

# SOKKIA

# GRX2



## Руководство по эксплуатации



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Вологда (8172)26-41-59

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Красноярск (391)204-63-61

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Липецк (4742)52-20-81

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Пенза (8412)22-31-16

Пермь (342)205-81-47

Ростов-на-Дону (863)308-18-15

Рязань (4912)46-61-64

Самара (846)206-03-16

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Саратов (845)249-38-78

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Череповец (8202)49-02-64

Ярославль (4852)69-52-93

**сайт: [www.sokkia.nt-rt.ru](http://www.sokkia.nt-rt.ru) || эл. почта: [ska@nt-rt.ru](mailto:ska@nt-rt.ru)**

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Sokkia.

Sokkia,

Sokkia.

GRX2™, Spectrum Survey Office™, Spectrum  
Link™, Spectrum Survey Field™, SHC2500™ GRX Utility™

Sokkia. Windows®

Microsoft.

Bluetooth®

Bluetooth SIG, Inc.,

Sokkia

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**File Exit**  
*Connection*

**File**

**Exit**

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*Frequency*

**Enter**

**Enter**



GRX2

GRX2

C/A ,

GPS L1, L2, C/A, L2C GLONASS L1, L2,



. 1-1.

GRX2

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## GPS

- GPS -

<http://tycho.usno.navy.mil/>

<http://www.navcen.uscg.gov/>.

<http://www.glonass-ianc.rsa.ru/>.

GPS

20



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DGPS

•  
•  
RTK  
RTK

DGPS

•  
RTK

RTCM

•  
RTK

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OmniSTAR,

WAAS, EGNOS, MSAS.

RTK

RTK

10

15

Precision

GDOP

- Geometric Dilution of

GPS D GPS RTK

DGPS

WAAS, EGNOS

GPS

GPS

RAIM

Sokkia.

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226

GPS

WGS-84,

SD

RTK

RTK

GRX2:

WAAS, EGNOS

DGP S

RTK

DGPS

GPS

RTK

- 
- - 
  - 
  -

GRX2

226-  
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COM

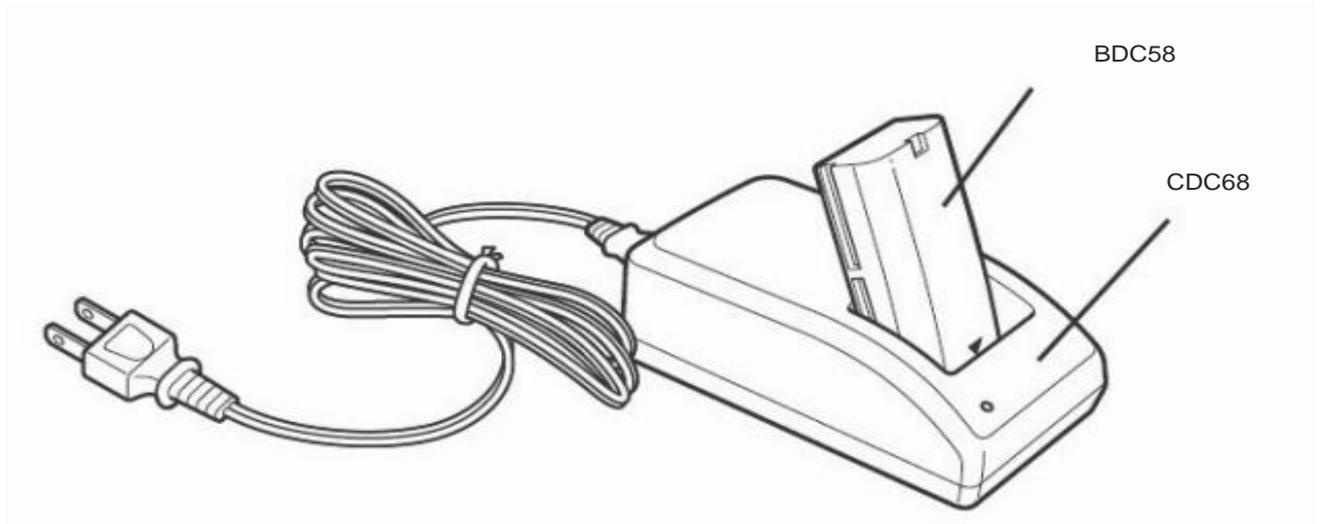
Bluetooth

GSM/GPRS

CDMA



GRX2  
. 1-2,



. 1-2.

GRX2

BDC58

CDC68.

2,5

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“ ”,

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. 1-1.

1		-20°C	+50°C
1	1	-20°C	+45°C
1	6	-20°C	+40°C
6	1	-20°C	+35°C

BDC58

## GRX2

GRX2

SD SIM

GSM

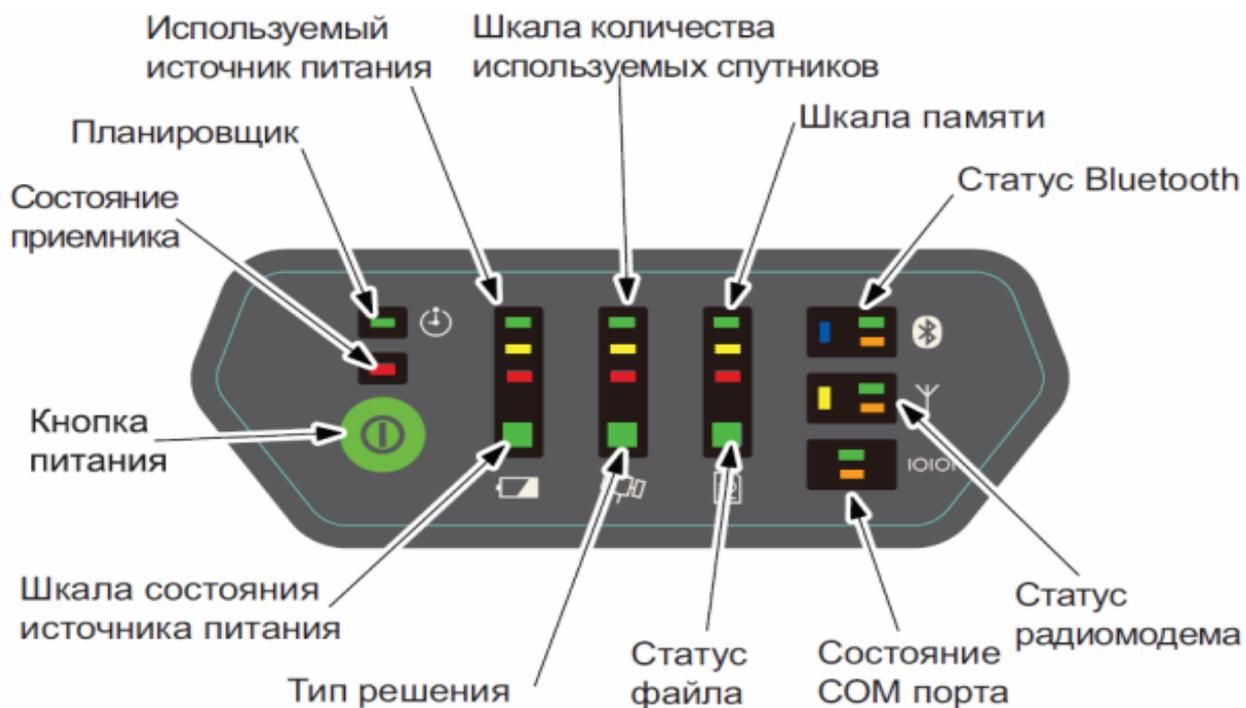
Bluetooth

GRX2

- TX/RX
- TX/RX
- TX/RX

GSM/GPRS  
CDMA

## GRX2



. 1-3.

GRX2

- - 50%.
- - 25%, 50%.
- - 10%, 25%.
- - 10%.
- - 8 .
- - 7,25 , 8 .
- - 6,5 , 7,25 .

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•	-6	7		.	
•	-4	5		.	
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•		- DGPS		RTK.	
•		-	RTK		
•					,
•					.
•	-	50%.			
•	-	25%,	50%.		
•	-	10%,	25%.		
•		-	10%.		
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	3 10	3-10 , , .

. 1-2.

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	10 20	10-20 , , , . . : .
	20 25	20-25 , , . . : . , , 25 . . Sokkia "GRX Utility", .

. 1-2.

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	25	25
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GRX2

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GRX Utility

30

GRX2

. 1-4

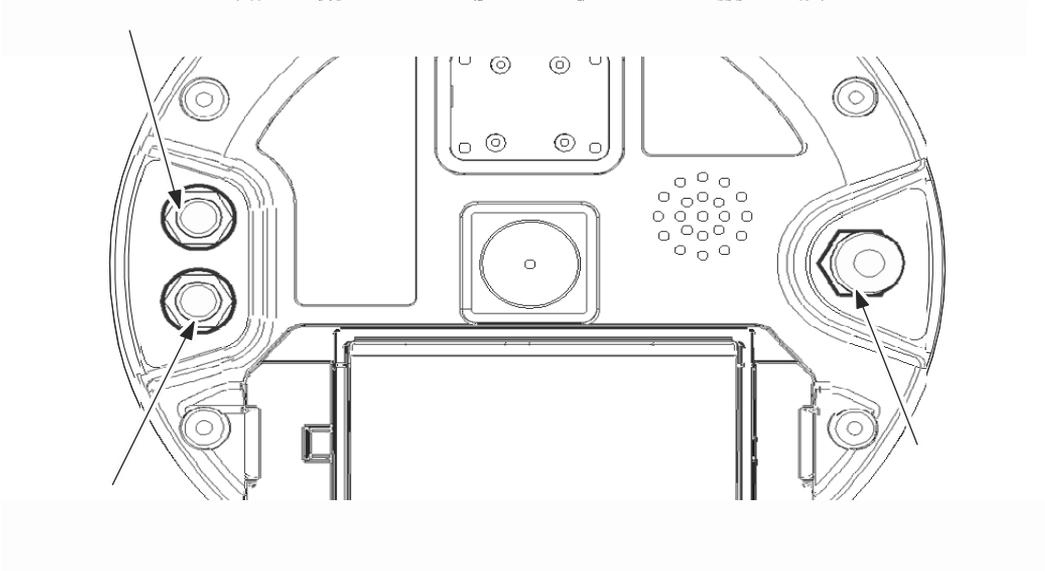
. 1-17:

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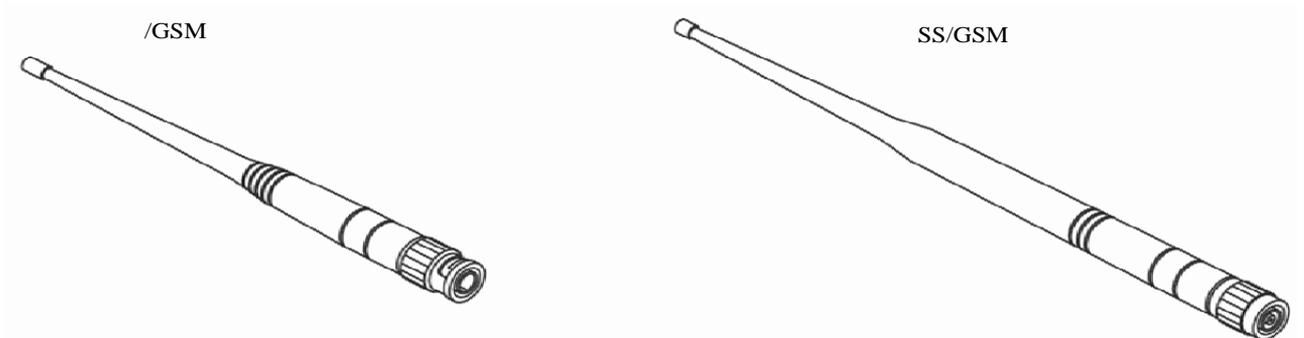
. 1-4.

GRX2

GRX2

. 1-5.  
GSM

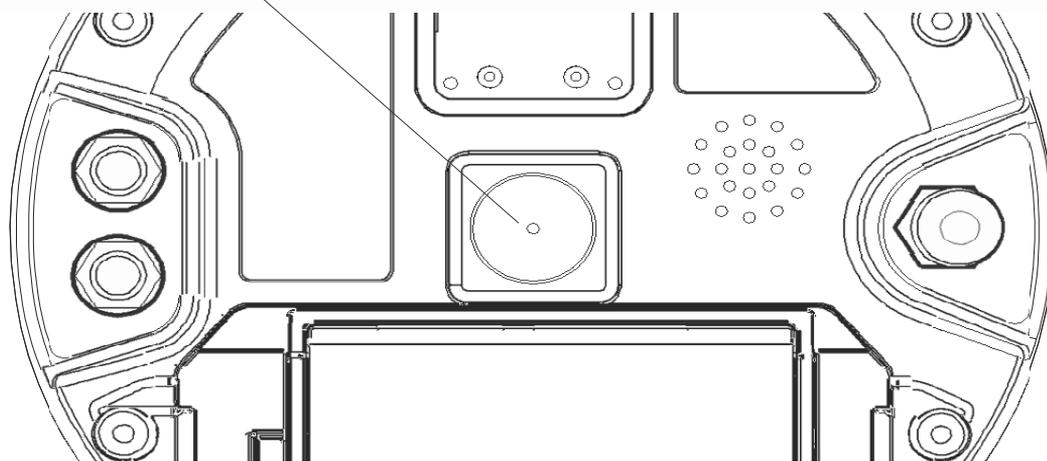
- : BNC : 410–440 440–470
- SS Spread Spectrum: TNC



. 1-5.

. 1-6,

5/8"



. 1-6.

GRX2

### SD/SDHC SIM

SD/SDHC SIM

### SD/SDHC

. 1-7 .

SD/SDHC,

- SD/SDHC,  
Bluetooth. SD

Sokkia

SD/SDHC

FAT16 FAT32,

### SIM

SIM

SIM

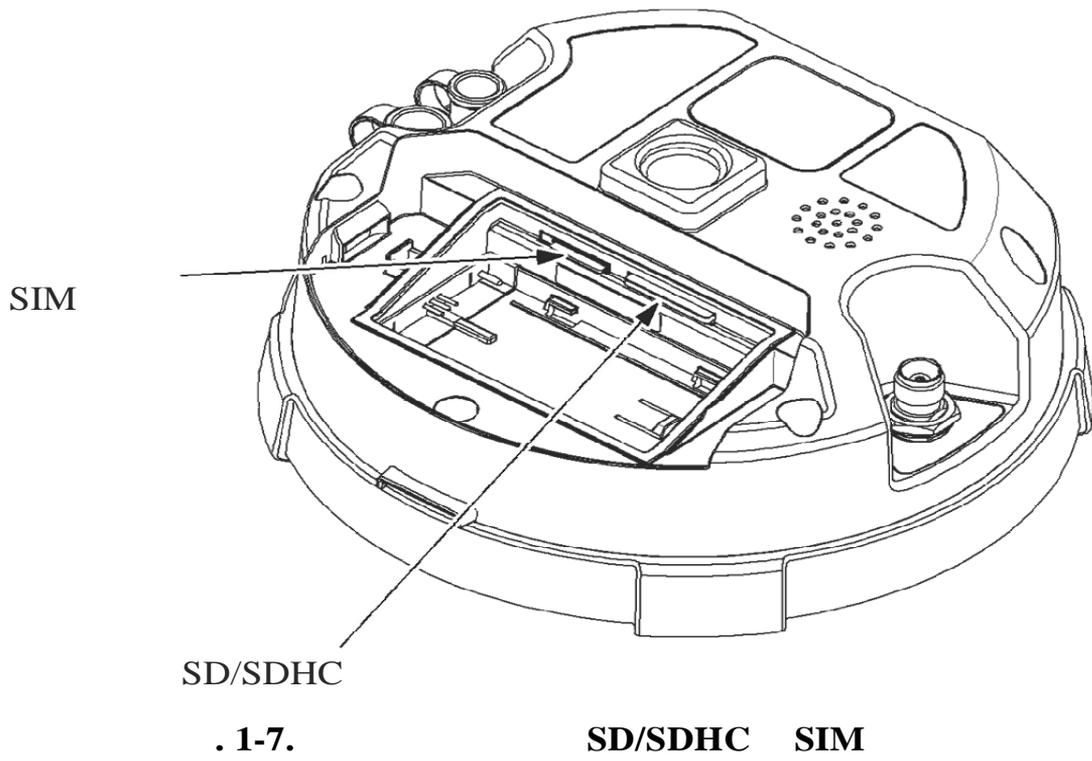
GSM

SIM

GSM,  
GSM

SIM

GRX Utility. SIM



GRX2

	. 1-3.
	<p style="text-align: center;"><b>GRX2</b></p> <p>A technical drawing of a cable. One end has a cylindrical connector with a small protrusion. The other end has a rectangular interface with a USB-like port and a smaller port.</p>

,

- BDC58 - 43 00 A ,  
7.2 . - 2 .
- CDC68
- 73 113/A/B/C CDC68
- ,
- D OC133, 72693 SHC250/  
SHC2500/PC
- CD
- 

GRX2

Sokkia .

Sokkia ,

GRX2, ,

Sokkia .

- 
- 10
- SD/SDHC
- 3,7



# OAF

Sokkia  
OAF,

- Sokkia, Sokkia
- GPS/ L1; GPS/ L2
- 5, 10, 20 1
- RTK 1, 5, 10, 20
- RTCM/CMR /
- 
- 
- WAAS
- RAIM



- 
- 



GRX2,

:



“ Sokkia” . 2-2.



SIM

:

SD/SDHC /

“ SD/SDHC SIM ”  
. 2-3.



“ ” . 2-5.



Bluetooth

“ ” . 2-11.



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3

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“ ” . 2-14.

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# Sokkia

Utility, GRX

- GRX Utility

GRX Utility

CD-ROM

## GRX Utility

GRX Utility

Windows®

GRX Utility: Microsoft® Windows XP / Vista/7  
RS-232C

Bluetooth.

GRX Utility.

GRX Utility:

1. Utility, GRX  
**GRX Utility.zip.**
2. **GRX\_Utility.exe** GRX Utility.
3. **GRX\_Utility.exe,**



. 2-1.

GRX Utility

GRX Utility,  
\*.exe.

Delete.

GRX Utility

Bluetooth.

btconf.ini.

Bluetooth

GRX Utility

## SD/SDHC SIM

SD/SDHC SIM

SD/SDHC

; SIM

GSM

SD/SDHC

Sokkia

; SIM

SD/SDHC,

FAT16/FAT32.

Bluetooth.

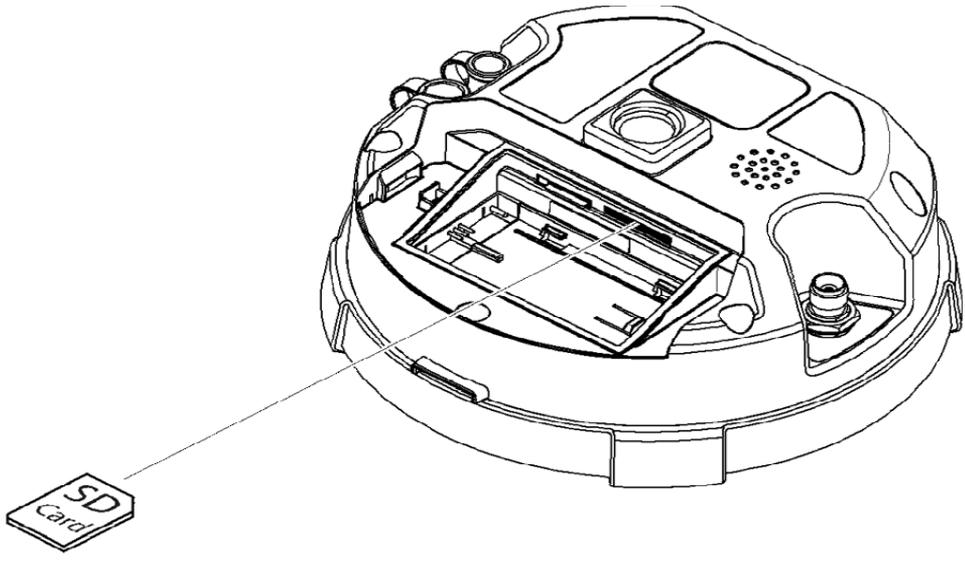
SD/SDHC

. 2-2:

1.



2. . . . “ ”
- . 2-6.
3. SD/SDHC



. 2-2. SD/SDHC



SD/SDHC

SIM . 2-3:

SIM CSD,  
 . SIM IP GPRS  
 EDGE

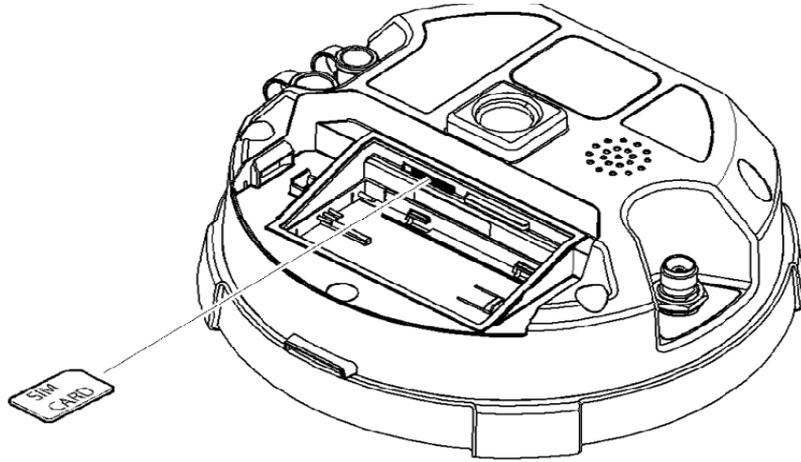


SIM

CS D

- 1.
- 2.
- 3.
- 4.

SIM  
SIM



. 2-3.

SIM

SIM

2,5

5



500

80%

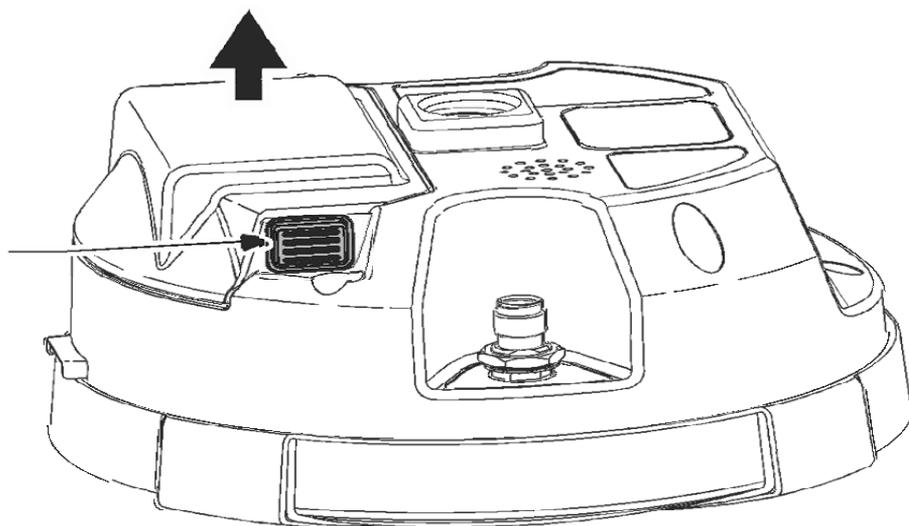
- 
1. .
  2. .
  3. . -
  4. .

GRX2

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7,5 .

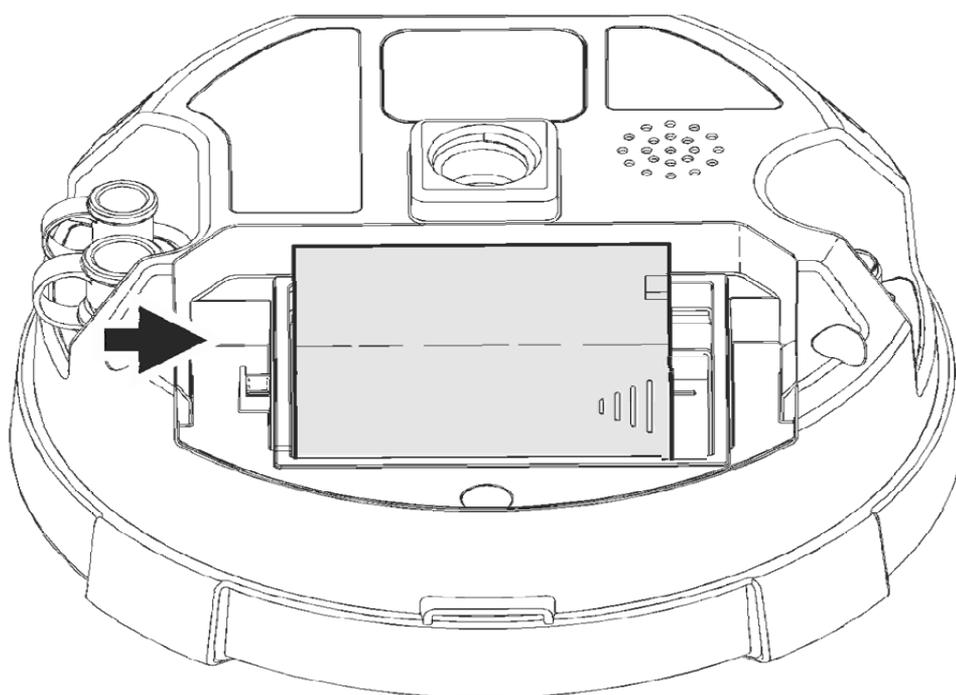
1. :  
GRX2.

2.



. 2-4.

3.



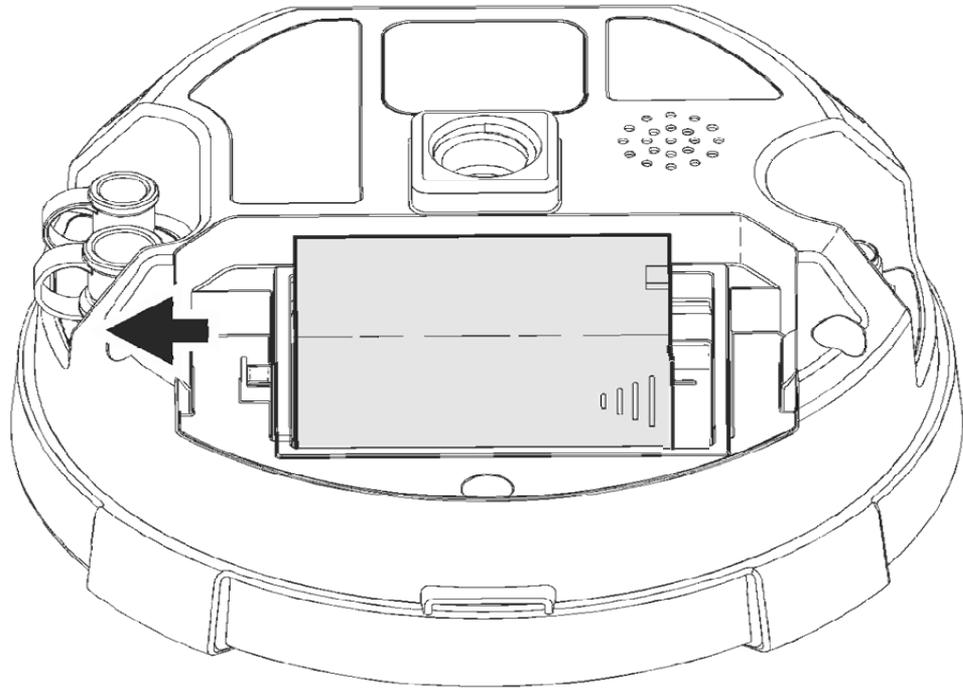
. 2-5.

4.

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1.

2.



. 2-6.

3.



/

# GRX2

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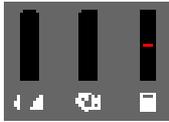
1

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3 10

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.2-1.

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	1	
	3 10	
	10 20	
	20 25	
	25	

GRX Utility

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GRX Utility,

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:

- Bluetooth,

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- RS232

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## RS232

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1.

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2.

RS232

1

3.

GRX Utility.

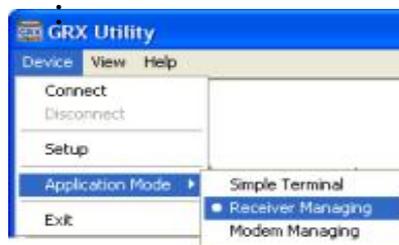
4.

**Device Application mode**

**Receiver**

**Managing.**

/



5.

**Device Connect.**

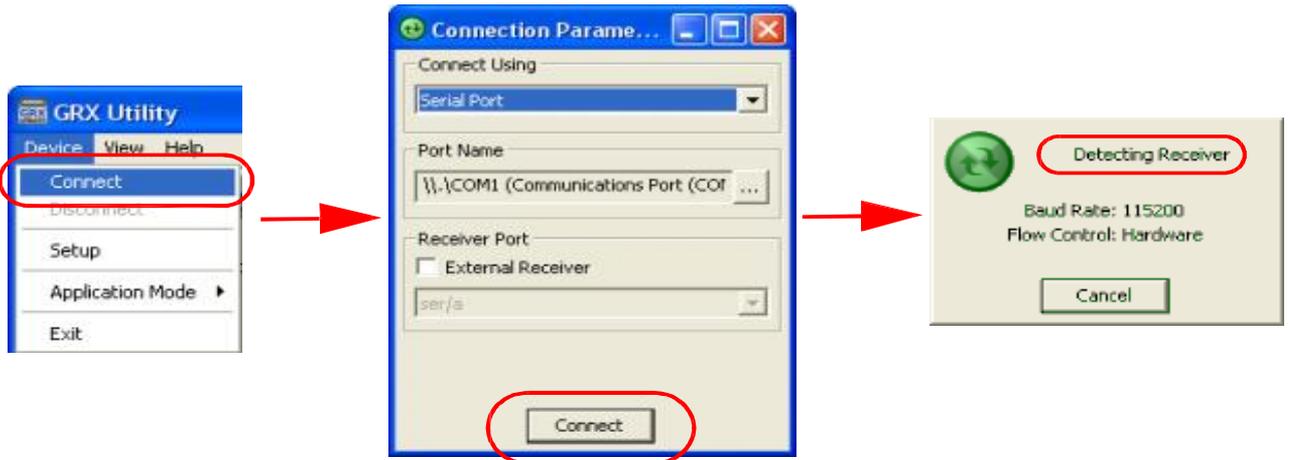
**Connection Parameters.**

/

,

**Connect.**

*Detecting Receiver.*



. 2-7.

RS232

6.

**Device Disconnect:**



**GRX2**  
*External Receiver  
Connection Parameters.*

GRX2

Bluetooth,

Bluetooth;

, SHC250  
USB-Bluetooth

PCMCIA-Bluetooth.

Bluetooth,

Bluetooth.

Bluetooth

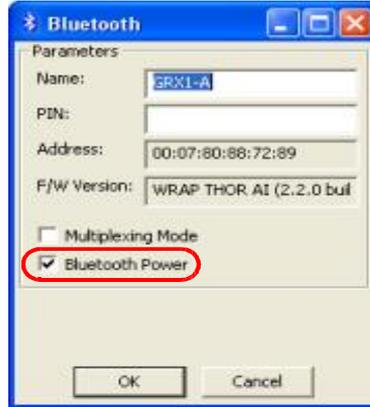
RS-232

RS232”

1-5,  
. 2-10.



**Bluetooth:**



*Bluetooth Power.*

**OK,**

Bluetooth

RS-232

6

RS232” . 2-10.

Bluetooth,

Bluetooth

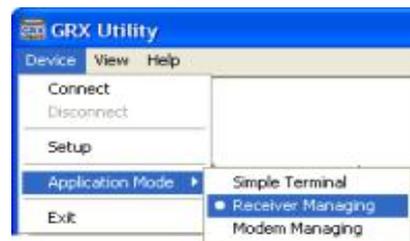
1.

2.

3.

**Device Application mode Receiver Managing.**

GRX Utility.



4.

**Device Connect.**

**Connection**

*Parameters.*

Bluetooth,

*Connect Using*

Bluetooth



. 2-8.

**Bluetooth**

5.

Bluetooth

*Select Port*

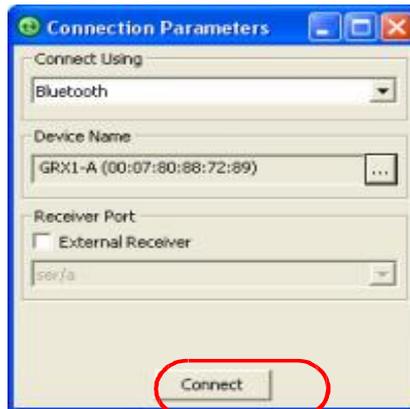
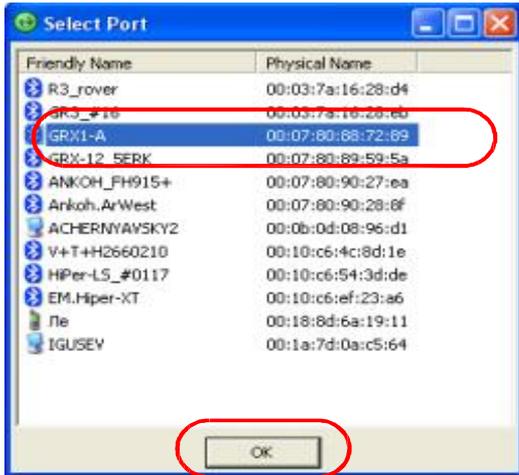
**OK.**

*Connection*

*Parameters*

**Connect.**

*Detecting Receiver.*



. 2-9.

/

**Bluetooth**

6.

/

**Device Disconnect:**



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GPS

30

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GPS

12,5

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2,5

NVRAM.

1.

2.

3.

15



15

N VRAM.

RAM

Flash

. 5-8.

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- :
  - .
  - ,  
NVRAM,
  - .
  - OAF.
  - .
  - NVRAM.
  - .



# GRX2

- RTK,
- GPS/
- GPRS CDMA
- GSM/
- GPS
- /

, Spectrum Survey Office.



RTK



2.



RTK

RTK

“

”

. 3-9.

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”

. 3-5:



“

GRX2”

. 4-1.

RTK



2.



“

”

. 3-9.



“

GRX2”

. 4-1.

GRX2”

Spectrum Survey Field.

GRX Utility -

Sokkia

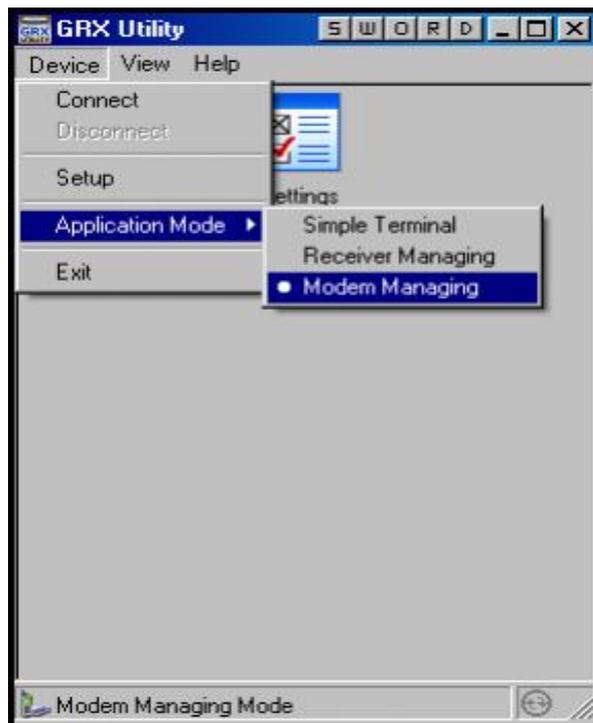
Utility

GRX.

GRX

- Bluetooth.
- ,
- .
- :
- Windows 2000
- GRX Utility
- RS -232 Bluetooth

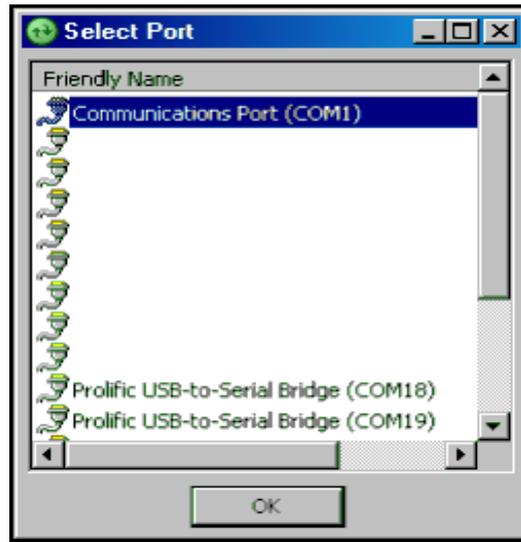
1. RS-232 Bluetooth.
2. GRX Utility. **Device Application**  
**Mode Modem Managing. Device Connect.**



. 3-1.

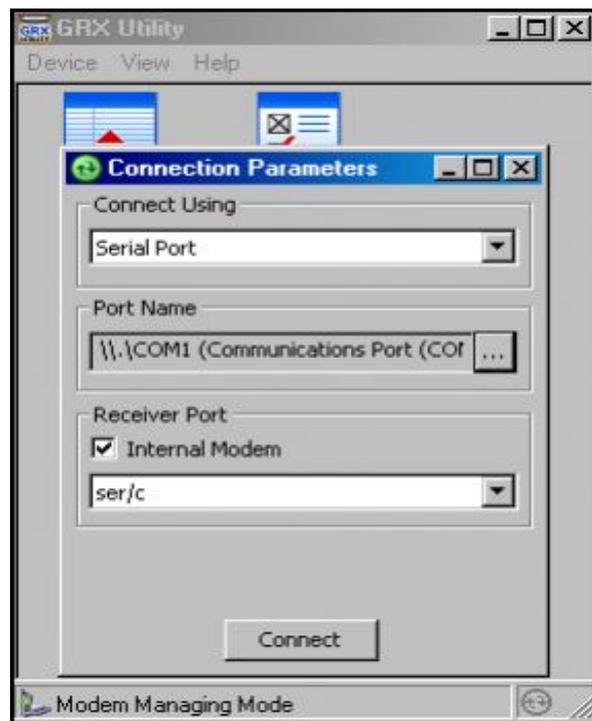
3. COM

4. COM ,  
OK.



. 3-2. COM

5. GRX2  
C. *Internal Modem*  
ser/c. **Connect.**



. 3-3.

---

6. GRX Utility



. 3-4.

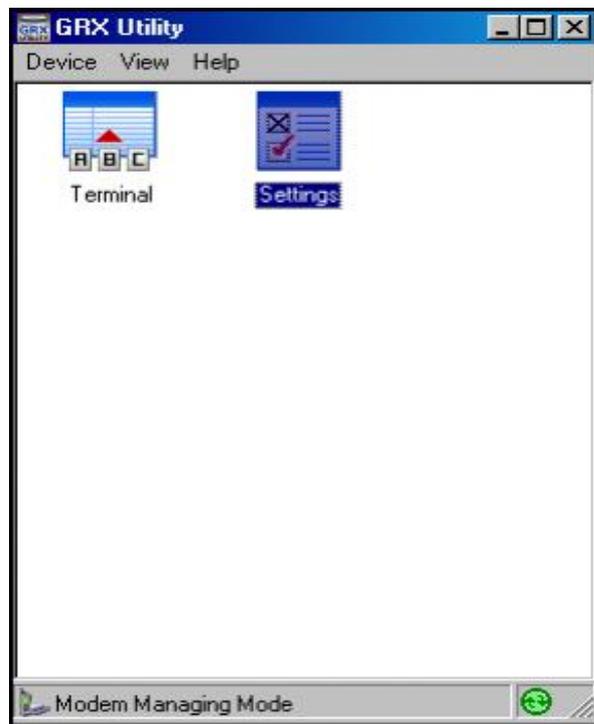
, GRX Utility



, 25 .

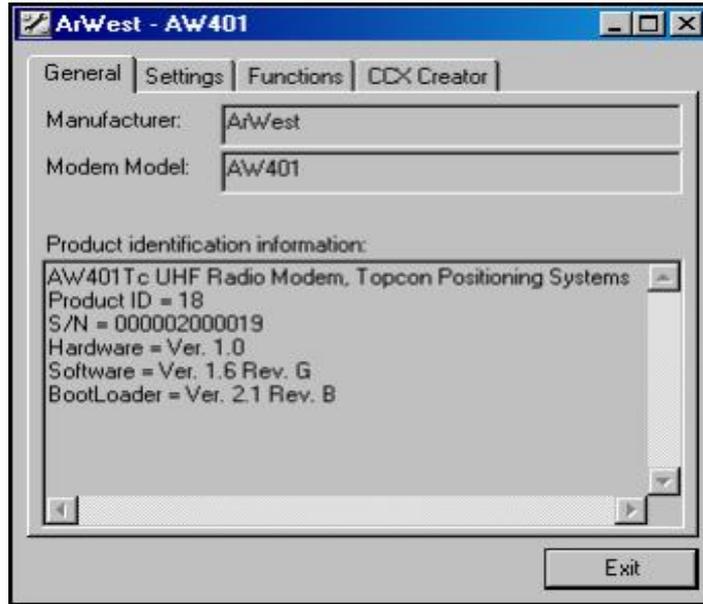
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1. GRX Utility GRX2 Modem Managing



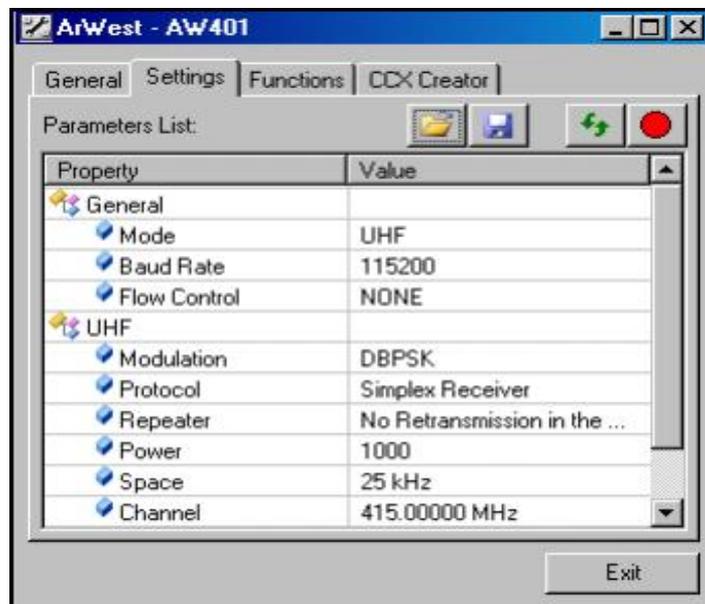
. 3-5.

2. Digital AW401,  
*General*



. 3-6.

3. *Settings*,  
. 3-7 . 3-6 .



. 3-7.

- *Mode* – GSM/CDMA.

*Baud rate* –

38400



115200

GPS.

- *Flow Control* –

/

- *Modulation* –

GMSK,  
DBPSK,

GMSK.

Simplex,  
Trimble

PDL,

- *Protocol* –

GMSK.

Simplex

- *Repeater* –

Simplex.

- *Power* –

10

1

- *Space* –

- *Channel* –

- *Scrambler* –

GMSK.

- *FEC* –

. 3-1.

. 3-1.

		<b>12.5</b>	<b>25</b>
DBPSK	Differential Binary Phase Shift Keying	4,8	9,6
DQPSK	Differential Quadrature Phase Shift Keying	9,6	19,2
D8PSK	Eight Phase Shift Keying	14,4	28,8
16QAM	Sixteen Quadrature Amplitude Modulation	19,2	38,4
GMSK	Minimal Shift Keying with Gaussian Filtering	4,8	9,6
4FSK	Four Level Frequency Shift Keying	9,6	19,2

GRX Utility,

GRX Utility

RTK

RTK



GRX2

RTK

- ,
- RTK ,
- RTK .
- RTK ,
- RTK

GRX Utility,

- Bluetooth,
- RS232

GRX Utility -

Sokkia

*GRX Utility.*

GRX Utility

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- ;



*GRX Utility.*

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1. “ ” . 2-9.

2. **GRX Utility** .  
**GRX Utility.**



. 3-8. **GRX Utility**

3. **Device Application Mode Receiver Managing.**

4. **Device Connect.**

5. **Connection Parameters** :

- *Connect Using* – , Bluetooth.



Bluetooth

GRX Utility

Bluetooth

Bluetooth

Bluetooth,

- *Port name* –

*Port name*

6. **Connect** . 3-9 .



. 3-9.

# GRX Utility

. 3-10.

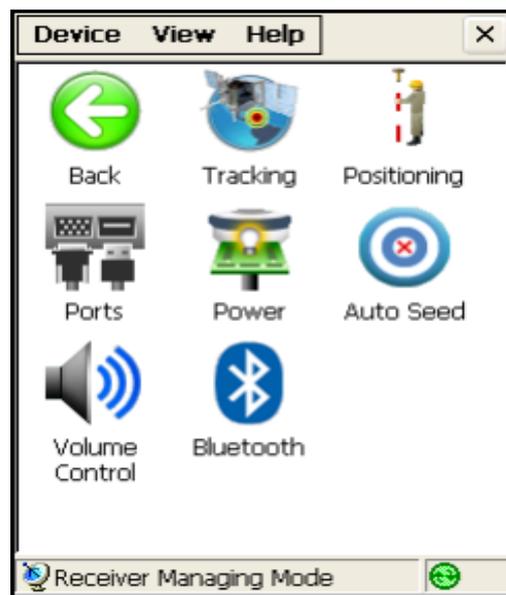


. 3-10.

**GRX Utility**

7.

## **Receiver Settings.**

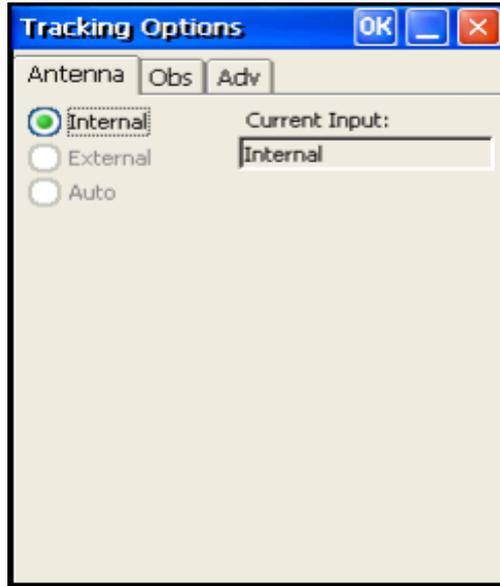


. 3-11.

8.

**Tracking**

. 3-12.



. 3-12.

9.

*Observation*

*Elevation mask*

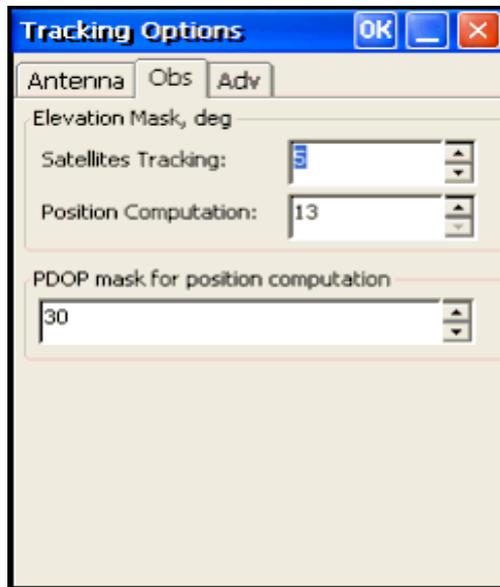
15

. 3-13,

*PDOP*,

**OK.**

*PDOP mask*



. 3-13.

---

10. **OK** *Advanced.* . 3-14 . 3-15.

- *Anti-jamming* –

GPS, GLONASS, L1, L2.

- *C/A code multipath reduction* –

- *C/A carrier phase multipath reduction* –

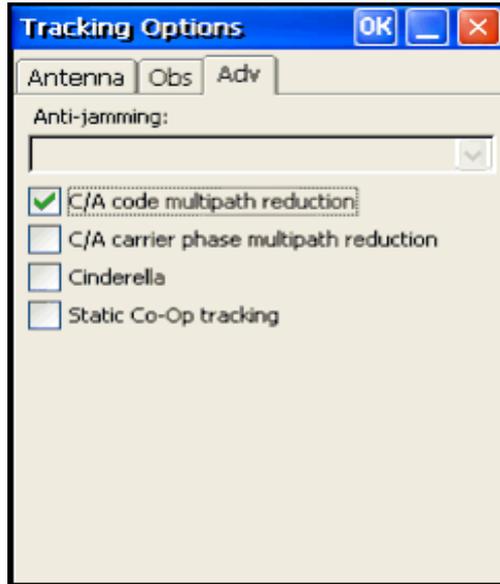
- *Cinderella* –  
Cinderella,

24

GPS.

- *Static Co-Op tracking* –

“ - ”.



. 3-14.

11.

**Seed**

**Auto**

. 3-15

. 3-16,

**OK.**

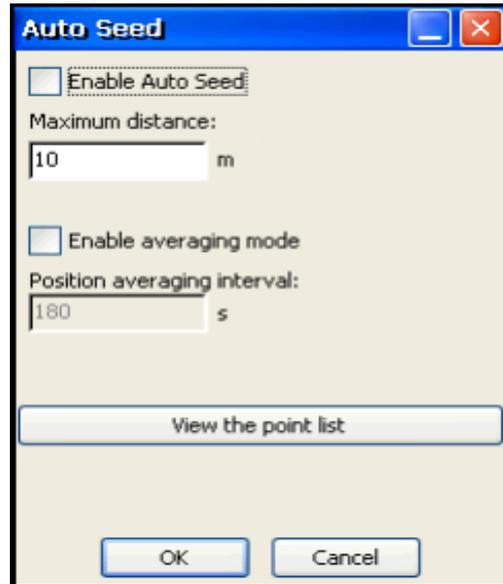
- *Enable Auto Seed*

RTK

- *Maximum distance:*

- *Enable averaging mode:*

Position averaging interval.



. 3-15.

**View the point list,**

*GRX Utility.*

12.

**Positioning,**

**OK**

. 3-16

. 3-17.

- *Positioning Mode* – Standalone; RTK  
RTK float RTK fixed.

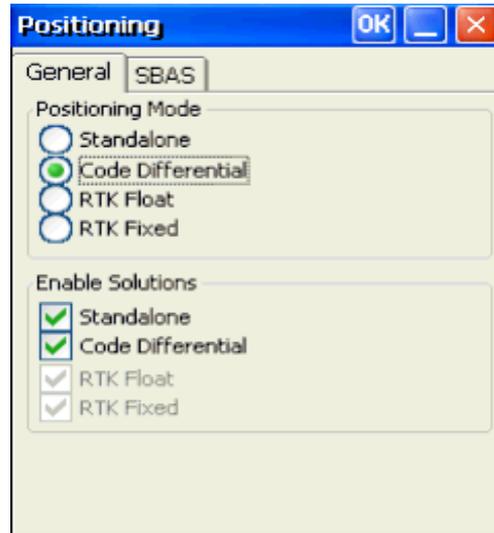
- *Enable Solutions* –

– Standalone – 3D

– Code differential –

– RTK float –

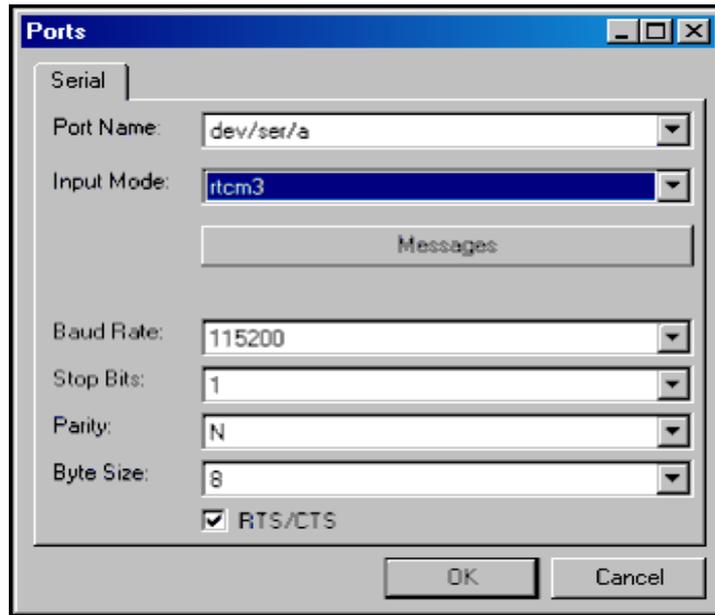
– RTK fixed –



. 3-16.

13. RTK

Ports,  
OK . 3-17 . 3-18.



. 3-17.



14.

OK.

GRX Utility  
NVRAM.

15.

*GRX Utility.*

RTK

Status

. 3-18

3-19,

10-30  
Spread Spectrum

60

GSM

Data Link

%;

- ;
- 
- 

Link Quality  
100%.



Status	
Position	Data Link
Data Link	1
Data Link Identifier	ser/d
Decoder	RTCM 3.0
Ref Station	0000
Link Quality	100%
DLink Delay	1
Received Messages	380
Corrupt Messages	0

. 3-18. Status - Data Link

16.

Device Disconnect, Device Exit,  
GRX Utility.



Sokkia  
Spectrum Survey Field.  
Spectrum Survey Field  
Spectrum Survey Field.





# GRX2

GPS

. 2-14.

**1:**

RTK



. 4-1.



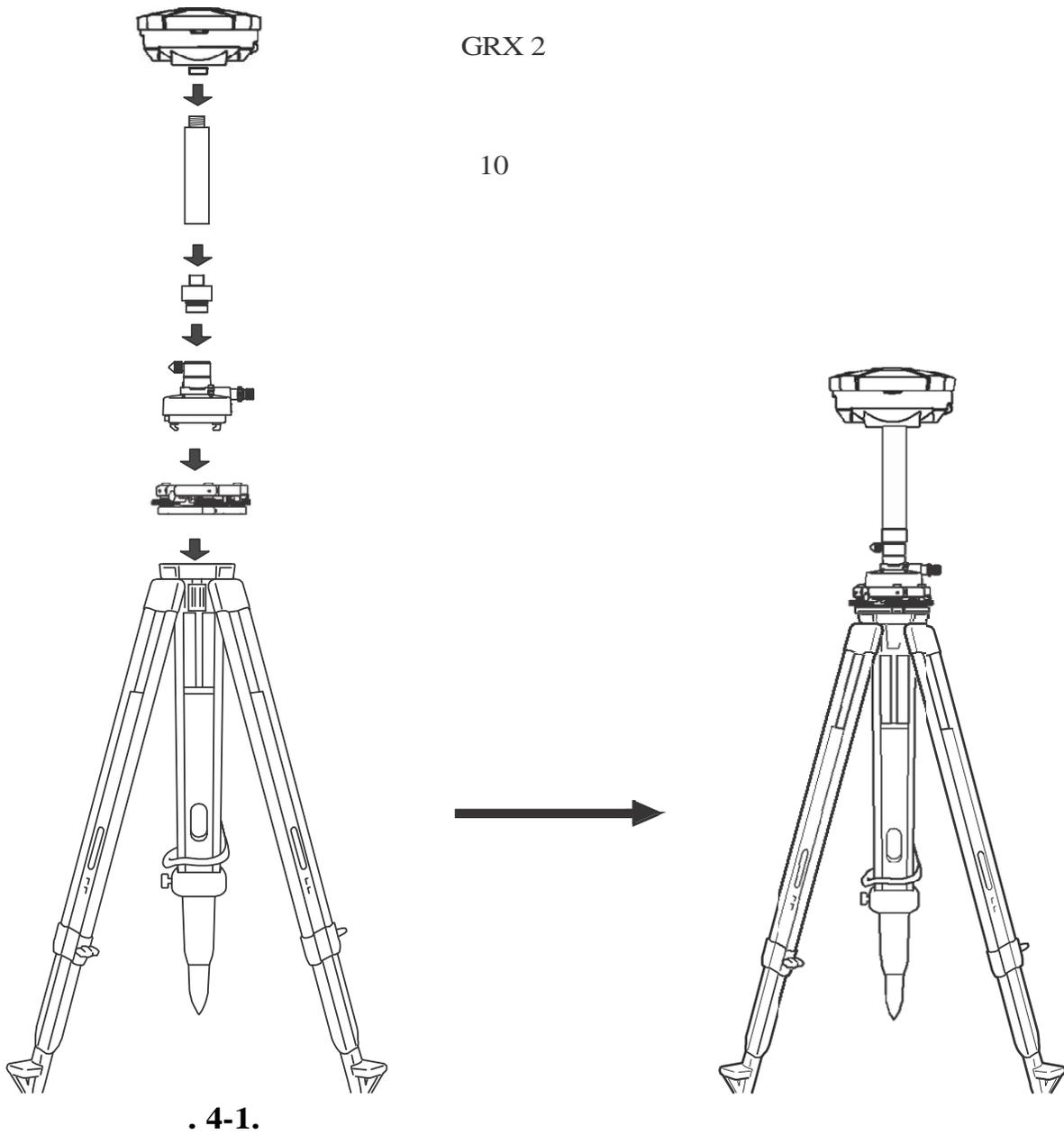
. 4-3.

. 4-1:

1.

- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

10 GRX2.



. 4-2

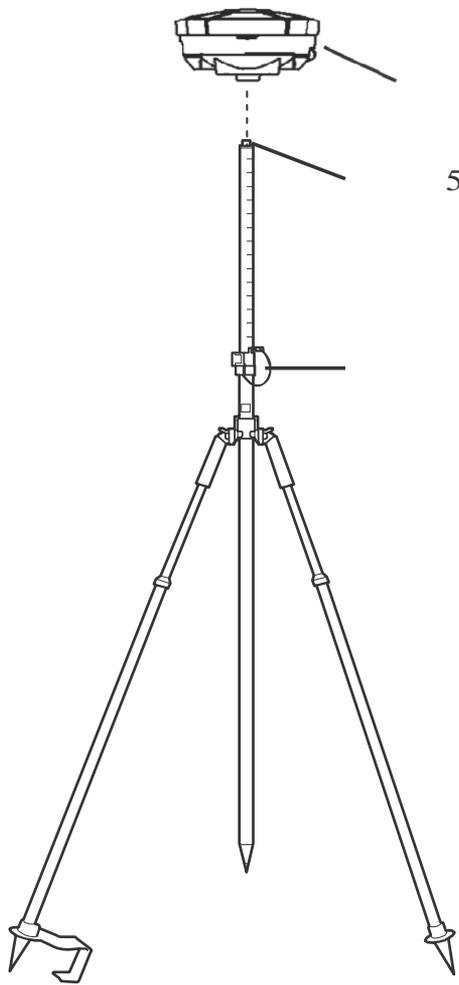
. 4-3:



1.

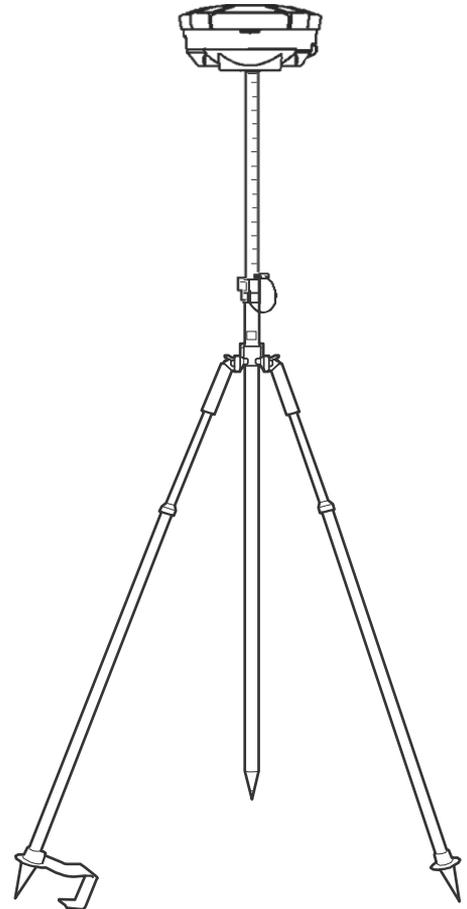
5/8

GRX2



GRX2

5/8



. 4-2.

GRX2

2:

3D

- 
- 
- 
- 
- 
- 
- 
- 

“ ” GPS/

“ ”

GPS/

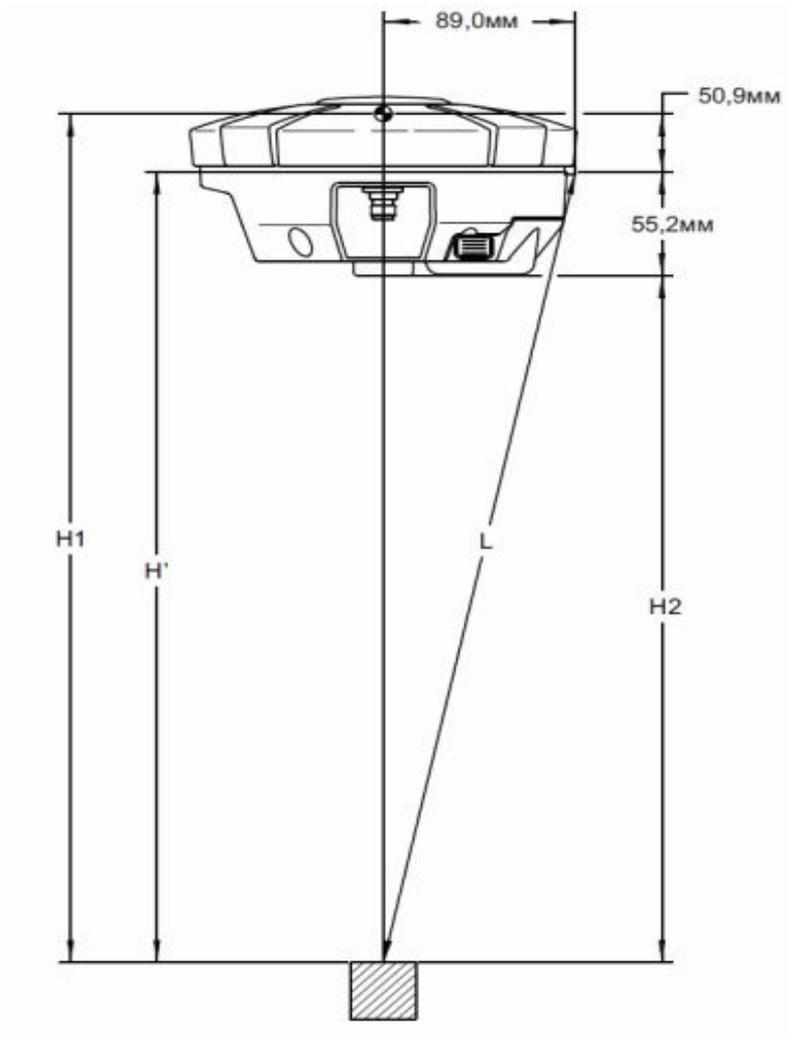
“ ”

1.

. 4-3

. 4-5.

2.



. 4-3.

- L:

- H':

- $H' = \sqrt{L^2 - (89)^2}$

- H1:

$$H1 = H' + 50,9$$

- H2:

$$= H' - 55,2$$

H2

. 4-1.

	L1	L2
	106,1	102,3

- 
- 
- 
- 

DOP

5 -30









Bluetooth, GPS, Sokkia

# GRX Utility

GRX Utility

1. GRX Utility. "2-9.

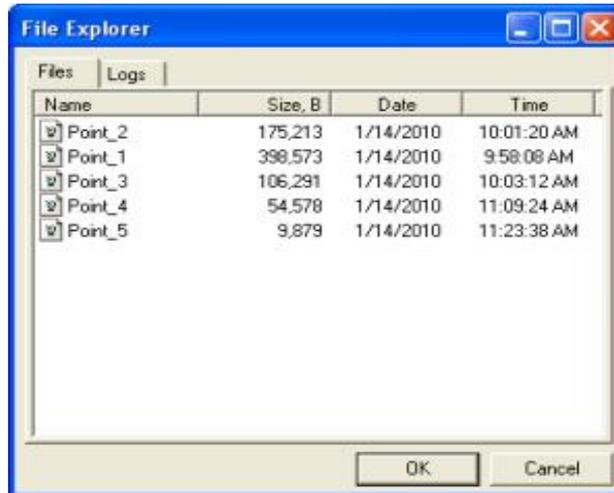


2.



*File Explorer,*

. 5-1.



. 5-1. File Explorer

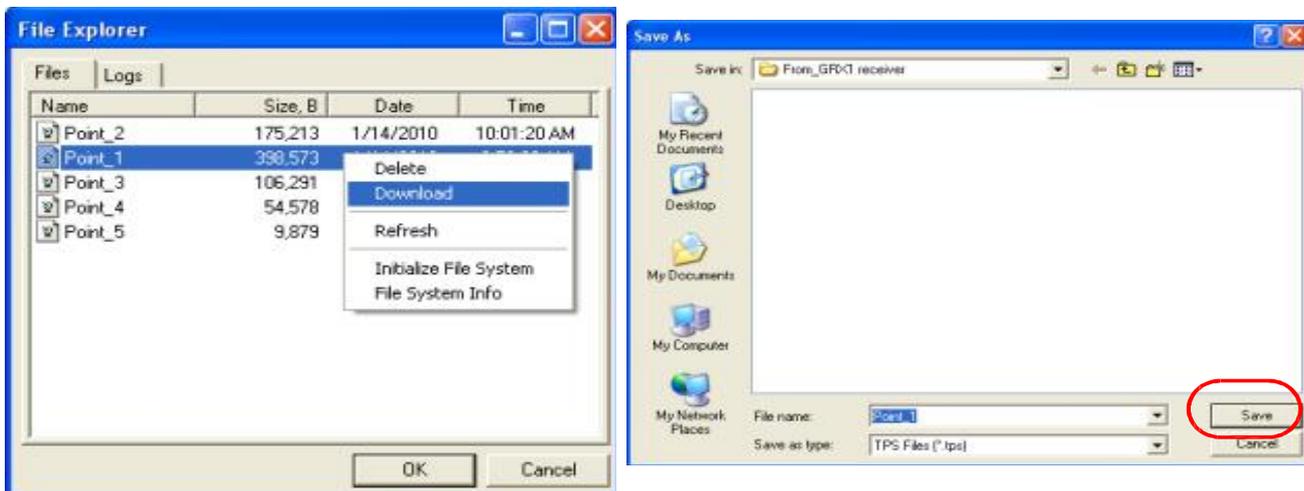
3.

*Download.*

*Save As*

. 5-2.

*Save,*



. 5-2.



4.

*Downloading,*



. 5-3.

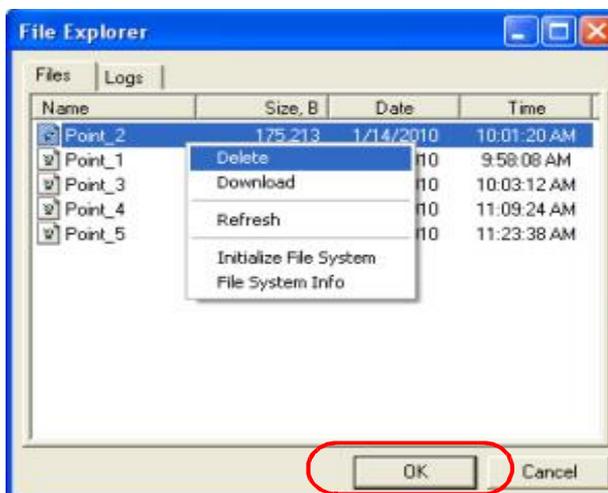
## GRX Utility

1 2,  
. 5-1.

*File Explorer*

*Delete.*

**Yes.**



. 5-4.



---

SD/SDHC 20-25 , . 1-2 , . 1-14.

- SS –

- N –

L1:

$$SS = 183 + 22 * N$$

L1 L2:

$$SS = 230 + 44 * N$$

- L1, L1/L2 . . ;

- ;
  - /
- Sokkia

### GRX Utility.

1. GRX Utility. “ 2-9.

- 2.



### *Receiver Options,*

 A screenshot of the "Receiver Options" software window. It features a table with columns for "Option Name", "Current", "Purch...", "Leased", and "Exp. Date". The "Upload OAF" button at the bottom is circled in red.
 

Option Name	Current	Purch...	Leased	Exp. Date
GPS	Yes	No	Yes	1/14/2010
Glonass	Yes	No	Yes	1/14/2010
L1	Yes	No	Yes	1/14/2010
L2	Yes	No	Yes	1/14/2010
Cinderella	Yes	No	Yes	1/14/2010
Position Update Rate, Hz	100	Disabled	100	1/14/2010
Raw Data Update Rate, Hz	100	Disabled	100	1/14/2010
Code Differential Base	Yes	No	Yes	1/14/2010
Code Differential Rover	Yes	No	Yes	1/14/2010
RTK Base	Yes	No	Yes	1/14/2010
RTK Rover, Hz	100	Disabled	100	1/14/2010
Memory, MB	Not supported	0	6,144	1/14/2010
Co-op Tracking	Yes	No	Yes	1/14/2010
1-PPS Timing Signal	Double	No	Double	1/14/2010
Event Markers	Single	No	Single	1/14/2010
In-Band Int. Rejection	Not supported	Disabled	Enabled Outside USA	1/14/2010
Multinath Positioning	Yes	No	Yes	1/14/2010

. 5-5.

Sokkia.

Sokkia: options@sokkia.com

1.

1 2,

“ ” . 5-5.

2.

**Upload OAF**

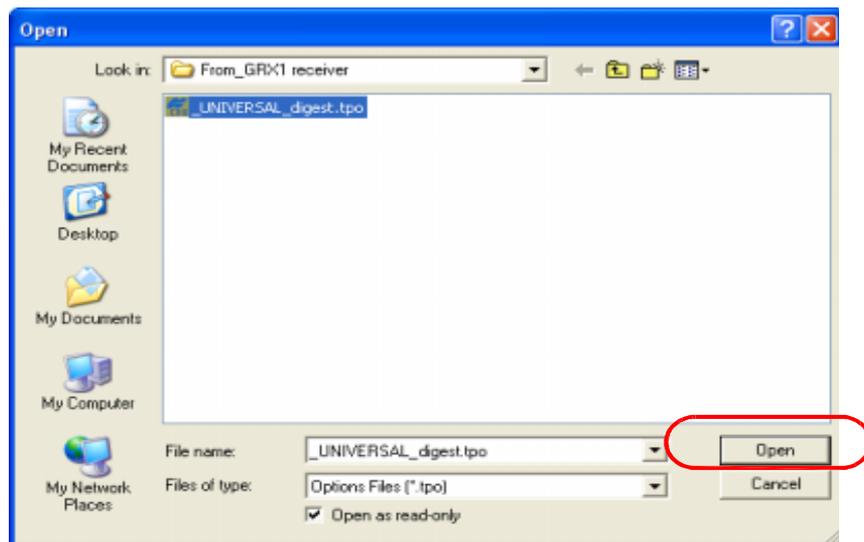
*Receiver*

*Options*

. 5-5.

3.

**Open** . 5-6.



. 5-6.

4.

**GRX Utility**

ID

*Upload OAF*

*Upload the File to the Receiver*



. 5-7.

5. *File to the Receiver.*

*Upload the*

6.

GRX Utility

. 5-8.

**Yes.**



. 5-8.

?

- ramimage.ldr – RAM
- main.ldr – Flash

GRX,

1. GRX Utility. “ ” . 2-9.

- 2.



***Upload Firmware,***

3. *Device* “Receiver/modem”.
4. *Capture Method* “Soft Break”
5. RAM Flash



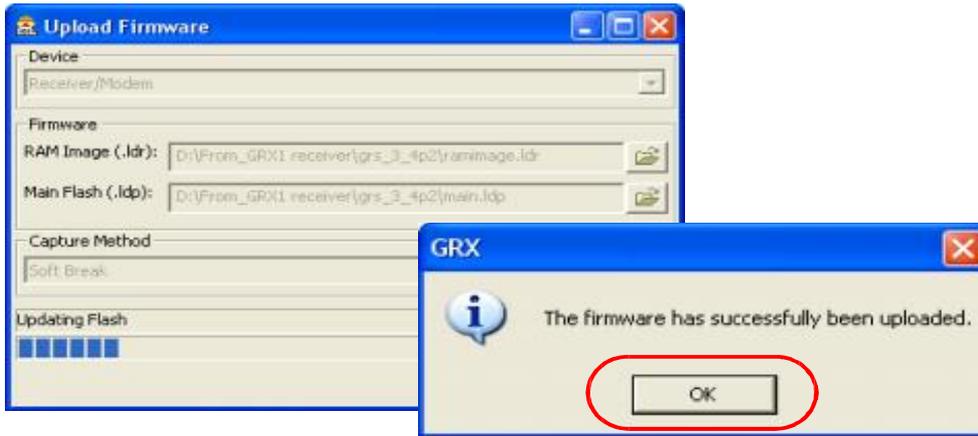
. 5-9.



- 6.
- 7.

Start.

OK.



. 5-10.

# NVRAM

NVRAM

NVRAM

NVRAM

NVRAM

NVRAM

NVRAM

15

NVRAM

# NVRAM

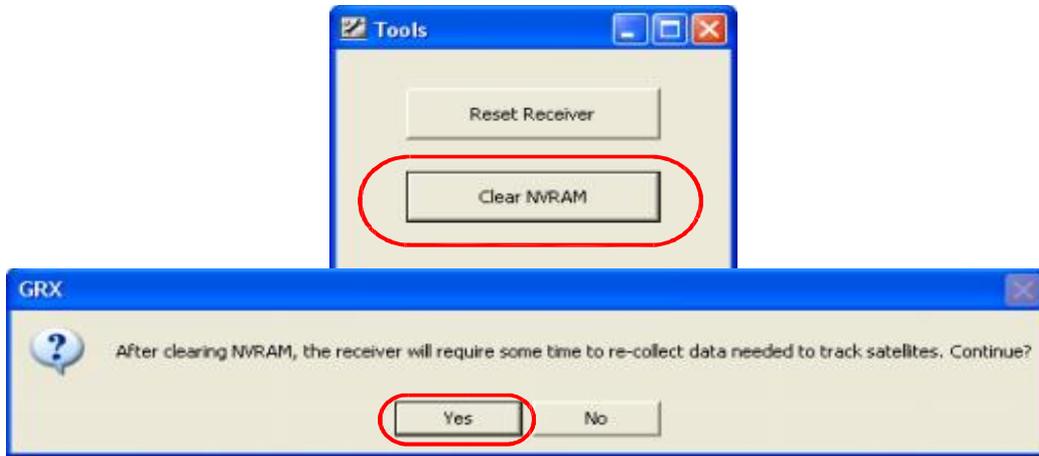
## GRX Utility

1. GRX Utility. “ . 2-9.

2.  Tools

*Tools,*

NVRAM



. 5-11. Tools

3. Clear NVRAM, Yes,



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GRX2.

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Sokkia,

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Sokkia.

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GRX Utility

**Tools    Reset receiver.**

•

GRX Utility

**Configuration    Receiver,**

**Set all parameters to defaults.**

- NVRAM . “ RAM Flash  
.” . 5-8.
- **Tools Initialize file**  
**system.**

SD/SDHC .

, :  
“ ,” . 6-3.  
, :  
“ ,” . 6-5.  
“ , ,” . 6-5.  
“ RTK,” . 6-6.  
“ ,” .  
. 6-8.

Bluetooth:

“ GRX Utility : Can't  
find receiver ,” . 6-9.  
“ GRX Utility : Open  
COM# port failed: Access is denied  
#: ,” . 6-10.  
“ GRX Utility : Open  
COM# port failed: Access is denied  
#: ,” . 6-10.  
“ ,” . 6-11.

“ Bluetooth

Bluetooth

,” . 6-11.

, :  
“GRX Utility ,” .  
. 6-12.

- “ ”.
1. GRX Utility . 2-9.
  2. **Configuration Receiver.**
  3. **General Power**  
**Charger.** “Auto”.  
Auto  
**Apply.**



NVRAM

RAM

Flash

“ ” . 5-8 .



- , .
- .



- / “ ” . 2-5.

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” . 2-5.

“



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Sokkia.

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,  
GRX2.

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“ GRX2” . 1-10 “  
” . A-12.



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- 1. **GRX Utility.**
  - 2. **Configuration Receiver Ports.**
  - 3. *Input*
- “Command”.



” . 2-14.



L1/L2, GPS/GLONASS

- “ ” . 5-4.
- 
- **Sokkia**
- *GRX Utility.*



...



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• , -

1.

GRX Utility. “

” . 2-9.

2.

**Configuration Advanced**  
*Multipath Reduction.*

**Apply.**

• , .

**RTK**



GRX Utility ,



• , .

3.

• , . 3.



• , .

“ ” . 5-4.

• , .

Sokkia

• .

*GRX Utility.*



- “ ” . 2-14.



1. GRX Utility. “ ” . 2-9.
2. **Configuration Advanced Ports.**



PDOP/GDOP

PDOP.



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Sokkia









- / ,
- “ ” .5-1 “ GRX Utility” .5-3.

## Bluetooth

Bluetooth,

GRX2.

**GRX Utility** : **Can't find receiver**



COM

GRX Utility.

RS232

GRX Utility.

.2-11.



- 1. cmd.
- 2-9

GRX Utility.

2. Configuration Receiver Ports.

3. Input "Command".



GRX Utility



D

- D : 115200 baud rate, 8 data bits, 1 stop bit, no parity, no handshaking.
- D RTS/CTS handshaking



D.

- " .5-4.
- Sokkia
- GRX Utility.

GRX Utility

: Open

COM# port failed: Access is denied

#:



- 
- 



- 
- 
- 
- 

“PWR”.

Sokkia



2C

- 1.
- 2.
- 3.

RS232

“

RS232”

. 2-10.

**Configuration Receiver General.**

*Turn on/off Slots*

Slot 2C .

**Bluetooth**

**Bluetooth**



- 
- 

Bluetooth

Bluetooth

. 2-11.



Bluetooth.

1. Bluetooth, Bluetooth manager.
2. Bluetooth.

## GRX Utility

' GRX Utility.

### GRX Utility



- , -
- .
- ,
- Sokkia ,
- Bluetooth, ,
- Bluetooth.
- Bluetooth. /
- ,
- GRX2 - A.





• , “ ” .5-4.

• ,  
Sokkia



1. **Connection** **Cancel**  
**Connecting to device** **Stop.**
2. **GRX Utility** **Tools** **Options.**
3. , **Ok.**
4. **File** **Connect.**

,  
,  
Sokkia.  
“ ” -  
.6-1. , .

Sokkia

- 1-800-4-Sokkia 1-800-476-5542
- 1-866-4-Topcon 1-866-486-7266

. 6-1.

. 6-1.

	...
	support@topcon.com
	support@topcon.com
OAF	support@topcon.com
RTK	support@topcon.com
GRX Utility	support@topcon.com
...	support@topcon.com
“ ”	service@gsi.ru



1. GRX Utility Help About  
Save to file.

2. GRX Utility, ...

---

3.

/

4.

5.

24

Sokkia

Sokkia.

Sokkia: <http://www.sokkia.com>

“ ”: <http://www.gsi.ru>



Bluetooth

GSM

),

Sokkia Topcon

SD/SDHC.

226-

NOTICE

15

6

NOTICE

PDOP

NOTICE



GRX2

. A-1

. A-1.

	Sokkia Sokkia
	184 95
	1,10
	, /
	5/8-11,
	: /

. A-1.

	22
	-20 +65°C ; -40 +65°C ;
	-45°C +70°C
	100%
	IP67
	BDC58, - , 4300 / 7,2
	195
	2,5
	7,5 20°C / Bluetooth /
	1
	6 18 .

**. A-1.**

	4
	CDC68
	NVRAM
	10
<b>/</b>	
	Bluetooth V2.1 x 2- ) RS-232C x 1
	COM1: 4800 115200 RS 115200 ) Bluetooth: 115200 SPP / Single Channel
	BNC TNC , RS232C
<b>NMEA</b>	
NMEA	2.1, 2.2, 2.3, 3.0
	GGA, GLL, GNS, GRS, GSA, GST, GSV, HDT, RMC, VTG, ZDA, ROT, GMP
	1 , 5 , 10 , 20
<b>DGPS</b>	
	RTCM SC104 Ver 2.1, 2.2, 2.3, 3.0, 3.1
RTCM	1, 3, 9, 31, 32, 34;
	10 ; 20 , 50 100
RTCM	10 ; 20 , 50 100
	0 90

. A-1.

RTK	
	CMR2/CMR+, RTCM SC104 Ver 2.2, 2.3, 3.0 3.1
RTCM	3, 18, 19, 20, 21, 22;
	OTF L1, L1/L2
	50 32
	5 10
CMR/RTCM	1 ; 5, 10, 20
	0 90
	1 ; 5, 10, 20
	L1: 3 + 0.8ppm / 5 + 0.5ppm L1+L2: 3 +0.5ppm / 4 + 1ppm
	L1+L2: 3 + 0.5ppm / 5 + 0.5ppm
	L1+L2: 10 + 1ppm /15 + 1ppm
RTK	L1+L2: 10 +1ppm / 15 + 1ppm
DGPS	<0,5
“ ”	<40
“ ”	<20
	<1

# GPS

. A-2

GPS

. A-2.

GPS

GRX2	: G: GPS L1 GD: GPS L1/L2 GG:GPS/GLONASS L1 GGD: GPS/GLONASS L1/L2
/	: FH915 + TX/RX FH915 + TXUHF + GSM  + GSM + CDMA
	226 G, GG, GD, GGD L1 GPS, L1/L2 GPS, L1 , L1 GPS + L1 , WAAS/EGNOS,
	GPS/GLONASS, L1/L2 C/A , WAAS/EGNOS/MSAS/QZSS
/	:
-	/ , , ,
o-op tracking	
WAAS/EGNOS/ MSAS	



. A-2.

**GPS**

	TPS, NMEA, RTCM, CMR
	20 RTK 10 RTCM SC104 RTCM 0,1 2.1, 2.2, 2.3, 3.0, 3.1 I/O. RAI M CMR CMR+.
SD/SDHC	
	SD/SDHC
	0,05 86400 ,

Cinderella,  
GPS

**GPS**

24

Cinderella  
Sokkia.

**Bluetooth**

. A-3

Bluetooth.

. A-3.

**Bluetooth**

	10 , 50
	1
	SPP

. A-3.

Bluetooth

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Spectrum

Spread

. -4

. A-4.

Spread Spectrum

/	902 - 928 M 915 - 925
	, FHSS
	5 ,
	128
	100
	FSK, 64
	135
	- , -
	, ,
	FH915, FH915+
<b>TX)</b>	
	250 24d Bm / 1 30dBm ,
<b>R X</b>	
	-105 dBm 10-4 BER
	105 dBm

. A-4.

**Spread Spectrum**

	RS232
	9600, 19200, 38400, 57600 ,
	9600, 10200, 17000, 51000 . FH915; FH915+
	FEC 15,7),
	TNC,
	2,5 dBi

**GRX2**

. A-5

. A-5. {

**GRX2**

/ /	410-470
	GMSK, DBPSK DQPSK
	12,5 /25
25	<ul style="list-style-type: none"> <li>• GMSK/DBPSK – 9600</li> <li>• DQPSK – 19200</li> </ul>
12,5	<ul style="list-style-type: none"> <li>• GMSK/DBPSK – 4800</li> <li>• DBPSK – 9600</li> </ul>
	115200

. A-5. {

GRX2


## GSM/GPRS

. A-6

GSM/GPRS,

. A-6.

GMS/GPRS

	EGSM:900/1800
	0,6 850 ; 2 900 ; 1 1800/1900
GPRS	8; 85,6 ; B GSM 07.10 ; CS1-CS4;
CSD	14,4 ;
SMS	MO/MT Text PDU; ;

# BDC58

. A-7

BDC58.

. A-7.

	7,2
	4,3A
	38 x 70 x 40
	195

# CDC68

. A-8

CDC68.

. A-8.

:	100 - 240
25°C):	4 25°C,
:	0 40°C
:	-20 65°C
	94 102 36
	170

GRX2

3

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. A-9,

. A-10

. A-12

. A-11

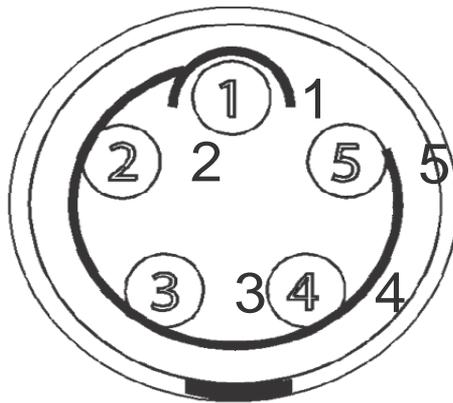
. A-13

. A-9.

			.	
	BNC	I/O	I/O	RF/GSM
FH915/915+	TNC,	I/O	I/O	RF/GSM

- 5-

. A-1 .



. A-1.

. A-10

. A-10.

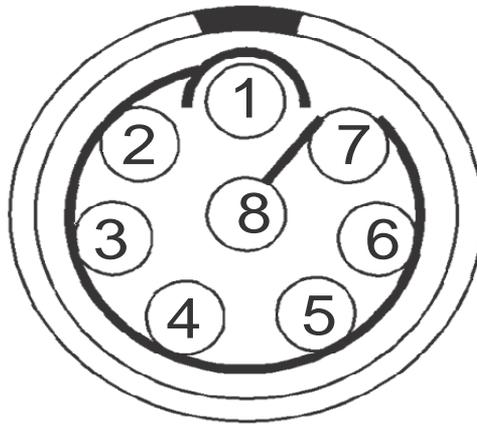
		.	
1	Power_GND	P	,
2	Power_INP	P	
3			

. A-10.

		.	
4			
5			

## C-RS232

RS232 - 8- -  
. A-2.



. A-2.

RS232

. A-11

. A-11.

RS232

		.	
1			
2	RXD		
3	TXD		
4	GND	I/O	
5	GND	I/O	
6			
7	RTS		
8	CTS		





25 .



## Sokkia

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Sokkia



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100° .



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Sokkia.



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Sokkia.

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NOTICE

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RTK

1.

RTK

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2.

- , :
- / -
- Sokkia,

**FCC**

FCC

FCC

OET65.

15

20  
FCC.

1.

2.

FCC.

15

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- 
- 
- 





: GRX2

	Sokkia
	Topcon Positioning Systems, Inc.
	7400 National Drive, Livermore, CA 94550
	+925-245-8300

RSS-102

1.

: 1

2

2.

3.

B

2,4 .

2,4 .

- 50 .

GRX2/U 2.4dBi /

410-440MHz ANTENEX/G420BN 440-470MHz

CENTURION/EVR450

GRX Utility

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**1999/5/EC**

1999/5/EEC

- EN 301 489-1 V1.8.1 2008-04
- EN 301 489-5 V1.3.1 2002-08
- EN 301 489-17 V1.3.2 2008-04
- EN 300 328 V1.7.1 2006-10
- EN 300 113-2 v1.4.1 2007-07
- EN 62311:2008
- EN 60950-1:2001 + A11:2004



# WEEE)

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Архангельск (8182)63-90-72

Астана +7(7172)727-132

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Владивосток (423)249-28-31

Волгоград (844)278-03-48

Вологда (8172)26-41-59

Воронеж (473)204-51-73

Екатеринбург (343)384-55-89

Иваново (4932)77-34-06

Ижевск (3412)26-03-58

Казань (843)206-01-48

Калининград (4012)72-03-81

Калуга (4842)92-23-67

Кемерово (3842)65-04-62

Киров (8332)68-02-04

Краснодар (861)203-40-90

Красноярск (391)204-63-61

Курск (4712)77-13-04

Липецк (4742)52-20-81

Магнитогорск (3519)55-03-13

Москва (495)268-04-70

Мурманск (8152)59-64-93

Набережные Челны (8552)20-53-41

Нижний Новгород (831)429-08-12

Новокузнецк (3843)20-46-81

Новосибирск (383)227-86-73

Орел (4862)44-53-42

Оренбург (3532)37-68-04

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Самара (846)206-03-16

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Смоленск (4812)29-41-54

Сочи (862)225-72-31

Ставрополь (8652)20-65-13

Тверь (4822)63-31-35

Томск (3822)98-41-53

Тула (4872)74-02-29

Тюмень (3452)66-21-18

Ульяновск (8422)24-23-59

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