number) of the frequency.
   - Press **[>]** to move the cursor to the right to enter the decimal number of the frequency.
   - Press the enter button to enter the frequency.

> **NOTE –** Press **[>]** and **[^] / [v]** to select the new frequency. Once you see the frequency that you programmed press the enter button again to activate it:
>
> 
>

8. To show the radio mode, press **[v]** once:



9. Press **[>]** to activate the cursor and then press **[^]** or **[v]** to select the appropriate *Protocol* and *Link Rate*.

10. Once selected, press the enter button to activate the mode you selected.
11. Press **[ESC]** to return to the home screen.

Updating Firmware

The AG-392 can have its firmware updated by using the FlashLoader-200 program. See Updating Firmware with the FlashLoader 200 Utility for more information on this procedure if necessary.

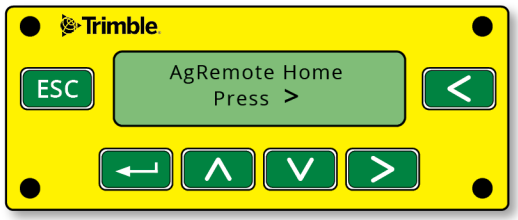
Download the FlashLoader 200 utility

AgRemote Map

AgRemote Navigation Keys

Escape ESC
Move up one menu level, return to *Home* screen

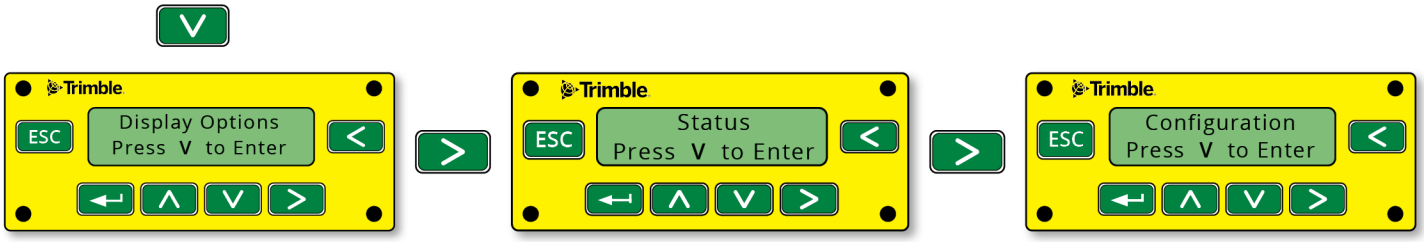
Enter
- Return to top of menu when an *Exit* screen appears
- Select/save changes



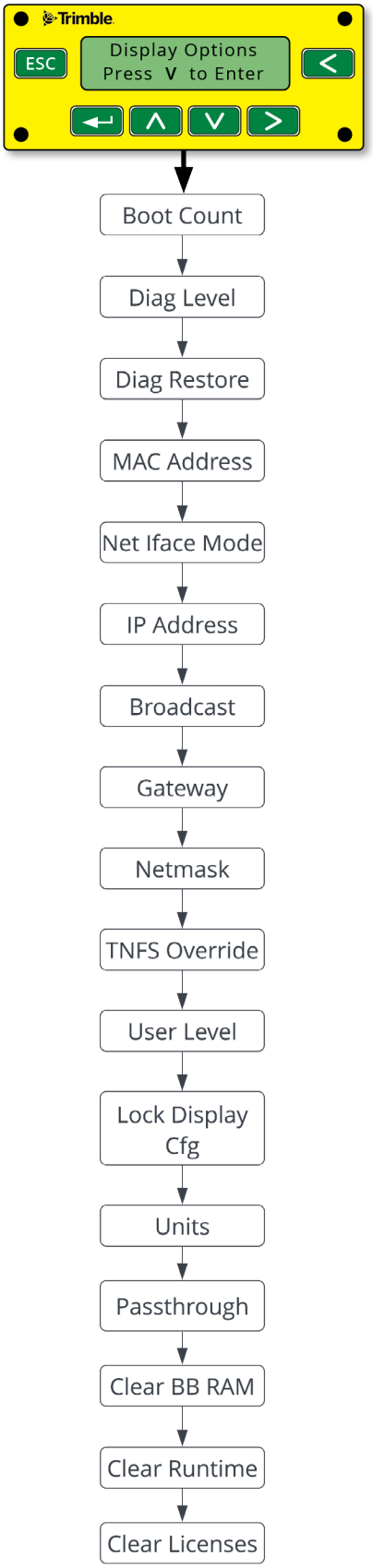
Up
Move up a menu level

Down
Move down a menu level, display the first screen from a lower-level menu

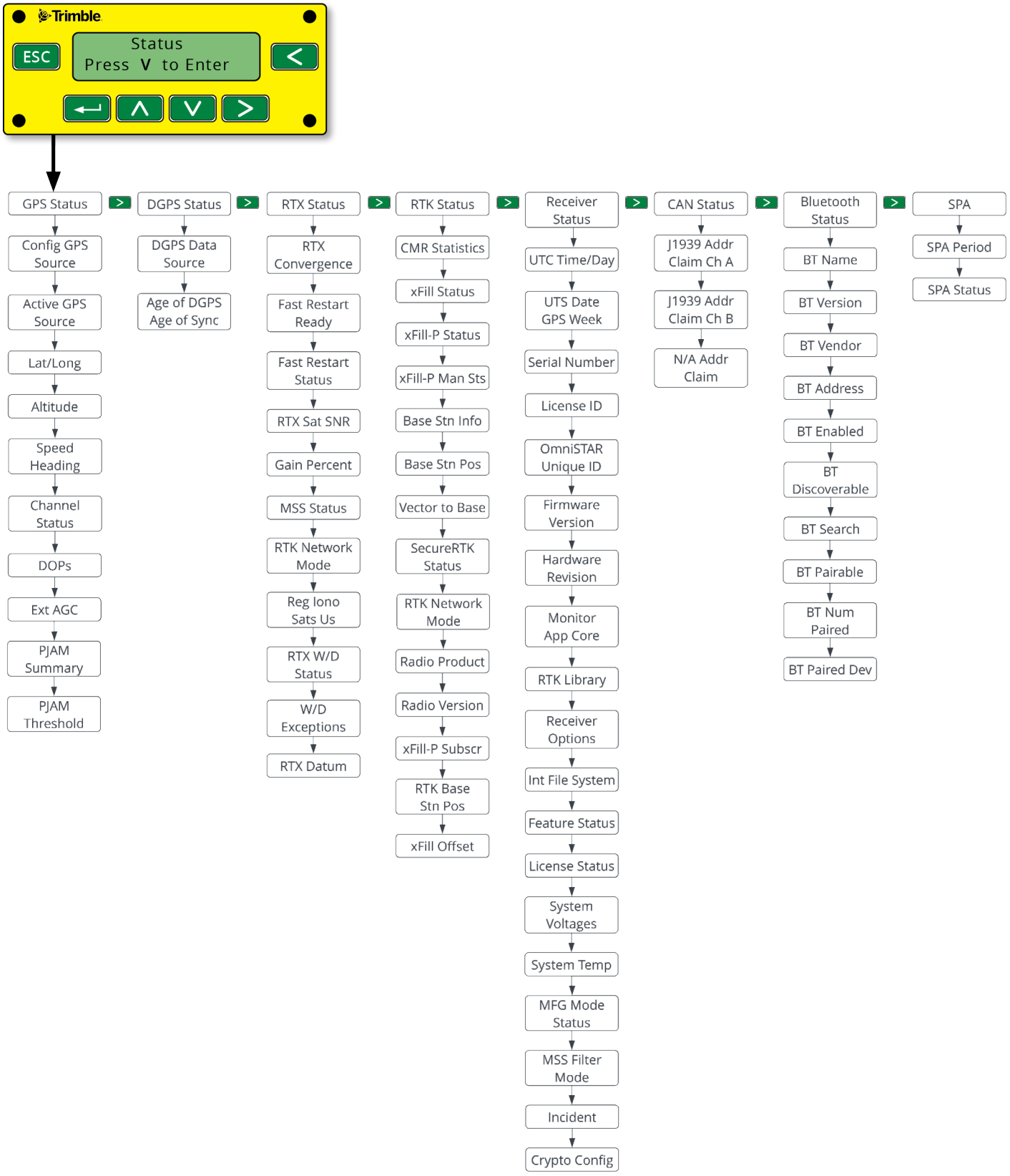
Left/Right
- Move horizontally through the upper and lower-level menus
- Move to the next letter or digit of a field
- Move from the last upper-level menu to the *Home* screen



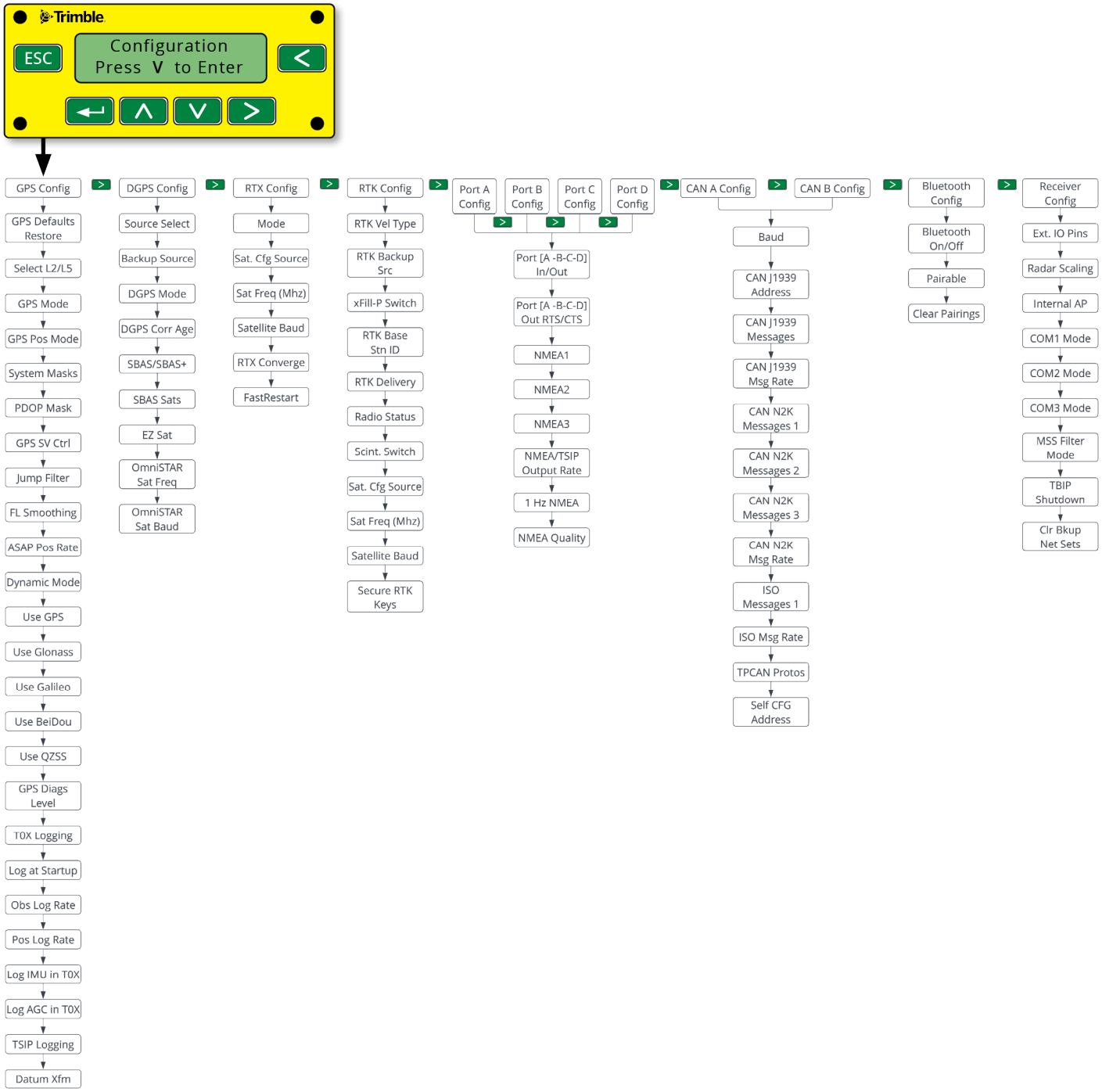
AgRemote Menu Map: Display Options



AgRemote Menu Map: Status Options



AgRemote Menu Map: Configuration Options



Trimble Agriculture

Easier Farming with Precision