

Pre-survey Preparation

Before beginning to survey with the GRX1 receiver, the following software needs to be installed and configurations need to be applied:

- Install receiver configuration software See "Installing Sokkia Topcon Software" on page 2-2.
- Optional: install SD card and/or SIM card See "Installing the Optional SD and SIM Cards" on page 2-7.
- Charge the batteries See "Charging the Batteries" on page 2-9.
- Enable power source settings (either attached or external) See "Power Management" on page 2-11 and "Power-ing the Receiver" on page 2-14.
- Configure the Bluetooth wireless technology module See "Bluetooth Module Configuration" on page 2-23.
- Collect almanacs and ephemerides (after first-time configuration activities as described in Chapter 3) See "Collecting Almanacs and Ephemerides" on page 2-26.

This chapter also discusses connecting batteries to the receiver, connecting the receiver and a computer, and powering the receiver using different sources.

Installing Sokkia Topcon Software

The Sokkia Topcon GPS+ CD includes the following software programs used for configuring and maintaining the receiver. This software is also available on the Sokkia Topcon website to registered users.

- PC-CDU Lite ver. 2.1.15 or newer
- Modem-TPS ver. 2.2p2 or newer
- BTCONF ver. 1.3 or newer
- FLoader ver 1.0.07 or newer

If installing the program (s) from the GPS+ CD, insert the CD into the computer's CD-ROM drive.

If downloading the program (s) from the website, extract the program's files into a folder on the hard drive.

The following sections describe installing this software, and other sections throughout the manual describe using this software with the receiver.

Installing PC-CDU

PC-CDU is a comprehensive Windows software product designed for controlling GPS+ receivers developed by Sokkia Topcon. **PC-CDU** uses the GPS Receiver Interface Language (GRIL) to configure various receiver settings and diagnose receiver performance.

The PC-CDU software exists in two versions: a full-functionality version called PC-CDU MS and a reduced-functionality version called PC-CDU Lite. PC-CDU Lite is available for free on the Sokkia Topcon website (www.sokkia.co.jp) or the GPS+ CD.

Computer requirements for PC-CDU are: Windows98 or newer and an RS-232C or Bluetooth capable. Use PC-CDU version 2.1.15 or newer to correctly configure the receiver.



Refer to the **PC-CDU** Reference Manual for full details on installing and using **PC-CDU**.

To Install **PC-CDU**:

1. Create a **PC-CDU** folder on the hard drive, and place the compressed **PC-CDU** zip file (retrieved from either the website or the GPS+ CD) in this folder.
2. Navigate to the PC-CDU folder, and double-click the PC-CDU_MS zip file.
3. Extract the **PCCDU.EXE** and associated *.dll file to the **PC-CDU** folder (Figure 2-1).
4. Optionally, create a shortcut on the computer's desktop for quick access to **PC-CDU** (Figure 2-1).

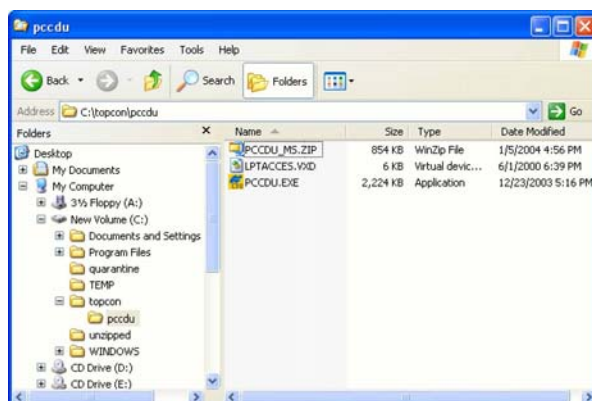


Figure 2-1. Extract Program and Create Shortcut

To uninstall **PC-CDU**, navigate to the location of the *.exe file. Select the file, and press Delete.

Installing Modem-TPS

Modem-TPS is a configuration program for the radio modem board inside the receiver.

Modem-TPS is available from the Sokkia Topcon website (www.sokkia.co.jp) or on the GPS+ CD.

Computer requirements for **Modem-TPS** are: Windows98 or newer and an RS-232C port or Bluetooth wireless technology. Use **Modem-TPS** version 2.2p2 or newer to correctly configure the receiver.

To install **Modem-TPS**:

1. Navigate to the location of the **Modem-TPS** program, and double-click the Setup.exe icon.
2. Keep the default installation location or select a new location. Click Finish (Figure 2-2).

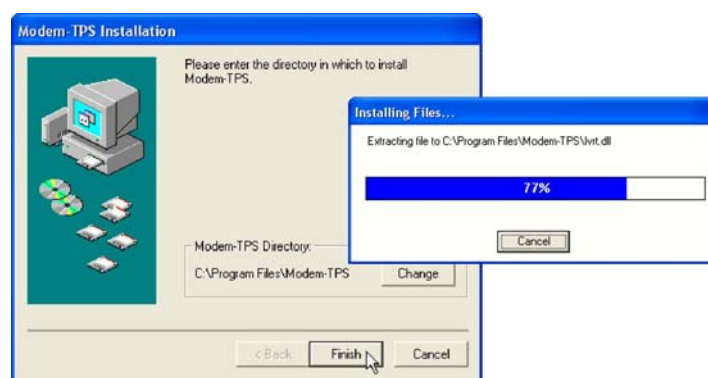


Figure 2-2. Select **Modem-TPS** Installation Location and Install

3. Click OK to complete the installation (Figure 2-3).
4. Optionally, create a shortcut on the computer's desktop for quick access to **Modem-TPS** (Figure 2-3)

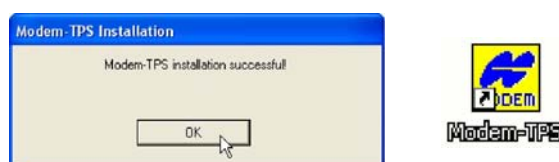


Figure 2-3. Installation Complete and Shortcut

To uninstall **Modem-TPS**, use the Start menu on the computer:

1. Click Start Programs **Modem-TPS UninstallModem-TPS**, and click Yes at the prompt.
2. Click OK when the uninstall completes.

Installing **BTCONF**

BTCONF is a configuration program for the Bluetooth wireless technology module inside the receiver. **BTCONF** is available from the Sokkia Topcon website (www.sokkia.co.jp) or on the GPS+ CD.

Computer requirements for **BTCONF** are: Windows98 or newer and an RS-232C port or

Bluetooth wireless technology. Use **BTCONF** version 1.3 or newer to correctly configure the receiver.

To install **BTCONF**:

1. Create a **BTCONF** folder on the hard drive, and place the compressed **BTCONF** zip file (retrieved from either the website or the GPS+ CD) in this folder.
2. Navigate to the **BTCONF** folder, and double-click the **BTCONF** zip file.
3. Extract the **btconf.exe** to the **BTCONF** folder.
4. Create a shortcut on the computer's desktop for quick access to **BTCONF** (Figure 2-4).

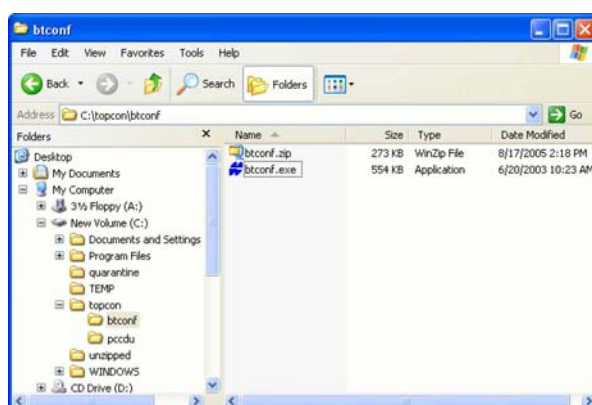


Figure 2-4. Extract Program and Create Shortcut

To uninstall **BTCONF**, navigate to the location of the *.exe file. Select the file, and press Delete.

Each time **BTCONF** runs and configures the Bluetooth module, **BTCONF** saves the settings in a file (**btconf.ini**). **BTCONF** automatically updates the file each time changes are made to the Bluetooth module's settings.



To maintain unique Bluetooth module settings for different purposes, keep copies of **BTCONF** in separate folders.

Installing **FLoader**

FLoader is a firmware loading program for the power board, GPS module, and modem board inside the receiver. **FLoader** is available from the Sokkia Topcon website (www.sokkia.co.jp) or on the GPS+ CD.

Computer requirements for **FLoader** are: Windows98 or newer and an RS-232C port or Bluetooth wireless technology. Use **FLoader** version 1.0.07 or newer to correctly configure the receiver.

To install **FLoader**:

1. Create an **FLoader** folder on the hard drive and place the compressed **FLoader** zip file (retrieved from either the website or the GPS+ CD) in this folder.
2. Navigate to the **FLoader** folder, and double-click the zip file.
3. Extract the FLoader.exe file to the **FLoader** folder (Figure 2-5).
4. Optionally, create a shortcut on the computer's desk-top for quick access to **FLoader** (Figure 2-5).

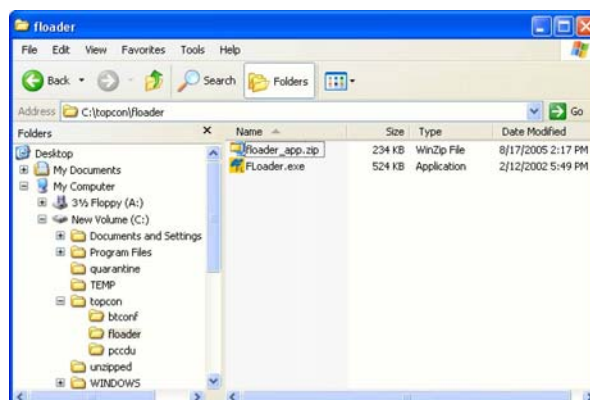


Figure 2-5. Extract Program and Create Shortcut

To uninstall **FLoader**, navigate to the location of the *.exe file, select the file, and press Delete

Installing the Optional SD and SIM Cards

Behind each detachable battery is a slot for the optional SD card or the optional SIM card. The SD card provides memory space in which to save logged data; the SIM card provides telephony communication for data transfer between two GSM-capable receivers. The SD card can be purchased at a local computer store; the SIM card can be purchased at a local cellular phone supply store. The receiver currently supports an SD card with up to 2GB (FAT16 format) capacity.

Once installed, the card (s) generally remains installed. The card can then be accessed via the receiver board using a data port or Bluetooth wireless technology.

To install the SD card (Figure 2-6):

1. Ensure the receiver is turned off.
2. Remove the battery.
3. Carefully insert the SD card, label side down, into the SD card slot located at the top of the battery pocket.

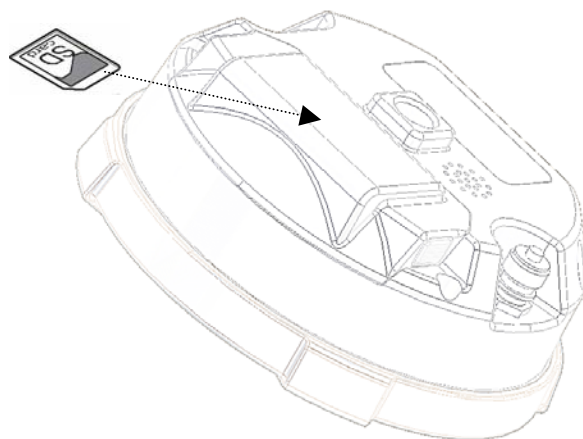


Figure 2-6. Install SD Card



Do not remove the card if the receiver is powered on. Damage to data may result from improper removal of the card.

Once the receiver is turned on, the receiver board will detect the SD card, and it will be ready to use as needed.

To install the SIM card (Figure 2-7):

The SIM card must support Circuit Switched Data to communicate directly between receivers. The SIM card must have GPRS or EDGE support to communicate with a GPS Network IP address.



For direct communication between Base and Rover receivers, you must install a SIM card with a Circuit Switch Data plan and have subscriptions to the same service provider for proper data communication.

1. Ensure the receiver is turned off.
2. Remove the battery.
3. If needed, snap the SIM card into its holder.
4. Carefully insert the holder, label side down, into the SIM card slot located at the top of the battery pocket.

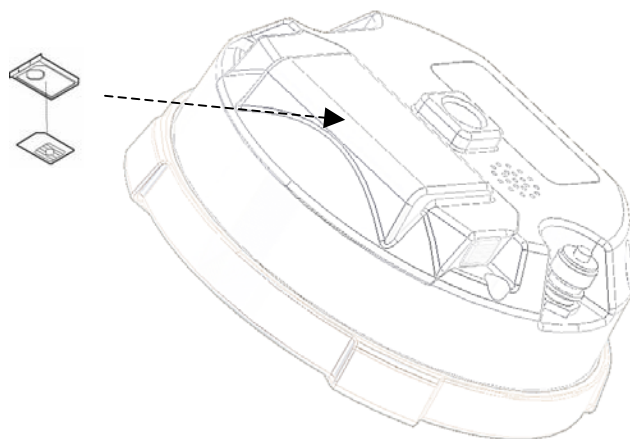


Figure 2-7. Install SIM Card

Once the receiver is turned on, the receiver board will detect the SIM card, and it will be ready to use as needed.

Charging the Batteries

To charge the battery, use the included charger. It takes approximately two hours to completely charge one battery, and **four** hours to charge two batteries.



The batteries are shipped from the factory without power. Fully charge the batteries before surveying.

The Li-Ion batteries used in the battery packs should run at no less than 80% capacity after 500 charging cycles. These batteries do not need to be drained before recharging.

Power Management

This chapter describes how to power your receiver. Before using the receiver for the first time, ensure that you have followed the setup instructions.

Powering the Receiver

The receiver's power button is used to switch the receiver on or off. However, the receiver will

also automatically turn on if it detects activity on COM1. If you turn off the receiver while it is logging data to the memory, it will save and close any open files before turning off. The receiver does not support the use of schedules.

As an alternative to using the internal battery (for example, if the internal battery is discharged), the receiver can also be powered using an external battery, following the recommendations in this section.



If the external power input exceeds 18 VDC, it may damage the receiver.

When the external battery is discharged, the receiver will automatically switch to using the internal battery. If the internal battery does not have sufficient charge (or is not present), the receiver will turn off.

The receiver draws a small amount of power from the batteries while the receiver is off. During long term storage, you should remove the battery.

If the internal battery and any external power input voltage are below minimum operating parameters (in other words, if the main battery is depleted, or external power is removed or insufficient), the receiver will initiate a power-down sequence. It will turn off and become inactive. If this happens, you will not be able to turn the receiver on until you restore sufficient power.

To return to normal operation, insert a charged battery or connect a valid external power input to the receiver. When sufficient power is restored, the receiver will turn on if the power button is pressed.



The receiver may also become inactive if the external power input is greater than the power specified as acceptable for the receiver.

Using the Detachable Batteries

The receiver uses one rechargeable lithium-ion battery. It also contains an internal backup battery, which maintains internal RTC. The backup battery is automatically charged from the main battery.

The battery is capable of running for more than 8 hours on a single charge. (static observation)

The battery compartment door provides access to the main battery. The receiver can also be powered using an external power source.

Remove or insert the battery

To remove the battery:

1. Please turn bottom to the top in GRX1.
2. Push battery knob of both sides, and please lift battery cover. It becomes easy to lift a battery cover when push the center of a battery cover lightly.
3. Please slide with battery sideways, and please separate battery from connector.
4. Please lift up battery.

