# Customer FAQs

GEOSPATIAL DIVISION

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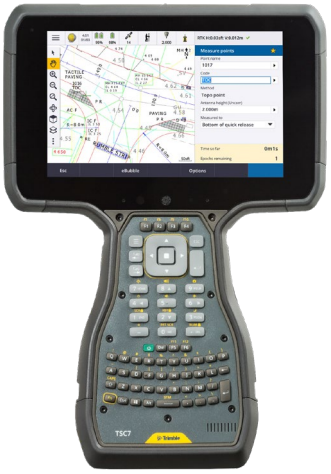
## TRIMBLE TSC7 CONTROLLER



### What is the Trimble TSC7 controller?

The Trimble® TSC7 controller integrates a tablet experience with a physical keypad into survey workflows. Featuring a processor with plenty of power, it makes quick work of large projects and handles 3D data visualization and manipulation with ease. Its comprehensive connectivity options, two cameras, and large touch screen make it easy to capture videos and images, send and receive emails, access the internet, and hold face-to-face discussions right from the job site. Faster and more powerful than its predecessors, the TSC7 is the must-have controller for survey fieldwork and scanning.

### What is new with the updated TSC7 released in October 2022?

The TSC7 controller released in October 2022 includes additional storage (128GB) and up to 8 hours of battery life.

### Are the old accessories compatible?

The TSC7 controller released in October 2022 maintains compatibility with all TSC7 controller accessory parts.

## What are the key features of the TSC7 controller?

7"  touch screen, two cameras (front and back), up-to-date connectivity, dependable ruggedness, two Trimble EmpowerTM module expansion slots, hot-swappable batteries,  Windows® 10 operating system.

# Contents



## Components

### What are the functions of the integrated digital cameras?

The TSC7 controller includes a rear (field-facing) 8 megapixel and a front (customer-facing) 2 megapixel camera, with an LED flash and geotagging.

The camera is accessed through an application that is pre-installed with the operating system. The camera features a variety of shooting modes to make it easier to capture images in different lighting conditions, and it can also record video with audio.

### How many function keys does the TSC7 controller have?

The TSC7 controller has 6 physical F-keys (function keys). 4 are located underneath the screen, 2 are located in the center of the keypad. Each F-key has a 2$^{nd}$ function, so there are 12 F-keys available.

### How do I set up Fn-keys and what can they do?

The Fn-keys behave like Fn-keys on any tablet or laptop. In the Trimble Access$^{TM}$ 2018 software you can configure the Fn-keys for favorites.

### What is in the TSC7 controller packout?

The Trimble TSC7 controller, AC power adaptor with cable, set of batteries, handstrap, glass screen protector, quick start guide.

### What are the environmental performance characteristics of the TSC7 controller?

Water: Survives rain and water spray, any direction and submersion.

Dust: Protected against dust: IEC 60529, IP6x, dust chamber under pressure.

Drops: Survives multiple drops of 4 ft. (1.22 m) MIL-STD-810G, Method 516.6 Procedure IV, Transit Drop.

Operating Temperature: -22 ºF to 144 ºF (-30 ºC to 60 ºC), MIL-STD-810G.

Storage Temperature: -40 ºF to 158 ºF (-40 ºC to 70 ºC), MIL-STD-810G.

For details, refer to the datasheet.

### What keyboard options are available? Can I change the keyboard?

The TSC7 controller released in October 2022 only includes a QWERTY keyboard option.

### Which screws are intended to be unscrewed by users?

Only Phillips (cross-cut) screws are intended to be unscrewed by users. They are used to attach modules and the covers of SIM / SD card slots. Do not unscrew any other screws; you might damage a water- and/or dust-tight sealing. Other screws should only be unscrewed by Trimble service providers.

### What size is the SIM card?

The TSC7 controller requires a micro-SIM.

### Why do I have to change touchscreen modes when switching between finger and stylus?

The capacitive touchscreen responds differently to the different characteristics of fingers, styli, and gloves. For optimal response Trimble recommends that you select the appropriate mode; use the Touch Control app that is installed on the TSC7 controller.

## Screen

### Do I need a screen protector?

Yes. Trimble strongly recommends using a screen protector. The screen protector provided with the TSC7 controller out-of-the box and available as an accessory protects the screen long term.

Although the screen of the TSC7 controller is hardened glass, it may show scratches over time. The screen protector also protects the screen from UV radiation.

## How do I apply the screen protector?

Make sure the screen is clean before you apply the screen protector; any dust or dirt between the screen and screen protector will be visible and degrade your display experience.

1. Place the device on a clean, flat surface, and clean the touchscreen with the alcohol wipe supplied with the screen protector.
2. Polish and dry the screen to remove any dust with the lint-free cleaning cloth supplied with the screen protector.
3. Remove any dust specs with the supplied dust sticker.
4. Remove the protective film from the screen protector.
5. Align the screen protector with the top of the glass portion of the display.
6. Carefully lay the screen protector down on the screen. If you make a mistake and the glass looks off-center, you can gently lift the screen protector up and realign it. Then, once the protector is on the screen, give it a soft press in the center and allow the adhesive surface to grip to the screen naturally.
7. If there are any bubbles remaining, use the cloth provided to gently smooth them toward the edges of the screen protector.

**NOTE**: You can place the screen protector in place and fix it on the upper side with adhesive strips to the housing. This will keep the screen protector aligned when sticking in on.

## What is important to know about projective capacitive touchscreens?

Capacitive touchscreens are very common in today's tablet computers and smartphones. The TSC7 controller has a capacitive touchscreen that is highly responsive to the touch of a finger, as well as a capacitive stylus. You can easily zoom into images or data (if the software used supports dual touch user interface).

The capacitive touchscreen is based upon the user being a conductor to enable the touchscreen properties. If you are wearing gloves, such as during very cold weather, Trimble recommends using gloves that are designed for capacitive touchscreens; otherwise, use the stylus.

Use the Touch Control app which is installed on the TSC7 controller to switch between using stylus, fingers, or glove.

The capacitive screen also works in the rain. However in heavy rain or when you wipe the screen, false contacts may happen. To wipe the screen and avoid false contacts, the touch input on the screen can be deactivated with a key on the physical keypad.

### What are the "Touch Modes"?

There are touch modes for finger, stylus, and (conductive) glove. Use the Touch Control app which is installed on the TSC7 controller to switch between touch modes.

### Do I have to use Trimble-provided gloves for my touchscreen to work?

No, but you do need to use gloves designed for use on projective capacitive touchscreens. There are plenty of touchscreen safety gloves available; Trimble does not provide gloves.

### How do I lock the screen rotation?

You can lock the screen rotation in the Windows 10 Action Center. Tap the Action Center icon at the lower right corner of the screen, and then tap Lock Rotation.

## Accessories

### What optional accessories are available for the TSC7 controller?

Pole mount, handstrap, shoulder sling, shoulder sling bag, stylus, screen protector, power supply, vehicle charger, spare batteries, external battery charger. For more information see the available accessories for the TSC7 controller here.

### Does the TSC7 controller fit into existing hard carry cases?

The TSC7 controller has its own compatible hard case and soft pouch.  For more information see the available accessories for the TSC7 controller here.

### If I lose my stylus, can I use a non-Trimble stylus?

Yes, there are a wide variety of capacitive touch stylus available in the marketplace that work well with the TSC7 controller as long as they have a rubber tip. However the stylus available as an accessory is tuned for the TSC7 controller's display and it fits into the stylus holder. Trimble cannot guarantee other styli will work and recommends that you order a replacement Trimble stylus.

### How does the pole mount work?

The pole mount for the TSC7 controller consists of 2 components—the pole-facing part and the TSC7 controller-facing part. They are both connected with a spare connector as it is used (and compatible) with other Trimble mounting products.

The pole part is designed to be compact enough to fit into a 10 cm (4") pipe for customers storing their poles in pipes.

The TSC7 controller-facing part has an arm that can be set up for left- or right-hand usage. To change it, unscrew the black screws in the cradle plate where the TSC7 controller sits, rotate the cradle plate, then screw it back into place.

The TSC7 controller “snaps” easily into the cradle; first sit the bottom of the TSC7 controller into the hook at the bottom of the cradle, then push it firmly into the snap lock.

To remove the TSC7 controller from the cradle, on the back of the locking mechanism pull up the lever.

## How do I attach and use the handstrap on the TSC7 controller?

Attach the handstrap to the left or the right side of the device, according to your personal preference. To ensure a good fit:

1. Thread one end of the handstrap ribbon through the top handstrap slot; thread from the center of the device toward the top of the device.
2. Pull the end of the ribbon back towards the center of the handstrap and feed it up, over, and down through the lock buckle on the handstrap and pull it tight.
3. Thread the ribbon at the other end of the handstrap through the bottom handstrap slot; thread from the center of the device toward the bottom of the device.
4. Pull the end of the ribbon back towards the center of the handstrap and feed it up, over, and down through the lock buckle on the handstrap and pull it as tight as is comfortable for your hand.

If required, use a small blunt tool to push the ribbons through the handstrap slots on the device. Do not use a sharp tool.

## How do I attach and use the shoulder sling with my TSC7 controller?

There are several ways to attach the shoulder sling to the TSC7 controller:

- If you have a handstrap attached to the device, clip the shoulder sling onto the handstrap buckles.
- If you do not have a handstrap attached to the device, attach the shoulder sling standalone connector straps to the handstrap slots on the device, and clip the shoulder sling to the connector straps.
- You can attach the shoulder sling to the handstrap slots/shoulder sling connector straps on either side of the device, according to your preference.
- You can attach a shoulder sling to the top or bottom handstrap slots, or use two shoulder slings and attach them crosswise to the device to create a harness.

# Software

## How do I install the Trimble Access software?

You need to download and install the Trimble Installation Manager on the TSC7 controller. Connect the TSC7 controller to the internet, open the browser and download the Trimble Installation Manager from http://www.trimble.com/installationmanager/. When you start Trimble Installation Manager, the Trimble Access software downloads; you must have a Trimble Access license.

## How can I change the date format in the Trimble Access software?

To change the date format using the Trimble Access software:

1. On the status bar, tap Date/Time. The operating system Date and Time settings dialog opens.
2. Scroll down to Related Settings and tap Additional Date, Time & Regional Settings.
3. Under Region, tap Change Date, Time or Number Formats.
4. Tap Additional Settings.
5. On the Date tab, type into the short date field the format that you want. Tap Apply and then tap OK.

## Can I set the camera to use the rear camera when starting the camera app instead of the user-facing camera?

Windows 10 opens the user-facing camera the first time you open the camera app. To change to the rear camera, in the camera app, tap the icon in the top left corner of the screen. The camera app remembers the last setting and will launch the selected camera the next time you open the camera app.

## How do I capture screensnaps?

- Fn + 0 (PRTSCR) copies a screen capture to the clipboard.
- Win + Fn + 0 saves a screen capture to the My Pictures/Screenshots folder.

## How do I activate Windows 10 on the TSC7 controller?

Windows 10 will guide you through the configuration process. This process takes a few minutes. You should set up a Windows account and a user. After the initial setup, you can change user settings and most of the other settings in the Settings menu.

### How does the operating system language provisioning feature work?

When you turn on the TSC7 controller for the first time, you are prompted to select the desired language.

## Connectivity

### Can the TSC7 controller be used for voice calls?

Not through the cellular network, however you can use Microsoft Teams or similar audio and video applications.

### How can I transfer data with my TSC7 controller?

Data can be transferred from the TSC7 controller using the following methods:

- Via cloud-based file sync services (for example, Trimble Connect® app, Dropbox, Microsoft OneCloud, Google Drive sync, or with other cloud-based apps) over Wi-Fi or 4G.
- Via Wi-Fi connection using a wireless LAN connection to an access point
- Via a USB stick

The Windows operating system enables the use of any cloud-based software already in common use. It is also possible to sign in through the Trimble Access software to an integrated survey workflow which connects Trimble Business Center office software and other office-based data with Trimble Access software using Trimble Sync Manager™ and the Trimble Connect cloud platform.

### What cellular networks does the TSC7 controller support?

Worldwide LTE in regions where it is available, and compatible with 4G networks. AT&T and Verizon are supported. Wi-Fi 802.11 a/b/g/n/ac, 2.4 GHz, Bluetooth® 5.1.

### How can I use the TSC7 controller Wi-Fi capability?

The TSC7 controller has an integrated Wi-Fi wireless Local Area Network (WLAN) radio that can be used to receive data anywhere within the range of a Wi-Fi access point. A Wi-Fi connection can be used to connect to the internet (at broadband speeds) through an access point.

**NOTE**: When there is an active connection to a Wi-Fi access point, power consumption increases and the battery will discharge more rapidly, depending on factors such as:

- Proximity to the access point (more distance requires more energy)
- Total data sent and received over time (more data requires more energy)
- Ratio of upload and download activity (transmission, or upload, requires more energy)

## How can I use the Bluetooth wireless technology capability?

The TSC7 controller has an integrated Bluetooth radio to establish cable-free connections to other Bluetooth devices that are within 10 meters.

Using a Bluetooth connection, you can communicate with other Bluetooth-enabled devices such as mobile phones, desktop computers and more. You can also communicate with Bluetooth-enabled peripheral devices instead of using USB connections.

**NOTE**: When there is an active connection to another Bluetooth device, power consumption increases and the battery will discharge more rapidly. Individual usage patterns will vary by device and the frequency of the Bluetooth communications.

## Can I connect to any Bluetooth device?

To pair the TSC7 controller with a Bluetooth device, it must have a Bluetooth PIN (for example 0000 or 1234). Some old Bluetooth devices do not require a PIN. For security, the TSC7 controller cannot connect to these older devices that do not require a PIN.

## How do I change the SD and SIM card?

The SIM card and SD card slots are underneath the two Empower module bays on the top back of the device. If you have Empower modules installed, you will need to remove them. If you do not have modules attached to the device, module bay covers should be attached; you will need to remove these.

1. For either Empower modules or the module bay covers, use a Philipps screwdriver to loosen the 4 Phillips screws.
2. Looking from the top down, there is an elongated door secured with 2 silverish Philipps screws. Loosen these screws and then use the little triangular grip to open the SD/SIM card door.
3. Insert the SD (SDXC) or SIM (micro) card. Then close the SD/SIM door and replace the screws, and re-attach the modules or module bay covers, tightening the screws.

## What type of cable connections does the TSC7 controller support?

The standard configuration TSC7 controller ships with USB 3, serial DB-9, power, and audio plug on the user-replacable I/O boot.

## Can I replace the I/O block?

Yes. The I/O boot is user-replaceable in case of damage. There is a USB/Serial RS232 DB9 (standard) and a USB/USB variant available.

### Can I use a normal USB cable to connect my TSC7 controller to my desktop PC / laptop?

No. USB cables as used for mobile devices are not supported because the TSC7 controller uses a Windows 10 desktop operating system, not a mobile operating system.

### Is there a potential problem with USB 3.0 and GNSS?

Yes. USB 3.0 in general can potentially jam GNSS bands. Trimble recommends you do not use USB 3.0 sticks on the TSC7 controller to transfer data when logging base data.

## GNSS

### Does the TSC7 controller have internal GNSS?

Yes. The TSC7 controller has integrated GNSS.

### What level of GNSS accuracy can I expect with my TSC7 controller?

The typical accuracy is 2 to 4 meters. Note that the accuracy depends on environmental conditions.

### Can I use an external GNSS antenna with my TSC7 controller?

No. The internal receiver has no antenna connector.

### Can I postprocess the GNSS data from the internal GNSS receiver?

No. If you want GNSS raw data for postprocessing, use a Trimble external GNSS receiver.

### Can I use an external GNSS receiver with my TSC7 controller?

Yes. For more information, see the Trimble GNSS systems portfolio here:
https://geospatial.trimble.com/products-and-solutions/gnss-systems

## Operating System

### What operating systems does TSC7 controller support?

The TSC7 controller supports Microsoft Windows 10. This is an open and fully capable desktop operating system enabling you to run any Windows software, such as Microsoft Office or Microsoft Teams.

### Can I install my own Microsoft Windows 10 operating system and are the required drivers available?

Yes. It is possible to install an enterprise version of Windows 10 on the TSC7 controller as with any other PC. Drivers are available on the TSC7 controller support website.

### How can I reset my TSC7 controller?

You can reset the TSC7 controller through the Windows 10 operating system.

### Does the TSC7 controller support Windows 11?

Windows 11 requires device screens of 9" or larger. With a 7" screen the TSC7 controller supports Windows 10 and will continue to receive security and driver updates via Windows Update.

### How do I reload the operating system, or update the BIOS?

Windows images and BIOS are located here: http://mcs.trimble.com

## Power

### What does the status LED indicate?

- Green - Solid: On
- Green - Flashing: Sleep / Suspend
- Orange - Solid: charging (changes to solid green when charged)
- Red - Flashing: 10% battery charge left

### Will using WWAN impact my battery life?

Yes. However, battery life is a complex calculation, based on a variety of factors that include: software applications in use, wireless features in use (Bluetooth, Wi-Fi, GPS), exposure to extreme heat or cold, age of the batteries, and battery storage and charging routines. Using the WWAN feature requires power which comes from the batteries when the device is not plugged into an electrical outlet.

Typically, your battery run times will be impacted less than 10% to as much as 20%, depending on transmit and receive times, and standby time.

## How do I change the batteries?

Do the following:

1. Turn the battery latch to give way for one battery (Note: The battery latch cannot be turned a full 360° by design, to prevent unintended false locks).
2. Insert one battery.
3. Turn the battery latch 180°, and insert the 2nd battery.
4. Turn the battery latch by 90° to lock both batteries in place.

To remove or hot-swap batteries:

**CAUTION** - Trimble strongly recommends that before you hot-swap a battery:

- In the Trimble Access software, you complete your task;
- In all other applications, you save your data.

**NOTE:** If you remove both batteries at the same time the device will instantly turn off due to power loss. Make sure you keep one battery in the device by following the instructions. If you have the device turned off you can remove both batteries at the same time.

1. Use the battery indicator LEDs to identify the battery with more remaining power. Start with the battery with the least remaining power.
2. Turn the battery latch by 90° and remove one battery.
3. Replace this battery, then rotate the battery latch by 180°.
4. Remove the 2nd battery.
5. Replace the 2nd battery, then rotate the battery latch 90° to lock both batteries in place.

## Can I charge the batteries in my TSC7 controller?

Yes. Batteries can be charged in the TSC7 controller, or using the external battery charger available as an accessory.

## Can I use a power bank to charge the TSC7 controller?

No. A power bank provides 5V through the USB port. Power banks are suitable for smartphones or small tablets, but the TSC7 controller consumes more power. It uses 19V and can only be charged through the power supply port.

## What happens if I remove both batteries at the same time?

The TSC7 controller will instantly turn off due to power loss. Make sure you always keep one reasonably charged battery in the device when changing the batteries.

## Why are the batteries arriving "dead"?

The batteries are not dead but in sleep mode. This prevents them from degrading when they are shipped or stored. The batteries will "wake up" once charged in a TSC7 controller or using the external battery charger (available as an accessory).

## In which order is power consumed from the batteries?

One battery is discharged first, then the second battery is discharged. This gives you better control over the battery status and hot-swap.

## How do I maximize battery life?

Ways to reduce power consumption and extend the battery life are:

- Power saver mode (Windows 10 Action Center).
- Minimize the Power & Sleep timeout settings (Settings / System / Power & Sleep)
- Reduce the display backlight (Fn + 4 keys on the keypad).
- Lock the screen rotation.
- Turn off the radios (Wi-Fi, WWAN, Bluetooth) when you are not using them.
- Change sync settings (Settings / Accounts / Sync your settings). Deselect the items you don't need.

## Is it normal for the battery to get warm?

Yes, it is normal for any battery to get warm during discharge or charging. Note that batteries should not be charged at temperatures below 32 °F (0 °C ) nor temperatures above 113 °F (+45 °C) to avoid impacting battery longevity and performance. Do not charge batteries inside a hot vehicle (for example, parked in the sun) as temperatures can quickly exceed the specified range.

## The TSC7 controller released in October 2022 is said to have better battery life, what can I expect compared to the previous model?

Battery life on the new model has improved to an estimated 8 hours of use compared to 4 ½ hours on the previous model. Environmental conditions, screen brightness and application use can vary.

## Where can I get more information?

Go to https://geospatial.trimble.com/tsc7 or contact your local authorized Trimble Distributor.