IP RECEIVER

Model GRx8-32

Instruction Manual





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1. Introduction

The highly sensitive GDD IP Receiver models GRx8-32 is a compact unit designed for high productivity resistivity and time-domain induced polarization (IP) surveys in mineral exploration, groundwater exploration, geotechnical investigations and other related fields. It features high capabilities allowing it to work in any field conditions. It can be configured for multi-pole or multi-dipole reception. The receiver uses a rugged field PC to process data acquisition and the software can easily be updated via internet.

Characteristics:

- **Reception poles/dipoles:** 8 poles/dipoles, expandable to 32, for dipole-dipole, pole-dipole or pole-pole arrays.
- **Programmable windows:** The GRx8-32 offers twenty fully programmable windows for higher flexibility in defining the IP decay curve.
- User modes available: Arithmetic, logarithmic, semi-logarithmic, Cole-Cole and user defined.
- **IP display:** Chargeability values, Apparent Resistivity, IP decay curves and pseudosections can be displayed in real time thanks to the TFT VGA screen. Before data acquisition, the GRx8-32 can be used as a one channel graphic display for monitoring the noise level and checking the primary voltage waveform through a continuous display process.
- **Internal memory**: Capacity to store up to 64 000 readings for 8 poles/dipoles, memory expandable to 512 000 readings on the PDA model. Each reading includes the full set of parameters characterizing measurements. Data is stored on flash type memory that does not require any lithium battery for safeguard purposes.
- Full wave data with IP Post-Processing software: The GRx8-32 records and saves the full wave data (*.mem file). This raw data can be imported, visualized and processed using GDD's IP Post-Processing software.

2. Receiver Accessories

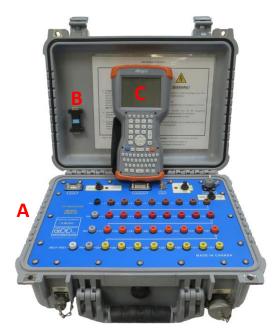
А	1x	IP Receiver, model GRx8-32					
В	1x	UART programming adapter (<i>Boot Loader</i>)					
С	1x	Allegro ² field computer with a 10.6Ah rechargeable Li-lon battery and an					
		adjustable hand strap					
D	1x	Allegro ² capacitive stylus with tether					
Е	1x	Allegro ² Holster case					
F	1x	Allegro ² wall charger with international plug kit					
G	1x	IP Receiver charger (<i>power supply</i>) with international plug kit					
Н		Blue cables with black banana connectors or red banana connectors					
Ι	1x	Standard serial communication cable					
J	2x	Rugged serial communication cables (Amphenol connector)					
Κ	2x	Micro USB Communication Cables					
L	1x	External GPS antenna (SMA connector)					
Μ	1x	GDD-BP02 External battery pack (optional for 8 to 16 channels receivers)					
Ν	1x	Input signals connector (41 positions) - Optional					
0	1x	Allegro ² Quick Start Guide					
Ρ	1x	GDD Instruction manual					
Q	1x	Screwdriver					
R	1x	IP Receiver documentation CD / USB stick					

Not shown on the illustration:

1x Blue carrying case1x GDD-RTE01 communication box with USB cable (optional accessory)1x GDD IP Post-Processing Software User Guide

Optional accessories:

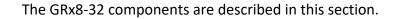
GDD-BP02 External battery pack (*for 8, 10 to 16 channels receivers*) GDD-RTE01 communication box with USB cable Input signals connector (41 positions)

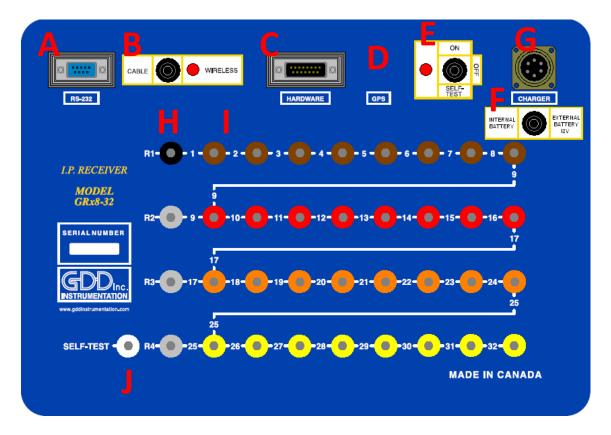


The items supplied with the device and available accessories may differ from the picture.



3. Receiver Components





A - RS-232 connector - 9 pin serial communication port

This connector is used to connect the RS-232 cable between the Allegro² and the GRx8-32.

B - CABLE/WIRELESS switch

This switch is used to select CABLE (RS-232) or WIRELESS (Bluetooth) communication with the PDA. The red light indicates that the switch is in the WIRELESS position.

C - HARDWARE connector - 15 pin programming port

This connector is used to update the CPU and PLD software.

D - GPS Connector

This connector is used to connect an external GPS antenna (SMA).

E - ON/OFF/SELF-TEST switch

This switch is used to turn the GRx8-32 ON or to perform a self-test. The red light indicates that the GRx8-32 is ON or in the SELF-TEST position.

F - INTERNAL/EXTERNAL BATTERY switch

This switch is used to select the internal batteries or the external battery pack, provided by GDD.

G - CHARGER connector

This connector is used to charge the receiver batteries. The *Internal Battery / External Battery (F)* switch must be on *Internal battery*.

H - R1 to R4 terminals

In pole configuration, the reference terminals (R1 to R4) are the infinite electrodes. In dipole configuration, the reference terminal is the first electrode in differential with the second electrode.

I - NUMBERED terminals

These terminals are referenced to the Ref terminal (Ref is infinity in pole configuration). In dipole configuration, the numbered terminals are differential terminals.

J - SELF-TEST terminal

This terminal is used to perform a self-test.

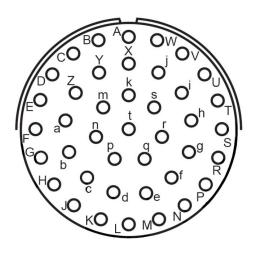


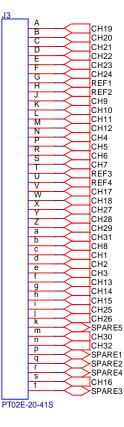
K - RS-232 external Connector

This connector is used to connect the rugged serial communication cable (Amphenol connector), which allows communication between the Allegro² and the GRx8-32 receiver.

L - Input signal connector

This connector is used to connect the wires coming from the electrodes to the receiver channels to keep the Pelican case closed while taking the readings. An optional cable mount connector (41 pos.) can be purchased and used with the instrument.





M - External battery connector

This connector is used to connect the external battery pack. The Internal/External battery switch (F) must be on External battery position.

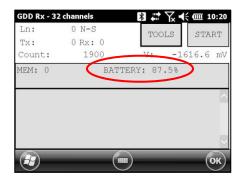
4. Power

GDD's IP Receiver, model GRx8-32, is powered by internal rechargeable Nickel Cadmium / Lithium-ion batteries or an external rechargeable Nickel Cadmium / Lithium-ion battery pack.

Refer to your receiver's charger to find out which type of batteries your receiver has.



The power level of the Rx internal batteries is indicated on the main screen of the Allegro² of the GDD Rx software.

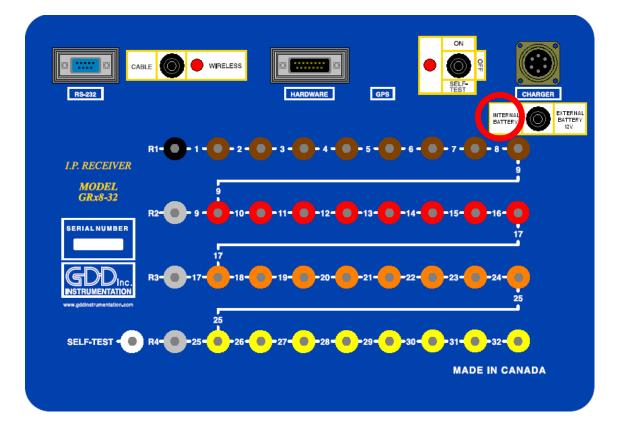


Here are a few tips for using and storing your **<u>lithium-ion</u>** powered receiver:

<u>Usage</u>

- Using a different battery power supply than the one supplied by GDD could damage the batteries and the receiver.
- The connector located on the back of the receiver is used to connect the External Battery Pack supplied by GDD. Connecting other external batteries using this connector could damage the batteries and the receiver.
- Do not replace the receiver's internal batteries without authorization and advice from GDD's technicians.

- The total operating time of the receiver depends on environmental conditions. Using the receiver in very cold weather (-20°C to -40°C) will lower the operating time.
- The receiver will turn itself off when the batteries reach a critical level.
- To extend battery life, avoid frequent full discharge and charge more often between each use.
- A LED under the *Internal battery* switch on the receiver is red when the batteries are charging. It turns off once the batteries are fully charged.



<u>Storage</u>

- To avoid permanent capacity loss, store the receiver and the external battery pack at 40% charge.
- Store the receiver and the external battery pack in a cool, dry place.
- Place the "Internal battery / External battery" switch on "External battery" position to minimize self-discharge of the batteries.
- If stored for several months, check the battery charge level every six months and recharge them to 50% if they are below 30% charge. Never store fully charged or completely discharged Lithium-Ion batteries for an extended period of time.

Here are a few tips for using and storing your **<u>Ni-CD</u>** powered receiver:

<u>Usage</u>

- Using a different battery power supply than the one supplied by GDD could damage the batteries and the receiver.
- The connector located on the back of the receiver is used to connect the External Battery Pack supplied by GDD. Connecting other external batteries using this connector could damage the batteries and the receiver. If the receiver does not have the external battery pack connector, use the Charger connector to connect the External battery pack.
- Do not replace the receiver internal batteries without the authorization and advice from GDD's technicians.
- The total operating time of the receiver will depend on the environmental conditions. Using the receiver in very cold weather (-20°C to -40°C) will lower the operating time.
- The receiver will turn itself off when the batteries reach a critical level.
- To extend battery life, avoid frequent full discharge and charge more often between uses.

<u>Storage</u>

- To avoid permanent capacity loss, store the receiver and the external battery pack at 40% charge.
- Store the receiver and the external battery pack in a cool and dry place.
- Place the "Internal battery / External battery" switch on "External battery" position to minimize self-discharge of the batteries.
- If stored for several months, check the batteries charge level every six months and recharge them up to 50% if they are below 30% charge.

5. Quick Start Guide

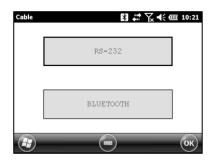
- 1. Connect electrodes into terminals.
- 2. Turn ON the IP receiver using the ON/OFF switch on the GRx8-32 panel.
- 3. Select the communication mode using the CABLE/WIRELESS switch on the GRx8-32 panel. In CABLE mode, the red light will turn ON only when the GRx8-32 software is active.
- 4. Connect the rugged serial communication cable (Amphenol connector) between the Allegro² (COM1) and the GRx8-32 RS-232 external connector (CABLE communication only).
- 5. Turn ON the Allegro² with the ON/OFF button.



6. Click GDD RX.



7. Select the communication mode: *RS-232* (CABLE) or *BLUETOOTH* (WIRELESS).

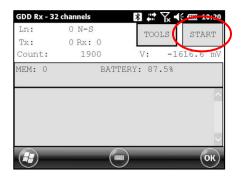


8. The following screen appears.

START TOOLS button: Rx Number of channels	r/stop b	button: Exit (utton: Start c nenu		
Line number and direction Transmitter and receiver position Trigger channel count and voltage Memory number and Rx battery level	GDD Rx - 32 (Ln: Tx: Count: MEM: 0	0 N-S 0 Rx: 0 1900	No No TOOLS V: -16 RY: 87.5%	START
				ÓK

9. Click START or press Enter keystroke to begin the acquisition procedure.

Note: If you want to start the process by using the same settings than those of the previous acquisition procedure, press F5 button. 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. If F1 to F5 keystrokes do not work on your Allegro², see Section 12 – Troubleshooting.



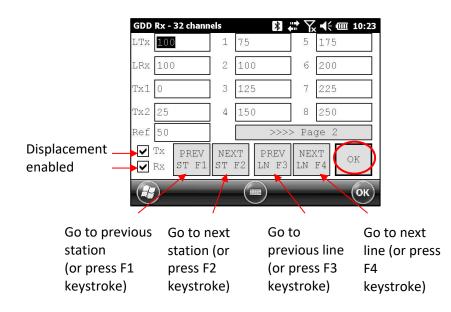
10. The following screen appears. Click OK to continue.



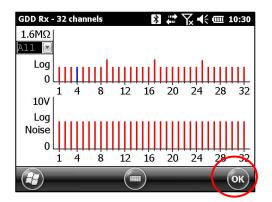
11. Enter the project, line, station, move displacement, etc. for Tx and Rx. Click OK to continue.

GDD Rx - 32 channels	*	I ₩ 7,	€ @ 10:22
Project:	Test pro	ject	
Ln. Tx: 100	Rx: 100)	N-S 💌
Move LINE: Tx:	0	Rx :	0
Station: Tx1:	0	Tx2:	25
Station Rx:	50	Sep:	25
Move ST.: Tx:	25	Rx :	25
Setup Position Window	ws Synchroniza	ation	
			ОК

12. Verify if the positions are correct and click OK or press Enter keystroke to continue.



13. The Contact and Noise graph appears. If the values displayed are normal, click OK or press ESC keystroke to close the window.



14. Click NEXT or press Enter keystroke to continue.

*Note: If all stations show an INFINITE contact, the reference electrode might be disconnected.

Ln: Tx:	100 I 25 H	N-S Rx: 50	TOOL:	s ne:	ХT
Count:		3300	V:	123.5	mV
MEM: 0		BATTE	ERY: 86.2	28	
		DITTT			
		Diriri			
Station		Contact	(kOhm)		^
Station	(m): 75:			9.0	^
Station		Contact	(kOhm)		
Station 12	75:	Contact 9.0	(kOhm) 100:	9.0	
Station 	75: 25:	Contact 9.0 9.0	(kOhm) 100: 150:	9.0 8.9	

15. Enter the transmitter current and click CONFIRM or press Enter keystroke to start the readings.

GDD Rx - 32 channels Current:	GDD Rx - 32 channels
MA mA	1000 mA
CONFIRM	CONFIRM
CANCEL	CANCEL
(П) (ок)	(2) (1) (0 K)

16. The following screens appear.

GDD Rx - 3 Ln: Tx:	2 channels 100 N-S 25 Rx: 50	TOOLS	5 (000 10:31) STOP	GDD RX Ln: Tx:	x - 32 channe 100 N- 25 Rx	·S	Nools	(E III) (III) STOP
Count:	4800	V:	65.3 mV	Count	t: 11	700	V: -	-125.1 mV
MEM: 0	BATTER	Y: 85.8%		MEM: CH	0 B: 86.3 Rho	3% Stack: Vp	2 I: 10 M	
			<	01 02 03 04 05	19.65 78.61 176.59 314.54 491.66	125.095 250.236 374.739 500.602 625.995	7.946 7.947 7.954	0.005 0.001 0.001 0.002 0.000
		-	ОК	Ð				ОК

If using the optional GDD-RTE01 communication box (refer to section 8.2.5) to collect live information broadcasted by the GDD Tx4 IP transmitter, the Tx current "I" and power "P" can be displayed alternatively in the Rx 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.

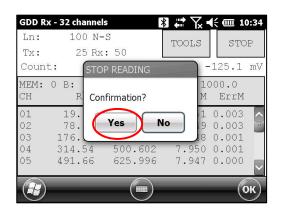
GDD Rx - 8	3 channels	እ 🔁 🔁 🕷	÷ 🎟 12:26	GDD Rx -	8 channels	8 📯 🏹	┥;
Ln: Tx:	1 N-S 500 Rx: 0	TOOLS	START	Ln: Tx:	1 N-S 500 Rx: 0	TOOLS	
Count:	200	I:	9820 mA	Count:	1000	P:	4850 W
MEM: 0	BATT	ERY: 99.0%		MEM: 0	BAT	TERY: 99.0	8
			$\hat{}$				
			\sim				\sim
			ОК				ОК

If no transmitter information can be received at the GRx8-32, the following symbol will be displayed instead of I and P: N/A.

17. Click STOP or wait until the end of the acquisition to stop the readings and save the data.

GDD Ra	c - 32 channels	6	∦ ₽ ₹	(m 1	0:33
Ln:	100 N-	S	TOOLS	STC	D
Tx:	25 Rx	: 50	10010	010	1
Count	: 117	700	V:	-125.1	mV
MEM: CH	0 B: 86.3 Rho	% Stack: Vp	2 I: 10 M		
01	19.65	125.095	7.945	0.005	^
02	78.61	250.236	7.946	0.001	-
03	176.59	374.739	7.947	0.001	
04	314.54	500.602	7.954	0.002	
05	491.66	625.995	7.949	0.000	
	_		_	(ж)

18. Click YES to confirm the operation.

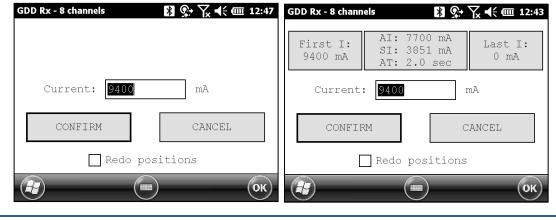


19. Click YES to save readings into the memory.

GDD Rx - 32 ch	annels	▮ # Ҡ. •	€ @ 10:34
	0 N-S 5 Rx: 50	TOOLS	START
Count:	SAVE		28.2 mV
MEM: 0 B: CH F	Do you want to sa reading?	ave the $\frac{10}{M}$	000.0 ErrM
01 19. 02 78. 03 176.	Yes	lo]	0.003 0.003 0.001
04 314. 05 491.	0 1 0 0 0 0 0 D D	7.950 7.947	0.001 0.000
			ОК

20. Re-enter the transmitter's output current value if it has changed and click CONFIRM to save the current value.

If using the optional GDD-RTE01 communication box (refer to section 8.2.5) to collect live information broadcasted by the GDD Tx4 IP transmitter, this menu will show additional Tx current options to choose as the final "I" value. These are the first "I" transmitted, the average "AI" (with information regarding Standard Deviation "SI" and average time between each Tx values broadcasted "AT") and the last "I" transmitted. Click on one of the corresponding button.



Check the REDO POSITIONS option to change the transmitter or receiver position.

Note: This option alters the reading that was just completed in order to correct or revise the coordinates before saving the reading to the file. It should not be used to pre-set the next reading.

GDD Rx - 8 channels	೫ 📯 🧙 ◀< 🎟 12:47
Current: 9400	
CONFIRM	CANCEL
Redo p	ositions
	ОК

If the REDO POSITIONS option is checked, enter the transmitter and receiver position and click OK or press Enter keystroke.

*Each position can be changed individually or moved by clicking Next or Prev (or by using F1 to F4 keystrokes).

GDD Rx - 32 chann	1els 🛛 🔀 🗱 🏹 📢	(IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Rx - 32 chann	els	*	: \} € @ 10:35
LTx 100	1 50 5 15	0 LTx	100	1 7	5	5 175
LRx 100	2 75 6 17	'5 LRx	100	2 1	00	6 200
Tx1 99999999	3 100 7 20	00 Tx1	99999999	3 1	25	7 225
Tx2 25	4 125 8 22	25 Tx2	50	4 1	50	8 250
Ref 9999999	>>>> Page	2 Ref	99999999		>>>>	Page 2
▼ Tx PREV ▼ Rx ST F1	NEXT PREV NEXT ST F2 LN F3 LN F4	OK V	Tx PREV Rx ST F1	NEXT ST F2	PREV LN F3	NEXT LN F4 OK
		ОК				ОК

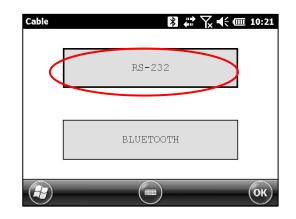
NOTE: Once your acquisition is completed, use Left and Right arrow buttons on the keypad of the Allegro² to compare your current data with that of your previous acquisitions. Use the Up and Down arrows to see all the channels. By clicking on Start, the program will automatically come back to the last acquisition and will start a new acquisition procedure.

Ln: Tx:	32 channel 100 N- 50 Rx	S	TOOLS	START
Count:	255	500	V:	2.9 mV
MEM: 2 CH	B 85.5 Rho	% Stack: Vp	2 I: 100 M	0.0 ErrM
01 02 03	19.65 78.61 176.62	125.091 250.233 374.788	7.955 7.946 7.949	0.001
	314.54 491.65	500.598 625.980	7.947 7.947	

21. Repeat steps 9 through 20 to take another set of readings.

6. RS232/Bluetooth Communication

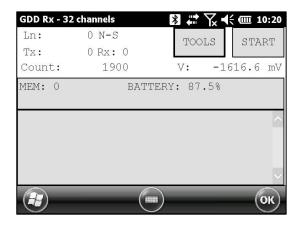
1. Select the "RS-232" communication mode to use the GRx8-32 with a serial communication cable.



2. Select the "BLUETOOTH" communication mode to use the GRx8-32 with a wireless connection.



3. The following screen appears and you are ready to begin.



In Bluetooth mode, if a "COM Error" message appears, see Section 12 – Troubleshooting.

7. Cold weather and harsh environments tips

The GRx8-32 receiver is designed to be used in cold weather (up to -40°C) but it is very important to consider these few tips to prevent damages or malfunctions:

- 1. Never charge the internal batteries of the GRx8-32 in sub-zero;
- 2. As much as possible, turn on the GRx8-32 receiver in a warm place before using it in cold weather;
- 3. Never turn off the GRx8-32 receiver when using it in cold weather to keep the batteries warm;
- 4. If possible, use the serial communication (RS-232 cable) between the Allegro² and the GRx8-32 to prevent malfunction of the Bluetooth communication, and to maximize the battery charge.

When using the GRx8-32 receiver during rainy days, please consider the following tips to ensure a long term instrumental reliability:

- 1. The receiver's control panel, including each connector and input channel, is water resistant. Nevertheless, it is important to bring the receiver back at the base of operation after each day, to leave the pelican case lid open and to remove the connectors' cap so that humidity is freed from the instrument;
- 2. If possible while collecting data, close the lid of the pelican case to avoid water to soak the jack connectors and potentially short the channels;

8. Tools Menu

Click TOOLS to select one of the following options:

₿₊₹Ҡ	€ @ 10:39
TOOLS	START
5	
Conf	mV
Stack: 5 Spec	ial →
Vp	
00.066 Show	
00.176	Data 🖡 📓
99.112	
00.423 Mem	orv
00.819 Mem	
Abou	t 📉
	ж)

<u>Config</u>

Use the CONFIG option to change:

- Staking parameters
- Electrode array
- Active channel
- Trigger channel Line number and position
- Transmitter and receiver position
- Signal timing
- Mode
- GPS time synchronization

<u>Special</u>

Use the SPECIAL option to:

- Reinitialize the GRx8-32
- Test the GRx8-32 with the internal simulator
- Set signal processing options
- Select battery type (if not automatically detected)
- Open Port (enables the RF (radio frequency) communication between GDD's IP transmitter Tx4 and receiver using the optional GDD-RTE01 box.

<u>Show</u>

Use the SHOW option to display:

- Hotkeys (shortcut keys menu)
- PseudoSection
- Signal graph
- Contact and Noise monitor graph
- Vp and Cycle synchronization graph
- Decay curve
- Windows chargeability
- SP (self-potential)

Raw Data

Use Raw Data option to:

- Check GPS
- Start recording Binary Data File (.bdf)

Memory

Use the MEMORY option to:

- See the History
- Recall the previous memory
- Clear the memory
- Save data in a file

<u>About</u>

Use the ABOUT option to display the GDD Rx software version number.

8.1 Config option

8.1.1 Setup

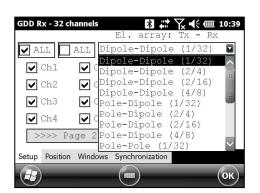
The SETUP option is used to set the electrode arrays, the active channel(s) and the trigger channel.

1. Select Tools | Config | Setup. The following window appears.



- 2. Select the 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 GRx8mini model only



🔀 🚅 🏹 📢 🎹 10:39

- Rx

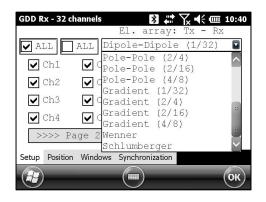
✔ Ch13

✔ Ch14

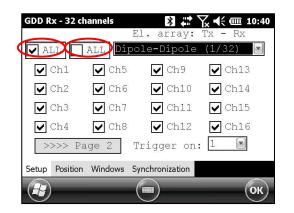
🖌 Ch15

✔ Ch16

(ок)

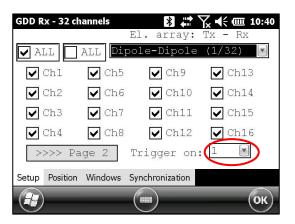


3. Check the active channel(s). Tap on the **□** ALL checkbox to select all channels, or tap on the **□** ALL checkbox to unselect all channels.



For a 32 channels receiver, channels 17-32 are shown on the second page. Click on the Page 2 button to see them.

4. Select the trigger channel, this channel is used for the synchronization process.



8.1.2 Position

The POSITION tab is used to set the following parameters: the Tx line number, the Rx line number, the line direction, the transmitter position (Tx1 and Tx2), the receiver position, the separation, the transmitter movement offset and the receiver movement offset.

1. Select Tools | Config | Position. The following screen appears.

GDD Ro	- 32 channel	s 🖇	i 🚅 🏹 € 🎟 10:39	9 GDD Rx - 32 channels 🛛 🕅 🗱 🏹 📢 @ 10:41
Ln:	100 N-	-	TOOLS START	Project: Test pro
Tx: Count	50 Rx 26	:75 L	Config mV	Ln. Tx: 100 Rx: 100 N-S
MEM: CH	3 B: 85.5 Rho	5% Stack: 5 Vp	Special →	Move LINE: Tx: 0 Rx: 0
01	15.72	100.066	Show >	Station: Tx1: 0 Tx2: 50
02 03	62.89 141.27	200.176 299.772	Raw Data 🕨	Station Rx: 75 Sep: 25 Move ST.: Tx: 25 Rx: 25
04 05	251.60 393.35	400.423 500.819	Memory →	Setup Position Windows Synchronization
			About	ОК

2. Enter the line number and select the line's direction.

GDD Rx - 32 channels	*	🗱 🏹 4 € @@ 10:41	GDD R	x - 32 channels	*	↓ 7		10:41
Project:	Test pro		11	Project:	Test pro			
Ln. Tx: 100	Rx: 100	N-S	Ln.	Tx: 100	Rx: 100		N-S N-S	
Move LINE: Tx:	0	Rx: 0	Move	LINE: Tx:	0	Rx:	QE-W	
Station: Tx1:	0	Tx2: 50	Sta	tion: Tx1:	0	Tx2:	50	
Station Rx:	75	Sep: 25	S	tation Rx:	75	Sep:	25	
Move ST.: Tx:	25	Rx: 25	Mov	e ST.: Tx:	25	Rx:	25	
Setup Position Window	ws Synchroniza	ation	Setup	Position Window	ws Synchroniza	tion		
		ОК	æ				(ок

The labels N –S and E-W are used to define the direction of the lines.

3. Enter the first electrode position of the transmitter and receiver.

GDD Rx - 32 channels	*	\downarrow	◀€ @ 10:41
Project: 7	lest pro		
Ln. Tx: 100	Rx: 100		N-S 💌
Move LINE: Tx:)	Rx:	0
Station: Tx1:⊄)	Tx2:	50
Station Rx:	75	Sep:	25
Move ST.: Tx: 2	25	Rx:	25
Setup Position Windows	Synchroniza	tion	
			ОК

A negative number is used to define South and West.

GDD Rx - 32 channels		7⁄2 ◀€ @ 10:41
Project: Te	est pro	
Ln. Tx: 100	Rx: 100	N-S 💌
Move LINE: Tx: 0	Rx	: 0
Station: Tx1: 0	Tx2	2: 50
Station Rx: 7	5 Sep	25
Move ST.: Tx: 2	5 Rx	25
Setup Position Windows	Synchronization	
		ОК

4. Enter the separation between the electrodes of the receiver.

A negative number is used to define South and West.

5. Enter the moving distance of the transmitter and receiver electrodes.

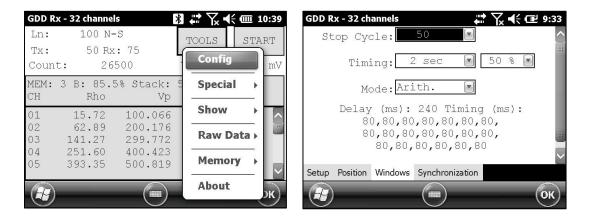
GDD Rx - 32 channels	*	I ⇔ '},	↓ € @ 10:41
Project:	Test pro		
Ln. Tx: 100	Rx: 100)	N-S 💌
Move LINE:	0	Rx:	0
Station: Tx1:	0	Tx2:	50
Station Rx:	75	Sep:	25
Move ST.: 🔩	25	Rx:	25
Setup Position Window	vs Synchroniza	ation	
			ОК

A negative number is used to define South and West.

8.1.3 Windows

Use the WINDOWS option to set the signal timing and the mode.

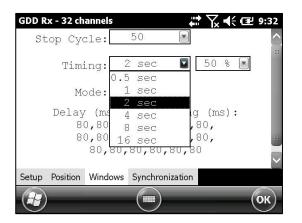
1. Select Tools | Config | Windows. The following screen appears.



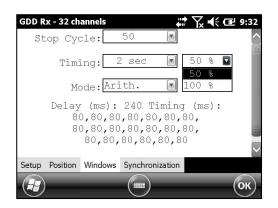
2. Select the maximum number of stacks.

GDD Rx - 32 c	nannels		🛱 🏹 📢 💷 9:32
Stop Cy	cle:	50	^
		10 ^	
Tim	ing:	15	50 % 💌
	1942	20	
М	ode:	25	
2022 - 20		30	
Delay		35	.g (ms):
	0,80	40	,80,
8	0,80	45	,80, 🗉
	80,	50 🚩	β ⁰
			~
Setup Position	Windows	Synchronizatio	n
			ОК

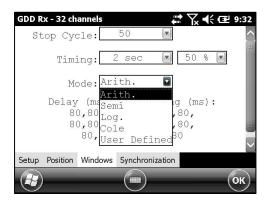
3. Select the signal timing.



4. Select the Duty Cycle (50% or 100%).



5. Select the mode (windows time definition).



• Arithmetic

Semi logarithmic

Windows: 20 Delay (ms): 40 Timing (ms): 2000 40, 40, 40, 40, 40, 40, 80, 80, 80, 80, 80, 80, 80, 160, 160, 160, 160, 160, 160, 160 Logarithmic

Windows: 4 Delay (ms): 160 Timing (ms): 2000 120, 220, 420, 820

• Cole

Windows: 20 Delay (ms): 20 Timing (ms): 2000 20, 30, 30, 30, 40, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 180, 200 User defined

Windows: between 1 and 20 Delay (ms): user defined Timing (ms): user defined

In USER mode, you can load settings you have previously saved, or you can create new settings.

GDD Rx - 32 channels	x 4 € Œ 9:41	GDD Rx	- 32 cha	nnels	÷	¦ € Œ	9:33
Stop Cycle: 50 💌	$\langle \rangle$	Sto	p Cyc	le:	50 💌		^
TirSAVE	*		Timi	ng: 2	2 sec 💽	50 % 💌	
N Do you want to load saved settings?				1	er Defin		
Dela Yes No	ns):	1	80	,80,80	240 Timing ,80,80,80,8	во,	
					,80,80,80,80,8 80,80,80,80	Concere a	#
Setup Position Windows Synchronization	\sim	Setup F	Position	Windows	Synchronization		×
	ОК		_	_			ОК
	OR	\bigcirc			Θ		$\underline{\mathbb{G}}$

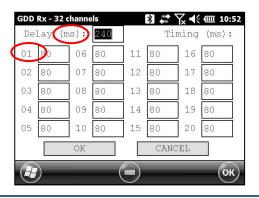
Click YES to load your settings from a previously saved file. This window will appear.

	GDD Rx ·	- 32 chanr	iels	*	\	IIII 10:42
	Open					
	Folder:	All Folder	s			ancel
	Type:	Windows	Files (*.w2	2)		
Ī	Name	A	Folder	Date	Si	ze
4	🔲 Userl	Mode1.w2	>			
	< [∷	_	_	::		>

In this dialog box, select your file. The Windows window appears automatically. Click OK. The saved values will be loaded in the User defined mode.

OR

Click NO to manually enter the delay and window(s) width.



Click OK when your settings are configured.

Click YES to save your new settings.

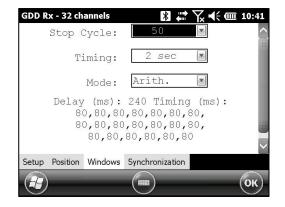
GDD Rx -	32 channels] ↓ 7 4	@ 10:52
Delay	(ms): 240	Timing	(ms):
01 80	SAVE	16	80
02 80	Do you want to sa	ve the	80
03 80	settings?	18	80
04 80	Yes	lo 19	80
05 80		20	80
	OK	CANCEL	
	\bigcirc		
(H_{τ})	(1111)		(ок)
			OK
GDD Rx - 3	\bigcirc		\bigcirc
GDD Rx - 3	\bigcirc] # 7. ◀	ок (ш 10:52
	\bigcirc	3 # 72 ◀	(10:52
	\bigcirc	3 #* 7× 4	(10:52
Name:	32 channels		\bigcirc
Name: Folder:	32 channels		(10:52
Name: Folder: Type:	32 channels		(10:52

Enter your filename and the location where you want to save your file. Then click SAVE. The User defined settings will be saved so you can reload them into the Allegro² later.

OR

Click NO if you do not want to save your User defined settings to a file.

In all cases, you will be brought back to this display and the settings you have entered in the User defined window will be loaded into the Allegro².



8.1.4 Synchronization

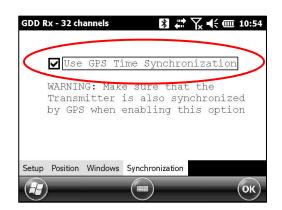
Use the GPS time synchronization if you need to synchronize your receiver to your transmitter using GPS time.

Requirements:

- Your receiver must be equipped with an internal GPS module.
- Your Allegro² must have the Rx software version # 4.2.39 or higher 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 8.4* to verify if a satellite is being tracked by the GPS module of your receiver.
- 2. Select Tools | Config | Synchronization. The following screen appears.



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



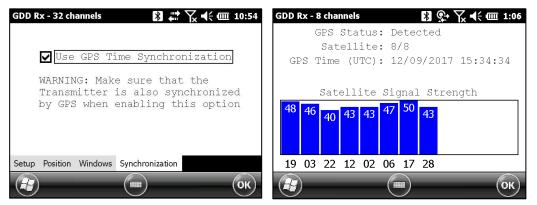
IMPORTANT: Make sure that your transmitter is also synchronized by GPS before using this option.

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 8.4* 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 8.4* to know how to verify the GPS signal):

GPS well synchronized

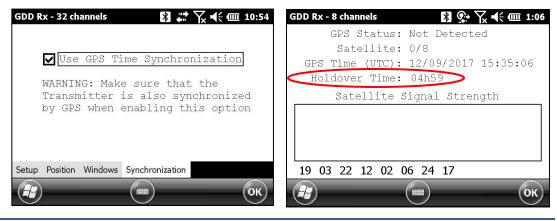
If you checked *Use GPS Time synchronization* and if a GPS signal is detected, your receiver will be synchronized with GPS.



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.

GDD Rx - 32 channels 🚯 🗱 🏹 📢 🎟 10:54	GDD Rx - 8 channels
✔ Use GPS Time Synchronization	GPS Status: Not Detected Satellite: 0/0 GPS Time (UTC): No GPS Time
WARNING: Make sure that the Transmitter is also synchronized by GPS when enabling this option	Satellite Signal Strength
Setup Position Windows Synchronization	(т) (ок)

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 8.5* to know how to create a *.gps* file).

1.0.0 RX 5	N: 1266						
): 240 Timi	na (ms):	80. 80. 80.	80. 80. 80. 8	0. 80.	80. 80. 80.	80. 80. 80.	80. 1
	Array	LineTx	LineRx Dir	n	Tx1	Tx2	Rx1
5 SIGNAL	DP-DP	100.00	100.00 N-5	1.0	0.00	50.00	75.
5 SIGNAL	DP-DP	100.00	100.00 N-5	2.0	0.00	50.00	100.
5 GPS	P-P	100.00	100.00 N-5	0.0	9999999.00	50.00	75.
5 GPS	P-P	100.00	100.00 N-5	0.0	9999999.00	50.00	100.
a rot of of of): 240 Timi S SyncBy S SIGNAL S SIGNAL S GPS	S SYNCBY Array S SIGNAL DP-DP S SIGNAL DP-DP S GPS P-P): 240 Timing (ms): 80, 80, 80, 5 SyncBy Array LineTx 5 SIGNAL DP-DP 100.00 5 SIGNAL DP-DP 100.00 5 GP5 P-P 100.00): 240 Timing (ms): 80, 80, 80, 80, 80, 80, 8 S SyncBy Array LineTx LineRx Dir S SIGNAL DP-DP 100.00 100.00 N-S S SIGNAL DP-DP 100.00 100.00 N-S S GPS P-P 100.00 100.00 N-S): 240 Timing (ms): 80, 80, 80, 80, 80, 80, 80, 80, 5 SyncBy Array LineTx LineRx Dir n 5 SIGNAL DP-DP 100.00 100.00 N-5 1.0 5 SIGNAL DP-DP 100.00 100.00 N-5 2.0 5 GP5 P-P 100.00 100.00 N-5 0.0): 240 Timing (ms): 80, 80, 80, 80, 80, 80, 80, 80, 80, 80,): 240 Timing (ms): 80, 80, 80, 80, 80, 80, 80, 80, 80, 80,

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.

8.2 Special option

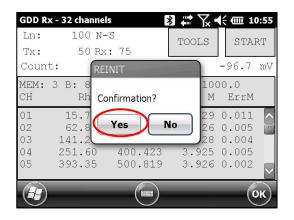
8.2.1 Reinit

The REINIT option is used to reset GRx8-32 configurations and communication with the Allegro².

1. Select Tools | Special | Reinit

GDD R	x - 32 channels	5	B # 7⁄2 € @ 10):55	GDD Rx	- 32 channels	🛿 🛱 🏹 📢 🎟 10:55
Ln:	100 N-	S	TOOLS STAF	217	Ln:	100 N-S	TOOLS START
Tx:	50 Rx	: 75			Tx:	50 Rx: 75	Config
Coun	t: 751	L00	Config	mV	Count	74600	mV
MEM:	3 B: 83.8		5 Special >		MEM:	Reinit	ial →
СН	Rho	Vp	Show >	_	CH	Simulation	
01 02 03	15.72 62.89 141.27	100.066 200.176 299.772	Raw Data		01 02 03	Signal processi	ing options Data
03 04 05	251.60 393.35	400.423	Memory >		04 05	Battery Type	≻ pry →
	_		About	м) Ж	Ð		About

2. Click YES to reinitialize the GRx8-32.



*** WARNING ***

Please ensure your MEM number is the same than before having reinitialized your GRx8-32. If MEM displays a 0 value, you may need to exit the GDD_Rx software, wait 15 seconds and start the application again. The MEM should be back to its original count. This issue happens when the PDA does not detect the memory card.

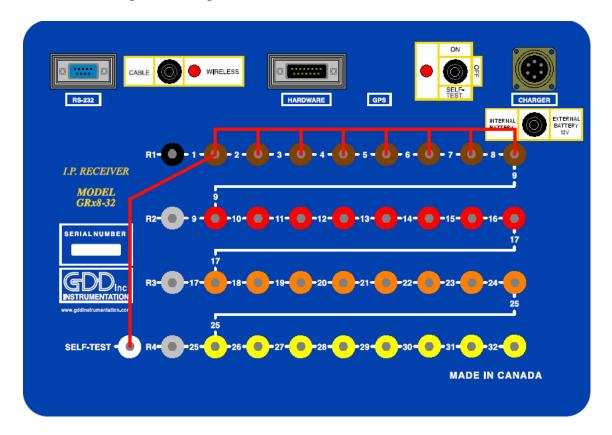
8.2.2 Simulation

The SIMULATION option is used to perform a self-test with the internal waveform generator (you need to select the Pole-Pole configuration to use this option).

1. Select the SELF-TEST mode using the ON/OFF/SELF-TEST switch.



2. Short the SELF-TEST terminal with the channel(s) you want to test. The picture below shows a self-test testing the first eight channels.



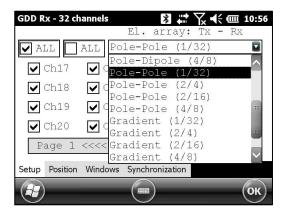
3. Select Tools | Config | Setup

GDD Rx - 32 Ln: Tx: Count:	channels 100 N-S 50 Rx: 75 26500	TOOLS	
МЕМ: З В СН	: 85.5% S [.] Rho	Vp	
02 6 03 14	2.89 20 1.27 29	.066 .176 .772 Raw	v Data
	2.00 10	. 423 . 819 Men	nory ,

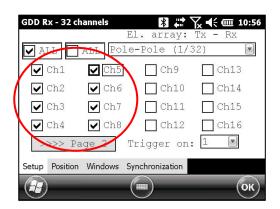
4. The following screens appear.

GDD Rx - 32 channels 🛛 🔀 🖨 🏹 📢 🎟 10:56	GDD Rx - 32 channels 💦 🗱 🏹 📢 💷 10:56
El. array: Tx - Rx	El. array: Tx - Rx
ALL Pole-Pole (1/32)	ALL ALL Pole-Pole (1/32)
✔ Ch1 ✔ Ch5 ✔ Ch9 ✔ Ch13	🗹 Ch17 🔽 Ch21 🔽 Ch25 🔽 Ch29
✔ Ch2 ✔ Ch6 ✔ Ch10 ✔ Ch14	✔ Ch18 ✔ Ch22 ✔ Ch26 ✔ Ch30
✔ Ch3 ✔ Ch7 ✔ Ch11 ✔ Ch15	✔ Ch19 ✔ Ch23 ✔ Ch27 ✔ Ch31
✔ Ch4 ✔ Ch8 ✔ Ch12 ✔ Ch16	✔ Ch20 ✔ Ch24 ✔ Ch28 ✔ Ch32
>>>> Page 2 Trigger on: 1	Page 1 <<<< Trigger on: 1
Setup Position Windows Synchronization	Setup Position Windows Synchronization
🕢 🗰 ок	С

5. Select the Pole-Pole (1/32) array configuration.



6. Check the channel(s) you want to test.



7. Select Tools | Special | Simulation

GDD Rx - 32 channels	🗱 🏹 📢 🎟 10:55	GDD Rx - 32 channels	🖹 💭 🏹 🕂 🎹 10:57
Ln: 100 N-S	TOOLS START	Ln: 100 N-S	TOOLS START
Tx: 50 Rx: 75		Tx: 50 Rx: 75	Config
Count: 75100	Config mV	Count: 80600	mV
MEM: 3 B: 83.8% Stack: 5	Special >	MEM: Reinit	ial ▶
CH Rho Vp		CH Simulation	
01 15.72 100.066	Show >	01	
02 62.89 200.176 03 141.27 299.772	Raw Data	02 03 Signal processi	ng options 🛛 Data 🕽 🖉
03 141.27 299.772 04 251.60 400.423		0.4	
05 393.35 500.819	Memory >	05 Battery Type) pry →
	About		About
	About ok)		

- 8. Enter the waveform timing (default = 2000ms).
- 9. Enter the primary voltage (default = 500mV).
- 10. Enter the chargeability (default = 0).



11. Click CONFIRM.

GDD Rx - 32 channels	Ÿx ◀€ @ 10:57
Timing:	N2723
2000 m.	5
Voltage:	
500 m ³	V
Chargeability:	
0	
CONFIRM	CANCEL
	ОК
	G

12. Click START to begin the acquisition process.

GDD Rx - 32	channels	🛿 井 🏹 📢 🎟 10:20
Ln:	0 N-S	TOOLS START
Tx:	0 Rx: 0	100110 GLOOP
Count:	1900	V: -1616.6 mV
MEM: 0	BAT	TERY: 87.5%
		~
		\sim
		(ок)

If you keep the default settings you should obtain the following results for all channels:

 $Vp \approx 500 mV$ $M \approx 0.000$

When you enter a VP of 500 mV in the self-test simulation mode, it is possible that the actual voltage generated is 504, 505, 506 mV, etc. It does not mean that the channels are not working properly. It would be a problem if the VP value is not the same during a reading for every channel. For example, a value of 520mV for one channel while you get a value of 503mV for the other ones.

8.2.3 Signal Processing Options

The SIGNAL PROCESSING OPTIONS are used to disable the default gain and offset settings. When offset and gains are applied, the signal to noise ratio is improved.



1. Select TOOLS | Special | Signal Processing Options

2. Check the checkboxes of the settings you want to disable and click CONFIRM.

GDD Rx - 32 channels 🛛 🔀 🗱 🏹 📢 🎟 10:58
□ Internal offset OFF
🗌 Input signal offset OFF
🗌 Input signal gain OFF
🗌 Input signal telluric OFF
CONFIRM CANCEL
🕢 💿 Ок

Note that the gains and offsets are enabled (applied) every time you start the GDD Rx program again even if you disabled them the last time you used them.

8.2.4 Battery type

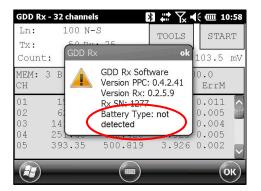
With Rx firmware version 2.5.4 or higher, the GDD Rx program detects the type of batteries in the receiver automatically.

If a battery type is detected, the information will appear in the About pop-up window.

Select Tools | About

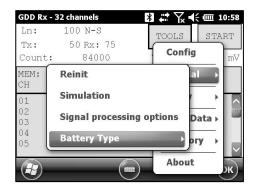
GDD Rx - 32 channels] # 🏹 📢 🎟 10:58	GDD Rx - 32 channels	🛿 🗮 🏹 📢 🎟 10:58
Ln: 100 N-S	TOOLS START	Ln: 100 N-S	TOOLS START
Tx: 50 Rx: 75		Tx:	
Count: 84700	Config mV	Count: GDD Rx	ok 103.5 mV
MEM: 3 B: 83.5% Stack:	Special >	MEM: 3 B 🛕 GDD Rx S	0.0
CH Rho Vp		CH Version PF	C: 0.4.2.41 ErrM
01 15.72 100.066	Show >	01 1: Rx SN: 12	
02 62.89 200.176	Raw Data	02 6: Battery Ty	
03 141.27 299.772		03 14	0.004
04 251.60 400.423	Memory	04 251.00 +00.+2.	0.005
05 393.35 500.819		05 393.35 500.81	9 3.926 0.002 🔽
	About		
	Эж		ОК

If the GDD Rx program cannot detect the battery type (older Rx firmware versions), the About pop-up window will indicate *Battery Type : not detected*.

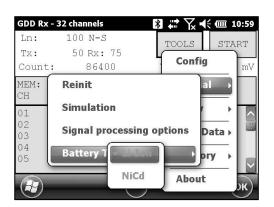


In which case, it is possible to select the battery type manually.

Select Tools | Special | Battery Type



Select the type of batteries in your receiver.



Refer to your receiver's charger to find out which type of batteries your receiver has.

Ni-CD batteries

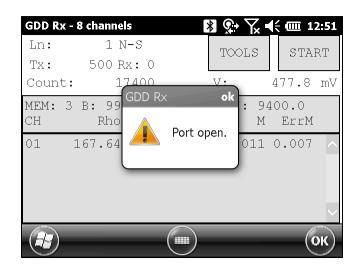


If you select the wrong battery type, the battery level indicated in the main window of the GDD Rx program will be slightly different from the actual value.

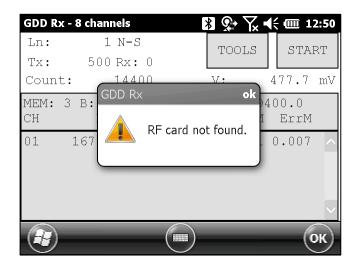
8.2.5 Open Port

The OPEN PORT option is used to enable the Tx-Rx RF communication when using the optional GDD-RTE01 box.

- 1. Connect the optional GDD-RTE01 box to the USB port of your Allegro²
- 2. Select Tools | Special | Open Port



If the GDD-RTE01 box is not connected or defective, the following message will pop up.



8.3 Show option

8.3.1 Hotkeys

The HOTKEYS option is used to display the shortcut keys menu.

1. Select Tools | Show | Hotkeys

Hotkey 'M'



2. The following screen appears.

GDD Rx - 8 channels	€ @ 1:11	GDD Rx - 32 channels	🖌 ┥€ 🎟 11:00
Action	Key 🔨	Show M and ErrM:	"R" 🔼
		Show Decay:	"D"
Hotkeys:	"M"	Show Windows (1-8 ch):	"1"
Quick start (Repeat reading):	"F5"	Show Windows (9-16 ch):	"2"
Show Voltage or Current:	"V"	Show Windows (17-24 ch):	"3"
Show Signal:	"S"	Show Windows (25-32 ch):	"4" · ·
Show Contact and Noise:	"N" ==	Show Sp:	"P"
Show Vp and Cycle:	"C"	Mode Resistivity:	"E"
Show M and ErrM:	"R"	Mode Chargeability:	"A"
Show Decay:	"D"	History:	"H"
Show Windows (1-8 ch):	"1"	Pseudosection:	nAn 🕫
Show Windows (9-16 ch):	"2" 🔽	Invert Pseudo Colors:	"I" 🔽
	(ок)		ОК
	UN UN		UK)

Use the shortcut keys to navigate quickly between the different options. The Quick Start option (F5) can be used to start the acquisition procedure using the same settings as the previous acquisition. Using F5 will skip the settings and contact resistance windows.

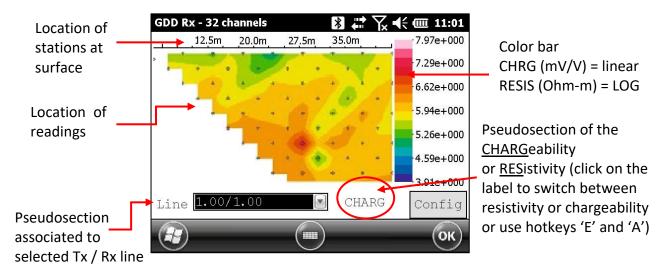
8.3.2 Pseudosection

The Pseudosection option is used to display the calculated pseudosection (in color) for each surveyed line.

1. Select Tools | Show | Show Pseudosection Hotkey 'U'

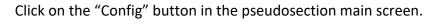


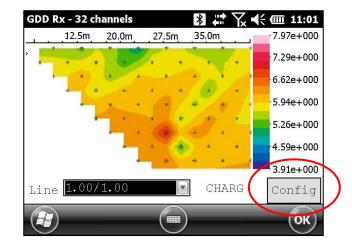
2. The following screen appears.



Note: Use the hotkey 'I' to invert the Pseudo colors.

3. Color bar editing.





The following screen appears.

Unclick the automatic range option	GDD Rx - 32 channels Automatically com Maximum value	B ₩ ₩ 4	Enter a maximum value (the value suggested corresponds to the line's highest value)
	Minimum value Note : Press ENTE	3.910375	Enter a minimum value (the value suggested corresponds to the line's smallest value)
) ОК	

To validate and go back to the pseudosections view, you can either click on « Enter » or on the « OK » button.

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

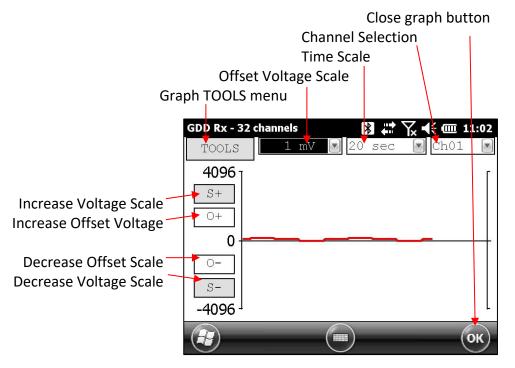


8.3.3 Signal

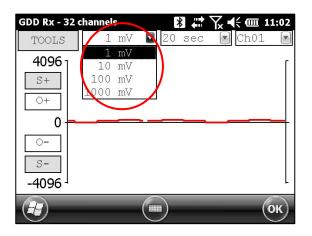
The SIGNAL option is used to display the signal graph of a selected channel.



1. Select Tools | Show | Show Signal Hotkey 'S'



3. Select offset voltage scale.



4. Select time scale.

GDD Rx - 32 c	hannels	*	\} € @ 1	1:03
TOOLS	1 mV 💽	20 sec	Ch01	
4096		5 sec 10 sec		٢
S+		20 sec 40 sec		
0+		80 sec		
0				-
0-				
S-				
-4096 1				L.
				ж

5. Select display channel.

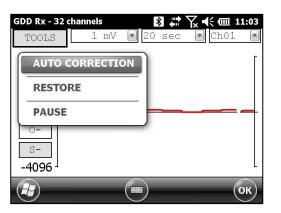
TOOLS 1 mV 20 sec Ch01 4096 Ch02 Ch03 S+ Ch04 Ch05 O+ Ch06 Ch07 O- Ch09 Ch09 S- Ch01 Ch02 -4096 Ch12 Ch03	GDD Rx - 32 0	hannels		¶, € @ :	1:03
4096 S+ ○+ Ch02 Ch03 Ch04 Ch05 Ch06 Ch06 Ch06 Ch07 Ch08 Ch07 Ch08 Ch09 Ch08 Ch09 Ch01 Ch04 Ch05 Ch04 Ch05 Ch04 Ch05 Ch04 Ch05 Ch04 Ch05 Ch06 Ch07 Ch08 Ch07 Ch08 Ch07 Ch08 Ch07 Ch08 Ch07 Ch08 Ch07 Ch08 Ch07 Ch08 Ch07 Ch08 Ch07 Ch08 Ch07 Ch08 Ch07 Ch08 Ch08 Ch07 Ch08 Ch09 Ch10 Ch10 Ch10 Ch10 Ch10 Ch10 Ch10 Ch10 Ch10 Ch10 Ch10 Ch10 Ch10 Ch10 Ch10 Ch10 Ch11 Ch12 Ch12 Ch12 Ch12 Ch12 Ch10 Ch11 Ch12	TOOLS	1 mV 💌	20 sec	0	
S+ Ch03 O+ Ch04 O Ch05 O Ch06 Ch07 Ch08 Ch09 Ch09 Ch10 Ch11 Ch12 Ch12	40961				
○+ Ch05 0 Ch06 ○- Ch07 S- Ch09 -4096 Ch10 Ch12 Ch12	S+				
Ch07 Ch08 Ch09 Ch09 Ch10 Ch11 Ch12	0+				**
○- Ch08 S- Ch09 -4096 Ch10 Ch11 Ch12	0				
S- -4096 Ch10 Ch11 Ch12	0-				
-4096 Ch11 Ch12	S-			Contract Andrewson	
	-4096			011±0	
(==) (OK)	(\mathbf{F})				べ

8.3.3.1 Tools menu

8.3.3.1.1 Auto Correction

The AUTO CORRECTION option is used to optimize the graph scale and correct the offset of the signal. This option should be used after one signal period (8 sec for a 2 sec time base).

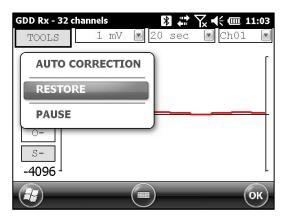
1. Select Tools | Auto Correction



8.3.3.1.2 Restore

The RESTORE option is used to reset the settings to default.

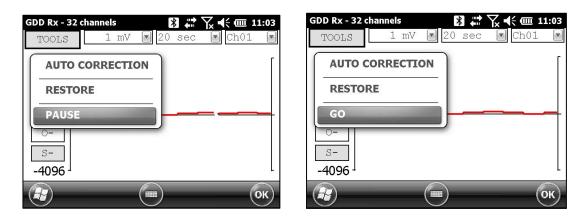
1. Select Tools | Restore



8.3.3.1.3 PAUSE/GO

The PAUSE/GO option is used to pause or play the signal.

1. Select Tools | Pause or Tools | Go



8.3.4 Contact and Noise

The CONTACT AND NOISE option is used to display the noise graph of all of the channels. This option can be useful for troubleshooting if you have a noise problem. The Contact graph shows the contact resistance between the electrodes and the ground.

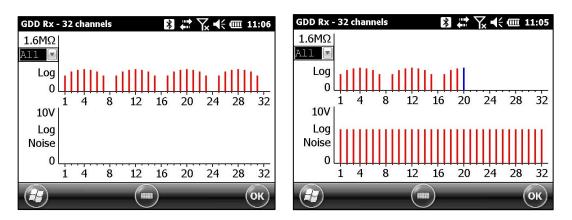
*This option should be used before your transmitter sends a current. If the transmitter sends a current, the Vp signal will be displayed for each active channel.

1. Select Tools | Show | Show Noise Hotkey 'N'



2. The following screen appears.

Transmitter is *not* sending a current



8.3.5 Vp and Cycle

Steps 14 to 16 of *Section 5* of this Manual must be done before using this feature.

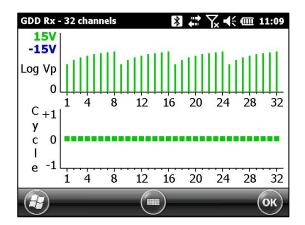
The VP AND CYCLE option is used to show the channel synchronization. This option can be useful for troubleshooting if you have any connection problems. The VP part of the graph shows the primary voltage of all your electrodes. The current graph is an example; your VP graph will depend on the physical configuration of the electrodes.

1. Select Tools | Show | Show Cycle Hotkey 'C'



Transmitter is sending a current.

2. The following screen appears.



- Green line indicates that this Vp is positive.
- Blue line indicates that this Vp is negative.
- Red dots indicate that the GRx8-32 is not synchronized.
- Green dots indicate that the GRx8-32 is synchronized.
- If the GRx8-32 is synchronized and the green dots are not moving in the same direction, check the position of the electrodes on the GRx8-32 front panel.

8.3.6 Show M and errM

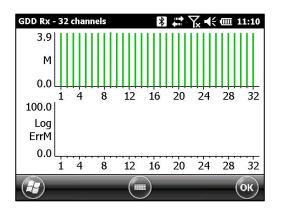
Steps 14 to 16 of *Section 5* of this Manual must be done before using this feature.

The Show M and errM option is used to display the chargeability and the error in chargeability for each channel.

1. Select Tools | Show | M and errM Hotkey 'R'



2. The following screen appears.



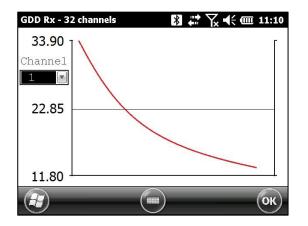
8.3.7 Decay Curve

Steps 14 to 16 of *Section 5* of this Manual must be done before using this feature.

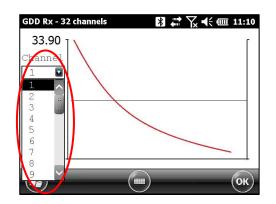
The *Decay Curve* option is used to display the decay graph of a selected channel.

1. Select Tools | Show | Show Decay Hotkey 'D'

GDD R	x - 32 channel	s 🕅	# 7⁄2 €€	@ 10:59
Ln:	100 N-	S	TOOLS	START
Tx: Coun	50 Rx t: 87:	-	Config	mV
MEM: CH	3 B: 83.5 Rho	i% Stack: 5 Vp	Special	
01 02 03	15.72 62.89 141.27	100.066 200.176 299.772	Show Raw Da	ita 🖡
04 05	251.60 393.35	400.423 500.819	Memory	
			About	ж



3. Select the display channel.



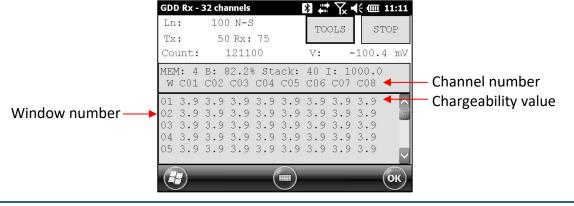
8.3.8 Show Windows

Steps 14 to 16 of *Section 5* of this Manual must be done before using this feature.

The Show Windows option is used to display the chargeability windows of each channel.

1. Select Tools | Show | Show Windows (1-8 ch), (9-16 ch), (17-24 ch) or (25-32 ch) Hotkeys '1' (1-8 ch), '2' (9-16 ch), '3' (17-24 ch), '4' (25-32 ch)





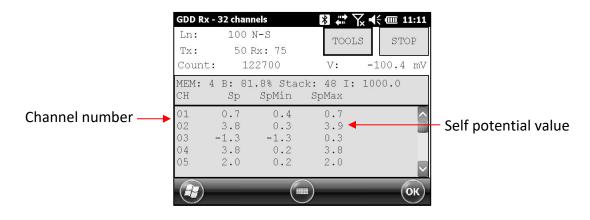
8.3.9 Show Sp

Steps 14 to 16 of *Section 5* of this Manual must be done before using this feature.

The SHOW SP option is used to display the self-potential (SP) in mV of each channel.

1. Select Tools | Show | Show SP Hotkey 'P'





8.4 Raw Data Option

8.4.1 Check GPS

To use the GPS function, your receiver must be equipped with an internal GPS module. This GPS module is designed for use with applications that require accurate time (getting GPS timestamps in output files, synchronizing a receiver with a transmitter using GPS signal, recording raw data without synchronization for post processing, etc.).

The *Check GPS* option is used to verify if a satellite is being tracked by the GPS module.

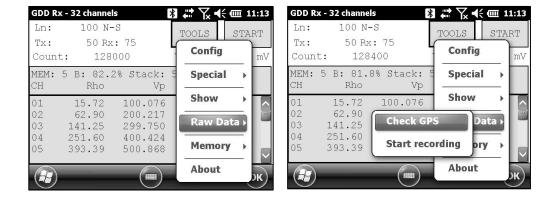
Connect an external antenna (SMA) to the GPS connector of the GRx8-32 receiver for more efficiency.



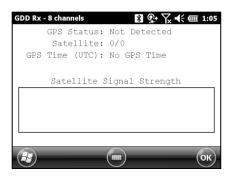
After turning on the GRx8-32 receiver, it can take up to 2 or 3 minutes for the GPS receiver to track and synchronize with a satellite.

Important: the internal GPS module of the receiver can take up to 15 minutes to get the UTC time. Wait for this time before taking your first reading if your receiver needs to get the same GPS time than another device.

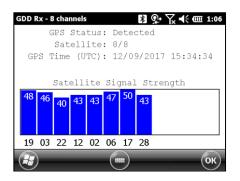
Select Tools | Raw Data | Check GPS



If the GPS module is not synchronized with a satellite, the following window will appear.



Once the GPS module is synchronized with a satellite, the following window should appear.



This window allows you to verify if the GPS works properly. You can close this window and continue to work normally with your GRx8-32 receiver. You can occasionally verify if the GPS is still tracking the satellite.

The GPS timestamps will appear in the .gps file (see Section 8.5.5 to create a .gps file). The data in this file is the same than that of the .gdd file except for the GPS timestamp (the time in the .gdd file comes from the PDA).

Example of .gps file

_				•			2010-10040-10000								
V	ersid	on PPG	: 0.4	.2.39 Ver	sion Rx	: 8.1	.0.0 RX	SN: 1266							
D	roier	+ . Dr	oiect												
							> > > >			~~					
W	1000	15: 21) sett	ing: Arit	n. pera			Timing (ms):	80, 80,	80,	80, 80, 80,	80, 80,	80, 80, 8	30, 80, 80,	80, 80, 8
1	Mem	Dat	te	Hour		GPS	SVNCBV	Array	LineTx		LineRx Dir	n	Tx1	Tx2	Rx1
- 11	1	27/08	3/2015	15:00:07	.049443	YES	SIGNAL	DP-DP	100.00		100.00 N-5	1.0	25.00	50.00	75.00
	1	27/08	3/2015	15:00:07	.049443	YES	SIGNAL	DP-DP	100.00		100.00 N-5	2.0	25.00	50.00	100.00
	1	27/08	3/2015	15:00:07	.049443	YES	SIGNAL	DP-DP	100.00		100.00 N-5	3.0	25.00	50.00	125.00
	1	27/08	3/2015	15:00:07	.049443	YES	SIGNAL	DP-DP	100.00		100.00 N-5	4.0	25.00	50.00	150.00
	1	27/08	3/2015	15:00:07	.049443	YES	SIGNAL	DP-DP	100.00		100.00 N-5	5.0	25.00	50.00	175.00
	1	27/08	3/2015	15:00:07	.049443	YES	SIGNAL	DP-DP	100.00		100.00 N-5	6.0	25.00	50.00	200.00
	1	27/08	3/2015	15:00:07	.049443	YES	SIGNAL	DP-DP	100.00		100.00 N-5	7.0	25.00	50.00	225.00
	1	27/08	3/2015	15:00:07	.049443	YES	SIGNAL	DP-DP	100.00		100.00 N-S	8.0	25.00	50.00	250.00
-Ц	2	27/01	3/2015	15:03:47	.001726	YES	SIGNAL	DP-DP	100.00		100.00 N-5	1.0	25.00	50.00	75.00

If there is GPS synchronization with a satellite, the column GPS will show YES as shown on the picture above. See *Section 8.1.4* to know more about SyncBy column.

If the GPS synchronization 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.

		PPC: 0.		ersi	on Rx:	8.1	.0.0 RX	SN: 1266										_			٦
				ith.	Delay	(ms): 240	Timing (ms):	80, 80,	80,	80, 80,	80,	80,	80,	80,	80,	80,	80,	80,	80, 8	Ο,
Me	m	Date	Hour			GPS	SyncBy	Array	LineTx		LineRx	Dir	n		Tx1			Tx2		RX: 7	1
1000	1 28	/08/201	5 17:03:	35.5	92977	NO	SIGNAL	P-P	100.00		100.00	N-S	0.0	999	99999	.00		50.	00	7	5.
	1 28	/08/201	5 17:03:	35.5	92977	NO	SIGNAL	P-P	100.00		100.00	N-S	0.0	999	99999	.00		50.	.00	10	0.
	2 28	/08/201	5 17:04:	31.5	80638	NO	SIGNAL	DP-DP	100.00		100.00	N-S	1.0	999	99999	.00		50.	.00	7	5.
	2 28	/08/201	5 17:04:	31.5	80638	NO	SIGNAL	DP-DP	100.00		100.00	N-S	2.0	999	99999	.00		50.	.00	10	0.
	3 28	/08/201	5 17:05:	31.5	78131	NO	SIGNAL	DP-DP	100.00		100.00	N-S	1.0	999	99999	.00		50.	.00	7	5.
			5 17:05:				STGNAL	DP-DP	100.00		100.00	N-5	2.0	999	99999	.00	×		00	10	0.

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*.

	PPC: 0.4.2.39 Versio	on Rx: 8.1.	0.0 Rx	5N: 1266		_						_	_				
	20 Setting: Arith.	Delay (ms)	: 240	Timing (ms):	80, 80,	80,	80, 80,	80,	80,	80,	80,	80,	80,	80,	80,	80, 8	80,
	Date Hour		SyncBy		LineTx		LineRx		n		TX			Tx2		RX	(1
1	NO GPS TIME	NO	SIGNAL	DP-DP	100.00		100.00	N-S	1.0	999	9999	9.00		50.	00	7	75.0
1	NO GPS TIME	NO	SIGNAL	DP-DP	100.00		100.00	N-5	2.0	999	9999	9.00		50.	00	10	0.00
2	NO GPS TIME	NO	SIGNAL	P-P	100.00		100.00	N-5	0.0	999	9999	9.00		50.	00	7	75.0
2	NO GPS TIME	NO	SIGNAL	P-P	100.00		100.00	N-S	0.0	999	9999	9.00		50.	00	10	0.00
3	NO GPS TIME	NO	SIGNAL	DP-DP	100.00		100.00	N-S	1.0	999	9999	9.00		50.	00	7	75.0
3	NO GPS TIME	NO	STGNAL	DP-DP	100.00		100.00	N-5	2.0	999	9999	9.00	<u>}</u>	50.	00	10	0.00

The GPS timestamps will also appear in the fullwave file (see *Section 8.5.5* to create a fullwave file) or in the raw data file (see *Section 8.4.2* to use raw data option).

Example of a fullwave file

	Version PPC: 0.4.2	.39 Version R	X: 8.1.0.0 R	x 5N: 1266				
	Project: Project							
	Windows: 20 Settin	g: Arith. Del	lay (ms): 240	Timing (ms):	80, 80, 80,	80, 80, 80	, 80, 80, 80	, 80, 80, 8
	MEM: 1 FULL WAVE:	<pre>8 channel(s)</pre>	27/08/2015 1	5:00:07 (Time	GPS) ARRAY:	DP-DP LINE	TX: 100.00	N-S LINE R)
1	Time GPS	GPS	CH01	CH02	CH03	CH04	CH05	CH06
1	27/08/2015 15:00:0	7.049443 YES	4402.110	4417.473	4446.574	4415.306	-4404.320	4367.173
L	27/08/2015 15:00:0	7.069458 YES	5594.123	5619.028	5625.894	5617.490	-5593.644	5572.307
L	27/08/2015 15:00:0	7.089446 YES	5917.275	5948.031	5945.424	5948.056	-5916.514	5904.229
L	27/08/2015 15:00:0	7.109414 YES	5992.098	6025.043	6020.204	6026.248	-5991.927	5982.474
L	27/08/2015 15:00:0	7.129439 YES	6008.621	6041.841	6036.090	6042.971	-6007.934	5999.322
L	27/08/2015 15:00:0	7.149438 YES	6011.757	6044.923	6039.294	6046.429	-6011.360	6002.891
L	27/08/2015 15:00:0	7.169437 YES	6012.301	6045.485	6040.224	6046.776	-6011.911	6004.071
l	27/08/2015 15:00:0	7.189437 YES	6012.851	6045.410	6040.478	6047.488	-6012.057	6004.230
1	27 /00 /201 F 1 F. 00.0	7 200425 45	C013 004	COAF 003	CO40 543	CO47 700	C013 103	CO04 501

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:



8.4.2 Start Recording (raw data)

This option is used to record raw data without any synchronization with a transmitter signal. This can be useful to record the telluric or noise from the ground.

The receiver will record a reading every 20 ms. Thanks to the GPS module, each recorded reading will be accurately time stamped. Your receiver must be equipped with an internal GPS module to use GPS with the raw data function.

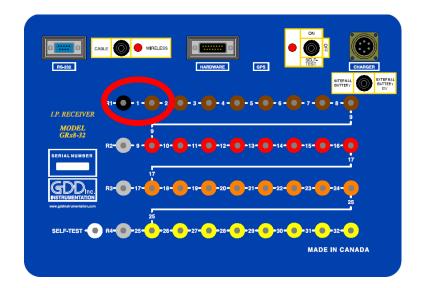
Ln:	100 N-		TOOLS	TART
Tx: Coun	50 Rx t: 128		Config	m
MEM: CH	5 B: 82.3	2% Stack: 5 Vp	Special	•
01	15.72	100.076	Show	•
02 03	62.90 141.25	200.217 299.750	Raw Data	
04 05	251.60 393.39	400.424 500.868	Memory	Ξ.
			About	- 4

1. Make sure that channel 1 or R1 is connected to the ground.

If a pole configuration is selected in the Setup – Config menu, make sure that channel R1 is connected to the ground.

If a dipole configuration is selected in the Setup – Config menu, make sure that channel 1 is connected to the ground.



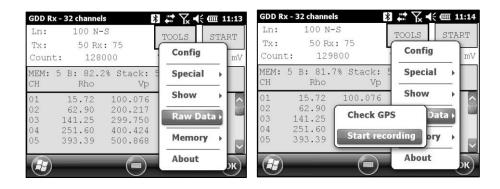


2. If you want to verify the GPS time, select Check GPS.

GDD Rx - 32 channels X Ln: 100 N-S Tx: 50 Rx: 75 Count: 128000	Image: Tools START Config m	Ln: Tx:	2 channels 100 N-S 50 Rx: 75 128400		Config	m 11:13 START mV
MEM: 5 B: 82.2% Stack: CH Rho Vp	Special →	MEM: 5 I CH	B: 81.8% St Rho	ack: 5 Vp -	Special	-
0115.72100.0760262.90200.21703141.25299.75004251.60400.424	Show Raw Data	02 03 1 04 2	62.90 41.25 51.60	.076 eck GPS art record	Show Dat	-
05 393.39 500.868	About	05 3	93.39		About	- Г
GDD Rx - 32 channels	8 # 7 € € @ 10:				€ @ 10:5	4
GPS Time No GPS			PS Time /08/2015	(UTC) 15:55:		
GPS Not D	etected		GPS Dete	ected		
)	ОК)

If you see No GPS Time, either the internal GPS module cannot receive any data from a satellite, or your receiver does not have this option.

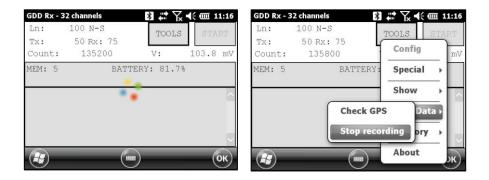
3. To begin the data acquisition, select Tools | Raw Data | Start recording.



4. You will be prompted to name your file.

GDD Rx - 3	32 channels 🗸	t 🗙 ◀€ Œ 9:37	GDD Rx - 3	2 channels	‡ Yx € Œ 9:38
Name:		^	Name:	full	>
Folder:	None		Folder:	None	
Туре:	Binary Raw Data Files (*.B		Туре:	Binary Raw Data Files (*.B	
Location:	SD Card		Location:	SD Card	
	Save Cancel	\sim		Save Cancel	\sim
					-

5. The following icon will appear and data will be recorded until you stop the acquisition by selecting Tools | Raw data | Stop recording.



The extension of the file created with your raw data is '.bdf'. This binary format file can be imported and visualized using GDD's IP Post-Processing software.

8.5 Memory Option

8.5.1 Display Reading

The Display Reading option displays a particular reading on the PDA as the operator would see it in the field even if no receiver is connected to the PDA.

Select Memory | Display Reading

GDD Rx - 32 channels	₩ \ (11:16	GDD Rx - 32 channels	¥ ₩ Y 🕂 🗰 11:16
Ln: 100 N-S Tx: 50 Rx: 75 Count: 136800	TOOLS START Config mV	Ln: 100 N-S Tx: 50 Rx: 75 Count: 137200	TOOLS START Config mV
MEM: 5 BATTERY:	Special Show	Hi	splay Reading al , , , , , , , , , , , , , , , , , ,
	Memory About	Cle	ear Mem ve File t

The following window will appear. The number in the *Reading Number* field is always the Memory number of the latest reading taken. Enter the number of the reading you want to see. Click on CONFIRM.



Select the Windows of chargeability. Click on CONFIRM.

GDD Rx - 32 channels	B 🛱 🏹 📢 🎟 11	GDD Rx - 32 channels	8 🖨 🏹 € 🎟 11:17
₽ 01 ₽ 02	♥ 03 ♥ 04 ♥	Ln: 100 N-S Tx: 50 Rx: 75	TOOLS START
06 🗸 07	✓ 08 ✓ 09 ✓ 09	Count: 139000	V: -96.6 mV
✓ 11	✓ 13 ✓ 14	MEM: 4 B: 81.5% Stack: CH Rho Vp	12 I: 1000.0 M ErrM
✓ 16 ✓ 17	✓ 18 ✓ 19	01 15.72 100.078 02 62.90 200.219	3.926 0.005 3.923 0.003
CONFIRM	CANCEL	03 141.26 299.765 04 251.60 400.433 05 393.40 500.889	3.922 0.001 3.925 0.001 3.925 0.001
			ок)

Use Left and Right arrow buttons to compare your current data with that of your previous acquisitions. Use the Up and Down arrows to see all the channels.

Ln: Tx:	100 N-5 50 Rx:		TOOLS	START	Ln: Tx:		0 N-S 0 Rx: 75	TOOLS	STA	RT
Count:	252	00	V:	103.5 mV	Cour	it:	139000	V:	-96.6	m∖
MEM: 3 CH	B: 85.7 Rho	% Stack: Vp	5 I: 100 M	0.0 ErrM	MEM: CH		81.5% Stack no Vj			
)2)3 1)4 2	15.72 62.89 41.27 51.60 93.35	100.066 200.176 299.772 400.423 500.819	3.929 3.926 3.928 3.925 3.925 3.926	0.005	01 02 03 04 05	15. 62.9 141.2 251.0 393.4	90 200.21 26 299.76 60 400.43	9 3.923 5 3.922 3 3.925	0.005 0.003 0.001 0.001 0.001	

Keep in mind that there is no indication of which reading is monitored on the PDA display. At this point, it is possible to use the Hotkeys or the Show menu to display graphs or channel values.

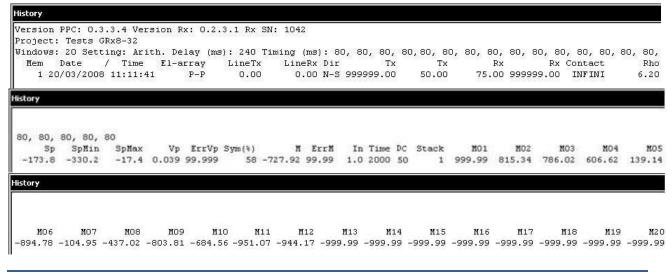
8.5.2 History

The History option is used to display all the data accumulated in memory.

	00	mV P
MEM: 2 B: 81. CH Rho	Display Reading	j al →
01 19.65 02 78.61 03 176.62	History Back Mem	Data
04 314.54 05 491.65	Clear Mem Save File	ory →

First	Prev 1 -	1 Ne:	xt Last
Mem	Date / Time	;	El-Arra
Project	Test pro		
	Windows: 20)	Setting
1	04/05/2016	11:32:47	DP-D.
1	04/05/2016	11:32:47	DP-D.
1	04/05/2016	11:32:47	DP-D.
1	04/05/2016	11:32:47	DP-D.
1	04/05/2016	11:32:47	DP-D.
1	04/05/2016	11:32:47	DP-DI
< [c c)			
A	(ОК

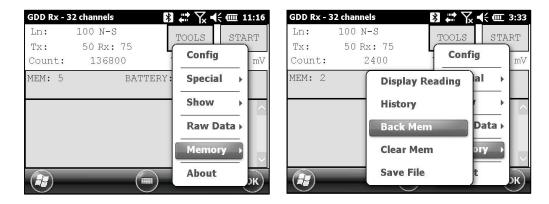
You will have to use the scroll bar to see all the information available. Click Next to go to the next page. The three following slides show all the information displayed by the history.



8.5.3 Back Mem

The Back Mem option is used to clear the last readings of the memory one by one.

1. Select Tools | Memory | Back Mem



2. Click Yes to clear the last readings.

GDD Rx - 3	2 channels	8 🛱 🏹	€ @ 3:34
Ln:	100 N-S	TOOLS	START
Tx:	50 Rx: 75	10010	01711/1
Count:	BACK MEM		L16.2 mV
MEM: 2		88	
	Confirmation?		
			^
	Yes	No	
			\sim
			(ок)

8.5.4 Clear Mem

The *Clear Mem* option is used to clear all the readings of the memory.



1. Select Tools | Memory | Clear Mem

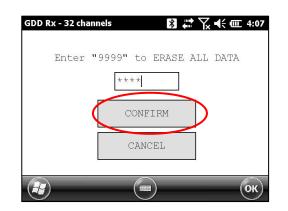
2. Click Yes to confirm the operation.

GDD Rx - 3	2 channels 100 N-S		∢≑ @ 4:06 Start
Tx: Count:	50 Rx: 75	TOOLS	-99.1 mV
MEM: 2	CLEAR MEM	88	
	Yes	No	^
			\sim
)	ОК

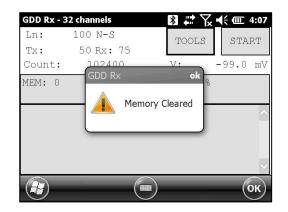
3. Enter 9999 in the text box.



4. Click *Confirm* to clear all the readings of the memory.



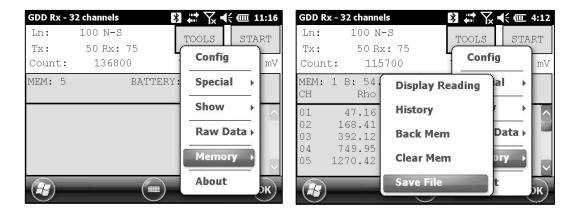
5. A message will follow to confirm your operation.



8.5.5 Save File

The Save File option is used to save the readings to a file.

1. Select Tools | Memory | Save File



2. Select the output file format available according to your electrode configuration (only one output file format could be available). A GDD Generic file is always created even if you choose another format.

GDD Rx - 32 channels	🕅 # 🏹 € 💷 4:12
GDD Generic (.gdd GDD GPS Time (.gp	
Geosoft (.dat) - Amira (.dat) - ex Prosys (.csv) - e	except 3D-survey cept 3D-survey
FULLV	IAVE
CONFIRM	CANCEL
	(ок)

3. Check the *FULLWAVE* check box if you want to create the *ascii* format fullwave file and click CONFIRM.

GDD Rx - 32 channels	₿ # 🏹 📢 🕮 4:12
GDD Generic (.gdd) GDD GPS Time (.qps	
Geosoft (.dat) - e: Amira (.dat) - exce	ept 3D-survey
Prosys (.csv) - ex	cept 3D-survey
FULLWA	IVE
CONFIRM	CANCEL
	ОК

Saving the FULLWAVE file will take significant time. We recommend to copy the .mem file from the PDA to you computer and to create this file using the IP Post-Process software.

4. Select the file location.

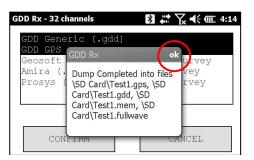
It is recommended to save your files in the SD Card folder to make sure that you will have enough disk space. Do not save the data in the My Documents folder.

	GDD Rx - 32	2 channels 🛛 🔀 🗱 🏹 🕂 🏛 4:13
	Name:	
	Folder:	None
	Туре:	Text Files (*.gps)
<	Location:	SD Card
		Save Cancel

5. Enter the file name and click **Save** (the saving operation can take several minutes).

GDD Rx - 32	2 channels	🗱 🏹 📢 🏛 4:14
 Name:	Test1	
Folder:	None	
Туре:	Text Files (*.gps)	
Location:	SD Card	
	Save	
H		

6. One of the following screens appears; click **OK** to close the pop up dialog box.

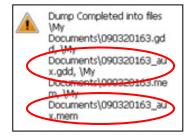


The *.mem* file, as the *.gdd* file, is automatically created by the system. The *.mem* file has a specific format required to be used with the new GDD IP Post-Process software. Contact GDD for more information about this new software.

If using the GDD-RTE01 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).

*** WARNING ***

The Allegro² sometimes does not detect the memory card and records the GDD_RxPP_MEM data file somewhere else in the PDA. If part of the memories has been acquired without detecting the SD card and another part with detecting the SD card, the Rx software creates auxiliary files with **_aux** at the end of their name. These auxiliary files contain the part of the data that was not saved directly to the compact flash card. You must transfer all these output files from your Allegro² to your computer to prevent loss of data.



8.6 About Option

The *About* option is used to display the software version number.

1. Select Tools | About

GDD R Ln: Tx: Coun	tx - 32 channel 100 N- 50 Rx t : 84'	s : 75	B Image: Transmission of the second se
MEM:	3 B: 83.5	5% Stack: !	5 Special →
CH	Rho	Vp	
01	15.72	100.066	Show >
02	62.89	200.176	Raw Data >
03	141.27	299.772	
04	251.60	400.423	Memory >
05	393.35	500.819	
Ð)		About

2. The following screen appears.

GDD Rx - 32 Ln: Tx: Count:	channels 100 N-S GDD Rx	75	TOOLS	S	TAF	۲T
MEM: 3 B CH 01 1 02 6 03 14		GDD Rx Soft Version PPC Version Rx: Rx SN: 1277 Battery Type	: 0.4.2.41 0.2.5.9	0.0	rM 11 05 04	
04 25 05 39	T. 00	500.819	3.926	0.0		ж Г

*See Section 8.2.4 for more information about Battery Type.

9. Transferring data

To establish communication between the Allegro² and a desktop PC, you need to install the appropriate synchronisation software.

Windows 7, 8 or Vista 64 bits users will require Windows Mobile 64 bits while Windows 7, 8 or Vista 32 bits users will need to install Windows Mobile 32 bits. Refer to the *"Sync PDA on Windows 10.pdf"* document located on the CD-ROM / USB stick if your experience problems using *Windows 10*. Install ActiveSync if you run Windows XP or earlier.

All three programs are available on the CD / USB stick supplied by GDD.

Another way of transferring data between your Allegro² and your PC is to set the PDA device as a USB connection. Refer to the detailed sections below.

9.1 ActiveSync

9.1.1 Installation and settings

1. Once ActiveSync is installed, a gray icon will appear in the bottom right corner of your desktop PC screen.



2. Right click on the *ActiveSync* icon to open the following menu and select *Connection Settings...*

Synchronize	
Stop	
Resolve items	•
Connection Settings	
Explore	

3. Check Allow USB connection with this desktop computer.

	tion Settings	
.	Click Get Connected to connect your ma computer.	bile device to this
	Status: Waiting for device to connect	Get Connected
□ Allo	w serial cable or infrared connection to this	s COM port:
0	M1	
Sta	us:COM port is not available	
	UCD	
	w USB connection with this desktop comp	outer.
Sta	us: USB is available	
serv	w network (Ethernet) and Hemote Access er connection with this desktop computer us: Network is available	
Sta		
	icon	
- Statu	s icon how status icon in Taskbar.	

9.1.2 Establishing connection with a desktop PC

1. Turn the PDA ON



2. Connect the micro USB communication cable between the Allegro² and the desktop PC.

	00		
USB Client			
Mic/Speaker Jack			
USB Host			
12-24 VDC Connector			
Docking Pin Contacts —			
9-pin Serial Port		18.0	

3. The desktop ActiveSync icon is now green.



4. A small *PCLink* icon appears on the Allegro² title bar.



9.1.3 Transferring file(s) from the Allegro² to a desktop PC

1. Double click on the *My Computer* icon on your desktop PC.



2. Double click on the *Mobile Device* icon.



3. Double click on the SD Card folder (if that is where you saved your files).



4. Use the drag and drop; or cut, copy and paste functions to move file(s) from your Allegro² to your desktop PC.

The GDD Generic data file is named: File_Name.gdd The GDD binary file is named: File_Name.mem If created, the fullwave file is named: File_Name.fullwave

 \ast See Section 8.5.5 -SAVE FILE for more information about alternate output formats and creating a FULLWAVE file.

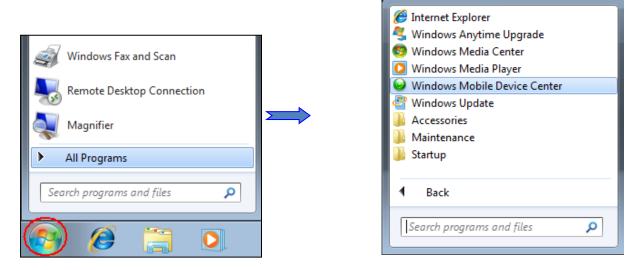
	Nom	Туре	Taille	Modifié le	Créé le
	J GDD	Dossier de fichiers		2016-05-03 20:23	2016-05-03 20:23
1	fullw.RDF	Fichier RDF	485 Ko	2016-05-04 15:16	2016-05-04 15:16
	Test1.fullwave	Fichier FULLWAVE	1 163 Ko	2016-05-06 20:14	2016-05-04 15:38
	Test1.gdd	Fichier GDD	13 Ko	2016-05-06 20:14	2016-05-04 15:38
	Test1.gps	Fichier GPS	13 Ko	2016-05-06 20:14	2016-05-04 15:38
	Test1.mem	Fichier MEM	303 Ko	2016-05-06 20:14	2016-05-04 15:38

5. Open the saved files with Notepad or Excel.

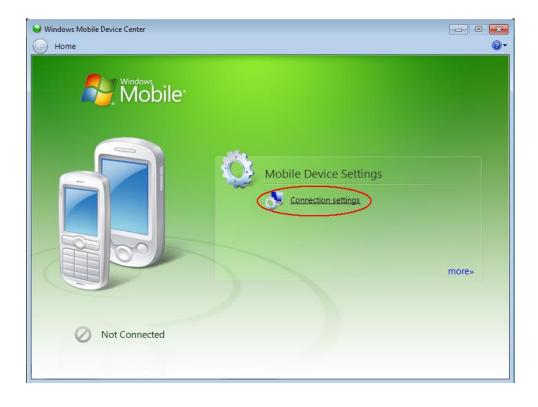
9.2 Windows Mobile Device Center

9.2.1 Installation and settings

1. Once Windows Mobile Device Center 32 or 64 bits is installed, click the Windows Start Menu icon and then click *All Programs* to display all installed programs. Click *Windows mobile Device Center* to launch the application.



2. Under the *Mobile Device Settings* option, click on *Connection settings*.



3. Check Allow USB connections.

Second Settings	? 🔀
Waiting for device to connect	
Allow USB connections	
Allow connections to one of the following:	
Bluetooth	
This computer is connected to:	
Automatic 🔹	
☑ Allow automatic device authentication	
Allow data connections on device when connected to PC	
ОК	Cancel

9.2.2 Establishing connection with a desktop PC

1. Connect the micro USB cable between the Allegro² and the desktop PC.



2. Turn the PDA ON.



3. The Windows Mobile Device Center application will connect with the PDA.



4. A small *PCLink* icon appears on the Allegro² title bar.



9.2.3 Transferring file(s) from the Allegro² to a desktop PC

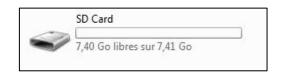
1. From the Windows Mobile Device Center, click *Connect without setting up your device*.



2. Click Browse the content of your device under the File Management section.



3. Double click on the SD Card (if that is where you saved your files).



4. Use the drag and drop; or cut, copy and paste functions to move file(s) from your Allegro² to your desktop PC.

The GDD Generic data file is named: File_Name.gdd The GDD binary file is named: File_Name.mem If created, the fullwave file is named: File_Name.fullwave

* See Section 8.5.5 (SAVE FILE) for more information about alternate output formats and creation of the FULLWAVE file.

Nom	Туре	Taille	Modifié le	Créé le
鷆 GDD	Dossier de fichiers		2016-05-03 20:23	2016-05-03 20:23
fullw.RDF	Fichier RDF	485 Ko	2016-05-04 15:16	2016-05-04 15:16
Test1.fullwave	Fichier FULLWAVE	1 163 Ko	2016-05-06 20:14	2016-05-04 15:38
Test1.gdd	Fichier GDD	13 Ko	2016-05-06 20:14	2016-05-04 15:38
Test1.gps	Fichier GPS	13 Ko	2016-05-06 20:14	2016-05-04 15:38
Test1.mem	Fichier MEM	303 Ko	2016-05-06 20:14	2016-05-04 15:38

5. Open the saved files with Notepad or Excel.

9.3 USB connection

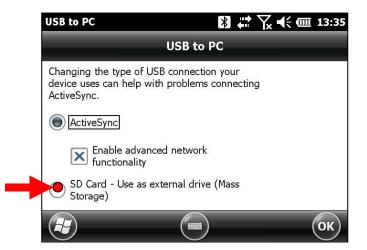
1. In the main screen of the Allegro², go in the Settings menu.



2. Go in the "connections" folder and then select the "USB to PC option".



3. Select "SD Card - Use as external drive (Mass Storage)"



4. The Allegro² can now be accessed from the Windows File Explorer:



10. Bluetooth configuration

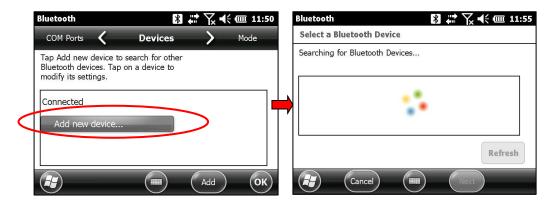
1. In the Home screen of the Allegro², click on the Bluetooth icon to turn the Bluetooth on.



2. Tap on the Title bar at the top of the screen to display the pop-up icons and click on the Bluetooth icon.



3. Click on *Add new device*. Your GDD IP receiver must be on and in wireless mode.



4. Select your device (the serial number of your receiver), and click *Next*.

	Bluetooth	🛿 🛟 🏹 📢 🎟 11:55	Blu	etooth	*	\	11:59
	Select a Bluetooth Device	401015	Se	lect a Bluetooth Dev	vice		
	Select a device to connect with and ta Next.	p	Se Ne	lect a device to connec xt.	ct with and tap		
(8 Rx1277	<		Rx1277			 Image: Second sec
	Archer2_166620	*	-	Archer2_166620			~
		Refresh				Refr	esh
	Cancel	Next		Cancel		Next	

5. Enter the passkey *1234*, and click *Next*. The *Device Added* window appears for a few seconds. Click on *Advanced* and go to step 8.



6. Or, click on your device (the serial number of your receiver) to modify its settings.



7. Check *Serial Port* and click *Save*.

Bluetooth	👔 🖨 🏹 代 🎟 12:01
Partnership Settings	
Display Name:	Rx1277
Select services to use fro	m this device.
Serial Port	
	Refresh
Cancel	Save

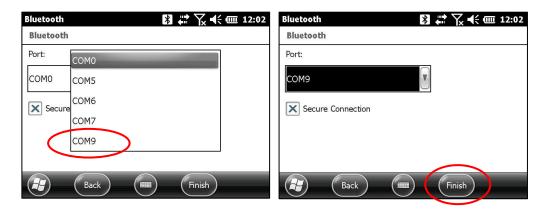
8. Click on *COM Ports* and select *New Outgoing Port*.



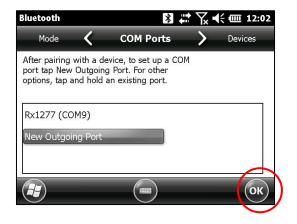
9. Select your device (the serial number of your receiver) and click *Next*.

Bluetooth	12:01
Add a Device	
Select the device you want to add	
Rx1277	
Cancel () (Next

10. Select COM9 and check Secure Connection. Click Finish.



11. Click *OK* to close the Bluetooth settings.



11. GDD Rx software update

1. Connect the micro USB cable between the Allegro² and the desktop PC.



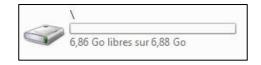
2. Double click on the *My Computer* icon on your PC's desktop.



3. Double click on the *Mobile Device* icon. Pictures could be different depending on your computer's operating.



4. Double click on the main directory. (Could be *My Handheld PC* on another operating system).



5. Double click on the *Program Files* folder.



6. Double click on the *GDD* folder.



7. Delete the old files. Use the drag and drop, or the copy and paste functions to move the new GDD Rx software files from your computer to your Allegro².

ati80.dii	FireFly Config.exe 2016-05-03 16:12 17,0 Ko	GDD Rx.exe 2016-05-03 16:12 396 Ko
MFC80U.dll	msvcr80.dll	

12. *Troubleshooting*

This section suggests problems that could occur while using the GDD Rx8-32 and their solutions.

For any issues regarding the Allegro² field computer other than those related to the GDD program, please refer to the Allegro²'s user manual available on the CD-ROM / USB stick provided by GDD.

➢ Problem:

The receiver is not ON when the On-Off switch is at 'On'.

✓ <u>Answer</u>:

- In Cable mode, the receiver will only be ON when the GDD Rx program is active on the pocket PC.
- If the receiver's battery power rating is below the critical threshold, the receiver will not turn on. (See Section 4 - Power for more details.)

➢ <u>Problem</u>:

The Internal Battery Label on the receiver panel does not light when the power supply is connected to the receiver.

✓ <u>Answer</u>:

- Verify if the battery is already fully charged. If the batteries are full, the light does not turn on.
- Verify that the 120V or 240V (black) power cable is plugged into the power supply and that it is connected to a power source.
- Verify that the connector is properly inserted into the power supply connector.
- Verify that the "Internal battery / External battery" switch is on "Internal battery".
- Verify that the power supply is working properly: unplug the power supply from the receiver and from its power source. Plug it into the power source again and the green light should turn on.

> <u>Problem</u>:

The message: 'GDD Rx - No Receiver' is shown in the program bar of the GDD Rx program. It stays on the bar even if the Allegro² is connected to the receiver.

Ln: Tx:	100 N-S 50 Rx:		TOOLS	START
Count:		0	V:	0 mV
MEM: 1		BATT	ERY: 99.9%	

✓ <u>Answer:</u>

- Check that the receiver's On-Off switch is at On and that the LED is on.
- Verify that the receiver's batteries are powered enough and not within the critical threshold limit.
- In Cable mode, verify that the cable is plugged correctly into the receiver and into the Allegro² pocket PC. If you are using the D-SUB 9 to D-SUB 9 cable, try replacing the cable to a D-SUB 9 to Amphenol 6 cable (or the opposite if you were using a D-SUB 9 to Amphenol 6 as your primary cable).
- In Cable mode, make sure your cable is connected to the COM1 port of the Allegro² pocket PC.
- In Bluetooth mode, this can happen if the Bluetooth module of the PDA did not close its virtual communication port properly. Close the GDD Rx program and turn off the receiver. Wait for about 10 seconds and then, turn on the receiver and try to restart the GDD Rx program in Bluetooth mode.
- If the program still not detects the receiver in Bluetooth mode, open the program in RS232 mode and save all your data. When your data is saved, push and hold the ON button of the Allegro² to reset it.

Problem:

In Bluetooth mode, the following message appears.



✓ <u>Answer</u>:

- Make sure that the Cable / Wireless switch is in the Wireless position and that the receiver is turned on.
- Verify that your Allegro²'s Bluetooth is ON. If the Bluetooth is Off, see Section 10.1 to turn it on.

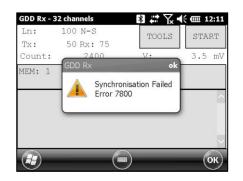


- See Section 10.1 to find out how to verify if a partnership has been established between your receiver and your Allegro².
- Reset your Allegro² by pressing and holding the Power button. The following message appears. Select Reset.

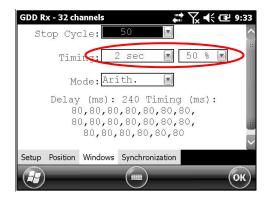


Problem:

A synchronization error message appears while synchronizing with the receiver.



- ✓ <u>Answer</u>:
- Make sure that the Timing and the Duty Cycle of the receiver corresponds to the Time base and the Duty Cycle of the transmitter.



 Check if the signal (Vp > 2) of the trigger channel is high enough. Otherwise, try to synchronize with another channel. You should select the channel that receives the higher signal as the trigger channel.

GDD R	x - 32 cl	nannels		🖌 ��€ @ 10:39
			1.11.11.11.11.11.11.11.11.11.11.11.11.1	Tx - Rx
A	LL	ALL Po	le-Pole (1/3	2)
✓	Ch1	Ch5	✔ Ch9	✔ Ch13
✓	Ch2	🖌 Ch6	✔ Ch10	✔ Ch14
✓	Ch3	Ch7	✔ Ch11	✔ Ch15
~	Ch4	🖌 Ch8	✔ Ch12	✔ Ch16
>	>>> Pa	age 🕻	Trigger on:	1
Setup	Position	Windows	Synchronization	
)			ОК

- Check if the transmitter works properly. If the transmitted signal is asymmetrical, the receiver may not synchronize.
- > <u>Problem</u>:

A warning red rectangle appears in the main window during the acquisition process. If you click on the red rectangle, a saturation message appears.

Ln: Tx:	100 N 25 R		TOOLS	stc		Ln: Tx:	100 N 25 R		TOOLS	STO
Count:	1	1700 ???	V: -	125.1	mV	Count			/:	-125.1
MEM: 0 CH	B: 86. Rho	.3% Stack: Vp	2 I: 10 M	00.0 ErrM		MEM: CH	0 B: GDD	Rx SATURATION	N)00.0 4 ErrM
01 02	19.65 78.61	17125.095 12250.236	7.946			01 02	19 🦊 78	Channel(s): 1	45	5 0.001
04	176.59 314.54 491.66	9374.739 7500.602 5625.995	7.954	0.001 0.002 0.000		03 04 05	176.59 314.54 491.66	9374.739 7500.602 5625.995	7.94 7.954 7.949	

✓ <u>Answer:</u>

- If this message appears, it means that the signal on some of the channels is higher than 15 volts. The channels of the receiver are protected against voltage up do 500V but they can read a Vp of up to 15V only. To prevent the voltage saturation, you can try to reduce the transmitted current at the transmitter.
- > <u>Problem</u>:

Creating files or transferring files takes too much time.

- ✓ <u>Answer:</u>
- The size of the fullwave file explains the export time on the PDA. We have developed an IP Post-Process software and we could recommend using this tool to generate the fullwave files instead of doing it on the PDA. It will speed up the export process.

You will find the software and the instructions on the CD-ROM / USB stick provided by GDD. Or contact GDD technical support for more information.



> <u>Problem</u>:

It is not possible to start Windows Mobile Device Center and transfer the IP data from the Allegro for computer operating under *Windows 10*.

- ✓ <u>Answer</u>:
- Refer to the "Sync PDA on Windows 10.pdf" document located on the CD-ROM / USB stick provided by GDD.

Problem:

After carrying out a reset of the PDA, the MEM number indicates 0 even though a certain number of acquisitions have already been made.

Ln: Tx:	100 N 25 P	-S x: 50	TOOLS ST			OP	
Coun:		1700	V:	-	125.1	m\	
MEM: CH	0 B: 86. Rho	.3% Stack: Vp	2 I:	10 M	00.0 ErrM		
01	19.65	17125.095			0.005	^	
02	78.61	12250.236			0.001		
04		7500.602			0.001		
05	491.66	5625.995	7.	949	0.000		

✓ <u>Answer</u>:

 On rare occasions, the PDA does not detect the memory card after reinitialization (or when starting the GDD_Rx software very shortly after turning the PDA ON) and this is why the MEM number is back to 0.

When this happens, you need to exit the GDD_Rx software, wait 15 seconds and start the application again. The MEM should be back to its original count.

Newer versions of the GDD_Rx software (4.2.43) include an automatic detection and the MEM count should be back to its expected value within a minute or so. A ! sign will appear in front of the MEM number if the memory card is not detected.

GDD Rx Ln: Tx:	- !!! NO REC 0 N 0 R:		TOOLS	Yx 4€ @ sta	
Count	:	0	V:	0	mV
!MEM: CH	1 B: 99 Rho	.9% Sta	ack: 10 I: Vp ErrVp	0.0 Sym(%)	
01 02 03 04 05	29.52 88.54 177.15 295.33 442.97	234.8 -234.8 234.9 -235.0 235.0	347 0.013 953 0.017 919 0.014	100 100 100	< 11 >
æ					ж

13. Specifications

General specifications

Number of channels:	8, 10, 16, 24 or 32
Size (receiver only):	41 x 33 x 17 cm (16 x 13 x 7 in)
Weight (receiver only):	7 kg (15 lbs)
Enclosure:	Heavy-duty Pelican case, environmentally sealed
Communication options:	RS-232 (serial) and Bluetooth to communicate with a PDA USB for data download
Power supply:	14.4V 13.6Ah rechargeable Lithium-Ion internal battery 14.4V 13.6Ah rechargeable Lithium-Ion external battery pack (optional)
Temperature range:	-40 to +60°C (-49 to +140°F)
Humidity range:	Waterproof
Technical specifications	
Survey capabilities:	Resistivity and Time domain IP
Twenty chargeability windows:	Arithmetic, logarithmic, semi-logarithmic, Cole-Cole and user defined
Synchronization:	Automatic re-synchronization Process on primary voltage Signal GPS time synchronization
Noise reduction:	Automatic stacking number
Computation:	Apparent resistivity, chargeability, standard deviation, and % of symmetrical Vp
Ground Resistance:	Up to 1.5 MΩ
Signal waveform:	Time domain (ON+, OFF, ON-, OFF)
Time base:	0.5, 1, 2, 4, 8 and 16 seconds
Instrumentation GDD	2023-07-17

Input impedance:	5 G Ω at 0.125 Hz and 130 M Ω at 7 Hz
Primary voltage range:	±10 uV to ±15 V for any channel
Input Common-Mode Voltage range with respect to reference in dipole-dipole configuration:	±15 V
Protection:	500V (on each channel)
Input:	True differential for common-mode rejection in dipole configuration
Voltage measurement (Vp):	Resolution 1 μV Accuracy <u><</u> 0,15%
Chargeability measurement (M):	Resolution de 1µV/V Accuracy < 0,4%
SP offset adjustment:	± 5 V, Automatic compensation through linear drift correction per steps of 150μ, with resolution of 1μV
Filter:	Eight-pole Bessel low-pass 15 Hz, Notch filter 50 Hz and 60 Hz
Reads up to 32 ch. simultaneously in po	les or dipoles
PDA menu-driven software / simple to u	ise
32 channels configuration allows 3D Sur 4 lines X 8 channels – 2 lines X 16 cha 1 line X 32 channels	-
Real-time data and automatic data stack	king
Screen-graphics: decay curves, apparent	t resistivity, chargeability, Vp, pseudosection
20 programmable chargeability window	S
One 24 bit A/D converter per channel	
Internal test generator (Self-test mode)	

For more details about the Allegro² rugged field PC specifications, read the Allegro² manual.

14. Technical help

If you encounter a problem not described in this manual, do not hesitate to contact **Instrumentation GDD** for help at:

Tel.: +1 (418) 478-5469

e-mail: info@gddinstruments.com

Any GDD IP Receiver that breaks down while under warranty or service will be replaced free of charge upon request for the duration of repairs, except for shipping fees. This service is subject to instrument availability but we have been able to honour this commitment up to now.

Printed in Canada in 2023

Version: manual-ip-receiver-2023-07-17-A2-EN.docx

Annex 1 – Geometrical parameters

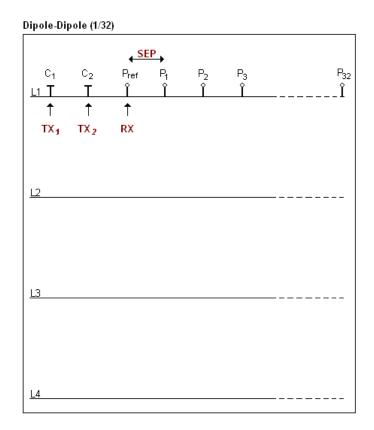
This annex explains how to configure your receiver according to the selection of the electrode array.

Electrode array	Geometrical parameters to				Maximum number of dipoles
		ent	er		
Dipole-Dipole	Tx1	Tx2	Rx	Sep	32
Pole-Dipole		Tx2	Rx	Sep	32
Pole-Pole		Tx2	Rx	Sep	32
Gradient	Tx1	Tx2	Rx	Sep	32
Wenner	Tx1	Tx2			1
Schlumberger	Tx1	Tx2		Sep	1

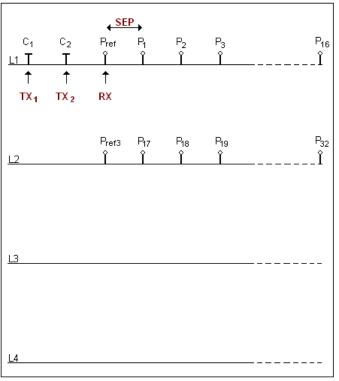
Tx1: Transmitter first electrode position

- Tx2: Transmitter second electrode position
- Rx: Receiver first electrode position
- Sep: Separation between two receiver electrodes

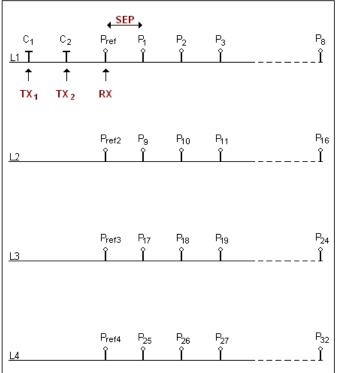
Note: For all electrode arrays, the Tx line and the RX line(s) can be different.

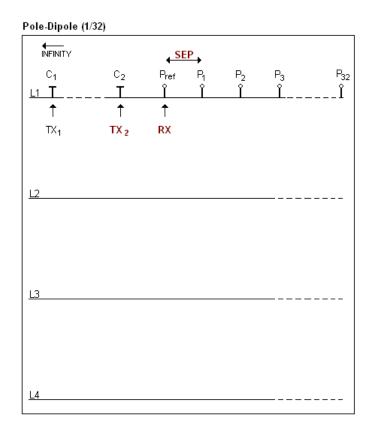




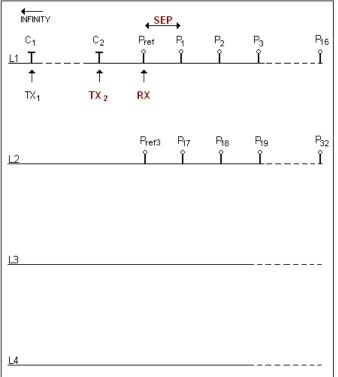


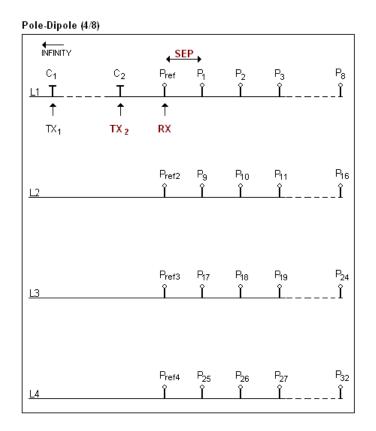




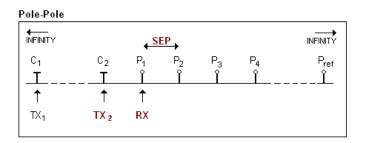


Pole-Dipole (2/16)

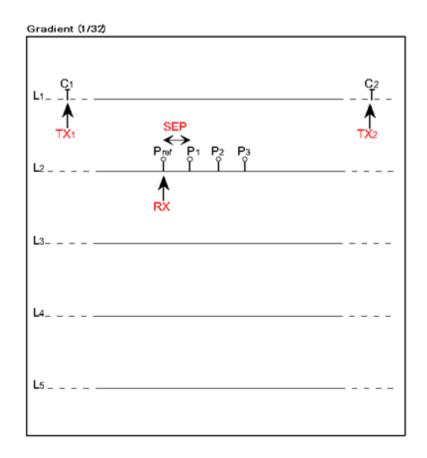




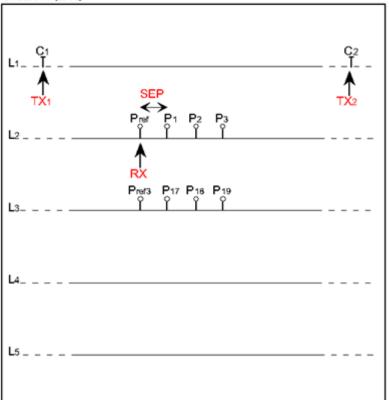
The electrode C1 has to be set far from the other electrodes, usually 5 times the maximum distance between C2 and Pref.

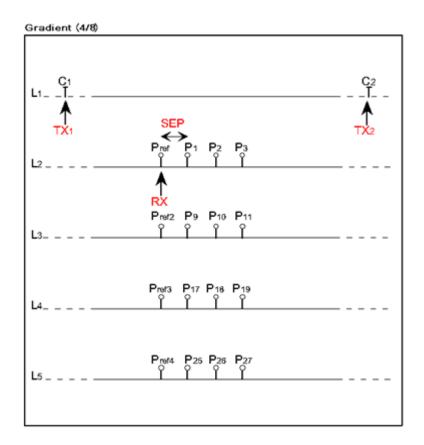


The electrodes C1 and Pref have to be set far from C2 and P1, usually 10 times the maximum distance between C2 and P1.

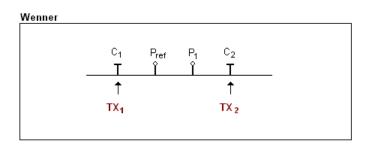




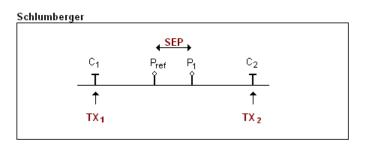




The electrodes C1 and C2 are fixed. The electrode P is moved parallel to C inside a zone located in the central part of C1, C2.



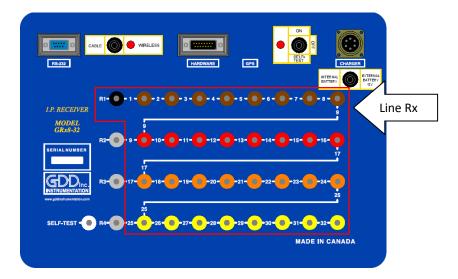
The electrodes C1, Pref, P1 and C2 are equidistant.



The electrodes Pref and P1 are located at the middle point of electrodes C1 and C2.

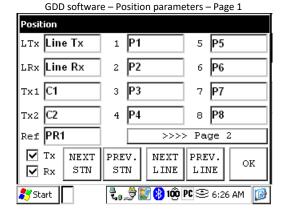
Annex 2 – 3D Survey

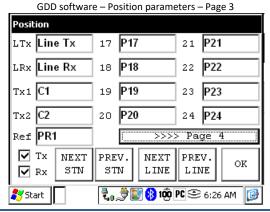
1. Receiver Dipole (1/32)



Electrode number	Electrode position on the	Electrode color on the	Electrode line number		
(software parameter)	receiver	receiver	(software parameter)		
PR1	1 st row – 1 st hole	Black	Line Rx		
P1	1 st row – 2 nd hole	Brown	Line Rx		
P2	1 st row – 3 rd hole	Brown	Line Rx		
РЗ	1 st row – 4 th hole	Brown	Line Rx		
P4	1 st row – 5 th hole	Brown	Line Rx		
P5	1 st row – 6 th hole	Brown	Line Rx		
P6	1 st row – 7 th hole	Brown	Line Rx		
P7	1 st row – 8 th hole	Brown	Line Rx		
P8	1 st row – 9 th hole	Brown	Line Rx		
P9	2 nd row – 2 nd hole	Red	Line Rx		
P10	2 nd row – 3 rd hole	Red	Line Rx		
P11	2 nd row – 4 th hole	Red	Line Rx		
P12	2 nd row – 5 th hole	Red	Line Rx		
P13	2 nd row – 6 th hole	Red	Line Rx		
P14	2 nd row – 7 th hole	Red	Line Rx		
P15	2 nd row – 8 th hole	Red	Line Rx		
P16	2 nd row – 9 th hole	Red	Line Rx		
P17	3 rd row – 2 nd hole	Orange	Line Rx		
P18	3 rd row – 3 rd hole	Orange	Line Rx		
P19	3 rd row – 4 th hole	Orange	Line Rx		
P20	3 rd row – 5 th hole	Orange	Line Rx		
P21	3 rd row – 6 th hole	Orange	Line Rx		
P22	3 rd row – 7 th hole	Orange	Line Rx		
P23	3 rd row – 8 th hole	Orange	Line Rx		
P24	3 rd row – 9 th hole	Orange	Line Rx		
P25	4 th row – 3 rd hole	Yellow	Line Rx		
P26	4 th row – 4 th hole	Yellow	Line Rx		
P27	4 th row – 5 th hole	Yellow	Line Rx		
P28	4 th row – 6 th hole	Yellow	Line Rx		
P29	4 th row – 7 th hole	Yellow	Line Rx		
P30	4 th row – 8 th hole	Yellow	Line Rx		
P31	4 th row – 9 th hole	Yellow	Line Rx		
P32	4 th row – 10 th hole	Yellow	Line Rx		

Dipole number	Dipole description
D1	P1-PR1
D2	P2-P1
D3	P3-P2
D4	P4-P3
D5	P5-P4
D6	P6-P5
D7	P7-P6
D8	P8-P7
D9	P9-P8
D10	P10-P9
D11	P11-P10
D12	P12-P11
D13	P13-P12
D14	P14-P13
D15	P15-P14
D16	P16-P15
D17	P17-P16
D18	P18-P17
D19	P19-P18
D20	P20-P19
D21	P21-P20
D22	P22-P21
D23	P23-P22
D24	P24-P23
D25	P25-P24
D26	P26-P25
D27	P27-P26
D28	P28-P27
D29	P29-P28
D30	P30-P29
D31	P31-P30
D32	P32-P31





Instrumentation GDD

Position 13 P13 LTX Line TX 9 P9 10 P10 LRX Line RX 14 P14 15 P15 tx1 C1 11 P11 Tx2 C2 12 P12 16 P16 Ref PR1 >>>> Page 3 🔽 Tx 🛛 NEXT PREV. PREV. NEXT OK STNSTNLINE LINE 🔽 Rx 📆 👮 🎒 🔞 🔞 🕫 🔍 🕄 6:26 AM 💦 Start -



GDD software – Position parameters – Page 4									
Position									
LTX Line TX	25 P25	29 P29							
lrx Line Rx	26 P26	30 P30							
Tx1 C1	27 P27	31 P31							
Tx2 C2	28 P28	32 P32							
Ref PR1	>>>>>	> Page 1							
Tx NEXT Rx STN	PREV. NEXT STN LINE	PREV. LINE OK							
🐉 Start 📔 🕄 🐉 🎲 🕅 PC 😂 6:26 AM 👔									

2023-07-17

GDD software – Position parameters – Page 2

<u>Pole-L</u>	Dipole (1/3	<u>82)</u>					
	↓ INFINITY						
Line Tx		C2					
Line Rx			PR1	P1	P2	P3	<u>P32</u>

Dipole-Dipole (1/32)

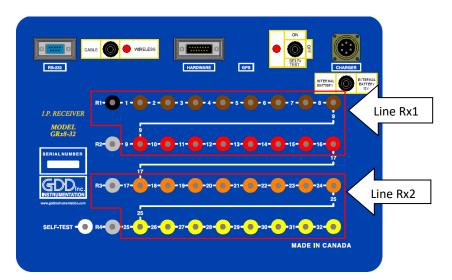
Line	C1	C2					
Tx							
			PR1	P1	P2	P3	P32
Line							
Rx							

<u>Gradient (1/32)</u>

Line C1						C2
「x						
	PR1	P1	P2	P3	P32	2
.ine	\top				Т	_
Rx			•			

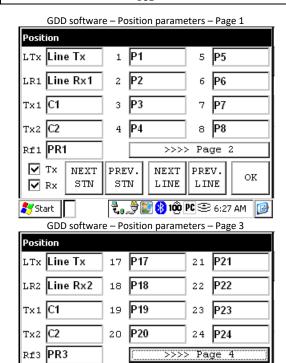
*The transmitter and the receiver can be on the same line.

2. Receiver Dipole (2/16)



Electrode number	Electrode position on the	Electrode color on the	Electrode line number
(software parameter)	receiver	receiver	(software parameter)
PR1	1 st row – 1 st hole	Black	Line Rx1
P1	1 st row – 2 nd hole	Brown	Line Rx1
P2	1 st row – 3 rd hole	Brown	Line Rx1
P3	1 st row – 4 th hole	Brown	Line Rx1
P4	1 st row – 5 th hole	Brown	Line Rx1
P5	1 st row – 6 th hole	Brown	Line Rx1
P6	1 st row – 7 th hole	Brown	Line Rx1
P7	1 st row – 8 th hole	Brown	Line Rx1
P8	1 st row – 9 th hole	Brown	Line Rx1
Р9	2 nd row – 2 nd hole	Red	Line Rx1
P10	2 nd row – 3 rd hole	Red	Line Rx1
P11	2 nd row – 4 th hole	Red	Line Rx1
P12	2 nd row – 5 th hole	Red	Line Rx1
P13	2 nd row – 6 th hole	Red	Line Rx1
P14	2 nd row – 7 th hole	Red	Line Rx1
P15	2 nd row – 8 th hole	Red	Line Rx1
P16	2 nd row – 9 th hole	Red	Line Rx1
PR3	3 rd row – 1 st hole	Grey	Line Rx2
P17	3 rd row – 2 nd hole	Orange	Line Rx2
P18	3 rd row – 3 rd hole	Orange	Line Rx2
P19	3 rd row – 4 th hole	Orange	Line Rx2
P20	3 rd row – 5 th hole	Orange	Line Rx2
P21	3 rd row – 6 th hole	Orange	Line Rx2
P22	3 rd row – 7 th hole	Orange	Line Rx2
P23	3 rd row – 8 th hole	Orange	Line Rx2
P24	3 rd row – 9 th hole	Orange	Line Rx2
P25	4 th row – 3 rd hole	Yellow	Line Rx2
P26	4 th row – 4 th hole	Yellow	Line Rx2
P27	4 th row – 5 th hole	Yellow	Line Rx2
P28	4 th row – 6 th hole	Yellow	Line Rx2
P29	4 th row – 7 th hole	Yellow	Line Rx2
P30	4 th row – 8 th hole	Yellow	Line Rx2
P31	4 th row – 9 th hole	Yellow	Line Rx2
P32	4 th row – 10 th hole	Yellow	Line Rx2

Dipole number	Dipole description
D1	P1-PR1
D2	P2-P1
D3	P3-P2
D4	P4-P3
D5	P5-P4
D6	P6-P5
D7	P7-P6
D8	P8-P7
D9	P9-P8
D10	P10-P9
D11	P11-P10
D12	P12-P11
D13	P13-P12
D14	P14-P13
D15	P15-P14
D16	P16-P15
D17	P17-PR3
D18	P18-P17
D19	P19-P18
D20	P20-P19
D21	P21-P20
D22	P22-P21
D23	P23-P22
D24	P24-P23
D25	P25-P24
D26	P26-P25
D27	P27-P26
D28	P28-P27
D29	P29-P28
D30	P30-P29
D31	P31-P30
D32	P32-P31



PREV.

LINE LINE

🐛 💐 📓 🚯 100 PC 🗢 6:27 AM 🛛 🞯

OK

NEXT

GDD software – Position parameters – Page 2				
Position				
LTx Line Tx	9 P 9	13 P13		
LR1 Line Rx1	10 P10	14 P14		
Tx1 C1	11 P11	15 P15		
Tx2 C2	12 P12	16 P16		
Rf1 PR1	[>> Page 3		
Tx NEXT Rx STN	PREV. NEXT STN LINE			
🐉 Start 🛛 🕄 🖏 🎾 🔝 🚯 100 PC 😂 6:27 AM 👔				
GDD software – Position parameters – Page 4				
Position				
LTx Line Tx	25 P25	29 P29		
LR2 Line Rx2	26 P26	30 P30		
Tx1 C1	27 P27	31 P31		
Tx2 C2	28 P28	32 P32		
Rf3 PR3	>>>> Page 1			
Tx NEXT Rx STN	PREV. NEXT STN LINE	IL OK		
🐉 Start 📔 🛛 🕄 🕄 😵 100 PC 🕾 6:27 AM 👔				

Instrumentation GDD

NEXT

STN

PREV.

STN

🔽 Tx

🔽 Rx

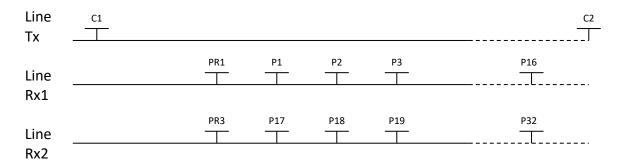
💦 Start

Pole-L	Dipole (2/1	<u>.6)</u>					
	◄—						
Line Tx		C2					
Line Rx1			PR1	P1	P2	P3	P16
Line Rx2			PR3	P17	P18	P19	P32

Dipole-Dipole (2/16)

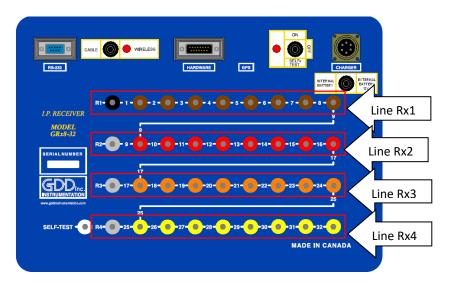
Line Tx	 C2					
Line Rx1	 	PR1	P1	P2	P3	P16
Line Rx2		PR3	P17	P18	P19	P32

Gradient (2/16)



*The transmitter and the receiver can be on the same line.

3. Receiver Dipole (4/8)



Electrode number (software	Electrode position on the	Electrode color on the	Electrode line number
parameter)	receiver	receiver	(software parameter)
PR1	1 st row – 1 st hole	Black	Line Rx1
P1	1 st row – 2 nd hole	Brown	Line Rx1
P2	1 st row – 3 rd hole	Brown	Line Rx1
P3	1 st row – 4 th hole	Brown	Line Rx1
P4	1 st row – 5 th hole	Brown	Line Rx1
P5	1 st row – 6 th hole	Brown	Line Rx1
P6	1 st row – 7 th hole	Brown	Line Rx1
P7	1 st row – 8 th hole	Brown	Line Rx1
P8	1 st row – 9 th hole	Brown	Line Rx1
PR2	2 nd row – 1 st hole	Grey	Line Rx2
Р9	2 nd row – 2 nd hole	Red	Line Rx2
P10	2 nd row – 3 rd hole	Red	Line Rx2
P11	2 nd row – 4 th hole	Red	Line Rx2
P12	2 nd row – 5 th hole	Red	Line Rx2
P13	2 nd row – 6 th hole	Red	Line Rx2
P14	2 nd row – 7 th hole	Red	Line Rx2
P15	2 nd row – 8 th hole	Red	Line Rx2
P16	2 nd row – 9 th hole	Red	Line Rx2
PR3	3 rd row – 1 st hole	Grey	Line Rx3
P17	3 rd row – 2 nd hole	Orange	Line Rx3
P18	3 rd row – 3 rd hole	Orange	Line Rx3
P19	3 rd row – 4 th hole	Orange	Line Rx3
P20	3 rd row – 5 th hole	Orange	Line Rx3
P21	3 rd row – 6 th hole	Orange	Line Rx3
P22	3 rd row – 7 th hole	Orange	Line Rx3
P23	3 rd row – 8 th hole	Orange	Line Rx3
P24	3 rd row – 9 th hole	Orange	Line Rx3
PR4	4 th row – 2 nd hole	Grey	Line Rx4
P25	4 th row – 3 rd hole	Yellow	Line Rx4
P26	4 th row – 4 th hole	Yellow	Line Rx4
P27	4 th row – 5 th hole	Yellow	Line Rx4
P28	4 th row – 6 th hole	Yellow	Line Rx4
P29	4 th row – 7 th hole	Yellow	Line Rx4
P30	4 th row – 8 th hole	Yellow	Line Rx4
P31	4 th row – 9 th hole	Yellow	Line Rx4
P32	4 th row – 10 th hole	Yellow	Line Rx4

Dipole number	Dipole description
D1	P1-PR1
D2	P2-P1
D3	P3-P2
D4	P4-P3
D5	P5-P4
D6	P6-P5
D7	Р7-Р6
D8	P8-P7
D9	P9-PR2
D10	P10-P9
D10	P10-P9
D12	P11-P10
D12	P13-P12
D13	P13-P12 P14-P13
D15	P14-P15
D15	P15-P14
D17	P17-PR3
D18	P18-P17
D19	P19-P18
D20	P20-P19
D21	P21-P20
D22	P22-P21
D23	P23-P22
D24	P24-P23
D25	P25-PR4
D26	P26-P25
D27	P27-P26
D28	P28-P27
D29	P29-P28
D30	P30-P29
D31	P31-P30
D32	P32-P31

GDD software – Position parameters – Page 1

E.

Position				
ltx Line Tx	1 P1		5 P5	
LR1 Line Rx1	2 P2		6 P6	
Tx1 C1	3 P3		7 P7	
Tx2 C2	4 P4		8 P8	
Rf1 PR1		>>>>	> Page	2
Tx NEXT Rx STN	PREV. STN	NEXT LINE	PREV. LINE	ok
🍂 Start	t. ,#	🖉 🚷 1ÔO 🛛	PC 🗢 6:2	7 AM 🛛 😰

GDD softwar	e – Position parame	eters – Page 3
Position		
LTx Line Tx	17 P17	21 P21
LR3 Line Rx3	18 P18	22 P22
Tx1 C1	19 P19	23 P23
Tx2 C2	20 P20	24 P24
Rf3 PR3	>>>>	> Page 4
Tx NEXT Rx STN	PREV. NEXT STN LINE	PREV. LINE OK
	Z,, 党 💽 🛞 100	PC 🗢 6:28 AM 🛛 👔

GDD software – Position parameters – Page 2

Position	
ltx Line Tx	9 P9 13 P13
LR2 Line Rx2	10 P10 14 P14
Tx1 C1	11 P11 15 P15
Tx2 C2	12 P12 16 P16
Rf2 PR2	>>>> Page 3
Tx NEXT Rx STN	PREV. NEXT PREV. STN LINE LINE OK
🂦 Start	🔩 🏓 📓 🚷 100 PC 🕾 6:28 AM 🛛 🞯

GDD softwar	e – Position parame	eters – Page 4
Position		
ltx Line Tx	25 P25	29 P29
LR4 Line Rx4	26 P26	30 P30
Tx1 C1	27 P27	31 P31
Tx2 C2	28 P28	32 P32
Rf4 PR4	>>>>>	> Page 1
TX NEXT Rx STN	PREV. NEXT STN LINE	PREV. LINE OK
鸄 Start	2, 🗳 💽 🚯 100	PC 😌 6:28 AM 🛛 👔

Instrumentation GDD

Pole-Dipole (4/8)

		L					
	← INFINITY						
Line	C1	C2					
Тх							
			PR1	P1	P2	P3	P1
Line						<u> </u>	
Rx1							
			PR2	Р9	P10	P11	P1
Line						<u> </u>	
Rx2							
			PR3	P17	P18	P19	P2
Line							
Rx3							
			PR4	P25	P26	P27	Р3
Line							

Dipole-Dipole (4/8)

Rx4

Line C1 C2 Тх PR1 Ρ1 P2 Ρ3 P8 Line Т Т Т Rx1 PR2 Ρ9 P10 P11 P16 Line Т Rx2 P19 P24 PR3 P17 P18 Line Rx3 PR4 P25 P26 P27 P32 Line Rx4

<u> Gradient (4/8)</u>

Line Tx					<u></u>
Line Rx1	 PR1	P1	P2	P3	<u>P8</u>
Line Rx2	 PR2	P9	P10	P11	P16
Line Rx3	 PR3	P17	P18	P19	P24
Line Rx4	 PR4	P25	P26	P27	P32

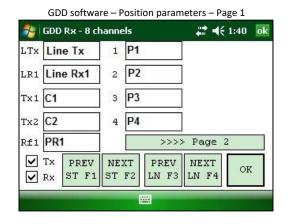
*The transmitter and the receiver can be on the same line.

4. Receiver Dipole (2/4) – For GRx8*mini* model only



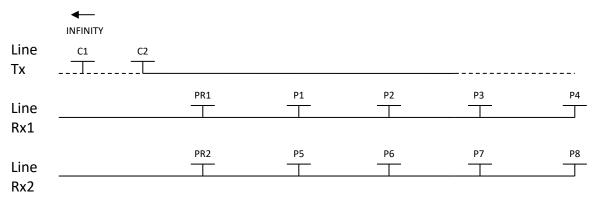
Electrode number (software parameter)	Electrode position on the receiver	Electrode color on the receiver	Electrode line number (software parameter)
PR1	1 st row – 1 st hole	Black	Line Rx1
P1	1 st row – 2 nd hole	Brown	Line Rx1
P2	1 st row – 3 rd hole	Brown	Line Rx1
P3	1 st row – 4 th hole	Brown	Line Rx1
P4	1 st row – 5 th hole	Brown	Line Rx1
PR2	2 nd row – 1 st hole	Grey	Line Rx2
P5	2 nd row – 2 nd hole	Red	Line Rx2
P6	2 nd row – 3 rd hole	Red	Line Rx2
P7	2 nd row – 4 th hole	Red	Line Rx2
P8	2 nd row – 5 th hole	Red	Line Rx2

Dipole number	Dipole description
D1	P1-PR1
D2	P2-P1
D3	P3-P2
D4	P4-P3
D5	P5-PR2
D6	P6-P5
D7	P7-P6
D8	P8-P7



GDD software – Position parameters – Page 2								
75	GDD Rx - 8 cl	nanne	els	💭 🗱 📢 1:41 🛛 🕏 🕏				
LTx	Line Tx	5	P5					
LR2	Line Rx2	6	P6]				
Tx1	C1	7	P7]				
Tx2	C2	8	P8]				
Rf2	PR2		>>>	> Page 3				
>	TX PREV RX ST F1	NE ST		NEXT LN F4 OK				

Pole-Dipole (2/4)



Dipole-Dipole (2/4)

Line Tx	 C2					
Line Rx1		PR1	P1	P2	P3	P4
Line Rx2		PR2	P5	P6	P7	P8

<u> Gradient (2/4)</u>

PR1	P1	P2	P3	P4	
	I		I		
PR2	P5	P6	P7	P8	
•	•		<u> </u>		

*The transmitter and the receiver can be on the same line.

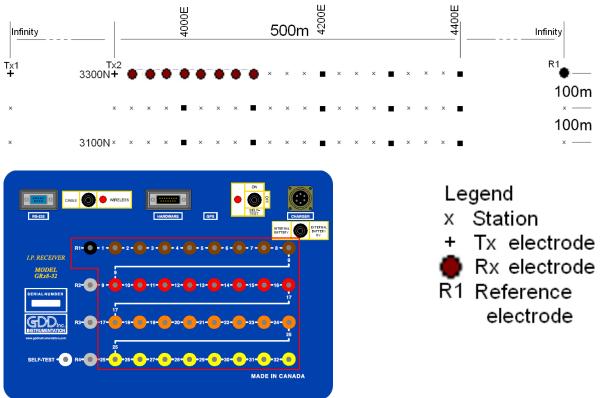
Annex 3 – Field survey setup

Survey setup

Line informa	ation	4200E	4400E	4600E	4800E	2000E
3300N • • • •	• · · · • • · ·	· • · · · • • · ·		· • · · · • • · · ·	•••••	
3100N • • • •					•••••	
	• · · · • • · ·					• • • • • • • • • • 3000N
2900N • • • •	• • • • • • • •					• • • • • • • • • • 2800N
2700N · · · ·		· • · · · · • · · ·	· • · · · · • • · ·			· • · · · • • · · · · 2000N
				· • · · · • • · · ·		•∎••••2600N
2500N · · · ·	• • • • • • • •	• • • • • • • • •	• • • • • • • • •			
			• • • • • • • • •			• • • • • • • • • • 2400N
2300N* * * * *	4100E · · · •	4300E	4500E	4700E	4900E	5100E

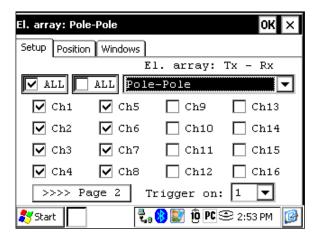
This survey consists of 11 lines, each separated by 100m. Each line is 1.3 km long. The examples below will begin at position 3300N-3900E.





For this pole-pole setup, 8 electrodes of the GDD-Rx will be used.

1) Select Pole-Pole in the setup page.



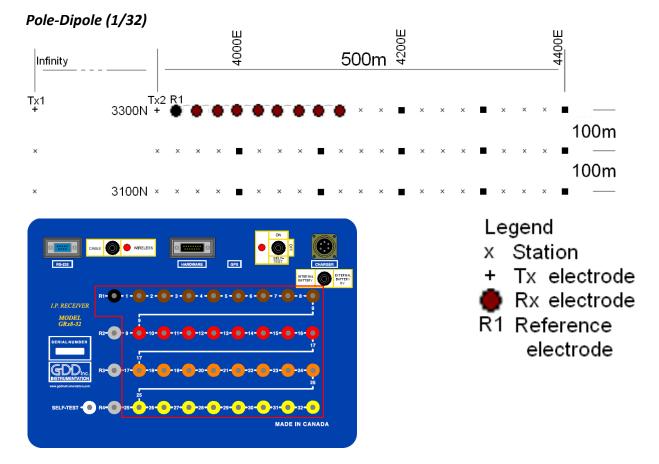
El. array: Pole-Pole			ок 🗙						
Setup Position Window	Setup Position Windows								
Project:	GDD Test								
Ln. Tx: 3300	Rx: 330	00	E-W 🔻						
Move LINE: Tx:	-100	Rx:	-100						
Station: Tx1:	N/A	Tx2:	3900						
Station Rx:	3925	Sep:	25						
Move ST.: Tx:	25	Rx:	25						
🎝 Start	🔁 😵 💓 1	ÎÕ PC 🟵	2:54 PM 🔞						

3) If all the values are correct, click the Ok button to continue and take a reading. If something is incorrect, you can modify it on this page.

Posit	ion							
LTx	330	0	1	39	25	5	4025	
LRx	330	0	2	39	50	6	4050	
Tx1	999	9999	3	39	75	7	4075	
Tx2	390	10	4	40	00	8	4100	
Ref	999	9999			>>>>	> Pa	ge 2	
N		NEXT STN	PRE ST		NEXT LINE	PRE LIN		
ಶ Sta	art		灯 Start 🛛 🕄 🕄 🗓 陀 😌 2:55 PM 📝					

4) When the reading is done, click the NEXT STN button to increment the positions.

_					
Posit	ion				
LTx	3300	1	3950	5	4050
LRx	3300	2	3975	6	4075
Tx1	9999999	3	4000	7	4100
Tx2	3925	4	4025	8	4125
Ref	99999999		>>>>	> Paq	ge 2
>		PRE' STI		PRE LIN	
鸄 Sta	art	4	t. 🛞 💓 🗓	PC 오	2:56 PM [



For this pole-dipole setup, 8 electrodes of the GDD-Rx will be used.

1) Select Pole-Dipole (1/32) in the setup page. The Pole-Dipole (2/16) and Pole-Dipole (4/8) options are explained in the 3D survey section at the end of this document.

El. array: Pol	e-Dipole (1/3	2)	ок 🗙
Setup Positio	n Windows		
	E	l. array:	Tx – Rx
🔽 ALL	ALL Pole	e-Dipole (1/32) 🔽
🔽 Chi	🔽 Ch5	🗌 Ch9	🗌 Ch13
🔽 Ch2	🔽 Ch6	🗌 Ch10	🗌 Ch14
🗹 Ch3	🔽 Ch7	🗌 Ch11	🗌 Ch15
🔽 Ch4	🔽 Ch8	🗌 Ch12	🗌 Ch16
>>>> P	age 2 T	rigger on:	1 🔻
🂦 Start	3.0	, 🫞 💓 🔞 PC S	Ҽ 3:04 РМ [🎯

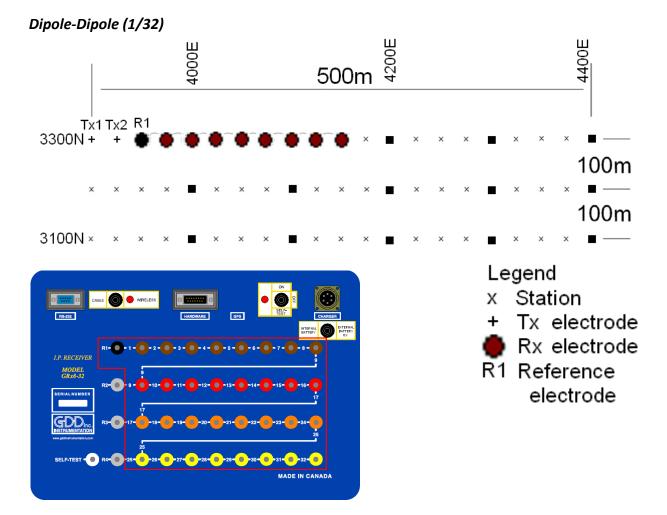
El. array: Pole-Dipole (1	(32)		ок	×					
Setup Position Windows	Setup Position Windows								
Project: G	DD Test								
Ln. Tx: 3300	Rx: 330)0	E-W	▾					
Move LINE: Tx:	100	Rx:	-100						
Station: Tx1:	N/A	Tx2:	3900						
Station Rx: 39	925	Sep:	25						
Move ST.: Tx: 2	5	Rx:	25						
🎝 Start	t. 🛞 💓 🛛	ÎÕ PC 🕾	3:04 PM	0					

3) If all the values are correct, click the Ok button to continue and take a reading. If something is incorrect, you can modify it on this page.

Posit	ion							
LTx	330	10	1	39	50	5	403	50
LRx	330	10	2	39	75	6	40'	75
Tx1	999	99999	3	40	00	7	410	00
Tx2	390	10	4	40	25	8	412	25
Ref	392	5			>>	>> Pa	ge	2
Tx NEXT Rx STN		PRE ST		NEXT LINE			ок	
ಶ Sta	art		[₹.,(👂 💓 🖞	Ò PC 🤄	3:0	4 PM [

4) When the reading is done, click the NEXT STN button to increment the positions.

Posit	ion				
LTx	3300	1	3975	5	4075
LRx	3300	2	4000	6	4100
Tx 1	9999999	3	4025	7	4125
Tx2	3925	4	4050	8	4150
Ref	3950		>>>>	> Pa	ge 2
>		PRE ST		PRE LIN	
ಶ Sta	art	1	t. 🛞 💓 🔞	PC 오	3:05 PM [



For this dipole-dipole setup, 8 electrodes of the GDD-Rx will be used.

1) Select Dipole-Dipole (1/32) in the setup page.

El. array: Dip	ole-Dipole (1,	(32)	ок 🗙
Setup Positio	n Windows		
	E	l. array:	Tx – Rx
🔽 ALL	ALL Dipo)le-Dipole	(1/32) 🔻
🔽 Chi	🗹 Ch5	Ch9	🗌 Ch13
🔽 Ch2	🗹 Ch6	🗌 Ch10	🗌 Ch14
🔽 Ch3	🔽 Ch7	🗌 Ch11	🗌 Ch15
🔽 Ch4	🔽 Ch8	🗌 Ch12	🗌 Ch16
>>>> P	age 2 T	rigger on:	1 🔻
	2.0	🛞 💓 🔞 PC 9	🖹 3:11 РМ [

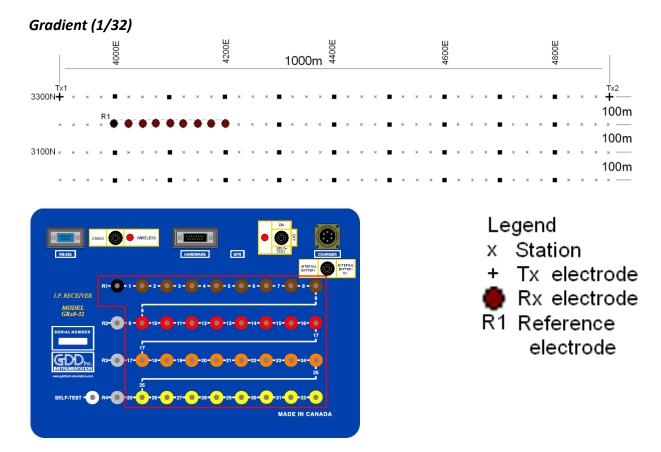
El. array: Dipole-Dipo	le (1/32)		ок 🗙						
Setup Position Windows									
Project: GDD Test									
Ln. Tx: 3300 Rx: 3300 E-W 💌									
Move LINE: Tx:	-100	Rx:	-100						
Station: Tx1:	3900	Tx2:	3925						
Station Rx:	3950	Sep:	25						
Move ST.: Tx:	25	Rx:	25						
🂦 Start	t. 😢 💓	ÎÕ PC 🟵	3:11 PM 👔						

3) If all the values are correct, click the Ok button to continue and take a reading. If something is incorrect, you can modify it on this page.

Posit	Position									
LTx	3300		1	3975		5	407	75		
LRx	3300		2	4000		6	4100			
Tx1	3900		3	4025		7	4125			
Tx2	3925		4	40	50	8	4150			
Ref	395	0			>>:	>> Pa	ge 2	2		
	▼ Tx NEXT ▼ Rx STN		PRE ST		NEXT LINE			ок		
🎝 Sta	🐉 Start 🛛 🕄 🍢 💓 🗓 PC 😂 3:11 PM 📝									

4) When the reading is done, click the NEXT STN button to increment the positions.

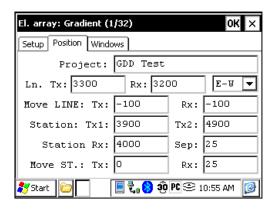
Posit	ion						
LTx	3300	1	4000	5	4100		
LRx	3300	2	4025	6	4125		
Tx1	3925	з	4050	7	4150		
Tx2	3950	4	4075	8	4175		
Ref	3975		>>>>	> Pa	ge 2		
✓ Tx NEXT PREV. NEXT PREV. ✓ Rx STN STN LINE OK							
鸄 Sta	art	4	t. 😣 💓 Ö	PC 오	3:11 PM [



For this Gradient setup, 8 electrodes of the GDD-Rx will be used.

1) Select Gradient (1/32) in the setup page.

El. array: Gradient (1/32) OK 🗙								
Setup Position	n Windows							
	E	l. array:	Tx – Rx					
🔽 ALL	ALL Grad	dient (1/32						
🗹 Chi	🔽 Ch5	🗌 Ch9	🗌 Ch13					
🗹 Ch2	🔽 Ch6	Ch10	🗌 Ch14					
🗹 Ch3	🗹 Ch7	Ch11	🗌 Ch15					
🔽 Ch4	🔽 Ch8	Ch12	🗌 Ch16					
>>>> P:	age 2 T	rigger on:	1 🔻					
🐉 Start 🛅	2	, <mark>, 😵</mark> ĝ PC 😌	10:50 AM [



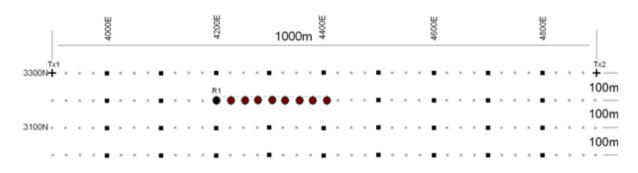
3) If all the values are correct, click the Ok button to continue and take a reading. If something is incorrect, you can modify it on this page. Uncheck the Tx box so that only the Receiver electrodes position will change.

Position									
LTx 33	00	1 4025		5	4125				
LRx 32	00	2 4050		6	4150				
Tx1 39	D0	3 4075		7	4175				
Tx2 49	00	4 4100		8	4200				
Ref 40	00		>>>>	> Pa	ge 2				
TX Rx	NEXT STN	PRE ST		PRE LII					
	🌠 Start 🛛 🕄 🕄 🔞 🕅 🔞 🖉 🕲								

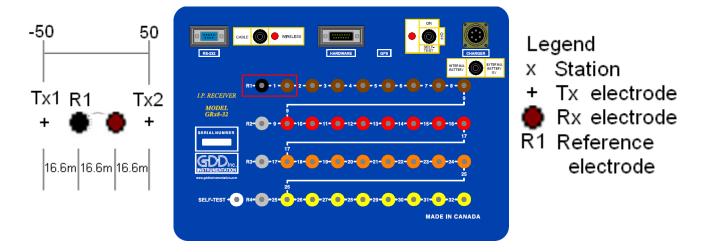
 When the reading is done, make sure that the Tx box is unchecked, click the NEXT STN button to increment the positions. Only the Receiver electrodes position changes. In this example, you will need to click the NEXT STN button 8 times to be at the position indicated on the next screen.

Position								
LTx 3300	1 4225	5 4325						
LRx 3200	2 4250	6 4350						
Tx1 3900	3 4275	7 4375						
Tx2 4900	4 4300	8 4400						
Ref 4200	>>>>	> Page 2						
Tx NEXT Rx STN	PREV. NEXT STN LINE	PREV. LINE OK						
鸄 Start 🗁 📄 🗐 🖏 🧐 🕅 🕾 11:00 AM 🕼								

5) Your next setup on the field should be like this.

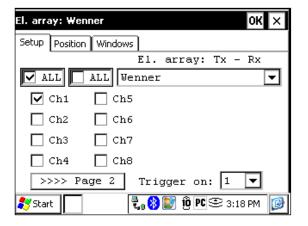


Wenner



A Wenner setup uses only two electrodes, the Reference R1 and the electrode 1 of the GDD Rx.

1) Select Wenner in the setup page and check only one channel.



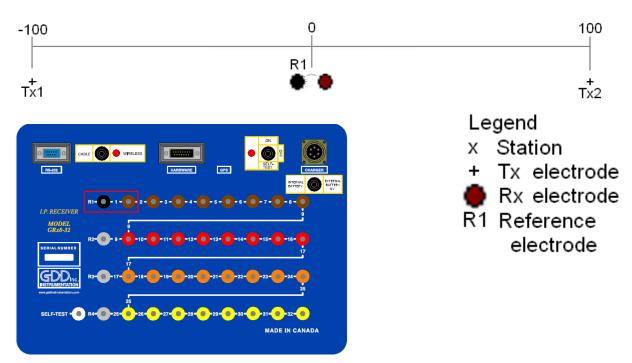
El. array: Wenner			ок 🗙
Setup Position Windo	ows		
Project:	GDD Test		
Ln. Tx: O	Rx: O		E-W 🔻
Move LINE: Tx:	0	Rx:	0
Station: Tx1:	-50	Tx2:	50
Station Rx:	N/A	Sep:	N/A
Move ST.: Tx:	0	Rx:	0
鸄 Start	t. 🛞 💓 į	Ô PC ©	3:21 PM 👔

3) If all the values are correct, click the Ok button to continue and take a reading. If something is incorrect, you can modify it on this page.

Posit	ion		
LTx	o	1 16	.66666 5
LRx	o	2	6
Tx1	-50	3	7
Tx2	50	4	8
Ref	-16.6666		>>>> Page 2
N		PREV. STN	NEXT PREV. LINE LINE OK
ಶ Sta	art	2.	👂 🛐 🔞 PC 😂 3:21 PM 🛛 🞯

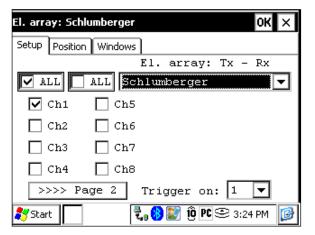
4) For a Wenner survey, you will have to manually enter the parameters for each reading. To access the Position page, click the Tools button and select the Config option in the pop-up menu.

Schlumberger



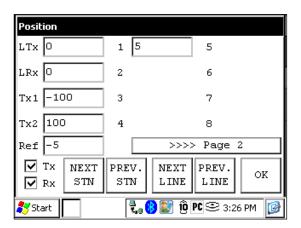
A Schlumberger setup uses only the Reference R1 and the electrode 1 of the GDD Rx.

1) Select Schlumberger in the setup page.



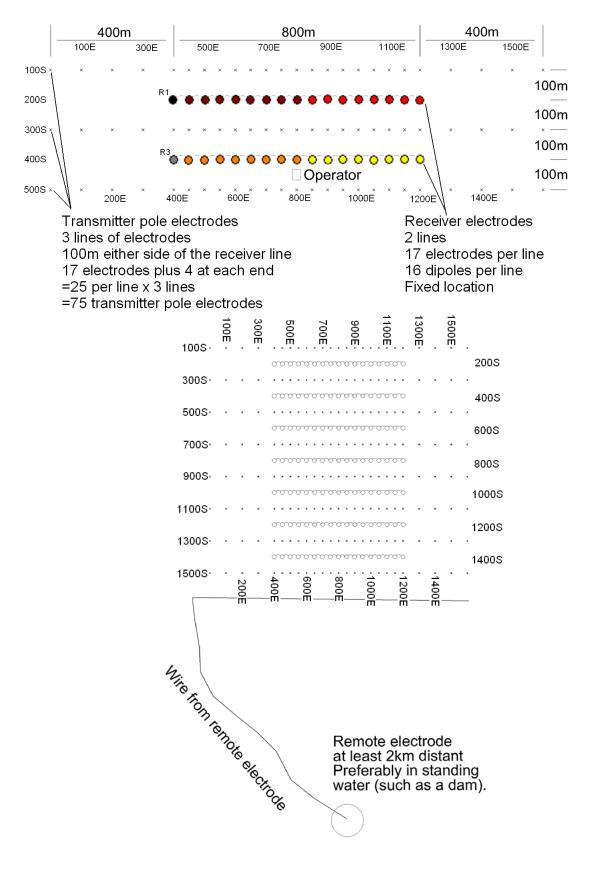
El. array: Schlumberg	jer		ОК	×
Setup Position Windo	ows			
Project:	GDD Test			
Ln. Tx: O	Rx: 0		E-W	▾
Move LINE: Tx:	0	Rx:	0	
Station: Tx1:	-100	Tx2:	100	
Station Rx:	N/A	Sep:	10	
Move ST.: Tx:	0	Rx:	0	
Start	t. 🛞 💓	ÎÔ PC 🕑	3:26 PM	0

3) If all the values are correct, click the Ok button to continue and take a reading. If something is incorrect, you can modify it on this page.

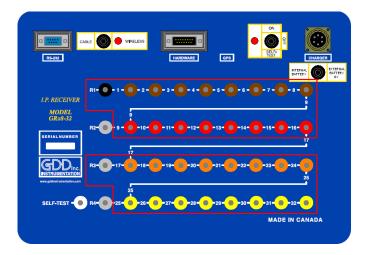


4) For a Schlumberger survey, you will have to manually enter the parameters for each reading. To access the Position page, click the Tools button and select the Config option in the pop-up menu.

3D Survey: Pole-Dipole (2/16)



As shown on the images on the previous page, this setup is for 2 lines of 16 dipoles each using a GDD Rx-32. For the reference pins, R1 and R3 will be used; R2 and R4 will not be used since this is a 2 line setup.



1) Select the Pole-Dipole 2/16 on the Setup tab.

El. array: Pole	Dipole (2/1	6)	ок 🗙
Setup Position	Windows		
	E	l. array:	Tx – Rx
🔽 ALL	ALL Pole	e-Dipole (2	2/16) 🔻
🔽 Ch1	🔽 Ch5	🔽 Ch9	🔽 Ch13
🔽 Ch2	🔽 Ch6	🔽 Ch10	🔽 Ch14
🔽 Ch3	🔽 Ch7	🔽 Ch11	🗹 Ch15
🔽 Ch4	🔽 Ch8	🔽 Ch12	🔽 Ch16
>>>> Pa	age 2 T	rigger on:	1 🔻
💦 Start 📃		🚯 💽 SÔ PC S	🖻 1:32 РМ 🛛 🞯

2) On the Position tab; enter the parameters of your survey.

El. array: Pole-Dipole (2/10	6)	ок 🗙								
Setup Position Windows										
Project: GDD Test										
Ln. Tx: 100 Rx: 200 E-W 💌										
Move LINE: Tx: 200	Rx: 200									
Station: Tx1: N	1/A Tx2: 0									
Station Rx: 400	Sep: 50									
Move ST.: Tx: 100	Rx: 50									
🐉 Start 📃 🖏	🛞 🂽 🕄 PC 😌 1:25	РМ [

3) Uncheck the Rx box so that only the Tx position will change when you click the NEXT STN and NEXT LINE buttons. Verify that the positions of the 32 electrodes are set properly. Hit the OK button to close this window. On the next screen, click Start to take readings.

Posit	ion						Positi	ion							
LTx	100	1	450	5	650		LTx	100)	9	850)	13	1050)
LR1	200	2	500	6	700		LR1	200)	10	900)	14	1100)
Tx 1	9999999	3	550	7	750	ŀ	Tx1	999	9999	11	950	D	15	1150)
Tx2	o	4	600	8	800	ŀ	Tx2	O		12	100	00	16	1200)
Rf1	400		(> Paq	ge 2		Rf1	400)		(>>>>	> Pa	ge 3	
	TX NEXT RX STN	PRE' STI		PRE LIN			_	Tx Rx	NEXT STN	PRE ST	· · I	NEXT LINE	PRE LII		OK
🂦 Sta	🕈 Start 📃 🛃 🧐 😰 🕄 1:34 PM 🞯 🐉 Start 📃 🖏 🎒 🧐 🔍 1:34 PM 🞯							РМ [

Position							ion			
LTx	100	17	450	21	650	LTx	100	25	850	29 1050
LR2	400	18	500	22	700	LR2	400	26	900	30 1100
Tx1	99999999	19	550	23	750	Tx1	9999999	27	950	31 1150
Tx2	0	20	600	24	800	Tx2	o	28	1000	32 1200
Rf3	400		>>>>	> Paç	ge 4	R£3	400		>>>>	> Page 1
	Tx NEXT Rx STN	PRE ST		PRE' LIN			TX NEXT RX STN	PRE ST		PREV. LINE OK
🎝 Sta	irt 🗌	4	t, 8 💽 Ô	PC 오	1:35 PM 👔	ಶ Sta	art	-	t, 😢 💓 🎨	PC 😌 1:34 PM [

4) After readings are taken and stored, click the Start button. Click the NEXT STN button and only the Tx2 station will be incremented by 100 since it was entered as the Tx spacing.

Posit	Position										
LTx	100	1	450	5 650							
LR1	200	2	500	6 700							
Tx1	99999999	3	550	7 750							
Tx2	100 🔵	4	600	8 800							
Rf1	400		>>>>	> Page 2							
	TX NEXT RX STN	PRE ST		PREV. LINE OK							
鸄 Sta	art	- T	t. 😢 💓 🔨	PC 😌 1:36 PM 🛛 🚱							

5) When the Tx2 station position is at 400, you will have to modify the spacing from 100 to 50. Select Tools -> Config and the next screen will appear. Select the Position tab and change the Move St.: TX: to 50.

El. array: Pole-Dipole	(2/16)		ОК	×
Setup Position Windo	ws			
Project:	GDD Test			
Ln. Tx: 100	Rx: 200)	E-W .	ਤ
Move LINE: Tx:	200	Rx:	200	
Station: Tx1:	N/A	Tx2:	400	
Station Rx:	400	Sep:	25	
Move ST.: Tx:	50	Rx:	25	
💦 Start	t. 😢 💓 4	ŧÕ PC 🕾	21:39 PM	0

6) Continue the survey. When the Tx2 station position is at 1200, you will have to change the spacing back to 100.

El. array: Pole-Dipole (2/16) OK 🗙									
Setup Position Windows									
Project: GDD Test									
Ln. Tx: 100 Rx: 20	0	E-W 🔻							
Move LINE: Tx: 200	Rx:	200							
Station: Tx1: N/A	Tx2:	1200							
Station Rx: 400	Sep:	50							
Move ST.: Tx:	Rx:	50							
🐉 Start 📃 🕄 🖏 🔊	40 PC 😌	2 1:40 PM [

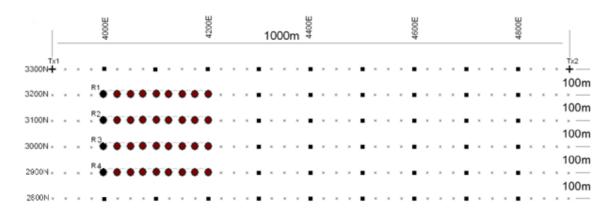
7) When the line is complete press NEXT LINE to increment the LTx.

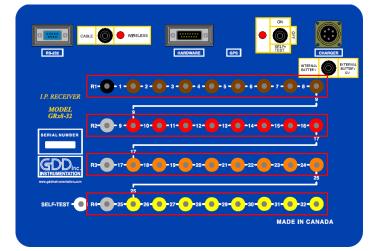
Posit	Position										
LTx	300	1	450	5	650						
LR1	200	2	2 500		6 700						
Tx1	99999999	3	3 550		7 750						
Tx2	1600	4	600	8	800						
Rf1	400		>>>>	> Paq	ge 2						
	TX NEXT RX STN	PRE' STI		PRE LIN							
ಶ Sta	🐉 Start 📃 🕄 😵 🔛 🏟 🖻 🕾 1:41 PM 👔										

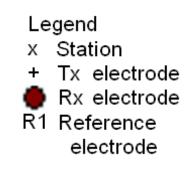
8) When the line is done, change the Move ST.: TX: to -100 or the Tx2 position to 0 depending on where you are starting the next line.

El. array: Pole-Dipole (2/16)		ок 🗙
Setup Position Window	s		
Project: G	DD Test		
Ln. Tx: 300	Rx: 200)	E-W 🔻
Move LINE: Tx: 2	:00	Rx:	200
Station: Tx1:	N/A	Tx2:	1600
Station Rx: 4	100	Sep:	50
Move ST.: Tx:🧲	100	Rx:	50
🂦 Start	🖏 🛞 💓 4	Ô PC 😌	2:21 PM 🛛 🚱

3D survey: Gradient (4/8)

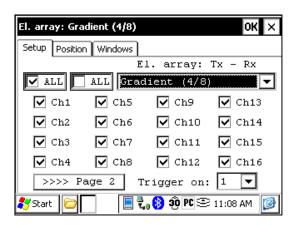






For this Gradient setup, 32 electrodes of the GDD-Rx will be used.

1) Select Gradient (4/8) in the setup page.



2) Enter the positions corresponding to your survey parameters.

El. array: Gradient (4/8)	ок ×
Setup Position Windows	
Project: GDD Test	
Ln. Tx: 3300 Rx: 320	DO E-₩ 🔽
Nove LINE: Tx: -100	Rx: -100
Station: Tx1: 3900	Tx2: 4900
Station Rx: 4000	Sep: 25
Move ST.: Tx: 0	Rx: 25
🍠 Start 🗁 🛛 🗐 🖏 🏟	PC 🕮 11:09 AM [

3) If all the values are correct, click the Ok button to continue and take a reading. If something is incorrect, you can modify it on these pages. Uncheck the Tx box so that only the Receiver electrodes position will change.

Posit	ion					Posit	ion			
LTx	3300	1	4025	5	4125	LTx	3300	9	4025	13 4125
LRx	3200	2	4050	6	4150	LRx	3100	10	4050	14 4150
Tx1	3900	3	4075	7	4175	Tx1	3900	11	4075	15 4175
Tx2	4900	4	4100	8	4200	Tx2	4900	12	4100	16 4200
Ref	4000		>>>>	> Pa	ge 2	Ref	4000		>>>>	> Page 3
	TX NEXT RX STN	PRE ST		PRE LIM			TX NEXT RX STN	PRE ST		PREV. LINE OK
💦 Sta	art	[t. 😣 💓 🗓	PC 🕾	3:17 PM 🛛 😰	ಶ St	art 🗁		🗏 🛃 😵 20 I	PC 🕾 11:16 AM 🛛 🞯

Posit	ion					Posi	ion				
LTx	3300	17	4025	21	4125	LTx	3300	25	4025	29	4125
LRx	3000	18	4050	22	4150	LRx	2900	26	4050	30	4150
Tx1	3900	19	4075	23	4175	Tx1	3900	27	4075	31	4175
Tx2	4900	20	4100	24	4200	Tx2	4900	28	4100	32	4200
Ref	4000		>>>>	> Pa	ge 4	Ref	4000		>>>>	> Pa	ge 1
	TX NEXT RX STN	PRE' STI		PRE LIM			TX NEXT RX STN	PRE ST		PRE LII	
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4) When the reading is done, make sure that the Tx box is unchecked, click the NEXT STN button to increment the positions. Only the electrodes position on the Receiver will change.

In this example, you will need to click the NEXT STN button 8 times to be at the position indicated on the next screen.

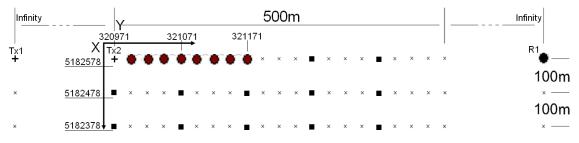
Position		Position
LTx 3300	1 4225 5 4325	LTx 3300 9 4225 13 4325
LRx 3200	2 4250 6 4350	LRX 3100 10 4250 14 4350
Tx1 3900	3 4275 7 4375	Tx1 3900 11 4275 15 4375
Tx2 4900	4 4300 8 4400	Tx2 4900 12 4300 16 4400
Ref 4200	>>>> Page 2	Ref 4200 >>>> Page 3
Tx NEXT Rx STN	PREV. NEXT PREV. STN LINE LINE OK	□ Tx NEXT PREV. NEXT PREV. ☑ Rx STN STN LINE PREV. OK
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Positi	ion					Posit	ion			
LTx	3300	17	4225	21	4325	LTx	3300	25	4225	29 4325
LRx	3000	18	4250	22	4350	LRx	2900	26	4250	30 4350
Tx1	3900	19	4275	23	4375	Tx1	3900	27	4275	31 4375
Tx2	4900	20	4300	24	4400	Tx2	4900	28	4300	32 4400
Ref	4200		>>>>	> Paq	ge 4	Ref	4200		>>>>	> Page 1
	TX NEXT RX STN	PRE ST		PRE LIN			TX NEXT RX STN	PRE ST		PREV. LINE OK
🐉 Sta	art 🗀	[🗏 🖏 🛞 20 I	¢©	12:12 PM 👔	💦 St	art 🗁	[🛯 🖏 🛞 20 🛛	PC 오 12:11 PM 🛛 🞯

5) Your next setup on the field should be like this.

	4000E	u 1000m	4400E	4600€	4800E
			• * * * • * * * *		
			• • • • • • • • •		100
			• • • • • • • • •		• * * * * · · · ·
			·•···		
			• · · · • • · · · •		100

GPS Positions



Setting GPS positions instead of nominal positions

Starting position: X – 320971.52 Easting Y – 5182578.35 Northing

El. array: Pole-Pole			ок 🗙
Setup Position Windo	ows		
Project:	GDD		
Ln. Tx: 5182578	3. Rx: 518	32578.	N-S 🔻
Move LINE: Tx:	-100	Rx: -	100
Station: Tx1:	N/A	Tx2:3	20971.5
Station Rx:	320996.5	Sep: 2	5
Move ST.: Tx:	25	Rx: 2	5
🐉 Start 🔽 🤇	2. <mark>8</mark> 9) PC 😌 10	:07 PM [

Instead of using a relative position system (the starting position being 0,0), you can enter a GPS position in meters in the Line TX, Line RX, Tx1, Tx2 and Station Rx cases. You can enter any number between -9999999 and 9999999.

Next Station	Next Line							
Position	Position							
LTx 5182578. 1 321021.5 5 321121.5	LTx 5182478. 1 320996.5 5 321096.5							
LRx 5182578. 2 321046.5 6 321146.5	LRx 5182478. 2 321021.5 6 321121.5							
Tx1 9999999 3 321071.5 7 321171.5	Tx1 9999999 3 321046.5 7 321146.5							
Tx2 320996.5 4 321096.5 8 321196.5	Tx2 320971.5 4 321071.5 8 321171.5							
Ref 9999999 >>>> Page 2	Ref 9999999 >>>> Page 2							
Image: TxNEXTPREV.NEXTPREV.Image: RxSTNSTNLINEOK	TxNEXTPREV.NEXTPREV.RxSTNSTNLINEOK							
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Version PPC: 0.4.2.42 Version Rx: 0.2.5.10 Rx SN: 1309

Project	t:																				
Windows: 20 Setting: Arith. Delay (ms): 240 Timing (ms): 80, 80, 80, 80, 80, 80, 80, 80, 80, 80,																					
Mem	Date		Hour		Array	LineTx	LineRx	Dir	•	n	Tx1		Tx2	Rx1	Rx2		Con	tact	Rhc)	
1	06/11/201	13	08:09:	55	P-P	0.00	0.00	N-9	N-S 0.		9999999	9999.00 0.00 0		0.00	9999999.00		8.9	8.9		0.00	
1	06/11/201	13	08:09:	55	P-P	0.00	0.00	N-9	S	0.0	9999999	9.00 0.00		0.00	9999999.00		16.0	16.0		0.00	
1	06/11/201	13	08:09:	55	P-P	0.00	0.00	N-9	S	0.0	9999999	9.00	0.00	0.00	99999999.00		0 21.2		0.0)	
1	06/11/201	13	08:09:	55	P-P	0.00	0.00	N-9	S	0.0	99999999.00		0.00	0.00	9999999.00		999999.00 24.2		0.0)	
Sp	SpMin	Sp	oMax	Vp		ErrVp	Sym(%	Sym(%)			ErrM	In		Tim	e DC	S	tack	MO	1		
0.4	0.4	0.	4	12	5.112	0.001	100	100		947	0.009	1000.000		2000 50		1	0	7.9			
0.5	0.4	0.	7	25	0.336	0.001	100	100		945	0.002	1000.000		200	000 50		0	7.9	54		
0.7	0.7	0.	8	37	5.726	0.002	100		7.9	947	0.002	100	00.000	200	0 50	1	0	7.9	61		
-0.0	-0.1	0.	9	50	0.038	0.002	100		7.9	945	0.000	100	00.000	200	0 50	1	0	7.9	52		

First section - File header:

Version PPC:	Version of the Rx program on the PDA
Version Rx:	Version of the Rx firmware
Rx SN:	Serial number of the IP Receiver

Second section:

Project:	Name of your project
Third section:	
Windows:	Number of windows (depending on the selected mode)
Setting:	Selected mode (Arith., Semi, Log., Cole, User)
Delay (ms):	Delay in ms before the first window (depending on the selected mode)
Timing (ms):	Timing of each window (depending on the selected mode)

- The file is divided in 4 sections. The fourth one contains the data.
- Sections 2 and 3 will be repeated within the same file following a parameter change.
- Infinite values within Rho, TX1 and RX2 (in pole arrays) are represented by 9999999.00.
- Values in section 4 are delimited by one or more spaces. Therefore, the import software must treat consecutive delimiters as one.
- Each line in section 4 has a fix number of entries. If less than 20 windows are defined for a selected entry, the unused columns will be padded with 999.99
- The example file is truncated on the right side omitting column M02 to M20.

Mem	Memory number
Date	Date, format DD/MM/YYYY (date of the PDA when recording the reading)
Hour	Time, format HH:MM:SS (time of the PDA when recording the reading)
Array	Electrode Array; P-P, P-DP, DP-DP, WEN, GRAD
LineTx	Transmitter Line Label
LineRx	Receiver Line Label
Dir	Line Direction (N-S or E-W)
n	Number or Rank of dipole
Tx1	First electrode of the transmitter
Tx2	Second electrode of the transmitter
Rx1	First electrode of the dipole
Rx2	Second electrode of the dipole
Contact	Soil resistance in kOhm; XX.X, INFINI or (undefined)
Rho	Resistivity in Ohm*m
Sp	Self potential in mV
SpMin	Minimum value of SP in mV
SpMax	Maximum value of SP in mV
Vp	Primary voltage in mV
ErrVp	Error of Vp: standard deviation of the data set used to calculate the primary
	voltage
Sym(%)	Symmetry in %
М	Chargeability in mV/V
ErrM	Error of M: standard deviation of the data set used to calculate the
	chargeability
In	Current in mA
Time	Transmitter timing in ms
Stack	Number of stacks
DC	Duty Cycle in %
M01 – M20	Windows of chargeability