SOKKIA

SHC700

Field Computer

SOKKIA

SHC700 Operator Manual

Part Number 1075208-01 (32512-00 JS)

Revision A

Contents

Preface

Thank you for purchasing this Topcon product. The materials available in this Manual (the “Manual”) have been prepared by Topcon Positioning Systems, Inc. (“TPS”) for owners of the covered Topcon product (the “Product”) and are designed to assist owners with the Product. Use of the Product is subject to these terms and conditions (the “Terms and Conditions”).

NOTE Please read the terms and conditions carefully.

Terms and Conditions

Use

This product is designed to be used by a professional. The user should have a good knowledge of the safe use of the Product and implement the types of safety procedures recommended by the local government protection agency for both private use and commercial job sites.

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Manual Conventions

Convention	Description	Example
Bold	Button or key commands	Select **Display**.
Italic	Link or cross-reference	See *Chapter 3* for more information.

Icon	Purpose
 **NOTE**	Further information to note about the system configuration, maintenance, or setup.
 **CAUTION**	Notification that an action has the potential to result in minor personal injury, system damage, loss of data, or loss of warranty.
 **WARNING**	Notification that an action has the potential to result in personal injury or property damage.

1 Getting Started

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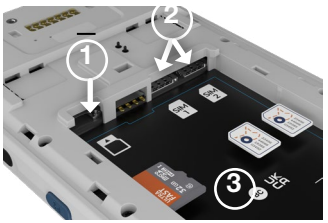
1. Getting Started

The SHC700 Rugged Handheld powered by Android™ features Bluetooth, Wi-Fi, two programmable keys, fingerprint sensor, and a GNSS/GPS receiver. Standard accessories include a lithium-ion battery, hand strap and attachment loop, USB-C cable and charger, international plug heads, and T6 screw driver. A sub-meter GNSS antenna is an expansion option.

1.1 The Anatomy of the SHC700

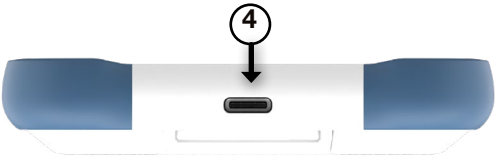
1 Power Button
2 Volume Up
3 Volume Down
4 Programmable Key P1
5 Proximity Sensor
6 Ambient Light Sensor
7 16 MP Front Camera
8 RGB LED Indicator
9 Front Speaker
10 Fingerprint Sensor
11 Programmable Key P2
12 Camera Flash/Flashlight
13 48 MP Rear Camera
14 Expansion Pod Attachment
15 Rear Speaker
16 Battery Door Locks
17 Battery Door
18 Microphone
19 Hand Strap Mounting Loop

1.1.1 Battery Compartment and Card Slots



1 Micro SD Card Slot
2 Two Nano SIM Slots
3 Battery Compartment

1.1.2 USB-C Port



4 USB-C Port

1.1.3 Future Optional Accessory

5 GNSS Antenna

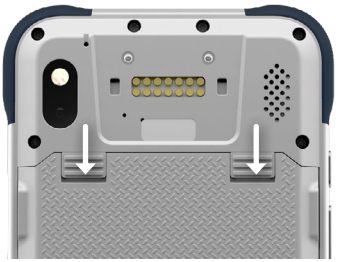
1.2 Perform Initial Tasks

When you receive your SHC700, perform the tasks outlined in this section before the first use.

1.2.1 Remove the Battery Door

Access the battery compartment from the back of the handheld.

1. Slide both battery door locks down.



2. Remove the door.
   If the hand strap has been installed, loosen it from the top mounting loop to remove the battery door.

CAUTION The SHC700 is not sealed against water and dust when the battery door is not installed.

1.2.2 Install/Remove the SIM/SD Card(s)

If you are using a nano SIM card and/or a micro SD card, install them now, before you install the battery pack, or at another time. To insert or

remove a card orient the card(s) as depicted in the image on the battery compartment label.

- Push a card into the slot to insert it.
- Push a card out of the slot to remove it.

1.2.3 Install the Battery

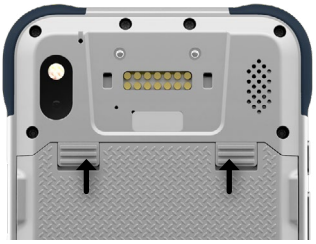
1. Place the Li-Ion battery pack in the battery compartment.

   Holding the battery at an angle, position the top of the battery into the compartment aligning the grooves on the top of the battery with the tabs inside. Press the bottom edge of the battery into the compartment.

2. Insert the three tabs on the battery door into the slots around the lower hand strap mounting loop.

3. Working from the bottom of the door toward door locks, press the door tabs along the sides of the door into place.

4. Slide the battery door locks into the locked position.



NOTE The battery door latches must be in the locked position for the NFC to work.

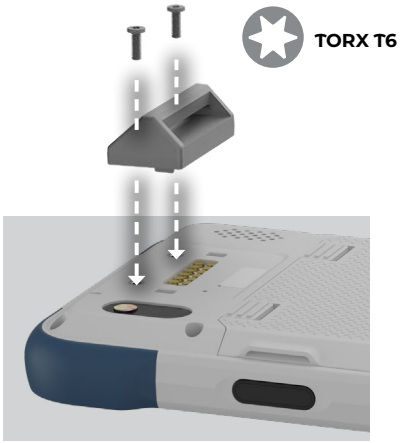
1.2.4 Charge the Battery

1. Plug in the USB charger and cable and connect it to the SHC700. The RGB LED indicator changes from red to yellow to green as the battery charges from a low power charge to fully charged. Charge the battery pack for 4-6 hours at room temperature. See *2.8.2 Charging the Battery Pack* on page 22.

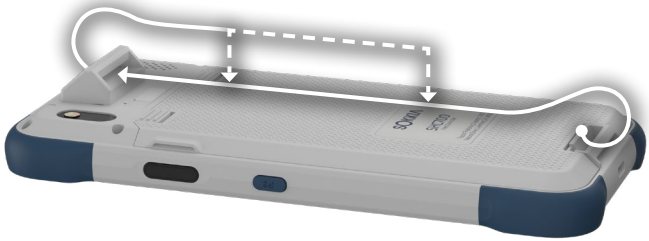
1.2.5 Install the Hand Strap

1. Remove the silicone plug.

2. Position the upper hand strap mounting loop over the expansion pod attachment.
3. Press the tabs into the slots.
4. Use the two screws to screw in the upper hand strap mounting loop to the SHC700.



5. Position the hand strap with the VELCRO® brand fastener facing down. Thread the hand strap through the bottom mounting loop.



6. Thread the hand strap through the upper mounting loop.

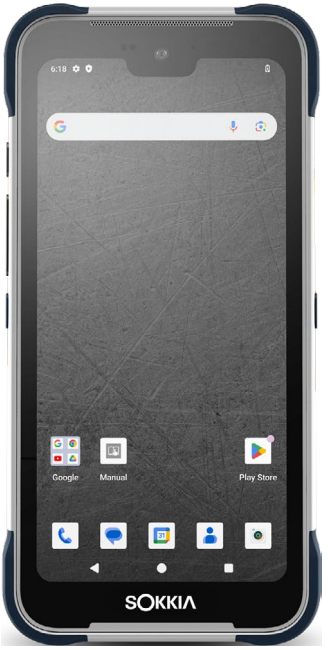
7. Fold the hand strap back over the upper mounting loop and affix to itself.

1.2.6 Power on, Power off, or Restart

To power on your SHC700:

1. Press and hold the power key for 3 seconds.

2. Swipe up to reveal the **Home** screen.



To power off:

1. Press both power and volume up.

2. Tap **Power Off**.

If you want to restart the handheld, tap Restart instead of Power Off.

2 Standard Features

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2. Standard Features

This chapter discusses the standard features included on all SHC700 models.

2.1 Operating System

This SHC700 is powered by the Android 14 operating system. Update the device-specific drivers, firmware, and apps from *https://mytopcon.topconpositioning.com/na/support*.

2.2 Preloaded Apps

The SHC700 comes with preloaded apps. To view all of the preloaded apps:

1. Swipe up from the **Home** screen.

2.3 Installing Apps

Use Google Play, located on the **Home** screen, to download additional apps.

If you would like to install Android apps without using Google Play, you can sideload an apk file using a PC and USB cable to connect to your handheld.

1. Connect a USB cable from your SHC700 to your PC.
2. From **Setting** > **About phone**, tap **Build Number** seven times.
3. Enter the device PIN. The PIN was created when you first set up the handheld.
4. From **Settings** > **System** > **Developer Options**, select **USB debugging**.
5. From **Settings** > **Connected Devices** > **USB**, tap **File Transfer**.

   You will only see the File Transfer option if there is a USB cable plugged in to both your PC and SHC700.

With file transfer set, you can move an apk file from your PC to your SHC700. Once the apk file is saved on your handheld, open it to complete the installation process.

2.4 Digital Assistant

Press and hold the power button to activate the digital assistant.

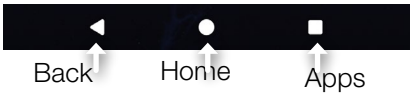
2.5 Programmable Keys

The SHC700 has two keys that you can program from **Settings** > **Programmable Keys**. By default the P1 key displays the **Home** screen. The P2 key shows the apps that you have used recently (App Select function). The following functions/values can be assigned to either of the keys.

None	Enter	Space
Back	Touchscreen Enable/ Disable	Backspace
Home	Screenshot	Camera Capture
App Select	Tab	Scan
Volume Up	Left	Numbers 0–9
Volume Down	Right	. (period)
Brightness UP	Up	-
Brightness Down	Down	F1–F12
Menu		

2.6 Android Navigation

The SHC700 uses the default Android navigation.

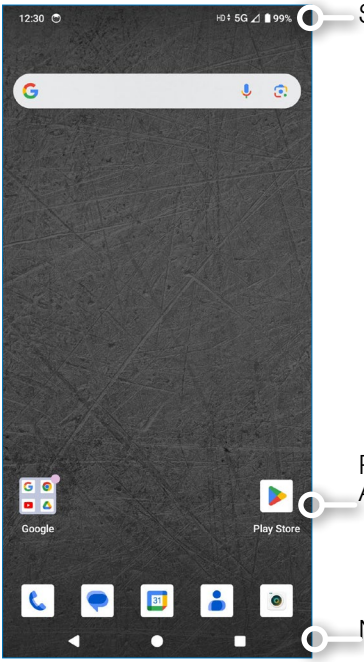


2.7 Display and Touchscreen

To adjust display settings including brightness, wallpaper, sleep interval, font size, and orientation, go to **Settings** > **Display**.

2.7.1 Home Screen

The **Home** screen consists of the following elements.



2.7.2 Touchscreen

The touchscreen of the SHC700 will function in a wide variety of settings. You do not need to make any change for the screen to work in wet conditions.

2.7.3 Disable or Enable the Touchscreen

The touchscreen on the SHC700 can be disabled. This is useful when you are running an app and you want to see the screen while avoiding accidental touchscreen activation. The touchscreen can also be disabled for cleaning purposes.

To disable the touchscreen, it is necessary to program one of the programmable keys to provide this functionality.

From **Settings** > **Programmable Keys**:

1. Select a key to program (P1 or P2).
2. Tap **Touchscreen Enable/Disable**.

This programmed key will now function as the On/Off switch for the touchscreen.

While the touchscreen is disabled, the  icon displays in the Status bar.

2.8 Power Management

The SHC700 uses a Li-Ion rechargeable battery pack. There are two battery options.

- 4500 mAh, fully charged lasts 8 hours or more under standard conditions
- (Optional) 8300 mAh, fully charged lasts 18 hours or more under standard conditions

Battery life varies depending on the backlight, open apps, GNSS use, and radio usage.

Do not install the battery door without the primary battery installed. If you do the handheld will immediately turn off and any unsaved data will be lost.

Only use batteries designed for the SHC700 from an approved vendor. Use of non-approved batteries may change performance and will void your product warranty.

Although it is not possible to overcharge the SHC700 battery pack, leaving it connected to the charger long-term may damage the Li-ion battery.

2.8.1 Hot Swap Battery

An internal secondary battery gives up to five minutes of time for you to change batteries without loosing data or damaging your handheld. When you opt to hot swap your battery, the handheld screen will dim and a notification will display.

Do not power the SHC700 with a USB charger and cable while replacing or removing the primary battery.

2.8.2 Charging the Battery Pack

The Li-Ion battery pack is charged most efficiently at room temperature (68° F or 20° C), but it will still charge at any temperature between 41° and 113° F (5° to 45° C). The battery may not charge outside of this range.

2.8.3 Removing the Battery for Long-Term Storage

To power off the SHC700 for long-term storage:

1. Charge/discharge the battery to 30–50%.
2. Press both power and volume up keys.

3. Tap **Power Off**.
4. Take out the battery pack. Store it in a cool, dry location.

Check the stored battery after three months. If the battery is discharged below 30%, charge it to at least 30%.

When you are ready to power on the SHC700:

1. Replace the battery pack.
2. Plug in the USB charger and cable and connect it to the SHC700.
3. Power on the SHC700.

2.8.4 How to Handle a Locked Up Unit

If the SHC700 is completely unresponsive:

1. Press the power and volume up keys.
2. Tap **Restart**.

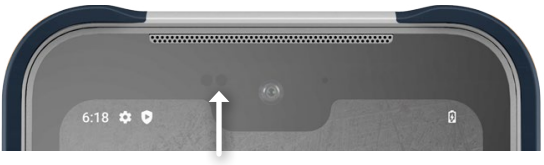
If restarting the handheld does not work, force it to shut down.

1. Press and hold the power key for 18 seconds.

WARNING Forcing a shut-down while the unit is running can cause damage to the device. NEVER do this to power off an SHC700 in normal circumstances.

2.9 LED Activity Indicators

LED activity indicators are located at the top of the screen.



LED Color	Meaning
Red, solid	Battery charge less than 20%. Charger connected.
Red, blinking	Battery charge less than 20%. No charger connected. Screen on.
Yellow, solid	Battery charge 21–90%. Charger connected.
Green, solid	Battery charge above 90%. Charger connected.

As the SHC700 charges, the LED transitions from red to yellow to green. The yellow and green color can be difficult to distinguish if not looking at the device with the screen at a 45–60° angle relative to your gaze.

2.10 Data Storage Options

2.10.1 Flash Data Storage

The SHC700 has 128 GB of internal flash data storage. You can see how much storage is available and how it is being used (storing apps or images, for example) from **Settings** > **Storage**.

2.10.2 Micro SD Storage

The SHC700 has up to 512 GB of micro SD storage.

2.11 Compass, Accelerometer, and Gyroscope

The SHC700 has a built-in compass, accelerometer, and gyroscope. The accelerometer assists the compass in determining direction, even if the handheld is not resting flat. The gyroscope senses change in angular motion. The compass, accelerometer, and gyroscope can also be used by other user applications.

2.11.1 Compass Calibration

Periodically calibrate the compass in your handheld to help maintain its performance.

To calibrate the compass:

1. Open an app that uses the compass.
2. Move the SHC700 around in the air so that it is oriented in different directions and angles. An effective method is to move the handheld back and forth making a sideways figure eight for approximately 10 seconds.

2.12 Bluetooth Wireless Communication

The SHC700 has built-in Bluetooth wireless technology. It has a tested line of sight range of 650 feet (200 meters), but actual range varies depending on the output of both paired devices. If you test your SHC700 with your Bluetooth devices, you may find the actual range extends far beyond the tested range.

To pair the SHC700 and another device using Bluetooth technology:

1. Turn on both devices.
2. Swipe down from the top of the SHC700 screen.
3. Long tap **Bluetooth**.
4. From Connected Devices, tap
   - **Pair new** to pair a device for the first time.
   - **See all** for previously paired devices.
5. From Pair new device, select the device you want to pair.
6. Tap **Pair** when asked.

The newly paired device will show on the **Connected devices** screen.

To disconnect a paired devices:

1. Swipe down from the top of the SHC700 screen.
2. Long tap **Bluetooth**.
3. From Connected Devices, tap  next to the name of the device to disconnect.
4. From Device details, tap **Disconnect**.

Additional device settings can be found and adjusted by following steps 1–3.

Bluetooth can also be accessed from **Settings** > **Connected Devices** > **Bluetooth**, where you can access additional information.

2.13 Wi-Fi Wireless Networking

The SHC700 has a built-in Wi-Fi wireless networking to connect to 2.4, 5, or 6 GHz Wi-Fi networks.

To connect to Wi-Fi, the handheld must be in range of a Wi-Fi access point to make a connection.

To connect the SHC700 to a Wi-Fi network:

1. Swipe down from the top of the screen.
2. Tap Internet.
3. Check that the Wi-Fi toggle is enabled.
4. Tap the name of the Wi-Fi network from the list of available networks.
    - Enter the password for the network if requested.

The SHC700 remembers the Wi-Fi network connections you create. When Wi-Fi is turned on, the SHC700 automatically scans the area for available Wi-Fi networks.

Wi-Fi can also be accessed from **Settings** > **Network & internet** > **Internet**, where you can access additional information.

- Tap the network the SHC700 is currently connected to view additional information like modify network.

2.14 Cellular Networking

The SHC700 has a built-in cellular networking to connect to 4G LTE and 5G cellular networks (WWAN). The handheld simultaneously accommodates two nano SIM cards, allowing you to quickly switch networks.

To connect to a cellular network:

1. Install the nano SIM card provided by your cellular provider. See *1.2.2 Install/Remove the SIM/SD Card(s)* on page 11.
2. Access the settings for the cellular networking from **Settings** > **Network & internet** > **SIMs** > **name of your cellular network**.

If your cellular carrier requires specific APN settings, you can access them from **Settings** > **Network & internet** > **SIMs** > **name of your cellular network** > **Access Point Names**.

2.15 Near Field Communication (NFC)

The SHC700 has a built-in NFC capability. You can enable/disable the NFC from **Settings** > **Connected Devices** > **Connection Preferences** > **NFC**.

NOTE The battery door latches must be in the locked position for the NFC to work.

2.16 GNSS Location

Although the SHC700 has a built-in dual-frequency (L1/L5) GNSS receiver, Android Location Services is used by default. Various apps, including the camera, can use position information provided by the GNSS receiver.

To enable the GNSS receiver:

1. From **Settings** > **Location**, select **Use Location**.

As needed, allow specific apps to have access to the position data.

Position data, whether provided by Android Location Services or the built in dual-frequency GNSS receiver works with the handheld positioned in portrait or landscape view. The accuracy will be slightly better when the SHC700 is held in portrait view.

2.16.1 GNSS Accuracy

The built-in GNSS receiver provides 2–5 meter accuracy. Putting your hand or another object over the antenna area reduces its accuracy. The more items between the antenna and the satellites, the lower the accuracy becomes.

A sub-meter GPS/GNSS antenna expansion is available. See *3. Future Optional Accessory: Sub-meter GPS/GNSS* on page 30.

2.17 Camera

The SHC700 has two built-in cameras.

- Front camera: 16 MP
- Rear: 48 MP

To launch the camera, do one of the following:

- Tap the camera icon.
- Press the power key twice.

2.17.1 Camera and Video Settings

By default, the camera is in photo mode when you open the app.

To switch to video:

1. Swipe up from the camera icon.
2. Tap **video**.

To switch from video to camera, repeat the steps choosing camera in step 2.

To change settings:

3. Tap the  icon.
4. Change camera settings as desired.

2.17.2 GNSS Metadata

The SHC700 can geotag images with location metadata.

To enable geotagging:

1. Open the Camera app.
2. Tap the  icon.
3. Select Location Tagging.
4. Respond with your desired options when asked, whether to allow the Camera to access device's location.

After enabling geotagging, you can mange it (turn it off and on) by going to **Settings** > **Apps** > **Camera** > **Permissions** or deselecting Location Tagging in the camera app settings.

2.18 Fingerprint Scanner

The SHC700 has a built-in fingerprint scanner on the side of the device, above P2 key. You will be prompted to set it up when you first set up your handheld.

Add or delete a fingerprint, from **Settings** > **Security & privacy** > **Device unlock** > **Fingerprint**.

When adding a fingerprint follow the prompts.

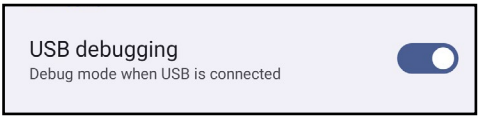
2.19 Share Files

As with other Android devices, file sharing with the SHC700 is fairly straight forward.

2.19.1 USB-C Cable to PC

Share files directly with a PC using a USB-C cable. Once the SHC700 is connected to the PC with the cable:

1. From **Settings** > **About phone**, tap **Build Number** seven times . (This enables developer mode on the handheld.)
2. From **Settings** > **System** > **Developer Options**, enable **USB debugging**.



3. From **Settings** > **Connected devices** > **USB**, tap **File Transfer**.

2.19.2 USB-C Storage Device

To share files using a USB-C storage device:

1. Connect the USB-C storage device to your SHC700 using the USB-C port.
2. From **Settings** > **About phone**, tap **Build Number** seven times . (This enables developer mode on the handheld.)
3. From **Settings** > **Connected devices** > **USB**, tap **File Transfer**.

Other options for file sharing are Bluetooth, cloud services, app syncing, and email.

3 Future Optional Accessories

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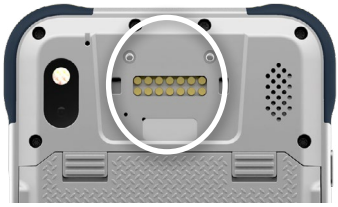
3. Future Optional Accessory: Sub-meter GPS/GNSS

A sub-meter GPS/GNSS antenna expansion can be added to any SHC700 to increase the accuracy of GPS/GNSS position data.

To install the sub-meter GPS/GNSS expansion:

1. Remove the hand strap and upper mounting loop (if applicable).
2. Remove the silicone plugs.



3. Attach the expansion with the screws provided.

4. Route the hand strap through the mounting loop at the bottom of the sub-meter GNSS expansion, if desired.

To use the sub-meter GNSS antenna:

1. Select U-Blox USB GPS from Settings > Location.

4

Storage, Maintenance, and Recycling

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4. Storage, Maintenance, and Recycling

Follow the instructions in this chapter to properly store, maintain, and recycle the SHC700.

4.1 Storing the SHC700 for More than Two Weeks

To store the handheld for two weeks or more, complete the following steps:

1. Charge the battery pack to 30–50%.
2. Close all running programs.
3. Power off the handheld by holding the power button until the Power menu appears and selecting Power Off.

NOTE Power-off the SHC700 before removing the battery. Although the handheld has an internal battery to provide a limited amount of power, power off to ensure that data is saved.

4. Remove the battery pack.
5. Place the battery pack in a dry location.

4.2 Cleaning the SHC700

Make sure the battery door is securely installed.

4.2.1 Touchscreen

1. Rinse the touchscreen in a slow stream of running water to loosen and rinse off any mud, grit, or other abrasive.
2. Apply warm water or a mild cleaning solution to a microfiber cloth and gently wipe off the touchscreen.
3. Rinse with water and dry with a microfiber cloth.

CAUTION Do not use abrasive pads, soft bristle brushes, or harsh cleaning solutions on the touchscreen.

4.2.2 Case, Bumpers, and Connector Module

Use warm water, a mild soap, and a soft bristle brush to clean the case, bumpers, and connector module.

WARNING Do not direct a high-pressure stream of water at the handheld to clean it. This action could break the seal, causing water to get inside the device and voiding the warranty.

CAUTION Exposure to some cleaning solutions may damage your handheld, including automotive brake cleaner, isopropyl alcohol, carburetor cleaner, and similar

solutions. If you are uncertain about the strength or effect of a cleaner, apply a small amount to a less visible location as a test. If any visual change becomes apparent, promptly rinse and wash with a known mild cleaning solution.

4.3 Recycling the SHC700 and Batteries

When the SHC700 reaches the end of its life, it must not be disposed of with municipal waste. It is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment.

The Li-Ion battery packs for your SHC700 are recyclable. Avoid placing them in the trash or municipal waste system. To find the nearest battery recycling center in the USA, visit the Rechargeable Battery Recycling Corporation, *www.call2recycle.org*.

5 Warranty and Repair Information

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5. Warranty and Repair Information

5.1 Limited Product Warranty

5.1.1 Two-Year Warranty

Topcon warrants that the SHC700 field computer and optional internal battery shall be free from defects in materials and workmanship, under normal intended use, for a period of 24-months that shall commence on the date the product is purchased from Topcon and excludes replaceable battery packs, media containing tablet and desktop PC programs, user documentation, and any accessories. To be eligible for coverage under this Warranty, a product believed to be defective must be received by an authorized Topcon service facility within the warranty period. Contact your Topcon dealer for additional warranty information.

Products can be registered on the myTopcon website: *https://www.topconpositioning.com/na/register*.

Warranty service may be obtained by contacting an authorized Topcon dealer. Purchaser agrees to ensure the product and/or assume the risk of loss in transit, prepay shipping charges to the warranty service location, and use the original instrument carrying case and shipping container or the equivalent. End users should contact their Topcon dealer for proper instructions on returning products to a warranty service location.

5.1.2 90-Day Warranty

Topcon warrants that the following items shall be free from defects in materials and workmanship, under normal intended use, for a period of ninety (90) days that shall commence on the date the Product is purchased from Topcon.

- Replacement battery packs
- User documentation
- Accessories

5.1.3 Warranty Exclusions

This warranty does NOT extend to products that have been, as determined by Topcon, exercising its sole discretion:

- improperly installed, calibrated, configured, or interfaced;
- misused, abused, modified improperly or without authorization, improperly maintained, serviced by anyone other than an authorized Topcon service provider;
- damaged or rendered defective due to accident (e.g., impact/drop), act of God, exposure to any other event or condition for which the product

was not intended, including but not limited to: fire, water, environmental hazards, atmospheric conditions, solar activity;

- damaged or rendered defective as a result of the product being used in combination with other devices or accessories that are not approved by Topcon for use with the Product;
- normal wear and tear or cosmetic damage; or
- operation outside of the environmental or other specifications for the product.

5.1.4 Remedy

In the event a defect in materials or workmanship is discovered and reported to an authorized Topcon dealer within the specified warranty period, after evaluation by a technician at a certified repair center or Topcon facility, Topcon will, at its option, repair the defect or replace the defective part or product. Replacement products may be new or reconditioned. Topcon warrants any replaced or repaired product for a period of ninety (90) days from the date of return shipment, or through the end of the original warranty period, whichever is longer.

5.1.5 Limitation of Liability

To the fullest extent allowed by law, the obligation of Topcon shall be limited to the repair or replacement of the product. Topcon shall in no event be liable for special, incidental, or consequential, indirect, special or punitive damages of any kind, or for loss of revenue or profits, loss of business, loss of information or data, or other financial loss arising out of or in connection with the sale, installation, maintenance, use, performance, failure, or interruption of any product. Any responsibility and/or liability of Topcon shall, in connection with a warranted product, be limited to the original purchase price for the subject product.

5.1.6 Governing Law

This warranty is governed by the laws of California and excludes the United Nations Convention on Contracts for the International Sale of Goods. The courts of California shall have exclusive personal jurisdiction in case of any disputes arising out of or in connection with this warranty.

5.1.7 Warranty Repairs

Warranty information for the SHC700 field computer is located on the Topcon website at *https://topconpositioning.com/na/support* or contact an

authorized repair center within the applicable warranty period.

5.2 Extended Warranty Plans

Topcon offers Topcon dealers to opportunity to purchase an extended warranty at the point of sale to an end user. An extended warranty offers identical coverage to the standard coverage and becomes effective upon expiration of the standard warranty.

5.3 Repairs, Upgrades, and Evaluations

CAUTION Do not attempt to repair the FC-100 yourself. This action voids the warranty.

Please contact your Topcon dealer about repairs, upgrades, and evaluations. If you do not have a Topcon dealer, please visit *https://mytopcon.topconpositioning.com/na/support* and select **Find a Dealer**.

Before returning a unit, please be sure to obtain an RMA (Return Material Authorization) from your Topcon dealer. Be prepared to provide the following information:

- The product serial number. This information can be located by opening Device Settings or inside the battery compartment.

CAUTION Before opening the battery door and removing the battery, see the proper procedure in *1.2.1 Remove the Battery Door* on page 10 and *1.2.3 Install the Battery* on page 12.

- Name and shipping address.
- Best contact method (phone, fax, email, cell/mobile).
- Clear, highly-detailed description of the repair or upgrade.

5.4 System Information for Your SHC700

You might be asked to provide additional information about your SHC700 when you contact a repair center. To view information like the operating system edition, OS build, and serial number, open **Setting** > **About phone**.

6

Product Warnings

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6. Product Warnings

Follow the warnings in this chapter to use the SHC700 and accessories safely.

6.1 Battery Warnings

WARNING This device comes with a lithium ion rechargeable battery pack. To reduce the risk of fire or burns, do not disassemble, crush, puncture, short external contacts, or expose the battery pack to fire.

Do not disassemble, open, crush, bend, deform, puncture, or shred.

Do not modify or remanufacture, attempt to insert foreign objects into the battery, immerse or expose to water or other liquids, expose to fire, explosion or other hazard.

Only use the battery for the system for which it is specified.

Only use the battery with a charging system that has been qualified with the system per this standard. Use of an unqualified battery or charger may present a risk of fire, explosion, leakage, or other hazard.

Do not short circuit a battery or allow metallic conductive objects to contact battery terminals.

Replace the battery only with another battery that has been qualified with the system.

Use of an unqualified battery may present a risk of fire, explosion, leakage or other hazard.

Promptly dispose of used batteries in accordance with local regulations.

Battery usage by children should be supervised.

Avoid dropping the battery. If the battery is dropped, especially on a hard surface, and the user suspects damage, take it to a service center for inspection.

Improper battery use may result in a fire, explosion or other hazard.

WARNING Risk of explosion if battery is replaced by incorrect type.

6.2 USB Charger and Cable Warnings

CAUTION To reduce the risk of personal injury, electrical shock, fire, or damage to the equipment:

- Plug the USB charger and cable into an electrical outlet that is easily accessible at all times.
- Do not place anything on the USB charger and cable cord or any of the

other cables. Arrange them so that no one may accidentally step on or trip over them.

- Do not pull on a cord or cable. When unplugging the USB charger and cable from the electrical outlet, pull on the plug, not the cord.
- To optimize battery charging, use only USB charger and cables with an output rating of 5 V DC and 3 A, although any charger with an output of up to 18 W will work. The USB charger and cable must be certified or listed by a nationally recognized testing laboratory. The USB charger and cable provided with the SHC700 meets these criteria.

6.3 Certifications and Standards

6.3.1 United States

In compliance with the FCC rules 47 CFR 15.19(a)(3), the statements that follow must appear on the device or in the user documentation.

This device complies with Part 15 of the FCC Rules. Operation of this equipment is subject to the following two conditions:

- The device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

In compliance with the FCC rules, 47 CFR 15.105(b), the user must be notified that 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 communications. 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 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.

In compliance with the FCC rules, 47 CFR 15.21, the user must be notified that changes or modifications to the Rugged Handheld that are not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Only approved accessories may be used with this equipment. In general, all cables must be high quality, shielded, correctly terminated, and normally restricted to two meters in length. USB charger and cables approved for this product employ special provisions to avoid radio interference and should not be altered or substituted.

This device must not be co-located or operating in conjunction with any other antenna or transmitter.

Operations in the 5.15-5.25GHz band are restricted to indoor usage only.

Prohibited for control of or communication with unmanned aircraft systems, including drones. This device is prohibited for control of or communications with unmanned aircraft systems, including drones.

Radio Frequency Exposure Information (SAR)

This device meets the government's requirements for exposure to radio waves.

This device is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government.

The exposure standard for wireless device employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6W/kg. *Tests for SAR are conducted using standard operating positions accepted by the FCC with the device transmitting at its highest certified power level in all tested frequency bands. Although the SAR is determined at the highest certified power level, the actual SAR level of the device while operating can be well below the maximum value. This is because the device is designed to operate at multiple power levels so as to use only the poser required to reach the network. In general, the closer you are to a wireless base station antenna, the lower the power output.

The highest SAR value for the model device as reported to the FCC when tested for use at the ear is 1.12 W/kg and when worn on the body, as described in this user guide, is 0.74 W/kg (Body-worn measurements differ among device models, depending upon available accessories and FCC requirements.)

While there may be differences between the SAR levels of various devices and at various positions, they all meet the government requirement.

The FCC has granted an Equipment Authorization for this model device with all reported SAR levels evaluated as in compliance with the FCC RF exposure guidelines. SAR information on this model device is on file with the FCC and can be found under the Display Grant section of www.fcc.gov/oet/ea/fccid after searching on FCC ID: VSFAR4.

For body worn operation, this device has been tested and meets the FCC RF exposure guidelines for use with an accessory that contains no

metal and be positioned a minimum of 1.0 cm from the body. Use of other accessories may not ensure compliance with FCC RF exposure guidelines. If you do not use a body-worn accessory and are not holding the device at the ear, position the handset a minimum of 1.0 cm from your body when the device is switched on.

6.3.2 Canada

This device complies with Industry Canada license-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.

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

This device complies with RSS-310 of Industry Canada. Operation is subject to the condition that this device does not cause harmful interference.

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter, except tested built-in radios.

Radiation Exposure Statement

Portable Device (< 20 cm from body 0.76 W/kg)

The product comply with the Canada portable RF exposure limit set forth for an uncontrolled environment and are safe for intended operation as described in this manual. The further RF exposure reduction can be achieved if the product can be kept as far as possible from the user body or set the device to lower output power if such function is available.

This device has been tested for compliance with IC SAR values at a typical operating near the body. To ensure that RF exposure levels below the levels tested, use accessories with this equipment to maintain a minimum separation distance of 1.0 cm between the body of the user and the device. These accessories should not contain metallic components. It is possible that the accessories used close to the body that do not meet these requirements are not consistent with the SAR limits and it is advisable to avoid using them.

WLAN 5GHZ Device

Cautions

1. the device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;

2. the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall comply with the e.i.r.p. limit; and
3. the maximum antenna gain permitted for devices in the band 5725-5825 MHz shall comply with the e.i.r.p. limits specified for point-to-point and non point-to-point operation as appropriate.
4. the worst-case tilt angle(s) necessary to remain compliant with the e.i.r.p. elevation mask requirement set forth in Section 6.2.2(3) shall be clearly indicated. <for 5G B2 with DFS devices only>
5. Users should also be advised that high-power radars are allocated as primary users (i.e. priority users) of the bands 5250-5350 MHz and 5650-5850 MHz and that these radars could cause interference and/or damage to LE-LAN devices.

Telecomm Device

This product meets the applicable Industry Canada technical specifications. The Ringer Equivalence Number (REN) is an indication of the maximum number of devices allowed to be connected to a telephone interface. The termination of an interface may consist of any combination of devices subject only to the requirement that the sum of the RENs of all the devices not exceed five.

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.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Cet appareil est conforme à la norme RSS-310 d'Industrie Canada. L'opération est soumise à la condition que cet appareil ne provoque aucune interférence nuisible.

Cet appareil et son antenne ne doivent pas être situés ou fonctionner en conjonction avec une autre antenne ou un autre émetteur, exception faites des radios intégrées qui ont été testées.

La fonction de sélection de l'indicatif du pays est désactivée pour les produits commercialisés aux États-Unis et au Canada.

Déclaration d'exposition aux radiations

Appareil portable (< 20 cm du corps 0,76 W/kg)

Le produit est conforme aux limites d'exposition pour les appareils portables RF pour les Etats-Unis et le Canada établies pour un environnement non contrôlé.

Le produit est sûr pour un fonctionnement tel que décrit dans ce manuel. La réduction aux expositions RF peut être augmentée si l'appareil peut être conservé aussi loin que possible du corps de l'utilisateur ou que le dispositif est réglé sur la puissance de sortie la plus faible si une telle fonction est disponible.

Ce dispositif a été testé pour la conformité avec les valeurs SAR à un fonctionnement typique près du corps . Pour assurer que les niveaux d'exposition aux radiofréquences en deçà des niveaux testés , utiliser des accessoires avec cet équipement pour maintenir une distance de séparation minimale de 1.0 cm entre le corps de l'utilisateur et l'appareil. Ces accessoires ne doivent pas contenir des composants métalliques . Il est possible que les accessoires utilisés près du corps qui ne répondent pas à ces exigences ne sont pas compatibles avec les limites SAR et il est conseillé d'éviter de les utiliser.

Dispositif WLAN 5GHZ

Précautions:

1. les dispositifs fonctionnant dans la bande 5150-5250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;
2. le gain maximal d'antenne permis pour les dispositifs utilisant les bandes 5250-5350 MHz
   et 5470-5725 MHz doit se conformer à la limite de p.i.r.e.;
3. le gain maximal d'antenne permis (pour les dispositifs utilisant la bande 5725-5825 MHz) doit se conformer à la limite de p.i.r.e. spécifiée pour l'exploitation point à point et non point à point, selon le cas.
4. les pires angles d'inclinaison nécessaires pour rester conforme à l'exigence de la p.i.r.e. applicable au masque d'élévation, et énoncée à la section 6.2.2 3), doivent être clairement indiqués. <for 5G B2 with DFS devices only>
5. De plus, les utilisateurs devraient aussi être avisés que les utilisateurs de radars de haute puissance sont désignés utilisateurs principaux (c.-à-d., qu'ils ont la priorité) pour les bandes 5250-5350 MHz et 5650-5850 MHz et que ces radars pourraient causer du brouillage et/ou des dommages aux dispositifs LAN-EL.

Dispositif de télécommunication

Le présent matériel est conforme aux specifications techniques applicables d'Industrie Canada. L'indice d'équivalence de la sonnerie (IES) sert à indiquer le nombre maximal de terminaux qui peuvent être

raccordés à une interface téléphonique. La terminaison d'une interface peut consister en une combinaison

quelconque de dispositifs, à la seule condition que la somme d'indices d'équivalence de la sonnerie de tous les dispositifs n'excède pas cinq.

6.3.3 European Union

CE Marking

Products bearing the CE marking comply with EU Directive 2014/53/EU.

Declaration of Conformity

The Declaration of Conformity for CE Marking is available at: *https://mytopcon.topconpositioning.com/na/support*.

Radio Frequency Exposure

A minimum separation distance of 0.5 cm must be maintained between the user's body and the device, including the antenna during body-worn operation to comply with the RF exposure requirements in Europe.

The SAR limit for mobile devices is 2.0 W/kg and the highest SAR value for this device when tested for use at the head was 0.734 W/kg and when tested for use at the body was 1.579 W/kg.

Frequency bands	Maximum output power
LTE Band 1	23.19 dBm
LTE Band 3	22.65 dBm
LTE Band 7	23.20 dBm
LTE Band 8	23.33 dBm
LTE Band 20	22.52 dBm
LTE Band 28	22.74 dBm
LTE Band 38	23.21 dBm
LTE Band 40	23.21 dBm
NR N1	23.64 dBm
NR N28	23.43 dBm
NR N41	25.39 dBm
NR N77	27.28 dBm
NR N78	27.27 dBm
Bluetooth 2402~2480MHz	8.58 dBm
WIFI 2.4G Band	18.64 dBm
WIFI 5G Band	17.19 dBm
WIFI 6 GHz RLAN	10.80dBM
NFC 13.56 Mhz	-21.01 dBuA/m@10m

5G Wi-Fi Restriction

Operations in the 5.15-5.35GHz band are restricted to indoor usage only.

	AT	**BE**	**BG**	**CH**	**CY**	**CZ**	**DE**	**DK**	**EE**	**EL**	**ES**	**FI**
	FR	**HR**	**HU**	**IE**	**IS**	**IT**	**LI**	**LT**	**LU**	**LV**	**MT**	**NL**
	NO	**PL**	**PT**	**RO**	**RS**	**SE**	**SI**	**SK**	**TR**	**UK**		

LVD Logo

To prevent possible hearing damage, do not listen at high volume levels for long periods.

7 SHC700 Specifications

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7. SHC700 Specifications

FEATURE	SPECIFICATION
Operating System	■ Android™ 14 GMS
GMS (Google Mobile Services)	■ EDLA Certified
Processor	■ Qualcomm 4490 octa-core up to 2.4 GHz
Memory (RAM)	■ 8 GB
Internal Storage (ROM)	■ 128 GB
SD Card Storage	■ Up to 512 GB ■ Micro SD slot, user accessible
Display	■ 500 nits typical (450 minimum) ■ Screen size (diagonal): 6.26” (159 mm) ■ Screen resolution: 2280 x 1080 FHD+ ■ Capacitive multi-touch interface for wet conditions ■ Chemically-strengthened Gorilla® Glass 5
Connectivity	■ Cellular 5G with 4G LTE fallback, dual nano SIM slots ■ Cellular: LTE-FDD: (B1/B2/ B3/B4/B5/ B7/B8/B12/B13/B14/B20/B25/B26/ B28a/B66/B71), LTE-TDD: (B38/B40/ B41), 5G: (N1, N2, N5, N41,N66, N71, N77, N78) ■ Wi-Fi: 6E 802.11 2.4/5 GHZ a/b/g/n/ac, 802.11 ax ■ Bluetooth 5.2 ■ Duel-band GPS, GLONASS, BDS, Galileo, SBAS, QZSS ■ NFC ■ OTG ■ USB Type-C (5Gbps, 5V power delivery):

FEATURE	SPECIFICATION
Ruggedness	■ Ingress protection: IP68 waterproof & dustproof ■ Operating Temperature: -4 F to 140 F (-20 C to 60 C) ■ Meets MIL-STD-810H test procedures: with the following methods: ■ 500.6 Low Pressure ■ 501.7 High Temperature ■ 502.7 Low Temperature ■ 503.7 Temperature Shock ■ 506.6 Rain, ■ 507.6 Humidity, ■ 510.7 Sand and Dust, ■ 512.6 Shock
Physical Features	■ Weight: .72–.87 lbs (325–395 g) depending on battery and expansion configuration ■ Dimensions ■ 4500 mAh battery: 174 x 85 x 15 mm ■ (option) 8300 mAh battery: 174 x 85 x 22 mm ■ 2 user programmable buttons
Camera	■ Front: 16 MP ■ Rear: 48 MP with LED illumination
Expansion	■ Sub-meter GNSS receiver (RTK capable)
Batteries	■ Removeable Li-ion battery ■ Rechargeable Li-ion battery: ■ 4500 mAh run time 8 hours or more ■ (option) 8300 mAh run time 18 hours or more ■ Internal 300 mAh internal battery allows for hot swapping

FEATURE	SPECIFICATION
Certifications and Standards	■ IC/FCC/CE ■ UKCA ■ ROHS, REACH, REACH Restriction Article, EU POP, WEEE ■ California Prop 65 ■ TSCA ■ Bluetooth SIG ■ RCM ■ Japan Radio (TELEC,JATE) ■ Brazil ANATEL ■ SCIP ■ Canada Prohibition ■ ERP,CEC,DOE ■ PTCRB ■ Global Certification Forum (GCF) ■ AT&T BYOD authorized
Audio	■ Speaker ■ Microphone
GNSS	■ 2 to 5 meter typical accuracy * ■ Enhanced performance under heavy canopy ■ File format NMEA-0183 version 4.11 output, default strings: GGA, GSA, GLL, GSV, RMC, VTG, ZDA, TXT ■ 72 GNSS tracking channels
LED Activity Indicators	■ Solid Red—The battery charge is less than 20%. Charger is connected. ■ Blinking Red—The battery charge is less than 20%. No charger is connected. The screen is on. ■ Solid Yellow—The battery charge is between 21–90%. The charger is connected. ■ Solid Green—The battery charge is above 90%. The charger is connected.

*Accuracy is subject to observation conditions, multipath environment, number of satellites in view, satellite geometry, and ionospheric activity.

FEATURE	SPECIFICATION
Temperature Specifications	■ Operating Temperature: –4° to 140° F (–20° to 60° C). *Note: Bluetooth* ***wireless technology is rated to –4° to 122° F (–20° to 50° C).*** ■ Storage Temperature: –22° to 140° F (–30° to 60° C)
Warranties	■ 24 months for SHC700 ■ 90 days for accessories ■ Extended service and maintenance plans

Standard Accessories	■ Removable Li-ion battery
	■ Rugged hand strap and attachment loop
	■ USB charger and cable with international plug kit
	  ■ Input: 100-240VAC, 50/60Hz, 0.5A
	  ■ Output: 5.0V 3.0Z, 9.0V 2.0A, and 12.0V 1.5A
	■ T-6 screw driver
	■ Quick Start Guide
	■ User Manual: Available in English, French, German, Spanish, and Brazilian Portuguese (available at *https://mytopcon.topconpositioning.com/na/support*)
	■ Two-year warranty on SHC700

Optional Accessories	■ Replacement 4500 or 8300 mAh batteries ■ Replacement USB charger and cables ■ Replacement hand strap ■ Replacement hand strap loop ■ Anti-glare or ultra clear screen protector ■ External battery charger ■ Allegro wireless keyboard (coming soon) ■ Geode Grip cradle (coming soon) *See your sales associate for more details on optional accessories.*

Note: Specifications are subject to change without notice.

7.1 Future Optional Accessories

FEATURE	SPECIFICATION
GNSS Pod	■ Horizontal Accuracy: ■ SBAS 1.0m (CEP) ■ RTK 0.01m + 1ppm (CEP) ■ Vertical Accuracy: ■ RTK 0.01m + 1ppm (Median) ■ Frequencies: ■ GPS: L1C/A, L1C ■ GLONASS: G1 ■ Galileo: E1 ■ BDS: B1I, B1C ■ SBAS: L1 ■ QZSS: L1 ■ Trigger Keys: Programmable ■ Power: ~600 mW active, ~0.2 mW standby

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