# Trimble<sup>®</sup> CU User Guide



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Trimble Navigation Limited warrants that this hardware product (the "Product") will perform substantially in accordance with published specifications and be substantially free of defects in material and workmanship for a period of one (1) year starting from the date of delivery. The warranty set forth in this paragraph shall not apply to software products.

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#### Notices

#### USA

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. These limits are designed to provide reasonable protection against harmful interference in a residential installation. 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.

#### Canada

This Class B digital apparatus complies with Canadian ICES-003.

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.

# **Important Information**

## **Environmental Information**

### NOTICE FOR TRIMBLE'S EUROPEAN UNION CUSTOMERS

Trimble is pleased to announce a new recycling program for our European Union customers. At Trimble, we recognize the importance of minimizing the environmental impacts of our products. We endeavor to meet your needs, not only when you purchase and use our products, but also when you are ready to dispose of them. That is why Trimble is actively pursuing, and will continue to pursue, the expanded use of environmentally friendly materials in all its products, and why we have established a convenient and environmentally friendly recycling program.

As Trimble makes additional recycling facilities available for your use, we will post their locations and contact information to our Recycling Instructions web page.

For product recycling instructions and more information, please go to

#### www.trimble.com/environment/summary.html

Recycling in Europe: To recycle Trimble WEEE, Call +31 497 53 2430, 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



Trimble CU User Guide



## **Declaration of Conformity**

According to R&TTE Directive, 1999/5/EC, Annex IV including amendments by the CE marking Directive, 93/68/EEC

Product:

#### **Control Unit with accessories**

 Types / Models
 Part Numbers

 Trimble CU
 58050001

 Docking station
 58252001

 GPS holder
 58317001

 Power supply
 78600007

Manufacturer:

Trimble AB P.O. Box 64 SE-182 11 Danderyd Sweden

Technical references

Article 3.1(a)	Health	1999/519/EC
Article 3.1(a)	El. Safety	EN 61010-1:2001
Article 3.1(b).	EMC	EN 301 489-17 V1.2.1
Article 3.2	Radio	ETS 300 328-2 V1.3.1

#### Additional information

The product complies with the essential requirements of the R&TTE Directive, 1999/5/EC, as shown in the Technical Construction File TCF/2004-11-29 certified by the Notified Body 0413, reference number 409587-1.

## **CE** 0413

As manufacturer, we declare under our sole responsibility that the equipment follows the provisions of the Directive stated above.

Danderyd 2004-12-06

gen Peter Fredriksson, President

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## CHAPTER

# 1

## Introduction

### In this chapter:

- Welcome
- Related Information
- Technical Assistance
- Your Comments
- Registration

## Welcome

This manual describes the features of the Trimble® CU and how to operate it. Even if you have previous experience of earlier Trimble control units, Trimble recommends that you spend some time reading this manual to learn about the special features of this product.

## **Related Information**

Sources of related information include the following:

• Help – the application software has built-in, context sensitive help that lets you quickly find the information you need. The Help is also available on the software CD.

## **Technical Assistance**

If you have a problem and cannot find the information you need in the product documentation, contact your local Distributor. Alternatively, do one of the following:

- Request technical support using the Trimble website at www.trimble.com/support/support.htm
- Send an e-mail to trimble\_support@trimble.com.

## **Your Comments**

Your feedback about the supporting documentation helps us to improve it with each revision. E-mail your comments to ReaderFeedback@trimble.com.

## Registration

To receive information regarding updates and new products please register on the Trimble web site.

www.trimble.com/register

# 2

## **Unpacking and Inspection**

### In this chapter:

- Inspection
- What's in the box?

## Inspection

Inspect the shipping container. If it is received in poor condition, examine the equipment for visible damage. If damage is found, immediately notify the carrier and the Trimble sales representative. Keep the container and packing material for the carrier's inspection.

Also make sure that all parts listed in the table below are included in the shipment.

## What's in the box?

The contents in the box might vary depending on what has been ordered. The table below is an example.

Part	Connection/Use
Trimble CU Controller	
Docking Station	For connecting the CU to office computer
Application Software CD	Software and User Guide
Docking Station Power Supply	Mains power to Docking Station, 12V 2A
Docking Station connection cable	6-pin Hirose/PC USB 2.5m
USB adapter cable	6-pin Hirose/USB 0.18m
Power cable	6-pin Hirose/Car cigarette lighter
Pack of 10 screen protectors	
Folding A4 card	Getting started, short form information
Compact Flash card	Compact Flash card 128Mb
Compact Flash card reader	Card reader for compact Flash card

## CHAPTER

# 3

# The Trimble CU

### In this chapter:

- Introduction
- Attaching/detaching the Trimble CU
- Trimble CU Keyboard
- Power Management
- Touch Screen
- Setting the Time and Date
- Operating System
- Data Storage
- Connecting your Trimble CU to an Office Computer
- Setting up and Running ActiveSync
- Bluetooth wireless technology

## Introduction

Loudspeaker Lock/release button

This chapter describes the Trimble® CU and its most common features.



## Attaching and Detaching the CU

The procedures for attaching/detaching the Trimble CU to a total station applies to the Docking Station, the Robotic Holder, and the GPS Holder.

To attach the CU:

1. Hook the top of the CU over the top of the panel attachment. Figure 3.2.



Figure 3.2 Attaching the CU

2. Push the CU toward the panel attachment until it locks into place with a click. Figure 3.3.



Figure 3.3 Locking the CU onto the panel holder

To detach the CU:

- **1.** To turn off the power, press the green power button.
- **2.** Push the lock release button at the bottom of the CU and then lift the bottom of the CU away from the instrument. Figure 3.4.

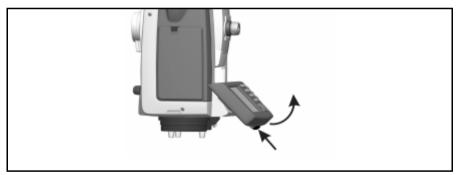


Figure 3.4 Unlocking the CU from the instrument

**3.** Unhook the top of the Trimble CU from the top edge of the panel attachment and remove it from the instrument. Figure 3.5.



Figure 3.5 Removing the CU from the instrument

## The Trimble CU Keyboard

Data entry on the Trimble CU is similar to that of a cell phone. The " $\alpha$ " button scrolls between three different states of data entry: 123, ABC, and abc. Multiple presses on one key scroll through the letters on that key depending on which state you're in.

The Trimble CU also offers the standard Microsoft® Windows® functions of cut (Ctrl+X), copy (Ctrl+C), and paste (Ctrl+V).

## **Control functions**

In addition to data entry and the standard Window functions, the Trimble CU has a number of control functions that are Trimble specific. These functions are described in the table below.

Key	Control function
Ctrl + α	Toggle the backlight on/off
Ctrl + Trimble	Disable the touch screen
Ctrl + 7	Toggle the touch screen keyboard on/off
Ctrl + Enter	Display help. Corresponds to F1 on a computer.
Ctrl + ESC	Pop up the the Widows taskbar
Ctrl + .,	Enter a "-" or a "+" symbol
<i>Ctrl</i> + t	Delete
Ctrl + 1 + 9	Perform a soft reset of the hardware
Ctrl + 3 + 9	Calibrate the touch screen

#### Table 3.1

## Keyboard backlight

The trimble CU is equipped with a keyboard backlight. The Keyboard backlight must be activated before it can be used. When activated it toggles on/off together with the touch screen backlight. To activate the keyboard backlight:

- 1. Tap the Start menu and then select Settings/Control Panel/Keyboard.
- 2. Select Backlight and then select the Enable Keyboard Backlight check box.
- **3.** Tap OK.

When activated it toggles on/off together with the touch screen backlight (Ctrl +  $\alpha$ ).

## **Entering Information**

#### **Entering text using the Input Panel**

Tap once on the Input Panel icon that is located in the Windows taskbar. In the image below the icon is identified by a circle. Tap Keyboard to display the Input Panel.



The Input Panel allows you to input data as if you were typing on a physical keyboard. To change the keyboard to international symbols, tap the [áü] key, identified in the circle below. To access additional symbols, tap [Shift]:

Inpu	t I	Pan	el									
Esc 1	12	2 3	4	5	6	7	8	9	0	-	=	+
Tab	q	w	e	r [	t	Y	u	i j	0	р	ſ	1
CAP	а	\$	d	f	g	h	1	k		;	Ŀ	Т
Shif	1	X	T	٦٧	Τь	Τn	In	Π,	T.	T	T	÷
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Inpu	t F	)an	el									
Esc 2	/ i	08	0	£	¥	5	0	±	μ	-	=	٠
Tab		á [	â	ã	ā	â	æ	ç	ð	ñ	1	1
CAP	è	é	ē	ë	l i	Í	[î]	Ĩ	[þ	Īš	Ŀ	Л
Shift	ò	Ó	Ô	Ĩ	ö	] ù	] ú	Û	ιĮί	i]/	11	4
Ctil	τü	ý	ÿ					T	4	Ť	4-	->

### Entering text using the Trimble keyboard

Trimble has developed a keyboard similar to the Input Panel, but with larger keys. The Trimble keyboard is the default keyboard. To activate it, double-tap the Input Panel icon. Double-tap once again to close it.

**Note** – The keyboard last used will be the default keyboard whenever the Input Panel icon is double-tapped. To switch default keyboard, tap once on the Input Panel icon and select the desired keyboard.

#### **Entering text using Microsoft Transcriber**

Transcriber is a program that converts your handwritten notes to text in programs like Notepad. To start Transcriber, go to Start/Programs/Accessories/Transcriber. The Transcriber icon will show up in the taskbar at the bottom of the CU and the icon is identified by a circle in the image below:



To toggle Transcriber on and off, tap the Transcriber icon. You can also hold the stylus on the icon for a few seconds to bring up the Options menu. Close the Transcriber from within the Options menu.

Transciber has a variety of tools and modes that allow you to customize the program. To get better aquainted with the tools, refer to the online help for Transcriber. To access the Help, go to Start/Help and select Transcriber from the Help table of contents.

## **Power Management**

The Trimble CU takes its power from an external power source, such as a total station, Robotic Holder, GPS Holder, or a docking station.

## Trimble CU AC adaptor

**International and US AC adaptor:** This unit is a wall mount unit that does not require an additional power cord. The adaptor is supplied with replaceable socket adaptors. Use the adaptor that match the plug and voltage requirement of your local area. When traveling to another country bring the adaptor for that country.

Rated Voltage: 100-240 / V AC 50-60 Hz / 700mA

#### AC adaptor safety

- Use only the AC adaptor intended for the Trimble CU.
- Using another AC adaptor can damage your product and may void your warranty.
- 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.
- Do not attempt to repair a defective unit. There are no repairable parts inside the unit.

## Suspend mode

The Trimble CU is equipped with an internal support battery that enables you to remove the controller from one power source and attach it to another within a period of 10 - 300 minutes if you put it in suspend mode before you turn it off. You can then resume working from the same place in the software that you were before you entered suspend mode.

To enter suspend mode, press the power button.

The CU will go into suspend for 120 minutes by default.

To resume, press the power button.

The internal support battery is charged when the Trimble CU is connected to external power.

*Note* – It is important that you press the power button before you remove the CU from its power source. Otherwise the controller has to reboot when it restarts.

If the Trimble CU has not been connected to external power when the suspend period has elapsed, the control unit powers down and has to reboot when started again and any unsaved data will be lost

If the internal battery runs low on power the Trimble CU powers down sooner. Fully charged and under normal conditions, the internal battery should have capacity for five suspend sequences.

**Note** – Trimble does not guarantee that the actual suspend time will always be 300 minutes. The actual time will depend on the aging and wear of the battery. The operating temperature will also affect the suspend time.

**Warning** – Do not attempt to replace the internal support battery on your own, or you may seriously damage the controller. For battery replacement, contact your local dealer.

## **Touch Screen**

The Trimble CU LCD screen can be viewed easily both in direct sunlight and in overcast conditions. It also incorporates a touch interface for navigation. Tap elements on the screen with a stylus or your finger.

## Calibrating the touch screen

If the touch screen does not respond properly when you tap it, recalibrate it as follows:

- Tap the Start menu and select Settings/Control Panel/Stylus. The Stylus Properties appears.
- 2. To recalibrate, tap Recalibrate in the Calibration tab.
- **3.** Follow the prompts on the screen.

## Disabling the touch screen

To clean the touch screen during a survey, press [Ctrl] + [Trimble] to disable it. To enable the touch screen again, press [Ctrl] + [Trimble].

## **Display light**

The display light is active by default and can be toggled on/off by pressing Ctrl +  $\alpha$ . To change the default display light settings:

- 1. Tap the Start menu and then select Settings/ Control Panel/ Display.
- 2. Select Display light and then make your changes.
- **3.** Tap OK.

## Setting the time and date

- 1. Tap the Start menu and then select Settings/Control Panel/Date/Time. The Date/Time properties dialogue appears.
- 2. Change the date and time as required.
- 3. To accept the new settings, tap OK. To cancel, tap ESC.

*Note* – when you attach the Trimble CU to a GPS receiver or to your computer using Microsoft ActiveSync® technology, time and date are automatically updated.

## **Operating System**

The Trimble CU runs the Windows CE .Net operating system.

## **Radio Settings**

When using a Trimble CU with a Trimble S Series or Trimble SPS700 Total Station, you can configure the radio settings for the robotic holder from the operating system control panel. To set the radio channels in the holder go to Start / Settings / Control Panel / Radio Settings.

## Data Storage

The Trimble CU has two kinds of memory:

• 64 MB RAM

RAM is volatile, and you risk losing data if the power fails.

• 256 MB NAND flash storage memory.

The NAND flash storage memory is non-volatile, and protects valuable data and software against memory loss.

To ensure the integrity of important data and software files, Trimble recommends that you load and save these on your flash disc rather than in RAM.

If required, you can restart the CU in one of the following ways.

## Soft reset (warm boot)

This keeps the RAM intact, but stops all running software. To perform a soft reset:

- 1. Tap the start menu and then select Programs/Utilities/Reset.
- 2. Select Soft Reset.
- **3.** Tap OK.

## Hard reset (cold boot)

A hard reset erases the RAM.To perform a hard reset:

Hold down the On/Off button for 20 seconds.

Or

- 1. Tap the start menu and then select Programs/Utilities/Reset.
- 2. Select Hard Reset.
- 3. Tap OK.

The Trimble CU backs up the data in RAM onto the System Folder on the flash disk. Any data stored in this way can be found under /Disk/System.

## Connecting the Trimble CU to an Office Computer

Use the docking station to connect the Trimble CU to an office computer:

- 1. Attach the CU to the docking station.
- 2. Connect the docking station power supply to power the CU. Figure 3.6
- **3.** Use the docking station connection cable to connect the CU to the computer through the docking station comm port and the computer USB port.



Figure 3.6 Docking Station +12 V power and com ports

## Transferring data or files using ActiveSync

Microsoft ActiveSync provides a way for devices such as the Trimble CU to communicate with desktop computers and laptops that run on Windows operating systems. ActiveSync is already integrated into the operating system on the Trimble CU. However, you must install ActiveSync on the computer or laptop. You can install the software from the CD that was shipped with the CU or you can download the current version of Active Sync from:

http://www.microsoft.com/mobile/pocketpc/downloads/

There are two types of ActiveSync connections. The table below summarizes the advantages and disadvantages of each choice.

	Advantages	Disadvantages
Guest	Fewer questions to answer on initial connection	Slower subsequent connections (one more steps per connection that requests partnership)
	Safer because syncronization cannot adversly impact data either on the CU or the computer.	
	For use on borrowed or shared computers	

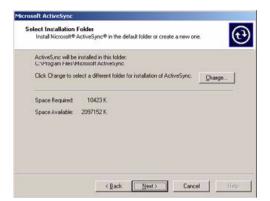
	Advantages	Disadvantages
Partnership	Fast subsequent connections (one fewer step per connection)	More questions to answer on initial connection
	The clock on the CU is set to match the computer clock	Synchronization not supported on the Trimble Recon® handheld
		If the clock on the computer is wrong, it will make the clock on the CU wrong
		Partnership is deleted when the CU is hard reset.

## Setting Up and Running ActiveSync

- 1. Connect the Trimble CU to the office computer using the USB cable.
- 2. Install ActiveSync on the computer. The following dialog appears:

Microsoft ActiveSync	
	Set Up Microsoft ActiveSync 3.7 Before you can exchange information between your mobile device and this computer, you must set up ActiveSync. This setup wizard will guide you through: Installing the ActiveSync program on this computer Setting up your mobile device Note. It is strongly recommended that you exit all Windows programs before continuing with this setup wizard. Dick Next to continue with the setup process. Click Cancel to guit setup.
	< <u>Back</u> Help

**3.** Click Next. The following dialog appears. Trimble recommends that you use the default setting:



- 4. Click Next.
- **5.** If necessary, reboot the computer. Once the software is installed, the following dialog appears:

Get Connected	and the second	×
	Get Connected	
	After instaling batteries or plugging in the AC adapter, do one of the following:	
	*Use the serial cable to connect to a CDH port on the back of this desktop computer and click Nest.	
Y	* Use the USB cable to connect to the USB por on the back of this desktop computer. ActiveSync will automatically detect the device connection.	
	You can also connect your mobile device using intrared (IR). For more information, click Help.	
	<back [jext=""> Cancel Help</back>	

6. Click Next.

7. In the dialog that appears select whether to set up as a partnership or a guest and then click Next:

New Partnership	and the second se	×
	Set Up a Partnership Before you can synchronize information between your mobile device and this computer, you must ret up a paintensitip between them. Would you like to set up a partnership? © <u>Free</u> Set up a partnership so that I can synchronize information between my device and this computer. C No I don't want to synchronize information. Set up my device as a guest so that I can copy or move information between my device and this computer.	
	(Beck Next> Cancel Hel	P

If you select No, you are set up as a guest and the Select Number of Partnerships dialog does not appear. Go to Step 9.If you select Yes, select a synchronization setting from the following dialog:



8. Click Next to continue.

9. In the dialog that appears, Trimble recommends that you clear all the check boxes.

	type of information, select its check box. To stop mation, clear its check box.
Mobile Device	Desktop Computer
Calendar	Microsoft Outlook
🗆 👰 Channels	Channel Synchronization
Contacts	Microsoft Dutlook
Files	Synchronized Files
□ [mbox	Microsoft Outlook
Pocket Access	Microsoft Databases
🗆 🖬 Taska	Microsoft Outlook

**10.** Click Next. Click Finish in the Setup Complete dialog:

New Partnership	and the second se	×
🗳 🖓	Setup Complete	
1 🖬	You are now ready to start exchanging information between your mobile device and this computer.	
	Upon exiting this wizard, Microsoft ActiveSync will open and	
	If your device is a guest, click Explore on the toolbar and start exploring your device.	
	If your device has a partnership, synchronization starts. Please wait until synchronization is complete before using your device.	
	Click Finish to exit this wizard.	
	< Back Finish Cancel Help	1

ActiveSync opens:

🚳 Microsoft Active	25ync	_ 🗆 🗙
File View Tools H	Help	
	etails Explore Options	
TrimbleCU	_80	0
Connected Synchronized		
Information Type	Status	

**11.** To view files on the Trimble CU, click the Explore icon. The file structure looks and functions the same as Windows Explorer on the office computer.

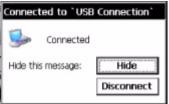
## **Disconnecting ActiveSync**

To avoid disconnection problems, disconnect ActiveSync on the CU before removing the cable from either the computer or the CU.

1. Double-tap the connection icon in the task bar at the bottom of the screen:



2. Tap disconnect and then remove the cable:



For more information about ActiveSync, refer to the help or visit the Microsoft website.

## **Bluetooth Wireless Technology**

The Trimble CU is equipped with Bluetooth® wireless technology. The function is enabled by default and makes wireless communication with most other devices that have Bluetooth wireless technology possible. Uses for Bluetooth wireless technology include:

- File transfer application in the Start menu to transfer data to and from other Trimble data collectors, including the Trimble ACU and the TSCe<sup>™</sup> controller (with BlueCap®).
- Browse and transfer files to and from your Trimble CU.
- Connect to the Internet through a cellphone equipped with Bluetooth wireless technology.

## Modifying your Bluetooth settings

To modify your Bluetooth settings:

- 1. Tap the Start Menu and then select Settings/Control Panel/Bluetooth Device Properties.
- 2. Make your changes.
- 3. Tap OK.

## CHAPTER

# 4

## **Caring for the Trimble CU**

#### In this chapter:

- Operating temperature
- Storage temperature
- Shock
- Environment
- Cleaning the case
- Care of the touch screen
- Applying a screen protector

## Maintenance

Trimble recommends the following to maintain the Trimble CU during everyday use, and to prevent potential physical damage and data loss.

Operating temperature	-30° C to + 55° C.
Storage temperature	-40° C to + 70° C.
Shock	The Trimble CU is designed and tested to withstand a drop from a height of 1 meter onto plastic carpet on a concrete floor.
Environment	The Trimble CU has been tested to meet the requirements of IP55 and EN 60529:1991 IP55, for water and dust. This means that the unit can be cleaned under running water and that dust will not affect its performance.
Cleaning the case	Clean the controller with a soft cloth dampened with clean water or with water containing a mild detergent. If the keyboard has dirt or grime on it, use compressed air, a vacuum cleaner, or rinse under clean water.
Care of the touch screen	Clean the screen with a soft cloth dampened with clean water or glass cleaner. Do not apply any cleaner directly on the screen. Apply the cleaner to the cloth and gently wipe the screen. <i>Note – Do not use abrasive cleaners.</i>
Applying a screen protector	Use a screen protector to help keep the screen clean and protected. Clean the screen thoroughly and leave it slightly wet. Peel the backing from the screen protector and then apply the protector to the screen. Use a soft cloth to squeeze the excess water from under the screen protector.