

USER GUIDE

Trimble® Pro Series Receivers

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Release Notice

This is the March 2012 release (Revision A) of the *Trimble Pro Series Receivers User Guide*. It applies to version 1.00 of the Trimble Pro series receiver (Pro 6H and Pro 6T receivers), model / 型号 : 98850.

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Subject to the terms and conditions set forth herein, Trimble Navigation Limited ("Trimble") warrants that for a period of (1) year from date of purchase this Trimble product (the "Product") will substantially conform to Trimble's publicly available specifications for the Product and that the hardware and any storage media components of the Product will be substantially free from defects in materials and workmanship.

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- your name, address, and telephone numbers;
- proof of purchase;
- a copy of this Trimble warranty
- a description of the nonconforming Product including the model number; and
- an explanation of the problem.

The customer service representative may need additional information from you depending on the nature of the problem.

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Official Language

THE OFFICIAL LANGUAGE OF THESE TERMS AND CONDITIONS IS ENGLISH. IN THE EVENT OF A CONFLICT BETWEEN ENGLISH AND OTHER LANGUAGE VERSIONS, THE ENGLISH LANGUAGE SHALL CONTROL.

Notices

Class B statement- Notice to users This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions may cause harmful interference to radio communication.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes and modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under Federal Communications Commission rules.

The radios in this device have been designed and manufactured to not exceed stipulated emission limits for exposure to radio frequency (RF) energy as required by the Federal Communications Commission of the U.S. Government 47 C.F.R. § 2.1091 and 2.1093.

The external antenna connector provided in this device is for GNSS antennas only.

Canada

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de Classe B prescrites dans le règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

Antenna Statement

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

Licence exempt

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) this device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Europe

This product has been tested and found to comply with all requirements for CE Marking and sale within the European Economic Area (EEA). It is classified and marked as being Class 2 Radio Equipment under 2000/299/EC, as Bluetooth and wireless LAN approvals are country specific. Please consult your local distributor for more information.



EU – Restrictions for Use in the 2.4GHz band

This device may be operated indoors or outdoors in all countries of the European Community using the 2.4GHz band, except where noted below.

- In Norway, this unit may not be operated within 20 km of Ny Alesund

The Trimble Pro series has Bluetooth approval in most EU countries and satisfies the requirements for Radio and Telecommunication Terminal Equipment specified by European Council Directive 1999/5/EC. These requirements provide reasonable protection against harmful interference when the equipment is operated appropriately in a residential or commercial environment.

A copy of the CE Declaration of Conformity for the Trimble Pro series can be accessed from <http://www.trimble.com/support.shtml>.

Australia and New Zealand

This product conforms with the regulatory requirements of the Australian Communications Authority (ACA) EMC and Radiocommunications framework, thus satisfying the requirements for C-Tick Marking and sale within Australia and New Zealand.



Taiwan – Battery Recycling Requirements

The product contains an internal Lithium-ion battery. Taiwanese regulations require that waste batteries are recycled.



廢電池請回收

Japan

This device has been granted two designation numbers by Ministry of Internal Affairs and Communications: according:

Ordinance concerning Technical Regulations Conformity Certification etc. of Specified Radio Equipment (特定無線設備の技術基準適合証明等に関する規則)

Article 2 clause 1 item 19

Approval nos: 202WWSM11569471 and T: D 11-0025 202.

This device should not be modified (otherwise the granted designation numbers will be invalid).

Korean Communications Commission (KCC)

This product conforms with the regulatory requirements of the Korean Communications Commission (KCC), thus satisfying the requirements for KCC Marking and sale within Korea.

방송통신위원

이 제품은 한국 방송통신위원회 (KCC) 의 규제요건에 부합하므로 KCC 마크 표시 및 한국내 판매 요건을 충족합니다

1. 인증받은자의 상호 : Trimble Navigation Ltd.
2. 모델명 :98850
3. 제조사 : Flextronics
4. 송신주파수 :B/T 2402~2480 MHz
5. 수신주파수 :B/T 2402~2480 MHz
6. 출력 : B/T 0.02 mW
7. 사용자 안내문구
8. 당해무선설비기기는 운용중 전파혼신 가능성이 있으므로 인명안

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Notice to Our European Union Customers

For product recycling instructions and more information, please go to www.trimble.com/ev.shtml.

Recycling in Europe: To recycle Trimble WEEE (Waste Electrical and Electronic Equipment, products that run on electrical power), Call +31 497 53 24 30, and ask for the "WEEE Associate". Or, mail a request for recycling instructions to:



Trimble Europe BV
c/o Menlo Worldwide Logistics
Meerheide 45
5521 DZ Eersel, NL

Safety

Before you use the Trimble® Pro series receiver, ensure that you have read and understood all safety requirements.



WARNING – This alert warns of a potential hazard which, if not avoided, could result in severe injury or even death.



CAUTION – This alert warns of a potential hazard or unsafe practice that could result in minor injury or property damage or irretrievable data loss.

Note – An absence of specific alerts does not mean that there are no safety risks involved.

Bluetooth radio use

The Pro series receiver is shipped with Bluetooth® wireless technology activated. To prevent the receiver from emitting radio signals, turn off the receiver.

Note – You may need to deactivate the Bluetooth radio in the receiver if the country in which you are working does not approve the use of Bluetooth wireless technology. If you are unsure about whether the Pro series receiver's radios are approved for use in your country, check with your Trimble reseller.

Use the Radio Activation Manager software to deactivate the Bluetooth radio, or to reactivate the radio if it has have been deactivated. For more information, see [Deactivating and reactivating the Bluetooth radio, page 15](#).

Exposure to radio frequency radiation from Bluetooth transmitters

This device is approved as a portable device with respect to Radio Frequency (RF) exposure compliance. The radiated output power of the internal wireless radio transmitters is less than 100 milliwatt, which results in exposure levels far below the FCC radio frequency exposure limits, even when operated in close proximity to the body. The internal wireless radios operate within guidelines found in international radio frequency safety standards and recommendations, which reflect the consensus of the international scientific community. Trimble therefore believes the internal wireless radios are safe for use by users. The level of electromagnetic energy emitted is hundreds of times lower than the electromagnetic energy emitted by wireless devices such as mobile phones. However, the use of wireless radios may be restricted in some situations or environments, such as on aircraft. If you are unsure of restrictions, you are encouraged to ask for authorization before turning on the wireless radios.

Introduction

The *Pro Series Receivers User Guide* describes how to use a Trimble® Pro series Pro 6H receiver or a Pro series Pro 6T receiver.

The Pro series receivers are high-performance GNSS receivers. They have an integrated antenna and receiver, a user-removable battery, and Bluetooth® wireless technology for connectivity with field computers.

Both the Pro 6H and Pro 6T receivers are compatible with Trimble Floodlight™ satellite shadow reduction technology for improved productivity in conditions where sky view is obstructed by buildings, trees, or landscape features.

The Floodlight satellite shadow reduction technology is provided as standard with the Pro 6H receiver. For the Pro 6T receiver, you will need to purchase the Floodlight satellite shadow reduction technology option. For more information, see [Additional receiver options, page 15](#).

What's in the box?

When you receive a Pro series receiver, check that you have received all the components. The standard components are:

- Pro series receiver
- AC adaptor
- International AC adaptor kit
- Rechargeable Lithium-ion battery
- Quick Start Guide
- Getting Started Disc
- USB data cable
- Null modem cable
- A sheet of device ID labels

Inspect all contents for visible damage (scratches or dents). If any components appear damaged, notify the shipping carrier. Keep the shipping and packaging material for the carrier's inspection.

Getting Started Disc

The *Trimble Pro Series Getting Started Disc* provides several software utilities that can be installed on office computers running the following Microsoft operating systems:

- Windows® XP Home, Professional, and Tablet PC Edition
- Windows Vista® operating system
- Windows 7 operating system

For more information on the:

- Radio Activation Manager software, see [Deactivating and reactivating the Bluetooth radio, page 15](#).
- Option Activation software, see [Activating Floodlight technology and NMEA output options, page 16](#).

Accessories

The following optional accessories are available:

- Tempest™ antenna¹
- Tornado™ antenna²
- Backpack
- Replacement Lithium-ion battery
- 12V vehicle adaptor
- Spare AC adaptor
- Spare international AC adaptor kit

¹Compatible with the Pro 6T receiver (L1 only).

²Compatible with the Pro 6H receiver (L1/L2).

For more information, go to the Trimble website at www.trimble.com.

Software used with the Pro series receiver

You can use the Pro series receivers with compatible Mapping and GIS field and office software. For version numbers and a complete list, see the [Product Compatibility List](#).

Further information

For more information on:

- Trimble Floodlight satellite shadow reduction technology, go to <http://www.trimble.com/mappingGIS/floodlight-tb.aspx>.
- Trimble training courses, go to www.trimble.com/training.html.

Technical assistance

Go to the Trimble technical support website <http://www.trimble.com/technical-support.aspx>, for the latest support information, including:

- support notes detailing support issues
- documentation
- the latest files available for download

Parts of the receiver

The following diagrams show the main parts of the Pro series receiver.



Item	Feature	Description
1	Integrated GNSS receiver and antenna	High performance GNSS receiver.
2	LED status lights	<ul style="list-style-type: none">  Power/battery status  GNSS receiver status  Bluetooth radio status <p>For more information, see LED status information, page 12.</p>
3	Power button	Press briefly to turn on or turn off the receiver.
4	External antenna connector	Connect to the optional external antenna.
5	Integrated Bluetooth radio	Cable-free connections to Bluetooth-enabled field computers.



Item	Feature	Description
❶	DE9 serial port (with cover)	Serial (COM) connection to a field computer if you are not using a wireless Bluetooth connection.
❷	Screwthread socket	Screwthread socket for fitting the receiver to a range pole using a screwthread adaptor.
❸	Mini-USB socket (with cover)	For USB connection to an office computer.
❹	Rechargeable Lithium-ion battery	Removable battery. All-day operation with GNSS and Bluetooth wireless technology. Power/battery LED on the front of the unit shows battery status.
❺	Power connector	Connect to DC power to charge the battery.

Charging the battery

The Pro series receiver contains a removable rechargeable Lithium-ion battery. Additional battery packs can be carried and quickly changed in the field.

***Note** – Charge the battery completely before using the receiver for the first time. If the battery has been stored for longer than six months, charge it before use. Trimble recommends charging the battery for at least five hours at typical room temperature to recharge it fully.*

When fully charged, the battery provides enough power for a full working day (8 hours) using the internal GNSS antenna and Bluetooth wireless technology.

***Note** – Cold temperature consume additional battery power and so shorten battery life between charges.*

Battery safety



WARNING – Do not damage the rechargeable Lithium-ion battery. A damaged battery can cause an explosion or fire, and can result in personal injury and/or property damage. To prevent injury or damage:

- Do not use or charge the battery if it appears to be damaged. Signs of damage include, but are not limited to, discoloration, warping, and leaking battery fluid.
 - Do not expose the battery to fire, high temperature, or direct sunlight.
 - Do not immerse the battery in water.
 - Do not use or store the battery inside a vehicle during hot weather.
 - Do not drop or puncture the battery.
 - Do not open the battery or short-circuit its contacts.
-



WARNING – Avoid contact with the rechargeable Lithium-ion battery if it appears to be leaking. Battery fluid is corrosive, and contact with it can result in personal injury and/or property damage.

To prevent injury or damage:

- If the battery leaks, avoid contact with the battery fluid.
 - If battery fluid gets into your eyes, immediately rinse your eyes with clean water and seek medical attention. Do not rub your eyes!
 - If battery fluid gets onto your skin or clothing, immediately use clean water to wash off the battery fluid.
-



WARNING – Charge and use the rechargeable Lithium-ion battery only in strict accordance with the instructions. Charging or using the battery in unauthorized equipment can cause an explosion or fire, and can result in personal injury and/or equipment damage.

To prevent injury or damage:

- Do not charge or use the battery if it appears to be damaged or leaking.
 - Charge the Lithium-ion battery only in a Trimble product that is specified to charge it. Be sure to follow all instructions that are provided with the battery charger.
 - Discontinue charging a battery that gives off extreme heat or a burning odor.
 - Use the battery only in Trimble equipment that is specified to use it.
 - Use the battery only for its intended use and according to the instructions in the product documentation.
-

Inserting the battery

The Pro series receiver has a replaceable Lithium-ion battery.

To insert the battery into the receiver:

1. Slide the battery into the cavity with the label facing upwards.
2. Push the battery in until it clicks into place.



CAUTION – Make sure that the battery is fully inserted and that both the left and right latches are fully engaged. If the battery is not properly inserted, it may fall out if the device is dropped.

Charging the battery



WARNING – To use AC adaptors safely:

- Use only AC adaptors intended for the Pro series receiver. Using any other external power source can damage your product and may void your warranty.
 - Make certain that the input voltage on the adaptor matches the voltage in your location.
 - Make certain that the adaptor has prongs compatible with your outlets.
 - AC adaptors are designed for indoor use only. Avoid using the AC adaptor in wet outdoor areas.
 - Unplug the AC adaptor from power when not in use.
 - Do not short the output connector.
-

The battery takes approximately four hours to charge fully. You can charge the battery while it is in the receiver or, if you have a spare battery, you can charge it out of the receiver. The battery has its own LED that shows the status of the battery.

To charge the battery:

1. Turn off the receiver.
2. Connect one end of the AC adaptor cable to the receiver or directly to the battery and the other to an AC power outlet. An international adaptor kit is provided with the receiver.

Note – Trimble recommends that you charge the battery at or below normal room temperature (0 to 30 °C / 32 to 86 °F).

3. Leave the battery to charge. It may take up to five hours for the battery to charge completely.



WARNING – When the battery is charged outside the receiver, the contacts may become very hot and there is a risk that you could burn yourself on the exposed metal.

When the battery is charging, the Power LED on the receiver is solid orange. When fully charged, the Power LED is green.

Changing the battery

If you have a spare battery, you can carry it with you and change it in the field.

To change the battery:

1. Turn off the receiver (press and briefly hold the **Power** button).
- Firmly press the ridges on both sides of the battery (1) and then pull the battery out of the cavity (2).
2. Insert the new battery (see [page 10](#)).



CAUTION – The receiver is not sealed from water and dust when the battery is removed. Trimble recommends only removing the battery for short periods of time and only removing the battery indoors or from inside the protection of a vehicle.

Turning on and turning off the receiver

To turn on and turn off the receiver, briefly press the Power button.

When you first receive the Pro series receiver, the Bluetooth radio is activated by default. If the receiver is turned on, the Bluetooth radio is on and ready to be used. If the Bluetooth radio is *deactivated*, the Bluetooth LED will not be lit after startup, and you must first activate the radio. For more information, see [Deactivating and reactivating the Bluetooth radio, page 15](#).

On startup, the three LEDs on the front panel lights up briefly. If they do not light up, make sure that the battery is installed correctly and is charged. After startup, the LED patterns show status information about the receiver.

LED status information

During operation, the LEDs provide the following status information:

LED	Color	Mode	Status
Power	Green	Solid	External power is connected and the battery is fully charged.
	Red	Solid	There is a charging fault.
	Red	Slow flash	There is less than 10% of battery power remaining.
	Amber	Solid	The battery is charging.
GNSS	Green	Slow flash	Generating positions.
	Orange	Fast flash	GNSS is operating but is not generating positions due to too few positions or poor satellite geometry.
	Red	Solid	There is a fault.
Bluetooth	Blue	Solid	Activated and connected.
	Blue	Off	Bluetooth is deactivated.

Note – During normal charging, the battery may become hotter than the maximum temperature allowed (40 °C or 104 °F). If this happens, charging is automatically suspended until the battery cools and then charging automatically restarts. During this time the Power LED changes to solid red. It may take about one hour for the battery to cool. If this does not resolve the issue, perform a hard reset of the receiver.

Performing a hard reset of the receiver

If the Power LED or GNSS LED shows solid red, some kind of fault has occurred. To resolve the issue, press and hold the **Power** button for 8 seconds. After a reset, the receiver automatically restarts.

Removing and replacing the battery also performs a hard reset.

If a hard reset does not resolve the issue, contact your Trimble reseller.

Connecting to a field computer

You can connect the Pro series receiver to a field computer that is running GNSS field software using:

- Bluetooth wireless technology
- the null-modem cable or the USB cable provided with the receiver

Connecting to a field computer using Bluetooth wireless technology

If the Bluetooth LED does not light when you turn on the receiver, then the Bluetooth radio is deactivated. If your country of use allows the use of Bluetooth wireless technology, use the Bluetooth Manager software to reactivate the Bluetooth radio. For more information, see [Deactivating and reactivating the Bluetooth radio](#).

To establish a Bluetooth wireless connection to the field computer, refer to the documentation provided with your field computer. Use the default passkey “0000”.

Once connected, use the GNSS field software to configure the connection (see [Configuring the connection in the GNSS field software, page 14](#)).

Multiple Bluetooth connections

You can connect to both Bluetooth ports on the receiver but you cannot have more than one TSIP connection.

Connecting to a field computer using a cable

1. Do one of the following:
 - Connect one end of the null-modem cable to the receiver and connect the other end of the cable to the field computer.



- Connect one end of the USB cable to the receiver and connect the other end of the cable to the field computer.



2. Once connected, use the GNSS field software to configure the connection (see below).

Configuring the connection in the GNSS field software

Once connected, do the following:

1. Open the GNSS field software on the field computer.
2. Select the COM port being used on the field computer for the connection.
3. If required, select TSIP or NMEA. Use the GNSS field software to configure the NMEA messages you want to use.

Note – You can only use NMEA messages if the Pro series receiver has the NMEA option activated. For more information, see [Additional receiver options, page 15](#).

4. Connect to the receiver in the GNSS field software.

For more information, refer to the documentation for your GNSS field software.

If the field computer does not have any GNSS field software installed, you can download a free copy of the GPS Controller software from the Trimble website and then use that to select the COM port and configure NMEA message options. For more information, go to <http://www.trimble.com/support.shtml> and then select *GPS Controller* from the list of products.

Deactivating and reactivating the Bluetooth radio

The Pro series receiver is shipped with Bluetooth wireless technology activated. Use the Radio Activation Manager software to:

- Deactivate the Bluetooth radio on a Pro series receiver if the country in which you are working does not approve the user of Bluetooth wireless technology.
- Reactivate the Bluetooth radio if it has been deactivated.

A copy of the Radio Activation Manager software is provided on the *Pro Series Getting Started Disc*. The latest copy of the software is also available for download from the Trimble website. Go to www.trimble.com/support.shtml, click the link for your receiver type, click *Downloads*, click *Pro Series receivers* and then click *Radio Activation Manager*.

To use the Radio Activation Manager software:

1. Insert the *Trimble Pro Series User Guide Disc* into the CD drive of an office computer. It should run automatically.
2. Click *Install USB to Serial Drivers* and then follow the instructions in the USB Serial Driver wizard to install the USB drivers provided onto the office computer.
3. Return to the splash screen of the CD and then click *Install Radio Activation Manager*. Follow the instructions in the Radio Activation Setup wizard to install the Radio Activation Manager software onto the office computer.
4. Connect the receiver to the office computer using the USB cable provided with the receiver.
5. Navigate to the location where you installed the Radio Activation Manager software and run it. Follow the instructions in the software to deactivate or reactivate the Bluetooth radio.

Additional receiver options

Two options are available for use with the Pro series receiver:

- The Trimble Floodlight satellite shadow reduction technology, which can increase the accuracy and likelihood of generating positions in environments affected by satellite shadow including canopy and near buildings.

For more information, go to www.trimble.com/mappingGIS/floodlight-tb.aspx.

- The NMEA Output option, which enables you to use the Pro series receiver with any GNSS field software that accepts NMEA messages.

The Floodlight satellite shadow reduction technology is provided as standard with the Pro 6H receiver.

For the Pro 6T receiver, you will need to purchase the Floodlight satellite shadow reduction technology option. To purchase this option, contact your Trimble reseller.

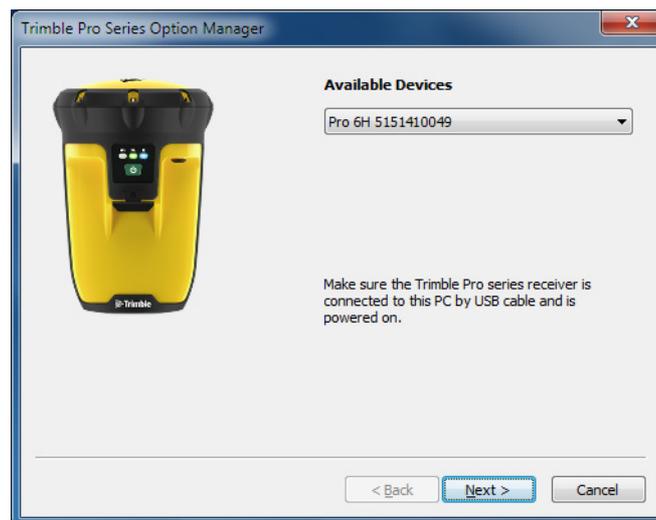
The NMEA option must be purchased for both the Pro 6H receiver and the Pro 6T receiver if required. To purchase this option, contact your Trimble reseller.

Both the Floodlight satellite shadow reduction technology option and the NMEA Output option must be activated on your receiver using the Option Activation Wizard. The wizard can either automatically retrieve an activation file over the Internet, or you can copy the file manually to the device using an external storage card or a USB cable. The activation wizard uses the file to determine which options to activate on the receiver.

Activating Floodlight technology and NMEA output options

To activate these options using the Option Activation wizard, do the following:

1. Insert the *Trimble Pro Series User Guide Disc* into the CD drive of an office computer. It should run automatically.
2. Click *Install USB to Serial Drivers* and follow the instructions in the USB Serial Driver wizard to install the USB drivers provided onto the office computer.
3. Connect the receiver to the office computer using the USB cable provided with the receiver.
4. Return to the CD splash screen and then click *Install Option Manager*. A screen similar to the following appears:



5. Click **Next**. The current activation state of the receiver options is shown.
6. To activate any of these options, click **Next**.
7. If you have received an activation file from your Trimble reseller, select *Manually activate purchased options*. Otherwise select *Automatically check and activate purchased options*.
8. Click **Next**.

The Option Activation Wizard shows the status of the option activation.

9. When the activation is complete, click **Finish** and then restart your device to complete the activation process.

Using the receiver with a backpack or range pole

The receiver can be fitted on a backpack or on top of a range pole.

1. Screw the receiver onto the top of an extension pole fitted on the backpack or the top of the range pole.
2. Make sure the receiver is not obscured by the user's head, hat brim, etc.



Caring for and storing the receiver

Servicing

If the receiver requires servicing, contact your support provider.

Cleaning

Keep the outer surface, the external antenna port, and the serial port free of dirt and dust.

To clean the Pro series receiver receiver, wipe it with a clean dry cloth.

Storage

If you are not going to use the receiver for some time, charge the battery to approximately 30% and then turn off the receiver.

To use the receiver after storage, turn on the receiver and then:

1. Fully recharge the battery in the receiver, see [Charging the battery, page 10](#).
2. Check that the Bluetooth radio is activated and on, see [Turning on and turning off the receiver, page 12](#).