

## 7. DATA, FILE AND PROGRAM TRANSFER

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## 7.1 MONITORING ANALOG SIGNALS

On the Meter & I/O Panels are BNC type output jacks to facilitate external monitoring of the analog signals with a portable chart recorder or oscilloscope.

Small, battery-powered oscilloscopes manufactured for field use are well suited for geophysical applications and are recommended for monitoring field noise. However, they are rarely needed in field operations. The GDP-32<sup>II</sup> measures noise and sets gains more efficiently than an operator.

Oscilloscope signals are taken from either the Analog Output Port on the Front Panel of the receiver or from the output jacks on the Meter & I/O Panel. Connection to the **Patch Panel** is made directly if the oscilloscope has BNC connectors; otherwise, an adapter box can be used.


The analog output connections are buffered to ensure that connecting chart recorders or oscilloscopes during data acquisition will not affect data quality. However, these instruments must have a floating ground or be grounded only to the receiver's system ground.

## 7.2 VIEWING DATA

Limited data are displayed on the receiver's LCD, but the full data set is stored in memory and can be viewed at any time that the receiver is not actually taking data. Calibrations and various types of data are stored in specifically defined and protected areas in memory (data caches.)

The data can be output to either a peripheral printer device via the parallel port, or to a personal or mainframe computer via the serial port or a LAN.

### DATA MODE

Press  to enter *Data Mode*. Depending on the current status of the *Field Data Cache* one of two screens appears:

- If no data is stored in the cache, the screen displays:

**There is no field data in the cache.**


Press  .

- If any data or headers are stored in memory, the screen displays the most recently acquired data block or header block.

### Exiting Data Mode

To return to data acquisition or the Main Program Menu, press  to leave Data Mode.

### FIELD DATA MAIN MENU

Once in Data Mode, press  to access the *Field Data Main Menu*. This is the primary menu for working with data stored in the Field Data Cache. The Field Data Main Menu has four options:

#### Option 1 – View Field Data

Displays the last data block saved to the cache. Note that the first line lists the block number and the total number of blocks in the cache.

*NOTE: For an explanation of the specific information displayed for each type of survey, see the appropriate Survey Program Section.*

The *Select Block* feature allows for easy navigation through the cache.

1. Press  .
2. Enter block to be viewed.
3. Press  .

Zonge Engineering recommends maintaining a data inventory sheet to facilitate locating data block numbers.



Additional data manipulation features **Plot Data** and **Skip Flag** are explained in the individual field program and plot manuals.

### Option 2 – Output Field Data

Options 2 and 3 of the Field Data Main Menu output the data through the serial or parallel ports. *(For instructions on configuring ports see Section 7.5, for complete instructions on outputting data see Section 7.6.)* The following instructions assume familiarity with serial transfer programs such as HyperTerminal.


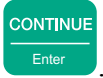


Option 2 outputs all data, while Option 3 outputs selected blocks of data.

To output all data in the Field Data cache:

1. Connect the GDP-32<sup>II</sup> serial port to an external computer with a serial cable.
2. Start the serial transfer program on the remote computer.
3. From the Field Data Main Menu, press .
4. The receiver immediately transmits the contents of the Field Data cache.
5. Press  (End Xmit) to abort transmitting data at any time.

### Option 3 – Output field data block(s)

*(For more information on outputting data see Section 7.6)* To output only selected blocks from the Field Data cache:


1. Connect the GDP-32<sup>II</sup> serial port to an external computer with a serial cable.
2. Start the serial transfer program on the remote computer.
3. Press .
4. Enter the block number where output should start.
5. Press .
6. The screen then prompts for **Ending Block**. Enter the block number where the output should end. If no Ending Block is entered, the system automatically outputs to the end of the cache.
7. Press .
8. Press  (End Xmit) to stop transmitting data at any time.

### Option 4 – Input Field Data Block(s)

For training or demonstration purposes, additional data can be appended to the Field Data Cache.

1. Connect the GDP-32<sup>II</sup> serial port to an external computer with a serial cable.

*NOTE: The first data block number should be equal to the number of data blocks to receive.*

2. Press .
3. Start the serial transfer program on the remote computer.

*NOTE: If Option 4 is selected without a serial connection in place, the receiver will suspend functions waiting to receive data. Re-boot the system by pressing **Control - Alt - Delete**.*

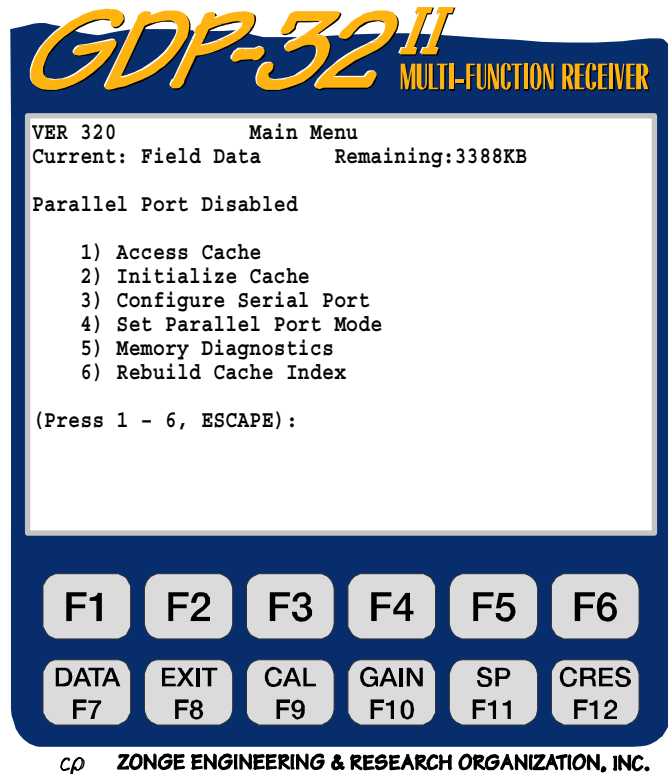
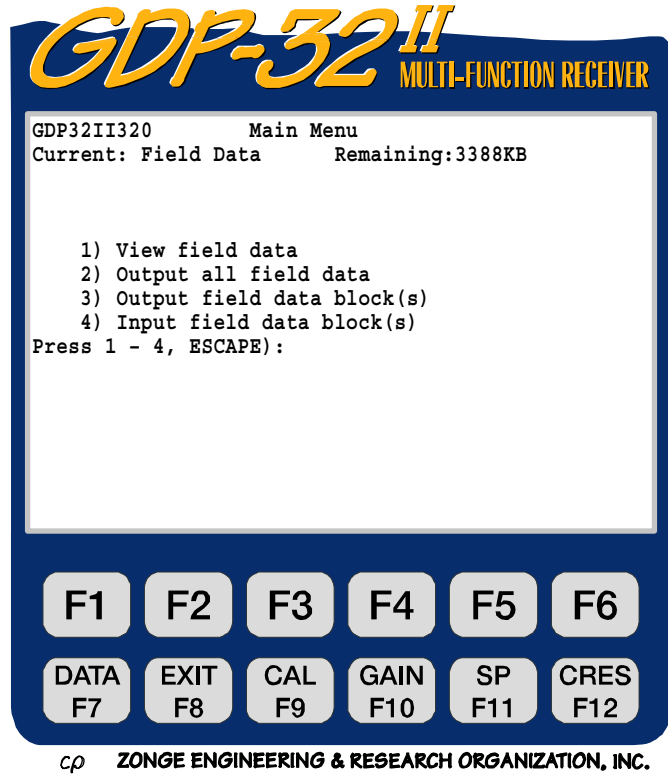
4. When the data transfer is complete the screen displays:  
**Exiting - press a key**
5. Press any key to accept the new field data and return to the Field Data Main Menu.

## DATA MODE MAIN MENU

From the Field Data Main Menu, press  to access the *Data Mode Main Menu*.

The following tasks are initiated from the Data Mode Main Menu:

- Accessing data caches to view or edit data
- Initializing caches
- Configuring the serial and parallel ports
- Outputting data or calibrations
- Outputting Memory Diagnostics



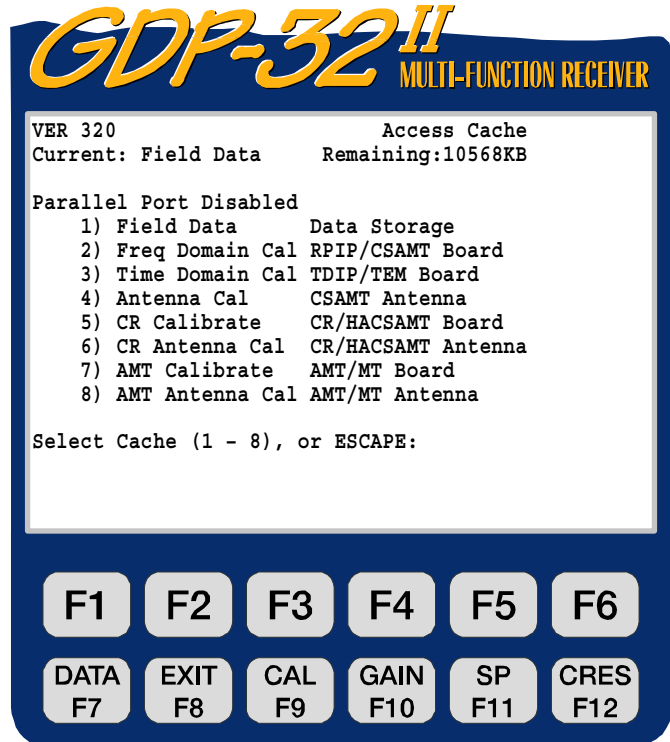
### 7.3 ACCESSING CACHES



To access data caches from the Data Mode Main Menu press , Access Cache. This displays the list of available caches:

- Field Data                      Data Storage
- Freq Domain Cal              RPIP / CSAMT Board Calibrations
- Time Domain Cal              TDIP / TEM Board Calibrations
- Antenna Cal                    CSAMT Antenna Calibrations
- CR Calibrate                  CR / HACSAMT Board Calibrations
- CR Antenna Cal                CR / HACSAMT Antenna Calibrations
- AMT Calibrate                 AMT / MT Board Calibrations
- AMT Antenna Cal              AMT / MT Antenna Calibrations

All field data (including system checks) are sent to the Field Data cache (1). All system calibrations are stored in both the field data (1) and the calibration caches (2,3,5,7). Antenna calibration data, loaded from an external device, are stored only in the antenna caches (4,6,8).





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## ACCESSING FIELD DATA


Option 1 of the Access Cache Menu re-enters the *Field Data Main Menu*. (See Field Data Main Menu, page 3.)

## ACCESSING BOARD CALIBRATION CACHES



For board calibration data, select option 2, 3, 5 or 7 from the Access Cache Menu. This accesses the corresponding *Board Calibration Cache Menu*. All Board Calibration Cache Menus are generic.

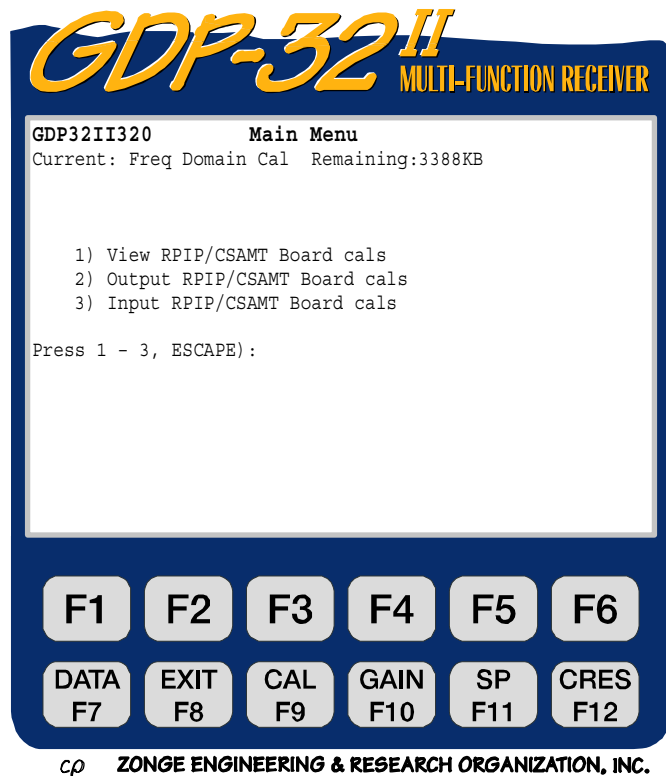
- Press  to view the Board Calibration data.
- Press  to output the Board Calibration data to an external device via the serial port (See *Section 7.6* ).

*NOTE: The receiver writes calibration data to the calibration cache and to the Field Data cache. Thus it is unnecessary in most cases to specifically output calibration data.*

- Press  to input Board Calibrations from an external computer. This option is used for special applications. For complete instructions for inputting calibration data see *Section 7.7*.

*NOTE: When Option 3 – Input Board Cals is selected the receiver expects data to be received via the serial port. To escape, re-boot the receiver by pressing **Control - Alt - Delete**.*

- Press  to return to the Data Mode Main Menu.
- Press  to exit Data Mode.





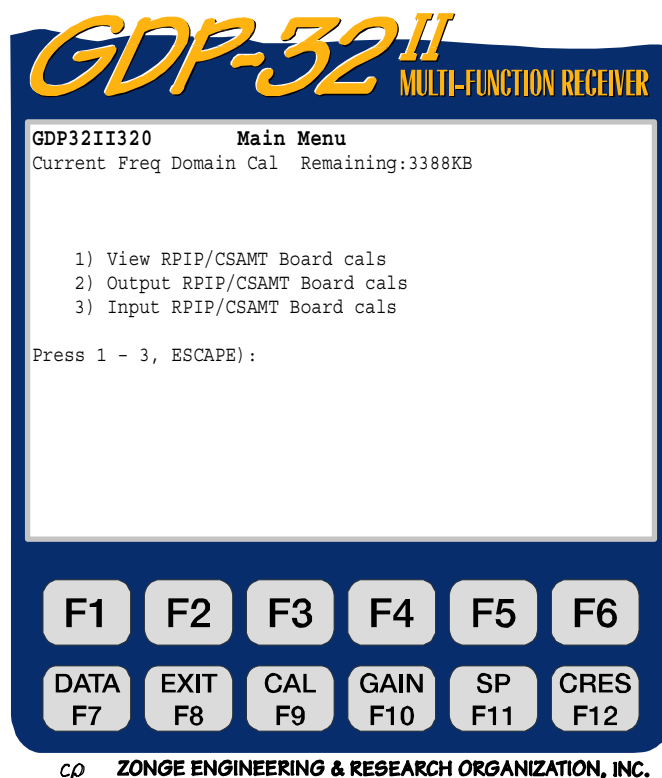
## ACCESSING ANTENNA CALIBRATE CACHES

For Antenna calibration data, select Option 4, 6 or 8 from the Access Cache Menu. This accesses the corresponding Antenna Calibration Cache Menu. As with the Board Data Calibration Caches, you have three options:

- View Antenna Calibrations
- Output Antenna Calibrations
- Input Antenna Calibrations

Unlike Board Calibration data, Antenna Calibrations are NOT written to the Field Data cache. They must be output from the antenna calibrate cache. See **Section 7.6** for outputting data.

Inputting Antenna Calibrations is common method of inputting calibration values into the receiver's memory. Magnetic antenna calibrations are supplied by Zonge Engineering for inputting into the GDP-32<sup>II</sup>. See **Section 7.7** for instructions.



## 7.4 INITIALIZING CACHES


Initializing is used for erasing or modifying the contents of memory. This option is primarily used after all data in the cache is transferred to an external computer.


*CAUTION: Once a cache is initialized, data cannot be recalled. Read the menu instructions carefully.*

Initialization is the same for Field Data, Board Calibrations or Antenna Calibrations. This example uses the Field Data Cache.

See **Section 12.22** for Initializing the NanoTEM Field Data Cache.



### INITIALIZING THE FIELD DATA CACHE


1. From the Main Data Menu, press , Initialize Cache.

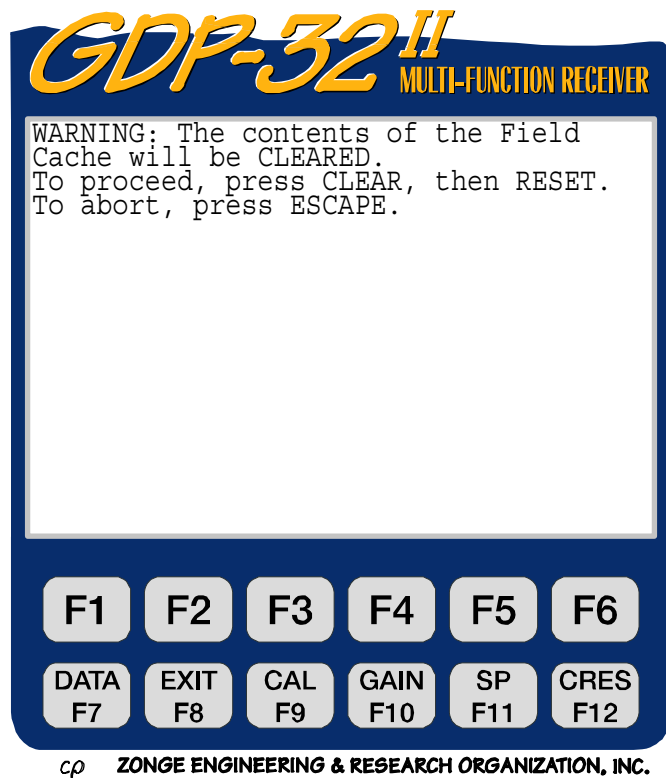
2. Press , Field Data to select the cache to be initialized.

Initializing the Field Data cache erases all data stored in the cache. Initializing any calibration cache replaces existing magnitudes with 1's and existing phases with 0's.

3. Once a cache is selected for initialization the screen displays the following:

4. To cancel the initialization, press , then press . The receiver returns to the Data Mode Main Menu.

5. To proceed with the initialization press . The receiver returns to the Data Mode Main Menu.






*WARNING: Initializing a cache means erasing ALL data stored in that cache.*

## 7.5 CONFIGURING PORTS

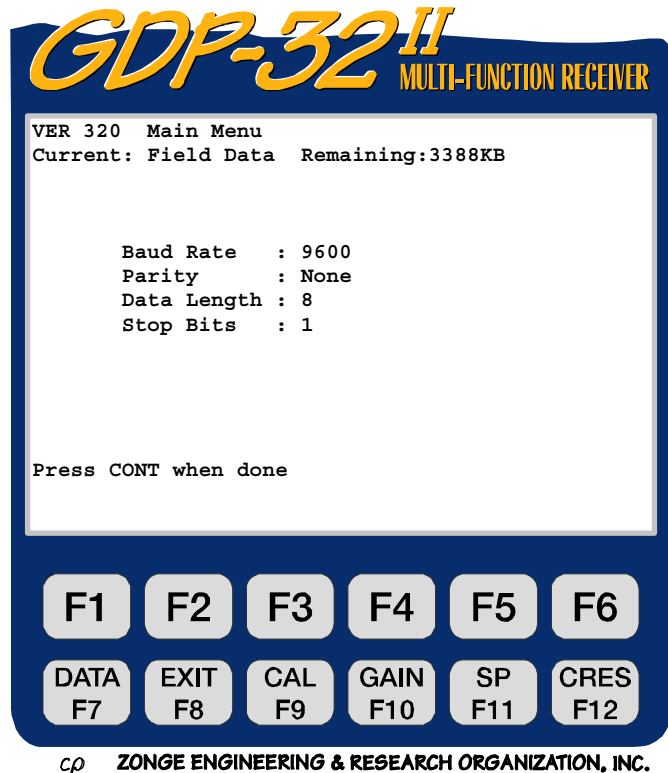
### SERIAL I/O PARAMETERS

Option 3 of the Data Mode Main Menu sets the protocols for transferring data to a computer via the RS-232 serial port. The GDP-32<sup>II</sup> uses a standard XON, XOFF software handshake protocol. For complete information on transferring data see *Section 7.6 below*.

- From the Main Data Menu, press . The *Configure Serial Port Options* Menu appears:

- Use  and  to set the four parameters.

- The default Baud Rate is 9600. Most computers accept this transfer rate. This transfer rate may need to be decreased for some modems. Available Baud Rates range from 300 to 38,400.
- The default Parity is NONE. The GDP-32<sup>II</sup> also accepts EVEN or ODD parities.
- Data length default value is 8 bits.
- Stop bits default is 1.




- Once the parameters have been set, press  to return to the Data Mode Main Menu.

## PARALLEL PORT MODE

Option 4 of the Data Mode Main Menu enables or disables the parallel port for transferring cache data to a printer. The current port status is displayed above the Data Mode Main Menu:

### Parallel Port Disabled

*NOTE: Before the parallel port can be enabled the GDP-32<sup>II</sup> must be connected to an on-line printer via the parallel port.*

1. Connect the GDP-32<sup>II</sup> parallel port to the printer using a Zonge Parallel Cable.
2. Turn the printer on.
3. Press  from the Data Mode Main Menu to enable the parallel port.
4. The receiver returns to the Data Mode Main Menu and displays the current port status:

### Parallel Port Enabled: ready



5. See *Section 7.6* for complete instructions on transferring data. *When data transfer is complete, disable the parallel port.*

## 7.6 OUTPUTTING DATA


### OUTPUT TO A COMPUTER

The GDP-32<sup>II</sup> stores 2 to 10 days' worth of data in memory. Zonge Engineering recommends that you dump data to an external computer at the end of every day in the field. Data are dumped to a computer using a serial dump cable for the data transfer procedure listed below. Before outputting data, be sure to check the Serial Port configuration (see *Section 7.5 above*)

1. Attach the Serial I/O Cable between the serial port of the GDP-32<sup>II</sup> and the serial port connector on your computer. This cable has a military plug at one end and a standard RS-232 25-pin D-connector at the other end.
2. Start the file transfer program on the computer (such as HyperTerminal).
3. Open a data file on the computer (e.g. for HyperTerminal: Transfer / Capture Text). The data will be sent from the GDP-32<sup>II</sup> into this file.
4. Verify that the program is connected with the receiver.

5. On the GDP-32<sup>II</sup>, press  to enter Data Mode. Press ,  to access the Data Mode Main Menu.

6. Press , Access Cache.

7. Select the cache you wish to dump (e.g. press  for Field Data, etc.) In the Field Data cache some or all of the data can be output. For board or antenna calibration data the entire contents of the cache are dumped.
8. Immediately upon selecting the output mode, the receiver begins transferring data. The receiver LCD displays:

**Transmitting**

**x blocks found to transmit**

Check this last message to make sure all the blocks selected are transmitting.

9. When the output is initiated, the data scrolls onto the computer display.
10. If the GDP-32<sup>II</sup> outputs data faster than the computer can accept it, the screen displays:

**Waiting**

as the data transfer stalls until the computer catches up.


11. When transfer is complete, the data stops scrolling on the computer terminal. The GDP-32<sup>II</sup> LCD displays the Cache Menu.
12. Close the data file on the computer (e.g. for HyperTerminal: Transfer / Capture Text / Stop).
13. Exit the computer file transfer program.



14. Check the new file for garbled or missing data before assuming that this process is complete. Verification consists of noting the number of data blocks in the GDP-32<sup>II</sup>, verifying that all blocks are transferred to the computer, and verifying that all blocks are readable, complete, and have a standard format.
15. Make back-up copies of all data on floppy disks.
16. Once all data is saved, initialize the data cache in the receiver (see *Section 7.4 above*).

## OUTPUT TO A PRINTER

Cache data is output to a printer via the parallel port. Usually data is transferred to a computer, but there may be occasions when a printout is all that is necessary.

1. In order to output data to a printer, the parallel port must be enabled. Follow the instructions in *Section 7.5* to enable the parallel port.

2. Press  to enter Data Mode.

3. Press  ,  to access the Data Mode Main Menu.

4. Press  , Access Cache.

5. Select the cache to output.
6. As soon as the output mode is selected, the receiver begins transferring data to the printer. The receiver LCD displays:

```
Transmitting
x blocks found to transmit
```

Check this last message to ensure that all of the selected blocks are being transmitted.

7. If the GDP-32<sup>II</sup> outputs data faster than the printer can accept it:

```
Waiting
```

is displayed as the software handshake takes over until the printer catches up.

8. When the transfer is complete, the data stops printing and the GDP-32<sup>II</sup> returns to the Data Mode Main Menu.
9. Examine the printed output to ensure the data have transferred correctly.

*NOTE: When finished printing data via the parallel port, reset the port status. If the parallel port is not disabled and a data transfer is initiated through the RS-232 port, the system will freeze. If this happens, re-boot the receiver by pressing **Control - Alt - Delete**.*

## **SIMULTANEOUS OUTPUT TO COMPUTER AND PRINTER**

Data can be output to both a computer and a printer simultaneously.

1. Enable the parallel port. (*See Section 7.5* ) Follow the instructions for outputting data to a computer.
2. The data will output to the computer and printer at the same time.

## **OUTPUT TIME SERIES DATA VIA NETWORK**

Time Series data are stored as files on the hard disk (drive D:). These files can be accessed and transferred using Windows Explorer. When the GDP-32<sup>II</sup> is connected to a Local Area Network, any other computer on the network can also see the GDP hard drive. File transfer is now facilitated by dragging and dropping files on the GDP to any desired folder on any other computer.

*NOTE: Program files and cache files can also be transferred this way.*

### **To transfer time series files:**






1. Turn OFF the GDP.
2. Connect the GDP-32<sup>II</sup> to the LAN using the multi-function interface cable.  
*NOTE: This is a special cable supplied by Zonge Engineering (P/N: GDP-32/2-ACC).*
3. Start the GDP and get into Windows.
4. The GDP-32<sup>II</sup> is configured by default to have no password. It is also set to obtain its IP address automatically. It's name is set to appear as: GDP32IISNxx, where xx is the front panel serial number. It's default workgroup is "ENGINEERING".
5. Once Windows is running, the GDP-32<sup>II</sup> should appear in the Network Neighborhood of the other computers on the network. Now you can easily transfer files to other computers.  
*NOTE: The time series files are stored in the directory D:\DATA.*
6. Exit Windows on the GDP as you would any other computer.

## 7.7 INPUT ANTENNA CALIBRATION DATA

Antenna calibration data are loaded into the GDP-32<sup>II</sup> from an external computer. These calibration files are transferred using SENDACAL, a special utility from Zonge Engineering. Antenna Calibrations are available for:

- CSAMT
- CR/HACSAMT
- AMT/MT

The procedure to load the file is as follows. Please note that the order is important.

1. Connect the serial port cable from an external computer to the GDP-32<sup>II</sup> serial port.
2. Press  to enter Data Mode in the GDP-32<sup>II</sup>.
3. Press ,  to access the Data Mode Main Menu.
4. Press  to Access Cache.
5. Select one of the Antenna Calibration caches (CSAMT, CR or AMT.)
6. Press , Input antenna calcs.
7. Set up the external computer to access the program SENDACAL and the antenna calibration files.

Begin input of antenna calibration by starting SENDACAL as follows:

```
> SENDACAL <FILESPEC> <PORT>
```

where <FILESPEC> is the name of the antenna calibrate file (e.g. ANTCALS.GSJ), and PORT is either 1 or 2 (for COM1 or COM2.) If <PORT> is not specified, COM1 is the default selection.

8. The computer shows the progress of the file being loaded. The GDP-32<sup>II</sup> display is updated on a frequency-by-frequency basis as the complete calibrate blocks are read in.

*NOTE: The operator must load in all 24 frequencies with this version of the program. The program expects the exact amount of input and will not operate properly if insufficient data are provided.*

### If the calibrate file does not load properly:

- Reset the GDP-32<sup>II</sup>.
- Check the connections.
- Repeat the above procedure.



## NAMING ANTENNA CALIBRATIONS

Antenna numbers are comprised of two parts – the antenna serial number and the antenna or calibration type:

NNNC

NNN     antenna serial number

C        channel number, antenna type, or calibration type.

Values for C:

0        Reserved for ANT/1 CSAMT antennas

1,2     Reserved for dual axis AA antennas: 1 = channel 1, 2 = channel 2

3        Reserved for AMT/CSAMT antennas, ANT/3

4        Reserved for MT antennas, ANT/4, EMI-BF

5        Reserved for light-weight CSAMT antennas, ANT/5, UOII, UOIV

6        Reserved for low-noise AMT antennas, ANT/6

7,8     Reserved for future use.

9        Reserved for TEM antennas, TEM/3

## 7.8 UP-LOADING PROGRAM FILES VIA NETWORK

Program files are stored on the PCMCIA Flash card disk (drive C:). These files can be accessed and transferred by using Windows Explorer. When the GDP-32<sup>II</sup> is connected to a Local Area Network, any other computer on the network can also see the GDP's disk drives. File transfer is now facilitated by dragging and dropping the files on the GDP to any desired folder on any other computer.

*NOTE: Time series files and the cache files can also be transferred with this method.*

### TO TRANSFER TIME-SERIES FILES:

1. Turn OFF the GDP.
2. Connect the GDP-32<sup>II</sup> to the network using the multi-function interface cable.  
*NOTE: This special cable is supplied by Zonge Engineering (P/N: GDP-32/2-ACC).*
3. Start the GDP and get into Windows.
4. The GDP-32<sup>II</sup> is configured by default with no network password. It is also set to obtain its IP address automatically. Its name is set to appear as GDP32IISNxx, where xx is the front panel serial number. Its default workgroup is "ENGINEERING".
5. Once Windows is running, the GDP-32<sup>II</sup> should appear in the Network Neighborhood of the other computers on the network. Now you can easily transfer files to other computers.

*NOTE: The program files are stored in the directory C:\.*

6. Exit Windows on the GDP as you would any other computer.

## 7.9 CONNECTING THE GDP-32<sup>II</sup> TO A LAPTOP VIA NETWORK

Time series data are stored as files on the hard disk (drive D:). These files can be accessed and transferred by using Windows Explorer. When the GDP-32<sup>II</sup> is connected to a Laptop computer via a Local Area Network crossover cable, the laptop can see the GDP's hard drive in the Network Neighborhood. File transfer is now facilitated by dragging and dropping files on the GDP to any desired folder on the laptop.

*NOTE: Program files and the cache files can also be transferred with this method.*

### CONNECT THE GDP TO A LAPTOP COMPUTER:

1. Turn OFF the GDP.
2. Connect the GDP-32<sup>II</sup> to the network using the multi-function interface cable.  
*NOTE: This special cable is supplied by Zonge Engineering (P/N: GDP-32/2-ACC).*
3. Use a CROSSOVER cable to connect the laptop to the GDP-32<sup>II</sup>.
4. The GDP-32<sup>II</sup> is configured by default with no network password. It is also set to obtain its IP address automatically. Its name is set to appear as GDP32IISNxx, where xx is the front panel serial number. Its default workgroup is "ENGINEERING".
5. Give the GDP a Static IP address: Right-click on Network Neighborhood. Click on Properties. Double-click on TCP/IP Properties. Click on the IP Address tab. Click on "Specify an IP address". Write in the IP as follows: 192.168.001.002. (This address can really be anything, so if there is already an address, just leave it. BUT IT MUST BE DIFFERENT FROM ALL OTHER COMPUTERS ON THE NETWORK.) Make sure the Subnet Mask is 255.255.255.0. Click OK until the GDP reboots.
6. Give the LAPTOP a Static IP address: Right-click on Network Neighborhood. Click on Properties. Double-click on TCP/IP Properties. Click on the IP Address tab. Click on Specify an IP address. Write in the IP as follows: 192.168.001.003. (This address can really be anything, so if there is already an address, just leave it. BUT IT MUST BE DIFFERENT FROM ALL OTHER COMPUTERS ON THE NETWORK.) Make sure the Subnet Mask is 255.255.255.0. Click OK until the LAPTOP reboots.
7. After a few minutes (sometimes several minutes) you should see the GDP from the LAPTOP, in the ENGINEERING workgroup.
8. Now you can drag files from the GDP, or copy updated programs to the GDP.

*NOTE: The time series files are stored in the directory D:\DATA and program files reside in the C:\ root directory.*