



EZ-PRO Version 1.1 DOCUMENTATION

CONTENTS:

- 1. Introduction**
- 2. Quick Start**
- 3. Logs Tab**
- 4. General Information on Primary NMEA Sentences**
- 5. Config Tab Features**
- 6. Terminal Tab**
- 7. Serial Bridge Tab**
- 8. Options Menu**
- 9. Exit Menu**

1. INTRODUCTION

Welcome to EZ-PRO - The configuration software for your *PRO XYZ* GPS receiver. **Note: Your PROXYZ GPS system comes pre-configured with the appropriate COM ports and settings in your Windows Mobile Manager; found under START/SETTINGS/SYSTEM/GPS; DO NOT ALTER THESE SETTINGS.**

2. QUICK START

To begin, launch the EZ-PRO software found under **Start/Programs/EZ-PRO**.

Tap the **CONNECT** menu in the lower left corner of the screen.

Your *PRO XYZ* GPS receiver is set on COM2; tap on it to connect. The lower screen will show **OPEN COM2** in the **RECEIVER TYPE** line and the baud rate setting in the Serial Number line (Baud Rate 9600). Once EZ-PRO finds the receiver, these lines will change to SX2g for RECEIVER TYPE and you will see the serial number for the GPS engine listed.

Tap on the **CONFIG** tab to ensure the receiver parameters are set the way you want them to be set for your environment and job function.

NOTE: If you make changes to any of the parameters within the CONFIG tab the changes will not take effect until you select the OPTIONS/SAVE CONFIGURATION/ SAVE SETTINGS NOW Tab.

The **TERMINAL** tab displays the messages coming from the GPS. This tab is designed to be used for troubleshooting if and when necessary.

The **SERIAL BRIDGE** tab is needed for connecting to an external RTCM correction source. For more information on this feature, see the section entitled Serial Bridge Tab.

Once you have your *PRO XYZ* GPS receiver configured the way you need it, tap the **Options/Save Configuration/Save Settings Now** Tab.

You are now ready to connect to your GPS navigation and data collection software. Next time you power on your *PRO XYZ* it will be configured with your parameters. You will not need to run EZ-PRO unless you want to change some parameters.

3. LOGS TAB

The **LOGS** tab on the *PRO XYZ* has been pre-set for NRCS requirements.

DO NOT CHANGE!

4. GENERAL INFORMATION ON NMEA SENTENCES

GPGGA

This message contains the time, your position and altitude, position type, the number of satellites you are tracking, the HDOP measure of geometry, and DGPS correction age and station ID, if applicable. This message is one of the most common messages used for GPS positioning. Most software packages expect this message once every second.

GPGSA

This message contains the PDOP, HDOP and VDOP measures of satellite geometry along with the numbers of the satellites used in the position solution. This message is commonly accepted in many software packages at a rate of once per second.

GPGSV

This message contains the satellite information for all satellites being tracked. This is common message software packages use to display satellite tracking information at a rate of once every 5 seconds. It is usually logged at a slow rate because the message is quite long.

GPVTG

This message contains your speed, direction of travel and status indicator. GPVTG is commonly used in many software packages at a rate of once per second.

5. CONFIG TAB FEATURES

The **CONFIG** tab is used to adjust the parameters for your *PRO XYZ* GPS receiver to provide optimal performance for your working environment. Once you are connected to the receiver, you will see the current setting for each parameter and you can change it as desired.

DIF AGE (in seconds) COAST TECHNOLOGY

This feature will take your last known differentially corrected position and use it to give you better yield in a 2D environment (under canopy or urban landscape) for up to 45 minutes.

MASK ANGLE (in degrees)

The Mask Angle is the number of degrees above the horizon where you would like to start using satellites. Any satellites appearing below the Mask Angle will not be included in the position calculation. Typically, satellites have poorer quality measurements when they are at or near the horizon. Allowing poor measurements into the position calculation can result in degraded accuracy. The *PRO XYZ* comes set with a mask angle of 10.

DECIMALS

This is the number of decimal places to include in the latitude and longitude position fields. Using 8 decimals ensures the highest precision (mm or sub-inch).

SMOOTHING

Smoothing defines an internal parameter for the GPS receiver to account for reflected signals. Using Long (900) is best for most situations.

HEIGHT AID

Height Aiding is when the GPS receiver no longer needs to calculate Altitude because you are assigning it a constant, known value. This allows it to still calculate positions while tracking only 3 satellites. Normally a minimum of 4 satellites is needed to calculate your position.

Select 3D ONLY to ensure you always use at least 4 satellites for position calculation. You can use this setting in any environment to preserve accuracy.

Select AUTO 2D/3D if you want to maximize the likelihood of calculating a position while under heavy canopy, or in urban canyons. This is referred to as increasing your yield. In this mode, the *PRO XYZ* GPS receiver will use the last available altitude while it is only tracking 3 satellites to continue to calculate latitude and longitude. Note that positions calculated while only tracking 3 satellites can have large errors in them, so use this setting with caution.

Another way to use Height Aiding is if you are always operating within 2 meters or 6 feet of the same altitude, such as collecting data along a shoreline or on a lake. Select FIXED from the menu, then type in the ellipsoidal altitude of the receiver in either meters or feet. Note that the GPS will force the solution height to the value that you enter.

PDOP LIMIT

Defining a PDOP limit will prevent position and velocity messages from being generated if your satellite geometry does not meet the value you specify in this field. Note that a low value for any DOP measure of geometry is desirable. This field is provided because some jobsite operators insist on not including any data that is beyond a specified PDOP value. For open environments a PDOP value of 6 would be a typical limit value. For areas under heavy canopy or in urban canyons, a PDOP value of 10 may be an acceptable limit. The value used here is up to the jobsite data coordinator.

FOREST MODE

Forest Mode can be set to YES or NO. For normal operation, NO is the recommended setting. Setting Forest Mode to YES increases the signal strength on weak satellites. This may or may not improve positioning quality as the weaker signals often include larger errors. This is usually an acceptable trade-off in areas with heavy canopy if obtaining higher yield is your primary interest.

6. TERMINAL Tab

The **TERMINAL** tab provides a way to observe the messages coming from the *PRO XYZ* GPS receiver, and also allows you to send text commands to the receiver.

You can switch to another tab at any time if you no longer want to view the TERMINAL tab.

Note: This screen is provided for advanced users and is not expected to be used as part of the normal operation of the *PRO XYZ* GPS receiver. As such, the information regarding the use of this tab will be brief.

PAUSE Button

Tap the PAUSE button to freeze the screen. This will allow you to scroll back in the messages to see a particular value. The text in the button will have changed to RESUME – tap that to return to the live data stream.

TEXT Box and SEND Button

Tap inside the text box and you can type in a command (**prior knowledge required**). Tap SEND to send this command to the receiver. Users will likely never need to use this function, but if required to, instructions will be provided by 3-D Marketing on what command to type into the text box.

7. SERIAL BRIDGE TAB

The SERIAL BRIDGE tab is provided to allow users to connect to an external RTCM correction stream. As the *PRO XYZ* GPS receiver only has one COM port connection to the Archer, SERIAL BRIDGE will allow you to connect to existing VIRTUAL PORTS within the *PRO XYZ* and will allow you to control the I/O from the virtual port. This feature utilizes the GPS feature that is part of Windows Mobile (found under START/ SETTINGS MENU/SYSTEM TAB/GPS ICON).

WINDOWS MOBILE GPS Manager

In order to use the Serial Bridge inside EZ-PRO, you will need to configure the Windows Mobile GPS Manager. Launch it by selecting the **START/SETTINGS MENU** then select the **SYSTEM TAB** followed by the **GPS ICON**.

In the first tab, labeled **PROGRAMS**, define the virtual COM port that you wish to use for connecting your navigation and data collection software to your corrected GPS messages. It is **NECESSARY** to select an unused COM port, such as COM4 which we have already set up for you under the connect tab in EZ-PRO.

In the second tab, labeled **HARDWARE**, define the COM port you connected to when you first ran EZ-PRO (**COM2**). Verify that the Baud rate is at 9600 and be sure the **Manage GPS** box, found under the **ACCESS TAB**, is checked.

Tap the **OK** box in the upper right corner and then the **X** box to return to home screen and connect to EZ-PRO (COM2)

NOTE:

Do not change the above PRO XYZ Win Mobile settings which are:

PROGRAMS: COM4

HARDWARE: COM2/9600 Baud Rate

ACCESS BOX MUST STAY CHECKED

SERIAL BRIDGE must stay running to handle data passing from port to port. Users planning to use external RTCM corrections **MUST ALWAYS START UP EZ-PRO AND TAP ON THE CONFIG TAB TO CHANGE THE DIFFERENTIAL SOURCE FROM WAAS (SBAS) TO DATA PORT (NOT BEACON) THEN TAP ON OPTIONS/SAVE CONFIGURATIONS/SAVE SETTINGS NOW TAB BEFORE OPENING SERIAL BRIDGE. THESE STEPS MUST BE DONE PRIOR TO OPENING YOUR NAVIGATION AND DATA COLLECTION SOFTWARE.**

SERIAL BRIDGE Button

Tapping on the large SERIAL BRIDGE button will move EZ-PRO into the SERIAL BRIDGE mode. Your screen will change to show an upper and a lower portion. The upper portion represents the Virtual COM port that your navigation

and data collection software will connect to, as defined in the Windows GPS manager (COM4). The lower portion of the screen represents the COM port you have chosen for the RTCM coming into the PRO XYZ (example COM7)

LOWER SCREEN, COM PORT Box

Set this COM port to the port you have your RTCM corrections coming in on. Typically this will be either a Bluetooth serial port (example, COM7), or the DB9 port at the bottom of the Archer (COM1).

LOWER SCREEN, BAUD RATE Box

SET ALL BAUD RATES ON BOTH PRO XYZ VIRTUAL PORT AND RTCM SOURCE AT 9600

UPPER SCREEN, COM PORT Box

Set this COM Port to match what you have set in the first tab of the Windows Mobile GPS Manager (COM4). This is the port that you will set your navigation and data collection software to.

UPPER SCREEN, BAUD RATE Box

SET ALL BAUD RATES ON BOTH PRO XYZ VIRTUAL PORT AND RTCM SOURCE AT 9600

CONNECT Menu

Once you are ready to bring the RTCM corrections into your *PRO XYZ* GPS receiver, tap the **CONNECT** menu option. You will see characters appearing in the lower portion of the screen, representing the RTCM corrections coming in on the COM port (COM7). The menu option will change to DISCONNECT. Tapping DISCONNECT will stop the flow of corrections and **should only be used if you are changing your parameters via the CONFIG TAB.**

AFTER COMPLETING SERIAL BRIDGE SET UP DO NOT TAP EITHER THE OK BUTTON IN THE UPPER RIGHT CORNER OR THE EXIT BUTTON IN THE LOWER LEFT HAND CORNER. TAPPING EITHER ONE OF THESE BUTTONS WILL STOP THE FLOW OF RTCM DATA.

HIT THE START BUTTON IN THE UPPER LEFT HAND CORNER TO LAUNCH YOUR NAVIGATION AND DATA COLLECTION SOFTWARE.

FREEZE DISPLAY Menu

Tap on **FREEZE DISPLAY** to stop the data from scrolling thru the screen. The data will keep flowing between the ports but this provides you with a clearer view of the RTCM data. Note that the RTCM looks like an odd collection of various characters, so there is not much to look at here!

EXIT Menu

Tapping **EXIT** will stop the flow of corrections and end EZ-PRO.

8. OPTIONS TAB

The OPTIONS menu provides control over various *PRO XYZ* GPS receiver functions.

VIEW DATA PORT

This item should be checked at all times when using your *PRO XYZ* GPS receiver.

TURN OFF ALL, (Data, Aux, All Ports)

Selecting DATA PORT or ALL PORTS will tell the *PRO XYZ* GPS receiver to stop sending out all logs. Selecting AUX PORT will have no effect on your *PRO XYZ* GPS receiver.

RESTORE DEFAULTS

Use this feature to bring back the NRCS default settings in the *PRO XYZ*.

SAVE CONFIGURATION/SAVE SETTINGS NOW

Tapping this option will save all of the log and configuration settings to non-volatile memory. This means the next time you power on your *PRO XYZ*, it will have the exact logs and configuration you have set.

9. EXIT MENU

This menu offers only one choice: **SAVE AND EXIT**. This will save all of your logs and configuration settings so that the next time you power on your *PRO XYZ* GPS receiver, it will be configured as you have set it. The only reason you would need to use EZ-PRO again is if you are either changing parameters and/or using RTCM corrections via Serial Bridge.

For Questions or Comments, please contact Technical Support:

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