

# Trimble SX12

## SCANNING TOTAL STATION



This Quick Start Guide applies to the SX12-100 and SX12-200 models of the Trimble® SX12 scanning total station. This instrument is intended to be used for surveying and scanning measurements.

## IN THE CASE



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7	Cleaning cloths		

**NOTE** – The lithium-ion battery is not provided with the SX12 scanning total station and must be ordered separately.

**NOTE** – For information regarding instrument accessories, please refer to <https://geospatial.trimble.com/Optical-Accessories>.

# FEATURES

Carrying handle

Optics for distance measurement, tracker, tele camera and optional laser pointer

Optics for over-view camera

SX12-100 model: long range radio (LRR)/Wi-Fi antenna or SX12-200 model: Wi-Fi HaLow radio/Wi-Fi antenna

True Height mark

On/Off key and status indicator

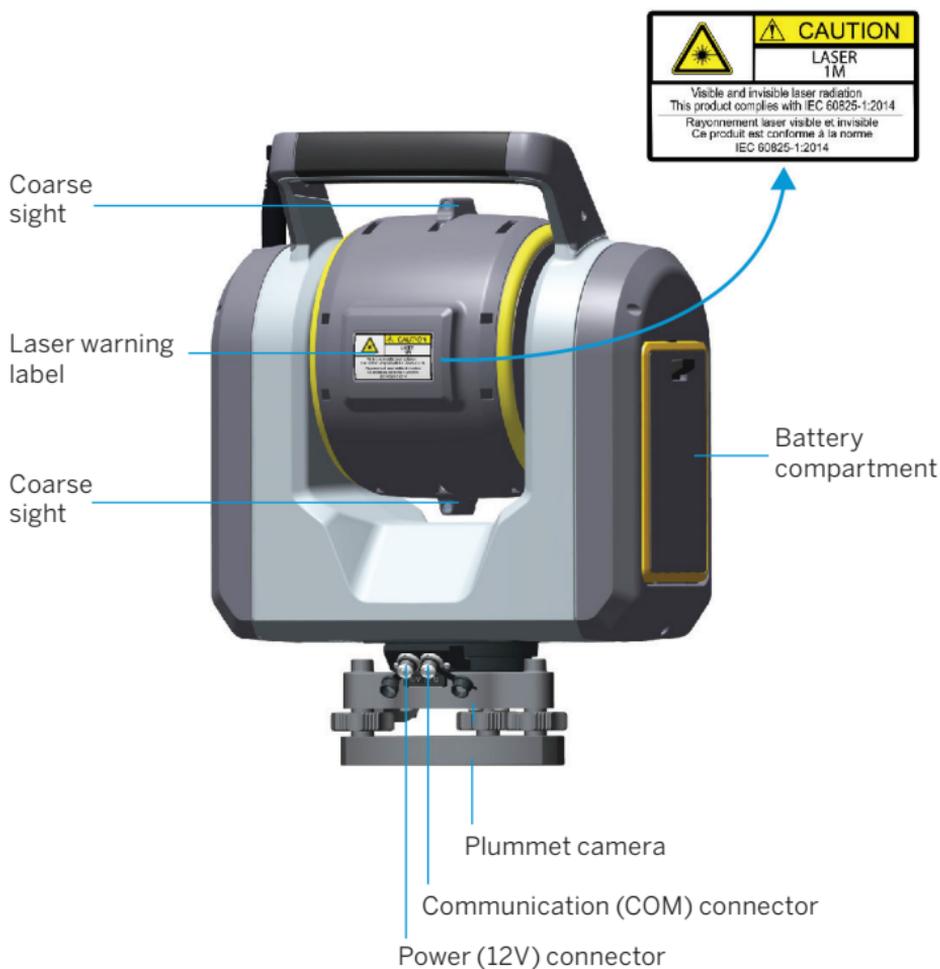
Bottom Notch height mark



Optics for primary camera

Target Illumination Light

# FEATURES



# SPECIFICATION

## Power rating

Power input	12 V DC, 40 W
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## Environmental specification

IP classification: Dust protected / Protected against flushing water from nozzle.	IP 55
Operating temperature range	-20 °C to +50 °C (-4 °F to +122 °F)
Humidity	100%, condensing

Dimensions of the SX12 scanning total station:  
Width 285 mm, Height 339 mm. Depth 208 mm.

Environmental conditions:

- Outdoor and Indoors use
- Altitude up to 5000m
- Overvoltage Category II
- Pollution degree II

For further technical specifications, please refer to the SX12 scanning total station data sheet available from [trimble.com](http://trimble.com).

## EXTERNAL POWER

Trimble provides an external power supply which can be connected to the 12 V DC connector on the instrument.

**NOTE** – Use only power supply approved by Trimble with the SX12 scanning total station.

Ratings: Input 100-240 V AC, 47-63 Hz, max 1.6 A, Output 12 V DC, min 4.75 A.

The external power supply must only be connected to a protective earthed socket.

To disconnect the SX12 scanning total station, remove the mains plug.  
Use only cord set Trimble PN: 51695 or equivalent cord set.

Cord set with plug IEC320-C13 to IEC320-C14 Rating: 250 V AC, 10 A.

**CAUTION** – The optional power supply for the SX12 scanning total station is intended for indoor use only, and shall not be exposed to moisture or liquids, and is approved for use up to an altitude of 3000 meters.

# BATTERY

**WARNING** – Before charging or using the SX12 scanning total station battery it is important that you read and understand the battery safety and environmental information. The battery safety and environmental information is available in the *Trimble SX12 scanning total station Regulatory Information Document*.

Trimble recommends only using batteries that have Trimble PN: 99511-30.

**NOTE** – The lithium-ion battery is not provided with the SX12 scanning total station and must be ordered separately.

**NOTE** – Use only batteries approved by Trimble.

**NOTE** – The performance of the battery will be lower at temperatures below 0 °C (32 °F). The performance of a cold battery might not be enough to start the instrument. For best battery performance, keep the battery at a temperature as close to 20 °C (68 °F) as possible before it is put to use in the instrument.

The SX12 scanning total station battery has battery charge status indicator LEDs. Push the button on the battery to check the battery charge status.



## Charge battery

When the rechargeable Lithium-ion battery is delivered, it is partially charged. Before using the battery for the first time, charge it completely. Use only Trimble battery charger (not included) approved by Trimble. Refer to the *Trimble SX12 scanning total station user guide* and the Battery charger user guide for more information.

## Connect internal battery

1. Press the battery compartment lock downwards to unlock.
2. Open the battery compartment.
3. Slide the battery into the battery compartment.
4. Close the battery compartment.



## POWER ON/OFF INSTRUMENT

**CAUTION** – If the equipment is used in a manner not specified by Trimble, the protection provided by the equipment may be impaired.

Power on the instrument with a short press on the On/Off key. To power off the instrument press and hold the On/Off key until the On/Off key LED starts to flash with a high frequency. The On/Off key LED will continue to flash with a high frequency until the instrument powers off.

### On/Off key LED

On/Off key LED	Instrument status	Description
Off	Off	
Solid, yellow	On	Connected to controller and instrument is in RUN status.
Solid, green	On	Connected to controller and instrument is in RUN status.
Long flash, yellow	Searching for controller with LRR	Only for the SX12-100 model. The instrument is searching for a controller with LRR (long range radio). Change to Wi-Fi with a short press on the On/Off key.
Flash green	Searching for controller with Wi-Fi HaLow™ radio	Only for the SX12-200 model. The instrument is searching for a controller with Wi-Fi HaLow radio. Change to Wi-Fi with a short press on the On/Off key.
Short flash, yellow	Searching for controller with Wi-Fi	The instrument is searching for a controller with Wi-Fi. Change to LRR for the SX12-100 model or Wi-Fi HaLow radio for the SX12-200 model with a short press on the On/Off key.
High frequency flash, yellow	Changing status	The instrument is changing status.

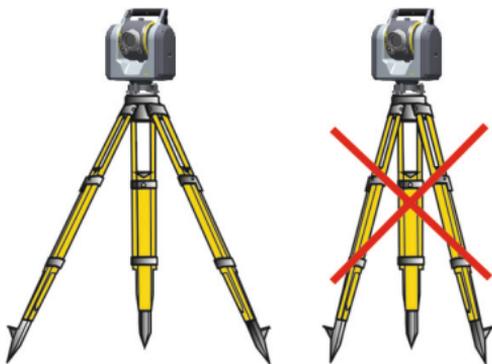
## OPERATION

The instrument is operated from a controller using field software such as the Trimble Access™ software. Connect the controller using a cable or wirelessly with Wi-Fi radio, LRR (long range radio) for the SX12-100 model or Wi-Fi HaLow radio for the SX12-200 model.

## Setup stability

When an instrument is set up, it is important to consider the following:

1. Set tripod legs wide apart to increase the stability of the setup.
2. Tighten all the screws on the tripod and tribrach to prevent play.
3. Use a tripod and tribrach of high quality. Trimble recommends the use of tripod heads made of steel.



## Set up over a point

The instrument is equipped with a plummet camera that is used to position the instrument over a point. The image from the plummet camera is displayed in the controller software.

## Measure the instrument height

There are two measurement marks on the side of the instrument. The true height mark corresponds to the trunnion axis of the instrument. The bottom notch height mark is 0.138 m (0.453 ft.) below the true height mark.

## Measurement stability

Take into account that the instrument requires sufficient time to adjust to the ambient temperature. The rule-of-thumb for a high-precision measurement is:

- Celsius: Temperature difference in degrees Celsius ( $^{\circ}\text{C}$ )  $\times 2 =$  duration in minutes required for the instrument to adjust to the new ambient temperature.
- Fahrenheit: Temperature difference in degrees Fahrenheit ( $^{\circ}\text{F}$ ) = duration in minutes required for the instrument to adjust to the new ambient temperature.

## Connect with long range radio

When LRR (Long Range Radio) is used to connect to the controller, the LRR must be set in both the instrument and controller. Only available on SX12-100 model.

## Connect with Wi-Fi HaLow radio

When Wi-Fi HaLow radio is used to connect to the controller, the Wi-Fi HaLow radio must be set in both the instrument and controller. Only available on SX12-200 model.

## Connect with Wi-Fi

When Wi-Fi is used to connect to the controller, the instrument serial number appears as a device in the controller with the serial number as ID. Select the device to connect to the controller.

## Connect with cable

When a cable is used to connect to the controller, it is automatically selected as the primary communication. If the cable is disconnected, the instrument will start to search for the controller using Wi-Fi or LRR for the SX12-100 model or Wi-Fi or Wi-Fi HaLow radio for the SX12-200 model.

**NOTE** – Use only a communication cable approved by Trimble.

## Security

To avoid unauthorized use of the instrument, you can activate a PIN code.

## Operator calibrations

The operator can perform the following instrument calibrations:

- Autolock collimation
- Compensator calibration

## Modes for SX12

Mode	Laser pointer	EDM	Tracker
Standby	OFF	OFF	OFF
Direct Reflex*	OFF	ON	OFF
Direct Reflex*	ON	ON	OFF
Scanning*	OFF	ON	OFF
Prism Manual*	OFF	ON	OFF
Prism Manual*	ON	ON	OFF
Prism Autolock*	OFF	ON	ON

\*Mode set through field software.

For Trimble support, go to [trimble.com/support](https://trimble.com/support).

## CARE AND MAINTENANCE

Like all precision instruments, the SX12 scanning total station requires care and maintenance. To get the best results from the instrument:

- Do not subject the equipment to rough jolts or careless treatment.
- Keep the lenses and reflectors clean. Be very careful when cleaning the instrument, especially when removing sand or dust from lenses and reflectors. Never use coarse or dirty cloth or hard paper. Trimble recommends using anti-static lens paper, a cotton wad, or a lens brush.

**NOTE** – Never use strong detergents such as benzine or thinners on the instrument or the instrument case.

- Keep the instrument protected and in an upright position, preferably in the instrument case.
- Do not carry the instrument while the instrument is mounted on a tripod. Doing so can damage the tribrach screws.
- Carry the instrument by the handle.
- When you need extremely precise measurements, make sure that the instrument has adapted to the surrounding temperature. Significant variations in instrument temperature can affect precision.
- If the instrument is moved from (extreme) cold to warm temperature, leave the instrument in the closed instrument case for at least 15 minutes to avoid internal condensation. Then open and leave the instrument case open until all moisture has dried.
- If the instrument has been used in damp weather, take the instrument indoors and remove the instrument from the instrument case. Leave the instrument to dry naturally. If condensation forms on the lenses, allow the moisture to evaporate naturally. Leave the instrument case open until all moisture has dried.

Always transport the instrument in a locked instrument case. For longer trips, transport the instrument in the instrument case and inside the original shipping container.

## ADDITIONAL INFORMATION

The original document is written in English. All documents in other languages are translations from the original English document. For more information and information in other languages, go to [trimble.com](https://trimble.com).

**CAUTION** – For laser safety and regulatory information, refer to the Regulatory Information Document delivered with the product.

For Trimble support, go to [trimble.com/support](https://trimble.com/support).

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