IP RECEIVER

New features
GDD Rx program

Version 5.3

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New features with version 4.2.39

PseudoSection

A new PseudoSection option is used to display the calculated pseudosection (in color) for each surveyed line.

1. Select Tools | Show | Show PseudoSection  
   Hotkey ‘U’

2. The following screen appears.

   Location of stations at surface
   Location of readings
   Pseudosection associated to selected Tx / Rx line

   Color bar
   CHRG (mV/V) = linear
   RESIS (Ohm-m) = LOG

   Pseudosection of the CHARgeability (Hotkey ‘A’)
   or RESistivity (Hotkey ‘E’)
   (Click on the label to switch between CHAR or RES)

   Note: Use the hotkey ‘I’ to invert the Pseudo colors.
3. Color bar editing.

Click on the “Config” button in the pseudosection main screen.

The following screen appears.

To visualize the whole pseudosection, use the arrows on the PDA keyboard:

4. To visualize the whole pseudosection, use the arrows on the PDA keyboard:
**Next/Previous Station hotkeys**

Hotkeys have been assigned to *Prev* and *Next* buttons (F1 to F4).

![Image](image-url)

**Note that the positions of the Prev and Next buttons have been changed too.**

To exit this window, use one of the *OK* buttons on the screen or use *ESC* keystroke to cancel and keep the same settings than before or *Enter* keystroke to confirm your settings.

If F1 to F5 buttons do not work on your Allegro Mx, go to *Start Menu | Settings | Buttons | FKey* and enable *F* buttons.
Acquisition start-up process

Here is the new configuration for the Start-up process with Allegro Mx or Allegro²:

1) Click Start or use Enter keystroke

2) Click OK or use Enter keystroke

3) Click OK or use ESC keystroke

4) Click NEXT or use Enter keystroke

5) Click OK or use Enter keystroke

All buttons in the different windows are now in the upper right corner.
The keystrokes used to start acquisition are:

   *Enter, Enter, ESC, Enter et Enter*

With Allegro Cx, there is a difference for the first window: with the keyboard you have to press on Tab keystroke until the Start button is highlighted. Then, press on Enter keystroke to begin the acquisition process.
### Negative value in Vp graph

The negative Vp values will be displayed in blue in the same graph. The height of the bars still indicates the absolute value of the Vp and the color indicates the sign (green for positive values and blue for negative values).

![Image of Vp graph showing negative values]

### Acquisition Quick Start

It is now possible to start the acquisition process with the same settings by using F5 keystroke. You have to start the first acquisition normally before being able to use F5 for the next acquisitions. Using F5 will skip all configuration and contact resistance windows.

Press on M keystroke to see Hotkeys.

![Image of Hotkeys showing F5]

If F1 to F5 buttons do not work on your Allegro Mx, go to Start Menu | Settings | Buttons | FKey and enable F buttons.

![Image of FKey settings enabled]
Comparing Data

In the readings window, you can now move between your readings by using left and right arrow keys.

Once your acquisition process is finished, use the left arrow keystroke to compare your current data with those of your previous acquisitions. Use Up and Down arrows to see all channels.

If you have to see data from an acquisition that is not close to the current one, use Display Readings option to select the acquisition you want to see.

You can start again your acquisition process by clicking on Start. The program will automatically come back to the last acquisition.
Scrolling up and down through decays

Unfortunately, because of how the Microsoft system is configured, we cannot get the same process with the Allegro Mx or the Allegro Cx. But we added the possibility to use Enter keystroke to go to the channel field.

Once the decay field is opened you can use Up and Down arrow keys to select the channel.

GDD – Special processing options

This option allows you to disable the default gain and offset settings.

Note that the gains and offsets are enabled every time you start the program even if you disabled them the last time you used it.
New electrode arrays configuration

- Dipole-Dipole (1/32)
- Dipole-Dipole (2/4)*
- Dipole-Dipole (2/16)
- Dipole-Dipole (4/8)
- Pole-Dipole (1/32)
- Pole-Dipole (2/4)*
- Pole-Dipole (2/16)
- Pole-Dipole (4/8)
- Pole-Pole (1/32)
- Pole-Pole (2/4)*
- Pole-Pole (2/16)
- Pole-Pole (4/8)
- Gradient (1/32)
- Gradient (2/4)*
- Gradient (2/16)
- Gradient (4/8)
- Wenner
- Schlumberger

*For the new GRx8mini model only.

Signal timing

Signal timing available now: 0.5, 1, 2, 4, 8 and 16 seconds.
GPS time

There is a new file format with .gps extension. The data in this file are the same than those of the .gdd file except for the GPS timestamp.

Example of .gps file

If there is GPS synchronization with a satellite, the column GPS will show YES as shown on the picture above. See Section GPS time synchronization at the end of this document for more details about SyncBy column.

If the GPS synchronization with a satellite is lost, the synchronization will be kept for 5 hours (holdover). In that case, the Date and Hour will continue to increase following the GPS time but the GPS column will show NO as shown on the picture below.

If there is no GPS synchronization with a satellite from the beginning or if the GPS signal is lost for more than 5 hours, the Date and Hour will be replaced by NO GPS TIME.
The GPS timestamps will also appear in the fullwave file or in the binary raw data file.

Example of a fullwave file

```
27/08/2015 15:00:07.049443 YES 4402.110 4417.473 4446.574 4415.306 -4404.320 4387.17
27/08/2015 15:00:07.069458 YES 5504.121 5619.028 5625.804 5617.490 -5593.444 5572.30
27/08/2015 15:00:07.089468 YES 5907.275 5948.031 5945.424 5946.056 -5916.514 5904.22
27/08/2015 15:00:07.109414 YES 5902.048 6025.043 6020.204 6026.248 -5991.927 5982.47
27/08/2015 15:00:07.129439 YES 6008.821 6041.841 6036.090 6042.971 -6007.934 5999.32
27/08/2015 15:00:07.149438 YES 6011.737 6044.923 6039.204 6046.429 -6011.590 6002.89
27/08/2015 15:00:07.169437 YES 6012.401 6045.485 6040.224 6046.776 -6011.911 6004.07
27/08/2015 15:00:07.189437 YES 6012.851 6045.410 6040.478 6047.488 -6012.037 6004.22
```

As for the .gps file, if there is no GPS synchronization or if the GPS signal is lost for more than 5 hours, the Date and Hour will be replaced by NO GPS TIME in the .fullwave and .bdf files.

Take note that for some reasons, such as weak signal areas, the GPS module will not be able to track and synchronize with a satellite.

During the acquisition process, the GPS status is available by selecting Tools | Raw Data | Check GPS:

- **GPS well synchronized**: 27/08/2015 15:55:16, GPS Detected
- **GPS signal lost for less than 5 hours**: 27/08/2015 15:57:35, GPS Not Detected, Holdover Time: 04h59
- **No GPS signal from the beginning or lost for more than 5 hours**: No GPS Time, GPS Not Detected
Battery type selector

The battery type of the GRx8-32 receiver will be detected by the GDD Rx program if your GRx8-32 receiver has firmware version 2.5.8 (or newer versions). If your GRx8-32 receiver has firmware version 2.5.4 or earlier, the GDD Rx program cannot detect the battery type automatically and you have to select battery type in the TOOLS menu (in that case, the default setting would be Ni-CD). See Section 8.2.4 in the Instruction Manual for more details.

If the Battery Type menu is grey (disabled), it means that the battery type is detected by the GDD Rx program and you do not need to set it manually.

If you do not select the right battery type, the battery level shown in the GDD Rx program will be a little bit different than the real level.
GPS time synchronization

Use the GPS time synchronization if you need to synchronize your receiver to your transmitter using GPS time.

**Requirements:**
- Your receiver must be equipped with an internal GPS module.
- Your Allegro PDA must have the Rx software version # 4.2.39 and your receiver must have Rx firmware # 0.2.5.9 (or newer versions).
- Your transmitter (itself or linked to another unit) must be synchronized with a GPS.

1. Refer to Section 7.4 to verify if a satellite is being tracked by the GPS module of your receiver.
2. Select Tools | Config | Synchronization. The following screen appears.

   ![Screen Shot 1](image1)

3. Check **Use GPS Time Synchronization** to enable the GPS synchronization.

   ![Screen Shot 2](image2)

**IMPORTANT:** Make sure that your transmitter is also synchronized by GPS before using this option.
Note that the GPS synchronization is disabled every time you start the program even if you checked it the last time you used it.

4. Before starting your acquisition process, make sure your transmitter and your receiver are well synchronized:

   • Wait for about 15 minutes before taking your first reading to ensure that the GPS module of the receiver gets the real UTC GPS time.
   • If possible, compare the GPS time of your transmitter with the GPS time of your receiver. They must have exactly the same GPS time (see Section 7.4 to know how to get the GPS time of the receiver).

5. During the acquisition process, you can verify if your receiver is still synchronized with GPS (see Section 7.4 to know how to verify the GPS signal):

   **GPS well synchronized**

   If you checked *Use GPS Time synchronization* and if a GPS signal is detected, your receiver will be synchronized with GPS.

   ![GPS Synchronization](image)

   **IMPORTANT:** it does not confirm that your receiver is well synchronized with your transmitter. In the case that your transmitter and your receiver are not well synchronized together, your data could be erroneous.

   **GPS signal lost for less than 5 hours**

   If you checked *Use GPS Time synchronization* and if the GPS signal is lost for less than 5 hours, your receiver will still be synchronized with GPS using the internal GPS clock.
No GPS signal from the beginning, GPS signal lost for more than 5 hours or Use GPS Time synchronization unchecked

If your checked Use GPS Time synchronization and if there is no GPS signal or if it is lost for more than 5 hours, the receiver will automatically switch to synchronize with the ground signal.

Note that the data acquired with the GPS synchronization can be more accurate than those acquired with the ground signal, especially over noisy environment.

**IMPORTANT:** During the acquisition process, if all your Vp values are negative, you can switch the polarity of the current transmission at the transmitter (switch the wires at the HV block) and all de Vp will become positive.
6. The .gps output file indicates if the receiver is synchronized with signal or GPS (see Section 7.5 to know how to create a .gps file).

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Delay (ms)</th>
<th>SyncBy</th>
<th>Array</th>
<th>LineTx</th>
<th>LineRx</th>
<th>Dif</th>
<th>n</th>
<th>Txl</th>
<th>Txc</th>
<th>Rx1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 27/08/2015</td>
<td>19:25:25</td>
<td>753199</td>
<td>SIGNAL</td>
<td>P-P</td>
<td>100.00</td>
<td>100.00</td>
<td>N-S</td>
<td>0.0</td>
<td>0.00</td>
<td>50.00</td>
<td>75.0</td>
</tr>
<tr>
<td>2 27/08/2015</td>
<td>19:29:44</td>
<td>062906</td>
<td>GPS</td>
<td>P-P</td>
<td>100.00</td>
<td>99999.00</td>
<td>N-S</td>
<td>0.0</td>
<td>99999999.00</td>
<td>50.00</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The SyncBy column indicates SIGNAL if the receiver is synchronized with the signal connected to the trigger channel and GPS if the receiver is synchronized with the GPS time.

**IMPORTANT:** Even if the file indicates that your receiver is synchronized with the GPS time, it does not confirm that your receiver is well synchronized with your transmitter. In the case that your transmitter and your receiver are not well synchronized together, your data could be erroneous.
New features with version 4.2.40

New .mem file for GDD IP Post Process software

When you save your files at the end of the acquisition (Memory Option – Save File), a new .mem file is automatically created. This new file has a specific format required to be used with the new GDD IP Post Process software. Contact GDD for more information about this new software.
New features with version 4.2.42

Duty Cycle 100%

It is now possible to measure induced polarization in the ON time using the Duty Cycle parameter (100%).

This parameter appears in the .gdd and .gps files.

<table>
<thead>
<tr>
<th>Sym(%)</th>
<th>H</th>
<th>ErrN</th>
<th>In Time</th>
<th>DC Stack</th>
<th>M01</th>
<th>M02</th>
<th>M03</th>
<th>M04</th>
</tr>
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<tbody>
<tr>
<td>100</td>
<td>3.935</td>
<td>0.008</td>
<td>1000.000</td>
<td>2000</td>
<td>50</td>
<td>3</td>
<td>3.956</td>
<td>3.910</td>
</tr>
<tr>
<td>100</td>
<td>3.915</td>
<td>0.001</td>
<td>1000.000</td>
<td>2000</td>
<td>50</td>
<td>3</td>
<td>3.922</td>
<td>3.915</td>
</tr>
<tr>
<td>100</td>
<td>3.906</td>
<td>0.006</td>
<td>1000.000</td>
<td>2000</td>
<td>50</td>
<td>3</td>
<td>3.916</td>
<td>3.916</td>
</tr>
<tr>
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<td>3.903</td>
<td>0.004</td>
<td>1000.000</td>
<td>2000</td>
<td>50</td>
<td>3</td>
<td>3.893</td>
<td>3.900</td>
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<tr>
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<td>100</td>
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<td>2000</td>
<td>50</td>
<td>3</td>
<td>3.927</td>
<td>3.910</td>
</tr>
</tbody>
</table>

Binary raw data file (.bdf)

The .rdf file has been replaced by a binary file with the extension .bdf. The function is still the same: recording raw data without any synchronization with a transmitter signal. This new binary file can be used to remove telluric noise from the data using the new GDD IP Post Process software. See Section 8.4.2 of the Instruction Manual to know how to record raw data. At the end of the process, you will be prompted to name and save your .bdf file.
New features with version 4.2.43

Monitor and record Tx output current and Power at the PDA

When using the optional GDD-RTE communication boxes to collect live information broadcasted by the GDD IP Transmitter, model Tx4, the Tx current "I" and power "P" can be displayed alternatively in the Rx PDA main screen under the TOOLS and STOP/START buttons. To switch from one information to the other, use the following shortcut Key: “V” or click on the text label directly on the screen.

When using the GDD-RTE communication boxes, an ascii file (gdd_rte.log) will be created at the same location than your IP data. This gdd_rte.log file contains the output current and power values broadcasted by the GDD IP Transmitter, model Tx4.
Monitor Satellite Signal Strength

If the external GPS antenna is connected to the IP Receiver, the satellite signal strength can be monitored in the TOOLS \ Raw Data \ Check GPS menu
**New features with version 4.2.44**

**Verification of the integrity of the last reading**

When you save a reading, there is a lot of data (Fullwave) that has to be stored in the memory, so it takes few seconds to complete saving reading. If, while saving reading, you turn the PDA OFF or the PDA battery goes down or any problem occur making the PDA restart, the last reading might be corrupted.

To avoid this problem, first of all, wait until the following message confirms the completion of saving reading.

![Image of software interface](image)

If, nevertheless, your memory file gets corrupted, the next time you launch the software you will be aware of that situation by the following message and the memory file will be fixed by truncating missing Fullwave data.

![Warning message](image)
**Different versions of output file format**

GDD Instrumentation constantly improves the GDD Rx software. Sometimes we need to add an additional parameter or change the format of an existing parameter in the output files (.gdd, .gps, .dat or .csv). To preserve compatibility with existing software that need legacy format you can choose version of the format to use while saving output files.
New features with version 4.2.45

“Show All Stations” function

When you watch Decay curve for the current reading (available from software version 4.2.46) or for a previous reading in Preview mode, you can choose option “Show All Stations”. This way, you will see Decay curves of the same channel for all readings in the memory which has been taken at the same station ( Tx and Rx positions) with the same parameters (Timing, Windows, etc.). This option allows you to compare the quality of different readings taken in the same conditions.
New features with version 5.0

Support “Multi Rx mode”

GDD Instrumentation has developed a new way to do a distributed IP survey with many IP receivers together. We call it “Multi Rx mode”. Many GDD IP receivers of any type (GRx2, GRx8mini or GRx8-32) can be controlled remotely from a “Master” station (PC, laptop, Toughbook, etc.) by means of using a RF (radio frequency) communication box (communication device developed by GDD Instrumentation) connected to the PDA which serves the receiver. You can use one RF communication box to connect a GDD IP transmitter (model Tx4) to the RF network in order to have measurements of induced current sent automatically from transmitter to the Master station.

To learn more about “Multi Rx mode” see “Multi Rx mode user guide”.

In order to support “Multi Rx mode”, the format of output file (.gdd) has been modified. We’ve added a field in the header which shows the used mode (SingleRx or MultiRx). We’ve also added the “Rdng” column which contains a unique ID of the reading. This ID helps to synchronize the readings from different receivers with the Master station.
New features with version 5.2

Supporting up to 100 stacks

Following the request of certain customers, the maximum number of stacks has been increased to 100.

Save files progress bar

A progress bar while saving files has been added.
New features with version 5.3

Battery Monitor

Now you can see the battery status in the window that you can find in TOOLS->Show->Battery information:

You can find here the information about the residual battery voltage (V), the current consumption (A) and the residual battery capacity (%). When the charger is plugged, the time to complete the charge is displayed.
This feature is available for the GRx2 model with the Firmware version 0.5.1.11 and later and for the GRx8mini model with the Firmware version 8.1.0.5 and later.

If the Firmware version of the unit does not support the feature, the following message is displayed in the Battery Monitor.