Veripos LD2 Equipment

PPS/ZDA Setup Information using PC-CDU

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Procedure Title:

LD2 PPS/ZDA Function Setup

Procedure No: AB-V-MD-00600	**File Ref: Vmd00600.doc**

CONTENTS

1. INTRODUCTION

The purpose of this document is to guide the user through setting up the PPS/ZDA function within the LD2 unit fitted with a Topcon 112 GPS card.

Typically this function is already setup within the LD2 unit but if not this document will guide the user through the steps necessary to get the PPS function enabled and working on the LD2. The following steps are detailed within this guide:

- Connecting to the LD2 GPS card using the PC-CDU software;
- Checking the status of the PPS signal on your LD2;
- Upgrading the GPS card within the LD2 should the PPS option not be available;
- How to setup the PPS/ZDA output;
- Show the pinout for the ZDA/PPS cable to be used with the LD2.

Users are advised to be familiar with the operation and menu structure of the LD2 before using this setup guide. All information is contained within the LD2 manual which is available via the Veripos Online Support System (http://help.veripos.com). If any problems are encountered please contact the Veripos Helpdesk.

Veripos 24 Hour Helpdesk contact details:

Tel: +44 1224 877993
Fax: +44 1224 896731
E-mail: veripos.helpdesk@subsea7.com

2. CONNECTING TO LD2 GPS RECEIVER USING PCCDU

A straight through serial cable is required and should be connected between COM1 of a PC to P5 connector on the back of the LD2.

Via the LD2 menu select **Configuration > Serial Ports > P5** and check that the GPS I/O is set to Remote. Remember to set the GPS I/O back to off once the process is completed then as good practice, power cycle the LD2 unit to ensure all internal computations re-start.

PC-CDU software is supplied on the Veripos CD shipped with the equipment. Alternatively the software is available via the VERIPOS downloads site:

http://downloads.veripos.com/downloads/PC-CDU/PCCDU_MS_7_12.zip

Alternatively, the software can be downloaded from the Topcon website (N.B. you will need to register as a user):

http://www.topconpositioning.com

Download PC-CDU lite and follow the installation instructions. Once the software has been installed, run the software ensuring that COM1 is selected and then the software will automatically scan baud rates until it can communicate with the GPS card.

Provide a suitable antenna is connected to the GPS connector on the back of the LD2, information on the satellites being tracked by the GPS card will be displayed as shown in Figure 1.

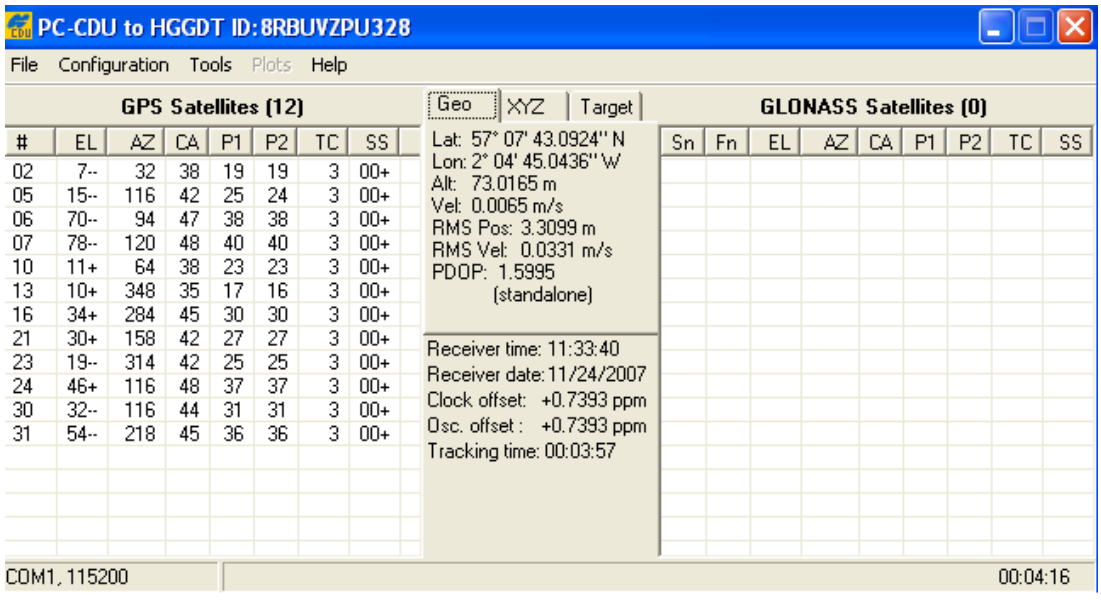


Figure 1 - PC-CDU Main Communication Window

3. CHECKING PPS OPTION ENABLED

The user should check to see whether the PPS option is enabled on the GPS card. This information can be viewed in PC-CDU by using going to **TOOLS** then **RECEIVER OPTIONS** in the menus as indicated in Figure 2.

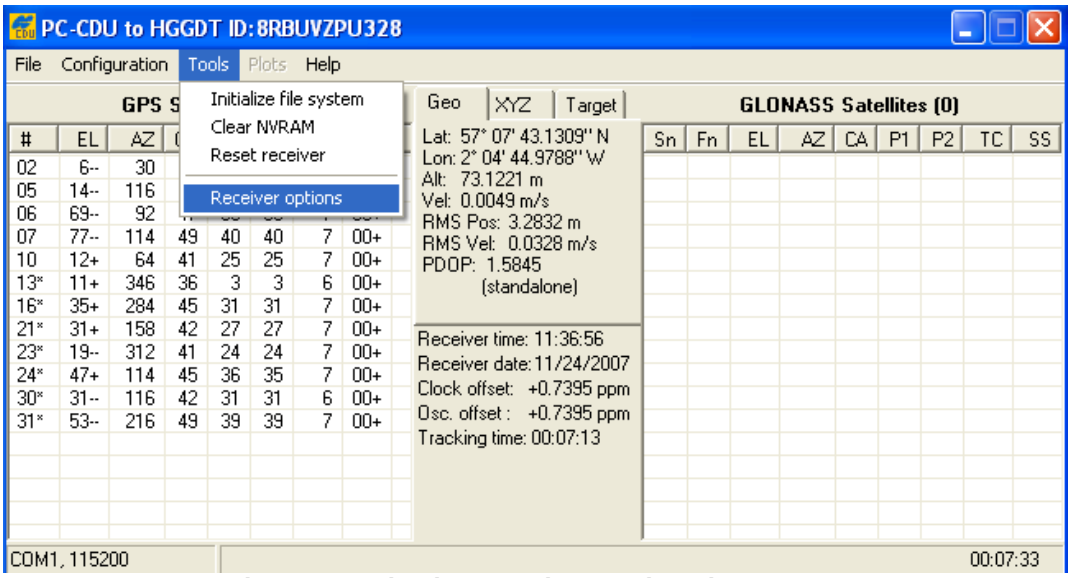


Figure 2 - Selecting Receiver Options in PC-CDU

This will then display the option manager dialogue (Figure 3). By looking down the option manager it can be seen that the PPS option is not installed as indicated by the option 0.

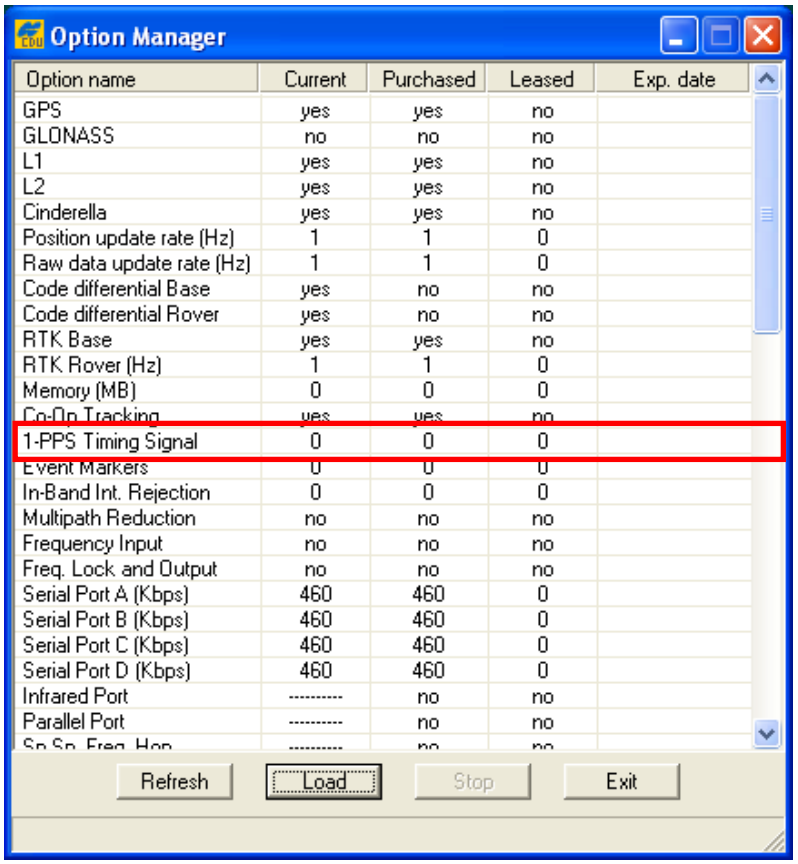


Figure 3 - Option Manager Dialogue (PPS not enabled)

Figure 4 shows the option manager dialogue indicating that the PPS option is enabled on the GPS card (indicated by the value 2).

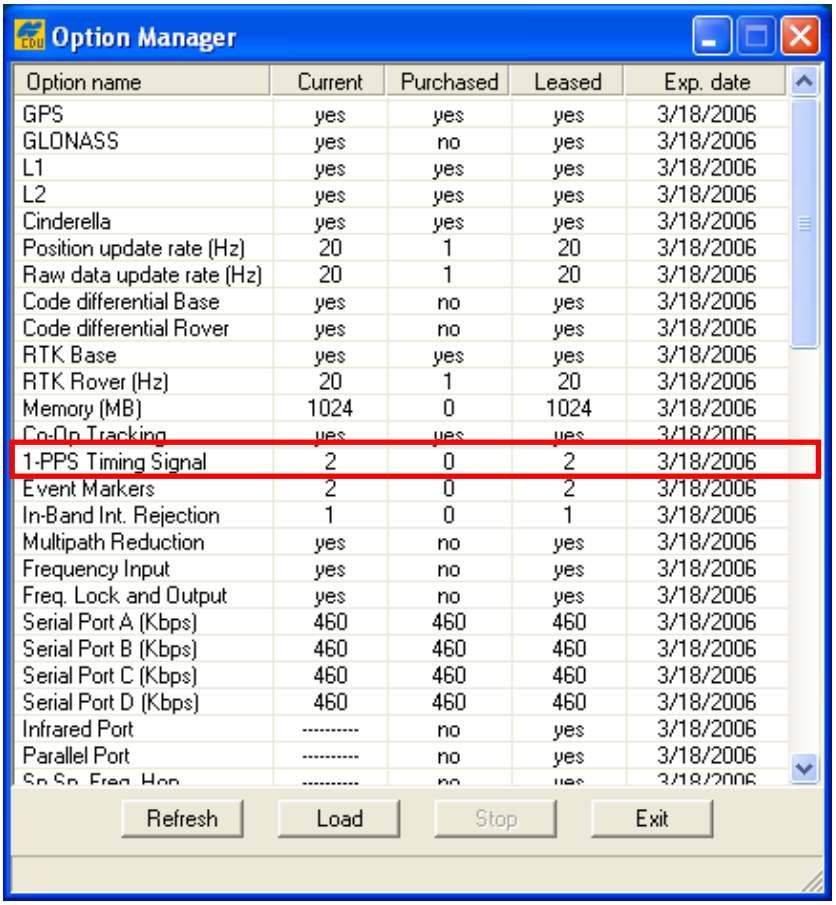


Figure 4 - Option Manager Dialogue (PPS enabled)

4. UPGRADING PPS OPTION ON GPS CARD IN LD2

If the GPS card within the LD2 does not have the PPS option enabled then the following steps should be followed to enable the PPS option.

In PC-CDU select **Help** and **About** to access information about the GPS card.

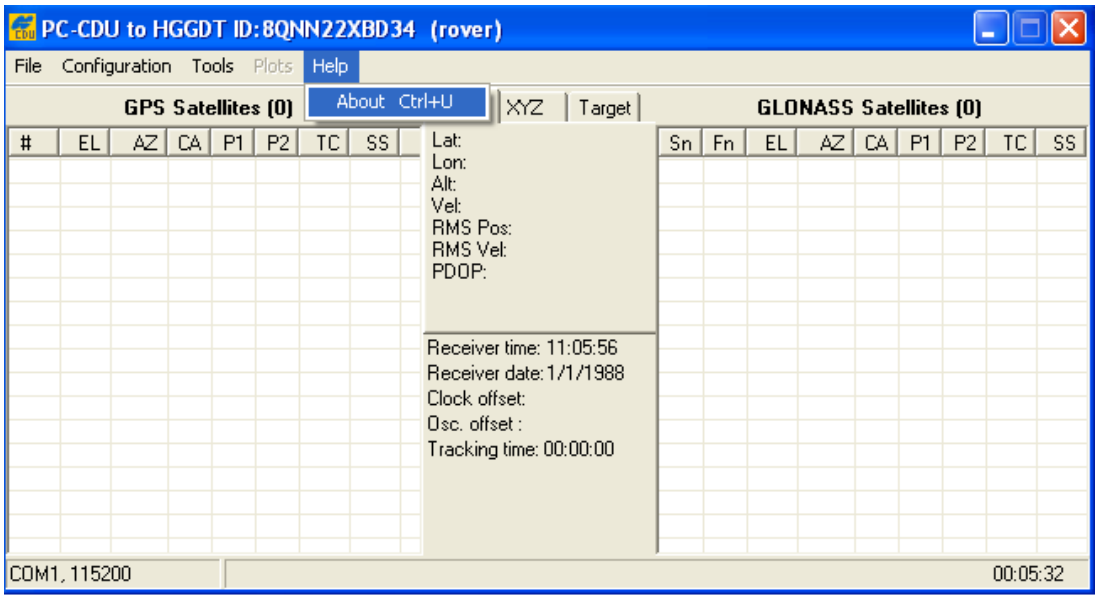


Figure 5 - PC-CDU Help Menu

Once the about menu in the software has been selected the dialogue in Figure 6 should be displayed which will display details about the GPA card installed in the LD2. The GPS card details are required in order to organise the PPS upgraded and should be saved to file by clicking on the **Report** button in Figure 6.

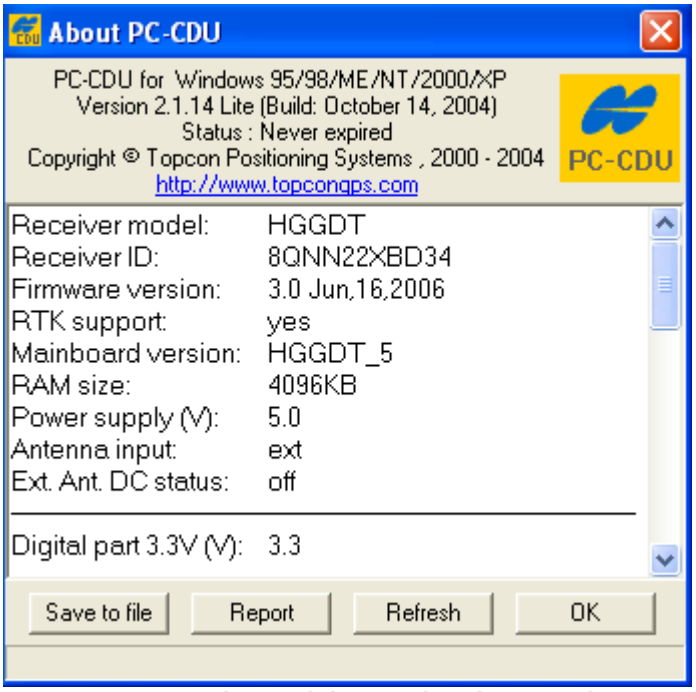


Figure 6 - PC-CDU About Dialogue showing Receiver Details

After clicking the report button, the dialogue in Figure 7 is displayed allowing the user to save the details to a text file. Name the .txt file the same as the receiver ID which is shown in the About dialogue of PC-CDU (second line) or at the top of the main receiver communication window (Figure 5).

This file should then be sent to the Veripos Helpdesk (see Section 1 for contact details) where an upgrade file for the GPS card will be organised. Please note that it take between 48-72hours to organise the upgrade file.

It is important that the receiver ID is used as the filename because this is required in order to generate the authorisation upgrade for the GPS card which will enable the PPS option. If the wrong receiver ID is used this can delay generation of the upgrade file.

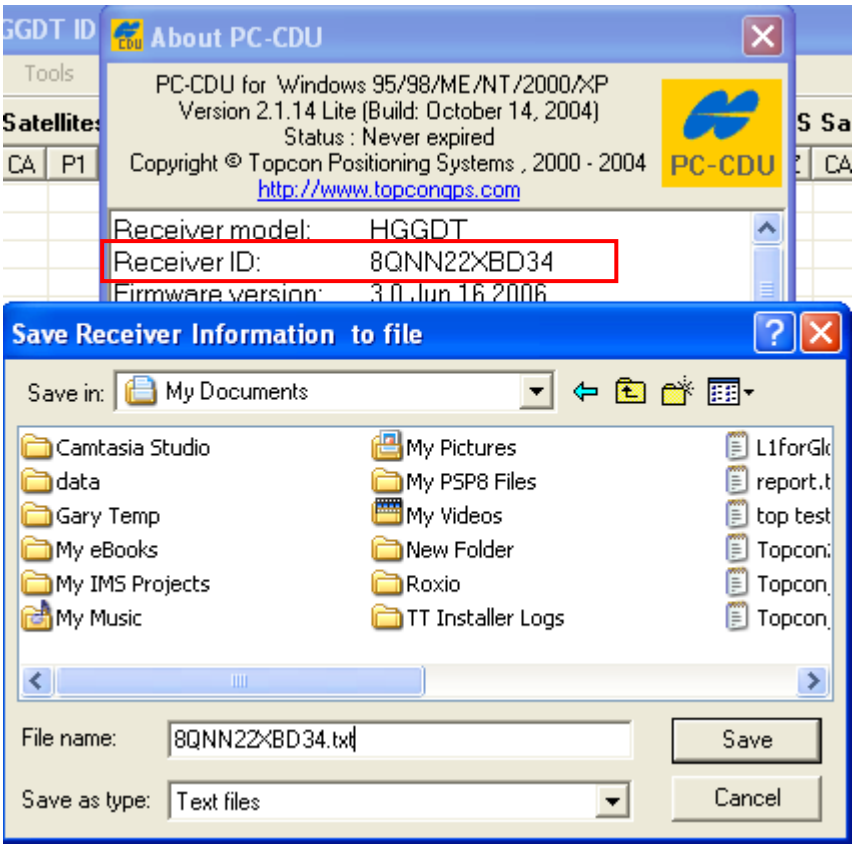


Figure 7 - Saving GPS Details to File

Once the user have received the upgrade file from Veripos, save the file to a location on the PC and then run the PC-CDU software connecting to the LD2 unit as detailed in Section 2. Once the software has successfully connected to the GPS card in the LD2 and then select **Tools** and **Receiver Options** from the PC-CDU menu (Figure 8).

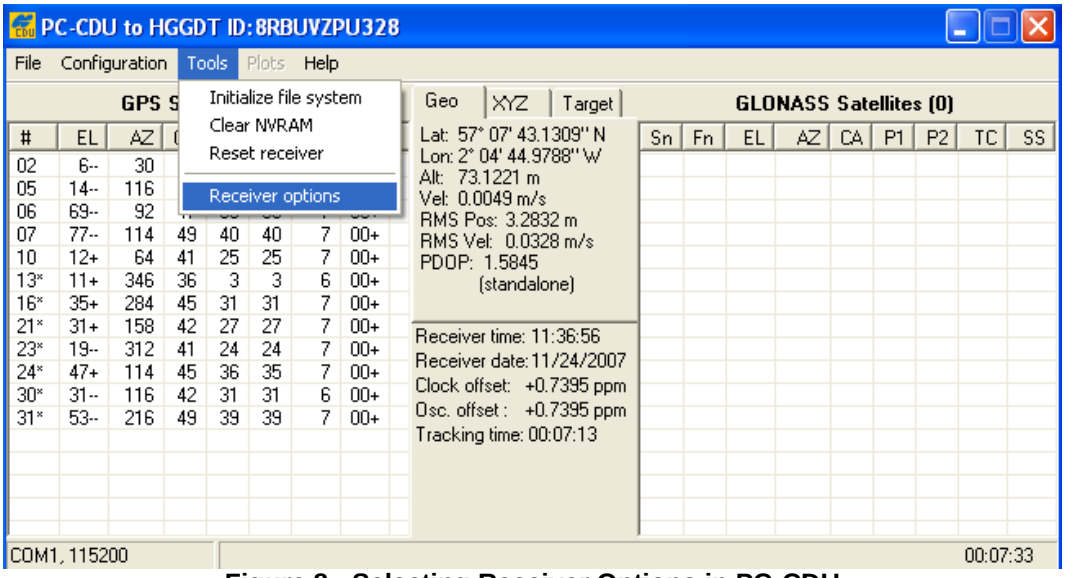


Figure 8 - Selecting Receiver Options in PC-CDU

This will then display the PC-CDU option manager dialogue (Figure 9) and the user should click on the Load button which will allow the upgrade file to be loaded to the receiver.

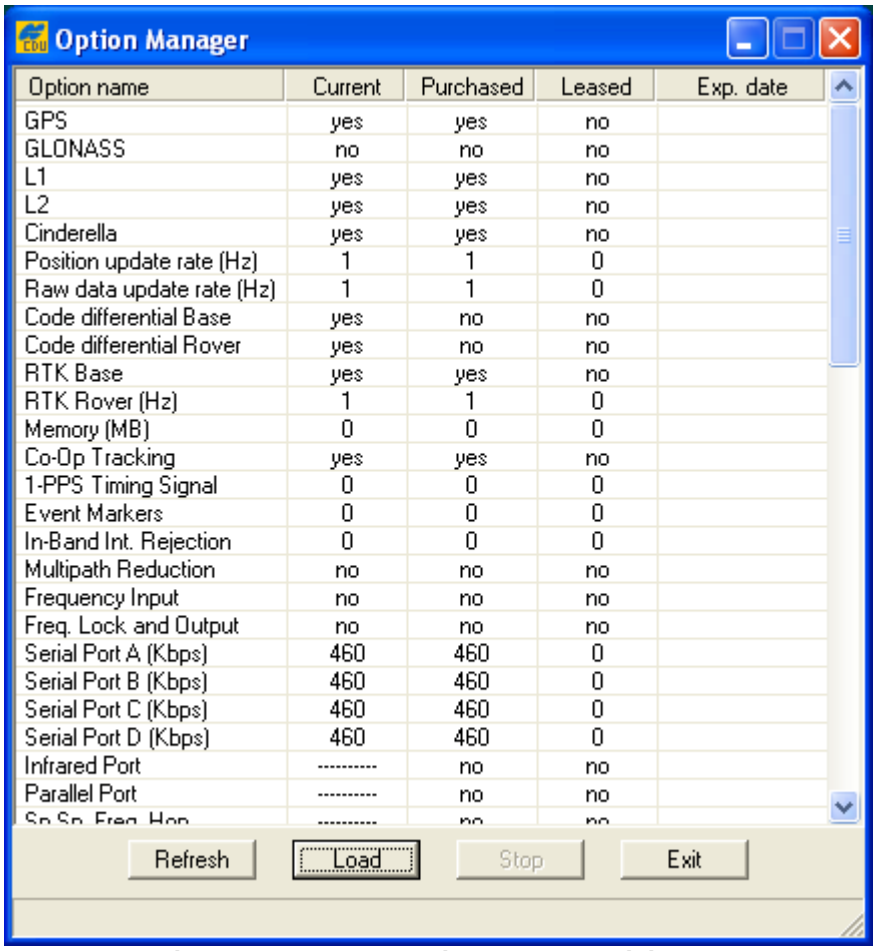


Figure 9 - PC-CDU Option Manager Dialogue

Browse to the directory where the upgrade file provided was saved. The PC-CDU software will automatically list files with the correct extension. Check for the filename that matches

the receiver ID, select the .tpo file and click Open which will start loading the options to the GPS card.

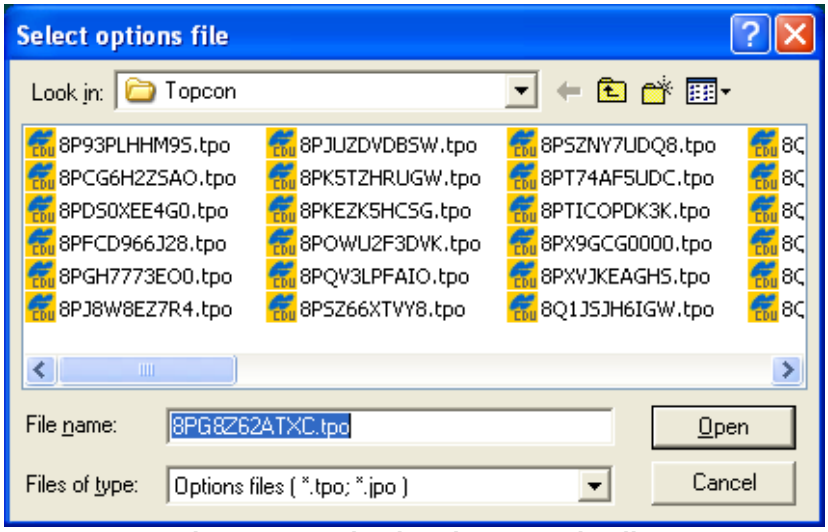
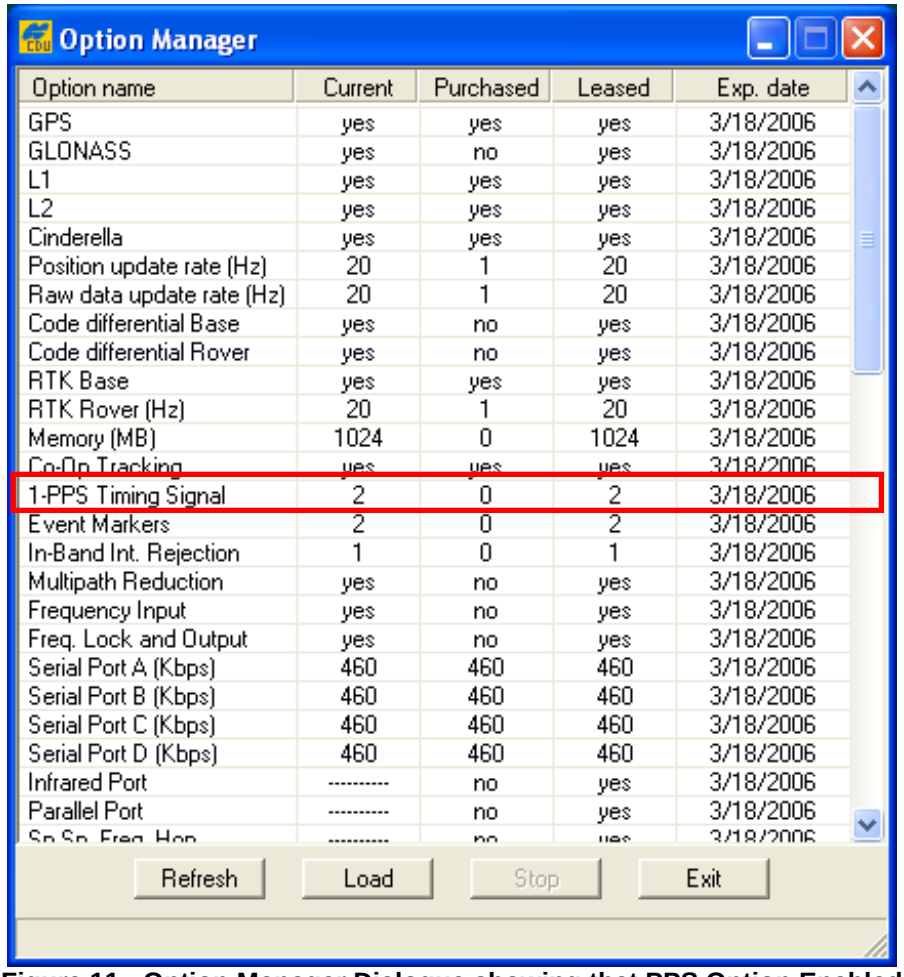


Figure 10 - Selecting the Upgrade File

The PC-CDU software will load the upgrade file to the GPS card and the unit will restart once loading is complete.



Option name	Current	Purchased	Leased	Exp. date
GPS	yes	yes	yes	3/18/2006
GLONASS	yes	no	yes	3/18/2006
L1	yes	yes	yes	3/18/2006
L2	yes	yes	yes	3/18/2006
Cinderella	yes	yes	yes	3/18/2006
Position update rate (Hz)	20	1	20	3/18/2006
Raw data update rate (Hz)	20	1	20	3/18/2006
Code differential Base	yes	no	yes	3/18/2006
Code differential Rover	yes	no	yes	3/18/2006
RTK Base	yes	yes	yes	3/18/2006
RTK Rover (Hz)	20	1	20	3/18/2006
Memory (MB)	1024	0	1024	3/18/2006
Co-Op Tracking	yes	yes	yes	3/18/2006
1-PPS Timing Signal	2	0	2	3/18/2006
Event Markers	2	0	2	3/18/2006
In-Band Int. Rejection	1	0	1	3/18/2006
Multipath Reduction	yes	no	yes	3/18/2006
Frequency Input	yes	no	yes	3/18/2006
Freq. Lock and Output	yes	no	yes	3/18/2006
Serial Port A (Kbps)	460	460	460	3/18/2006
Serial Port B (Kbps)	460	460	460	3/18/2006
Serial Port C (Kbps)	460	460	460	3/18/2006
Serial Port D (Kbps)	460	460	460	3/18/2006
Infrared Port	----------	no	yes	3/18/2006
Parallel Port	----------	no	yes	3/18/2006
Sp Sp Freq Hop	----------	no	yes	3/18/2006

Figure 11 - Option Manager Dialogue showing that PPS Option Enabled

Once completed, ensure that the PC-CDU software is communicating with the GPS card (see Section 1 on how to connect) to check that the options file has been successfully loaded and the PPS option is enabled. From the PC-CDU menu go to **Tools** and **Receiver Options** which will bring up the option manager dialogue where the PPS option should be enabled (see Figure 11).

5. SETTING UP THE PPS AND ZDA OUTPUT FROM THE LD2

After establishing that the PPS option is enabled on the GPS card within the LD2, the next step is to check the settings of the PPS signal. This also gives the user the option of editing the PPS settings to meet their requirements.

Connect the PC-CDU software to the GPS card using the process outlined in Section 2 and select Configuration and Receiver from the PC-CDU menu (see Figure 12).

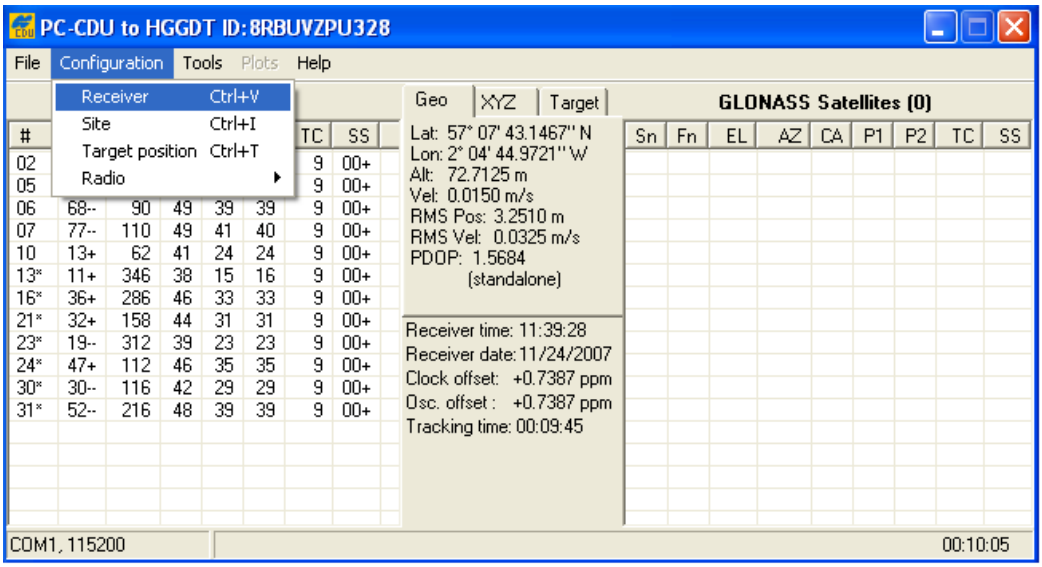


Figure 12 - Configuring the GPS Receiver in PC-CDU

This will bring up the dialogue window as shown in Figure 13. Select the Events tab which allow configuration of the PPS options. Ensure that **PPS A Enabled** checkbox is ticked which will enable the PPS output on the GPS card.

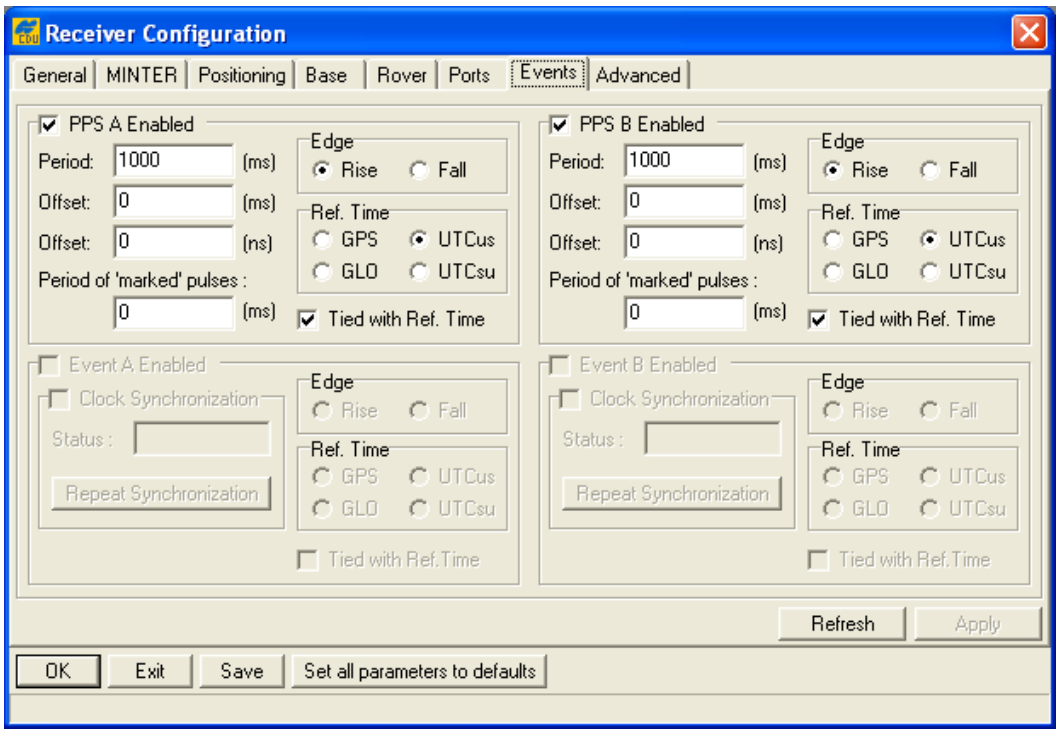


Figure 13 - GPS Receiver Configuration Dialogue

The PPS output is available using a suitable serial cable connected to P1 of the LD2 and ensuring that in the LD2, P1 is set to **GPS Rx**. This can be viewed by going thought the LD2 menu **Configuration > Serial Ports > P1**.

To enable the ZDA output, first run up the PC-CDU software and from the menu select File and Manual Mode (see Figure 14).

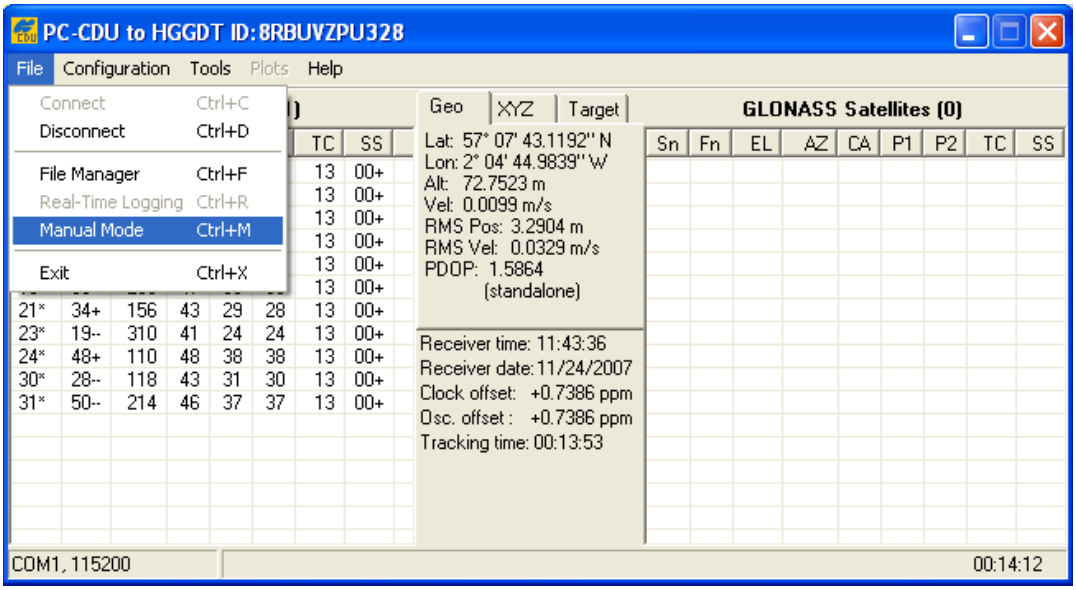


Figure 14 - Entering Manual Mode in PC-CDU

To actually enable the ZDA output the following command needs to be typed (case sensitive):

em,/dev/ser/b,nmea/ZDA

Then press the Send Command button (see Figure 15).

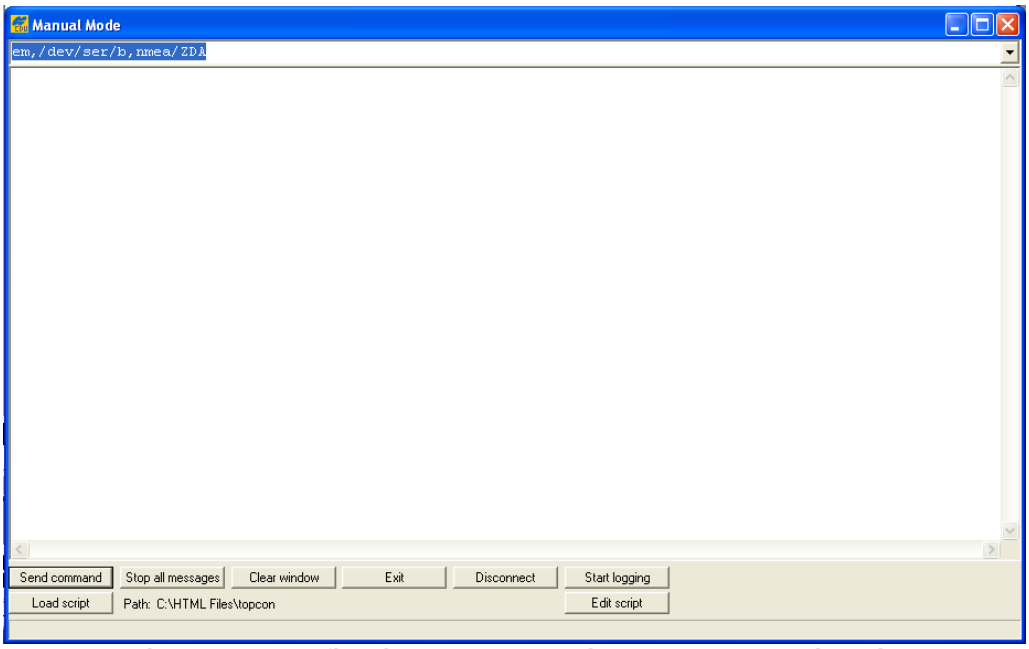


Figure 15 - Configuring ZDA Output in PC-CDU Manual Mode

If other telegrams such as GGA are being output from the GPS card they can be disabled if required by typing the following command (for GGA):

dm,/dev/ser/b,nmea/GGA

This process can be repeated for any other telegrams that are being output by substituting the telegram ID in place of the GGA in the example above.

Please note that if using the Veripos Verify-QC software it is possible to enable the ZDA output without using the PC-CDU software. This involves using the same command as above and going to **Action**, **Receiver** and **Send Command** which will bring up a dialogue box. Enter the command and then send to the receiver.

To verify that the ZDA is being output from P1 of the LD2 unit, the user can use a terminal program such as HyperTerminal to check for a valid ZDA output as shown in Figure 16.

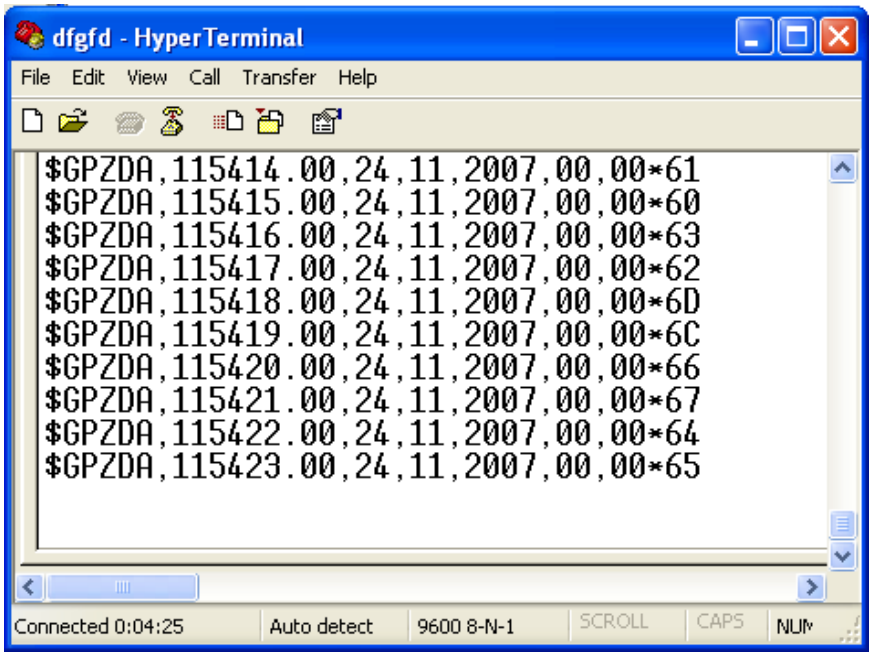


Figure 16 - ZDA Output Displayed in HyperTerminal

If no output is observed in HyperTerminal, check the cabling and then the baud rate settings of the GPS card using the PC-CDU software. Using the menu in PC-CDU, go to **Configuration** and **Receiver** and **Ports** then check that Serial B is set 9600 (see Figure 18 or 18).

Baud Rates for receivers with an LD2S IMU or an LD2 IMU with controller version of 7.16 or later:

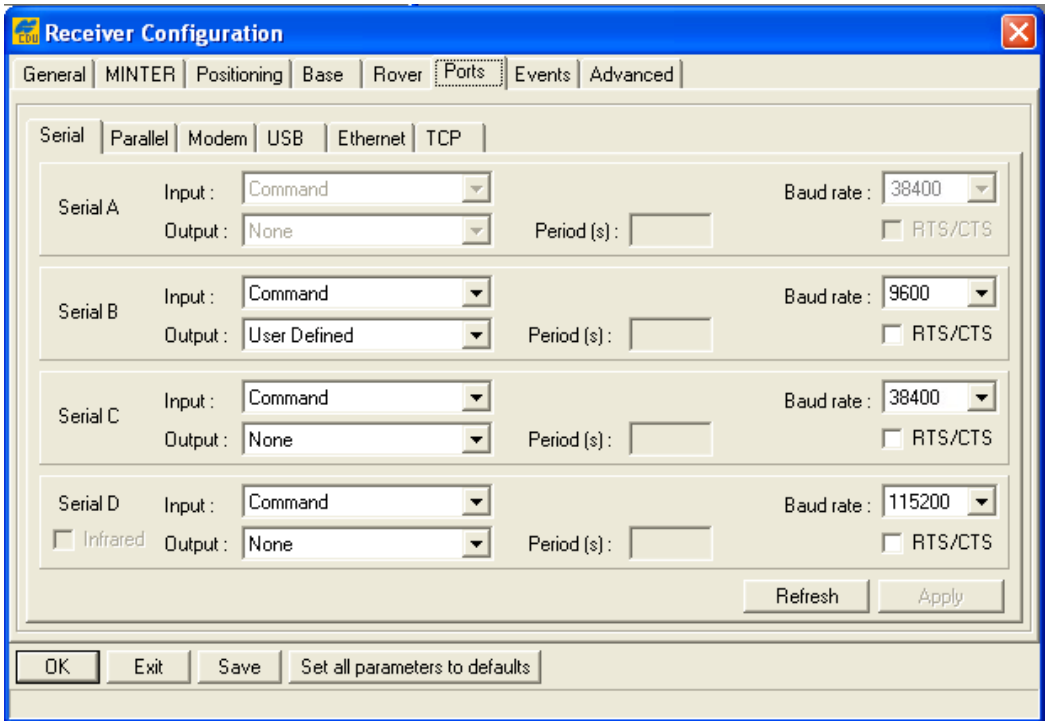


Figure 17 - PC-CDU Receiver Configuration (Ports)

Baud Rates for receivers with an LD2 with controller version of 6.33 or earlier

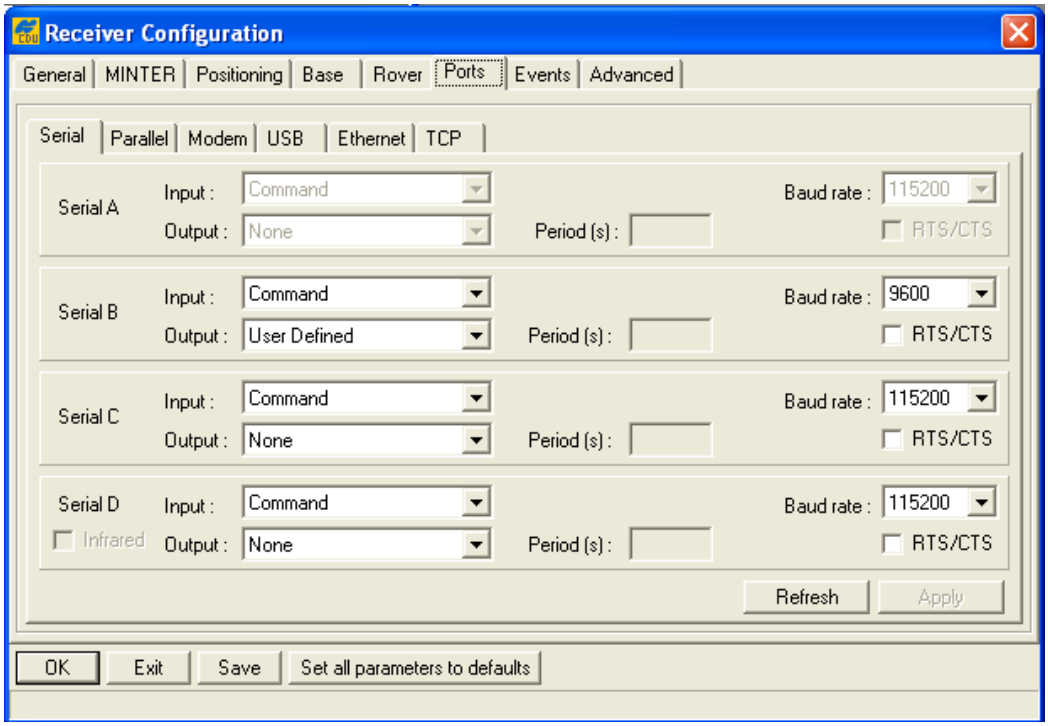


Figure 18 - PC-CDU Receiver Configuration (Ports)

6. LD2 P1 CABLE FOR PPS/ZDA OUTPUT

This section will provide the details required to make up a PPS/ZDA cable that can be connected to P1 of the LD2.

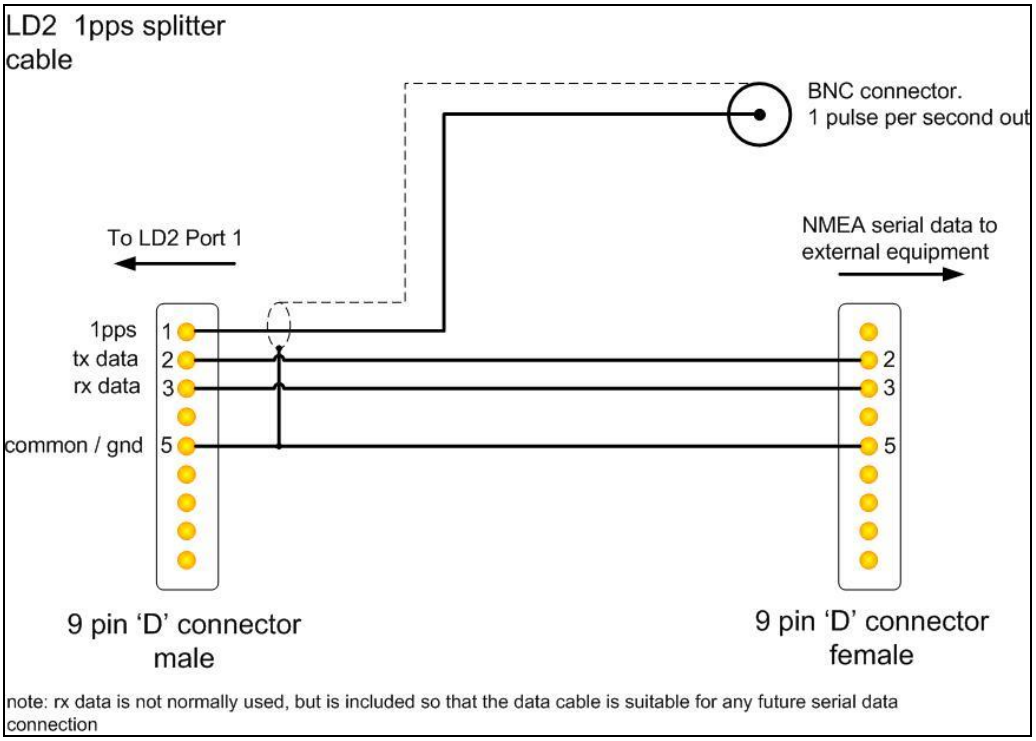


Figure 19 - LD2 PPS/ZDA Cable

The wiring diagram is shown in Figure 19 and images of a typical cable are shown in Figure 20 and Figure 21.

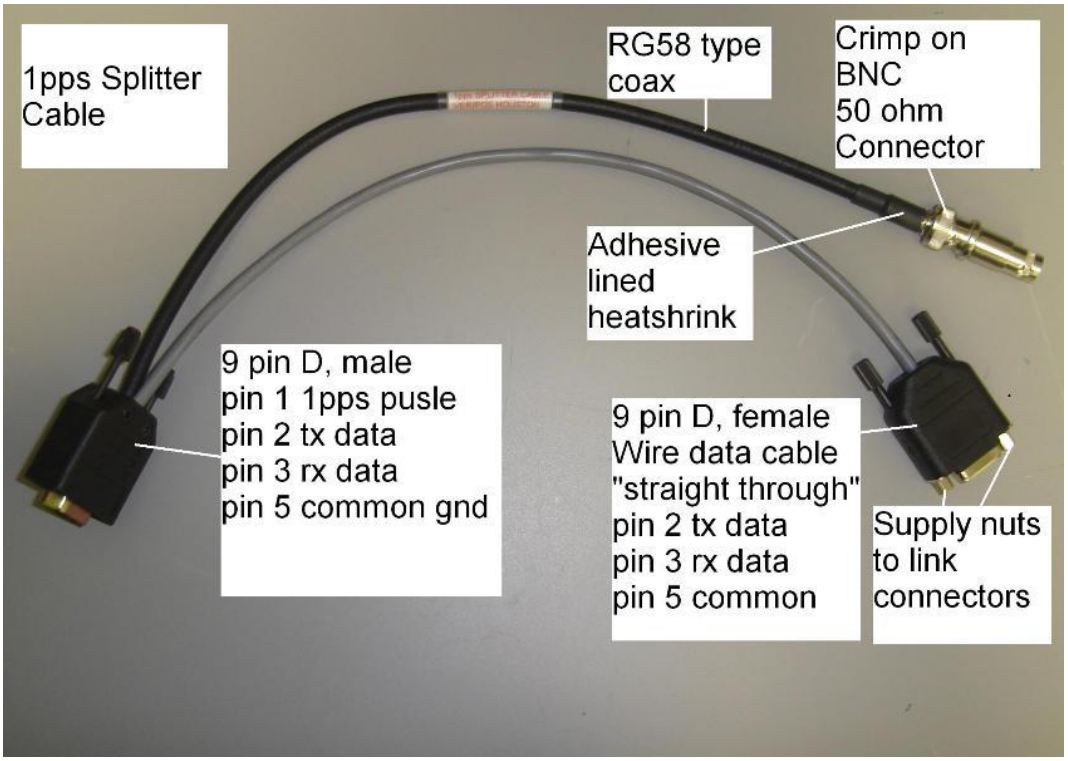


Figure 20 - Y-Cable for LD2

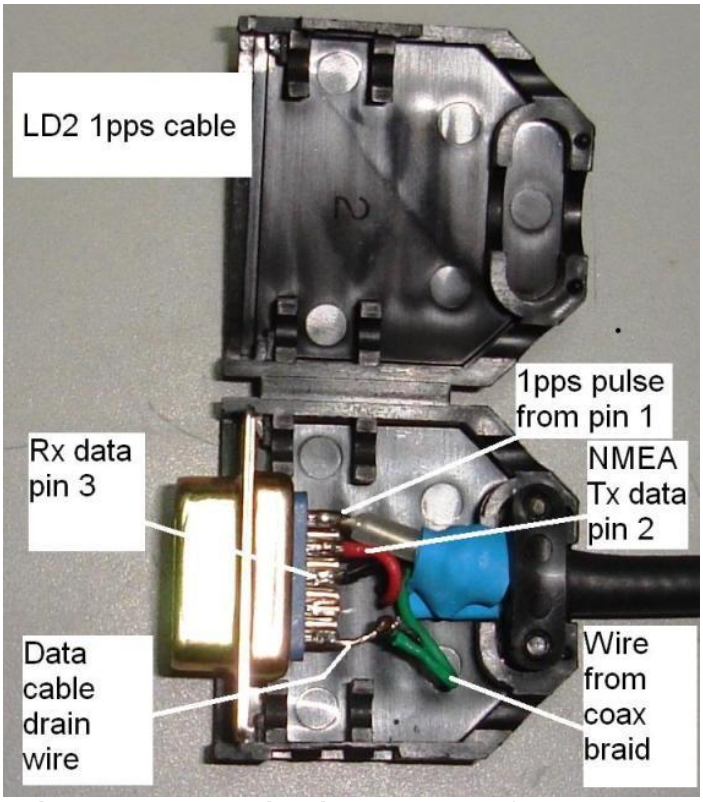


Figure 21 - Image Showing Connector for P1 on LD2