

OS-200 series

Quick Manual

1043650-01-C

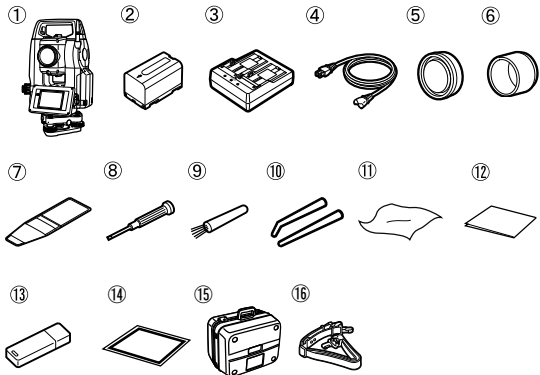
Export restrictions Policy

These commodities, technology or software were exported in accordance with applicable export control laws and regulations. Diversion contrary to those laws and regulations, as well as the export laws and regulations of any countries of reexport, is prohibited.

In consideration for its purchase of commodities, technology or software from Topcon, Purchaser agrees that it will determine any license requirements to export the items and, as applicable, to re-export or transfer the items, obtain any license or other official authorization, and carry out any customs formalities for the export or re-export of the items. Purchaser agrees that it will not reexport or transfer the commodities, technology or software to Cuba, Iran, North Korea, Syria or Sudan without a license or other authorization from all applicable export control authorities. It is also unlawful to receive, use, transfer, or re-export these items to persons on all applicable restricted party lists (see e.g. <http://www.bis.doc.gov/index.php/policy-guidance/lists-of-parties-of-concern> and http://eeas.europa.eu/cfsp/sanctions/consolidated_en.htm), and http://www.meti.go.jp/policy/anpo/law_document/tutatu/t10kaisei/130830kaisei_userlist_kohyo.pdf) where prohibited, or to use these items in activities involving missiles or unmanned air vehicles, nuclear explosive devices or nuclear propulsion projects, chemical or biological weapons, or any other prohibited end-use prohibited (see e.g. http://www.access.gpo.gov/bis/ear/ear_data.html)

Standard Package Components

Upon opening, make sure that all the following are included.



1	Main unit	1
2	Battery (BDC72)	1
3	Battery charger (CDC77)	1
4	Power cable (EDC113A/113B/113C etc.)	1
5	Lens cap	1
6	Lens hood	1
7	Tool pouch	1
8	Precision screwdriver	1
9	Lens brush	1
10	Adjusting pin	2
11	Silicon cloth	1
12	Quick Manual (This sheet)	1
13	USB flash drive (Manual)	1
14	Laser caution sign-board	1
15	Carrying case	1
16	Carrying strap	1

- A dedicated power cable for the country or the area where the instrument is purchased is attached.
- Instruments with a laser plummet also include a 1.5 mm hexagonal wrench.
- Instruments with a plate level also include an adjusting pin.
- The manual is an electronic manual provided in a USB flash drive in PDF format. It is recommended that the manual files are backed up by transferring to your PC etc. Adobe Acrobat Reader is necessary in order to view these documents. The latest version of Adobe Acrobat Reader can be downloaded from the Adobe homepage.
- We recommend using the attached USB flash drive when transferring data from the USB port of the instrument.
- Some types of USB flash drives may not be recognized on the instrument. Even if the procedure of SD formatting enables any USB flash drives to be recognized, TOPCON CORPORATION cannot guarantee safe operation of them.

Precautions for Safe Operation

For the safe use of the product and prevention of injury to operators and other persons as well as prevention of property damage, items which should be observed are indicated by an exclamation point within a triangle used with WARNING and CAUTION statements in this operator's manual. The definitions of the indications are listed below. Be sure you understand them before reading the manual's main text.

Definition of Indication

	WARNING	Ignoring this indication and making an operation error could possibly result in death or serious injury to the operator.
	CAUTION	Ignoring this indication and making an operation error could possibly result in personal injury or property damage.

- This symbol indicates items for which caution (hazard warnings inclusive) is urged. Specific details are printed in or near the symbol.
- This symbol indicates items which are prohibited. Specific details are printed in or near the symbol.
- This symbol indicates items which must always be performed. Specific details are printed in or near the symbol.

General

- Warning**
- Do not use the unit in areas exposed to high amounts of dust or ash, in areas where there is inadequate ventilation, or near combustible materials. An explosion could occur.
- Do not perform disassembly or rebuilding. Fire, electric shock, burns, or hazardous radiation exposure could result.
- Never look at the sun through the telescope. Loss of eyesight could result.
- Do not look at reflected sunlight from a prism or other reflecting object through the telescope. Loss of eyesight could result.
- Direct viewing of the sun during sun observation will cause loss of eyesight. Use solar filter (option) for sun observation.
- When securing the instrument in the carrying case make sure to set all the locks. Failure to do so could result in the instrument falling out while being carried, causing injury.

Caution

- Do not use the carrying case as a footstool. The case is slippery and unstable so a person could slip and fall off it.
- Do not place the instrument in a damaged case or in a case with a damaged belt. The case or instrument could be dropped and cause injury.
- Do not wield or throw the plumb bob. A person could be injured if struck.
- Secure handle to main unit. Failure to properly secure the handle could result in the unit falling off while being carried, causing injury.
- Tighten the adjustment tribrach clamp securely. Failure to properly secure the clamp could result in the tribrach falling off while being carried, causing injury.

Power Supply

- Warning**
- Do not disassemble or rebuild the battery or the battery charger, nor expose to heavy shocks or vibration. Sparking, fire, electric shock or burns could result.
- Do not short circuit. Heat or ignition could result.
- Do not place articles such as clothing on the battery charger while charging batteries. Sparks could be induced, leading to fire.
- Do not use voltage other than the specified power supply voltage. Fire or electrical shock could result.
- Do not use batteries other than those designated. An explosion could occur, or abnormal heat generated, leading to fire.
- Do not use damaged power cords, plugs or loose outlets. Fire or electric shock could result.
- Do not use power cords other than those designated. Fire could result.
- Use only the specified battery charger to recharge batteries. Other chargers may be of different voltage rating or polarity, causing sparking which could lead to fire or burns.
- Do not use the battery or charger for any other equipment or purpose. Fire or burns caused by ignition could result.
- Do not heat or throw batteries or chargers into fire. An explosion could occur, resulting in injury.
- To prevent shorting of the battery in storage, apply insulating tape or equivalent to the terminals. Otherwise shorting could occur resulting in fire or burns.

- Do not use the battery or the battery charger if its terminals are wet. Resultant poor contact or shorting could lead to fire or burns.
- Do not connect or disconnect power supply plugs with wet hands. Electric shock could result.
- Caution**
- Do not touch liquid leaking from batteries. Harmful chemicals could cause burns or blisters.

Tripod

- Caution**
- When mounting the instrument to the tripod, tighten the centering screw securely. Failure to tighten the screw properly could result in the instrument falling off the tripod, causing injury.
- Tighten securely the leg fixing screws of the tripod on which the instrument is mounted. Failure to tighten the screws could result in the tripod collapsing, causing injury.
- Do not carry the tripod with the tripod shoes pointed at other persons. A person could be injured if struck by the tripod shoes.
- Keep hands and feet away from the tripod shoes when fixing the tripod in the ground. A hand or foot stab wound could result.
- Tighten the leg fixing screws securely before carrying the tripod. Failure to tighten the screws could lead to the tripod legs extending, causing injury.

Bluetooth wireless technology

- Warning**
- Do not use within the vicinity of hospitals. Malfunction of medical equipment could result.
- Use the instrument at a distance of at least 22 cm from anyone with a cardiac pacemaker. Otherwise, the pacemaker may be adversely affected by the electromagnetic waves produced and cease to operate as normal.
- Do not use onboard aircraft. The aircraft instrumentation may malfunction as a result.
- Do not use within the vicinity of automatic doors, fire alarms and other devices with automatic controls as the electromagnetic waves produced may adversely affect operation resulting in an accident.

Laser Safety

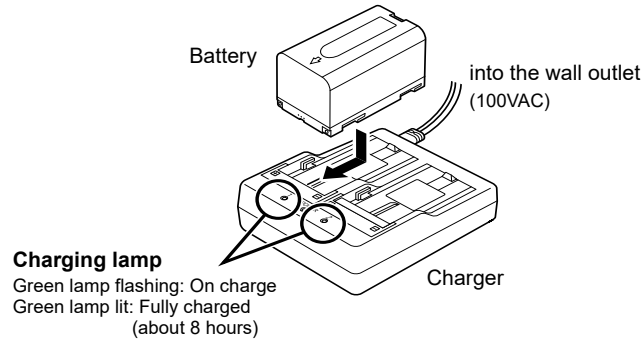
Refer to "LASER SAFETY INFORMATION" in your manual (PDF format).

Using the Battery

Battery Charging

The battery (BDC72) was not charged at the factory. Charge the battery fully before using the instrument.

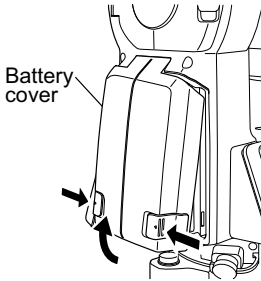
1. **Connect the power cable to the charger and plug the charger into the wall outlet.**
2. **Mount the battery in the charger by matching the grooves on the battery with the guides on the charger.**
When charging starts, the lamp starts flashing in green.
The lamp lights up in green when charging is finished.



- Be sure to charge the battery within the charging temperature range. Charging temperature range: 0 to 40°C

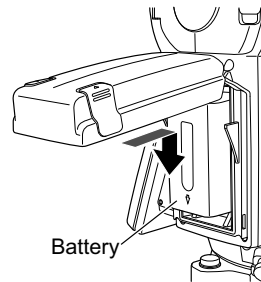
Installing the Battery

1. **Slide the catches on the battery cover to open.**



2. **Checking the terminal side on the battery, insert the battery as shown.**

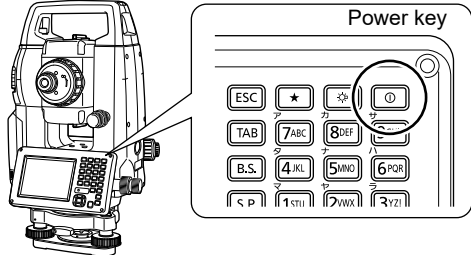
- Do not insert the battery inclined. Doing so may damage the instrument or battery terminals.



3. **Close the battery cover.**
A click is heard when the cover is secure.

Power ON/OFF

Press the power key {} to power ON.



Press and hold (about 1 sec) power key {} to power OFF.

Resolving Software Issues

If you are experiencing problems with the instrument and suspect a fault in the program, you should try a warm boot.

1. **Power OFF the instrument.**
2. **Press {} while pressing {ENT}.**
The instrument is reset and powers ON as normal.

- If the problem is not resolved with a warm boot the next step is to perform a cold boot. For cold boot, refer to "Resolving Software Issues" of the manual (PDF format).

Diagram illustrating the components of the OS-201/202 and low temperature models of the optical plummet. The diagram shows two views of the instrument: a front view (left) and a side view (right). Numbered callouts (1-31) identify various components. Detailed insets show the objective lens (17) and the trigger key (22).

Components:

- 1 Handle
- 2 Bluetooth antenna
- 3 External interface hatch (USB port / Reset button)
- 4 Instrument height mark
- 5 Battery cover
- 6 Display unit
- 7A Serial connector
- 7B Serial / External power source connector
- 8 Circular level
- 9 Circular level adjusting screws
- 10 Base plate
- 11 Levelling foot screw
- 12 Optical plummet focussing ring
- 13 Optical plummet eyepiece
- 14 Optical plummet reticle cover
- 15 Luminance sensor
- 16 Guide light
- 17 Objective lens (Includes Laser-pointer function)
- 18 Handle locking screw
- 19 Tubular compass slot
- 20 Vertical clamp
- 21 Vertical fine motion screw
- 22 Trigger key
- 23 Horizontal fine motion screw

Additional Labels:

- <OS-201/202 and low temperature models only>
- <Low temperature models only>

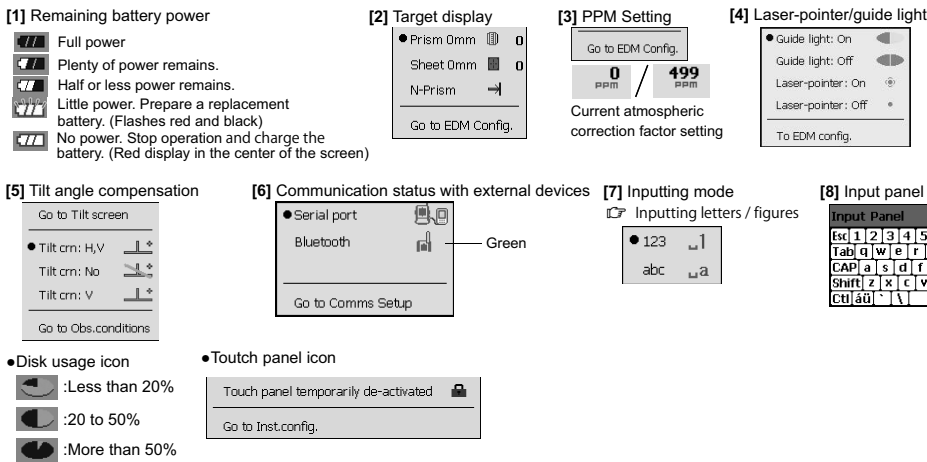
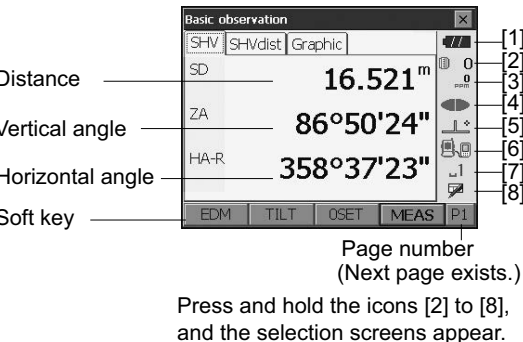
Diagram of the control panel of the SPM-1000 telescope. The panel includes a large rectangular display unit on the left. To its right is a control area with a numeric keypad (0-9), function keys (ESC, TAB, B.S., S.P., S.S.R., FINE, F1-F4, ENT, and a four-way arrow pad), and a star key. Various labels with arrows point to specific features: [TAB], [B.S.], [S.P.], {★} Starkey mode, {☼} Illumination key, { } Power key, {1} ~ {9}, {A} ~ {!}, { } { } ±, {D} Target type, {PRG} Program mode, {α} Input mode, {SHIFT}, {ENT} Enter key, {FUNC} Switching the page, and Luminance sensor / Microphone. A bottom section lists mechanical components: Horizontal clamp (28), Sighting collimator (29), Tribach clamp (29), Instrument center mark (29), Telescope eyepiece screw (30), Plate level (30), Telescope focussing ring (31), and Plate level adjusting screw (31).

Press the Starkey [★], and the Starkey mode is accessed. In the Starkey mode, it is possible to change the setting item that is frequently used during measurement.

- [1] Battery icon
- [2] Target type icon
- [3] PPM setting icon
- [4] Laser-pointer/ Guide light icon
- [5] Tilt angle compensation icon
- [6] Communication status with external devices icon
- [7] Inputting mode icon
- [8] Input panel icon
- [9] Config mode icon

●Disk usage icon ●Touch panel icon

Observation mode screen



Basic observation

SHV SHVdist Graphic

SD

ZA 288°11'21"

HA-R 1°15'44"

STOP

Laser is emitted

Top menu

Top

TOPCON

OS-20X

S/N XXXXXXXXXX

OBSERVE MENU CONFIG

Version

Serial number

Instrument name

Version information

● Power ON / OFF	
{	Power On
{ } (Press and hold: About 1 second)	Power Off
● Lighting up the reticle/keys and selecting screen backlight brightness	
[	Switches the reticle illumination and key light On/Off (When Key light is On, backlight brightness goes down)
● Switching to Starkey mode	
{	Switches to Starkey mode / basic mode
● Switching to program mode	
{PRG}	Switches to program mode / basic mode
● Switching target type	
{	Switches between target types Prism/Sheet/N-prism (reflectorless)
Note	
Changes can also be made by tapping the icon on status bar or in Starkey mode.	

{FUNC}	Toggle between Observation mode screen pages
---------------	--

● **Switching the Laser-pointer/Guide light ON/OFF**

(Press and hold until a beep sounds)	Turns ON/OFF the laser-pointer/guide light
--	--

Note

- Changes can also be made by tapping the icon on status bar or Starkey mode.

● **Inputting letters/figures**

{α}	Switch between numerals and alphabetic characters
{SHIFT} + {1} to {9}	In alphabetic characters mode, switch between lowercase characters and upper case characters each time
{SHIFT} (Press and hold)	In alphabetic characters mode, switch between lowercase characters and upper case characters
{SHIFT}+{α}	Display/hide <Input Panel>
{0} to {9}	Input numeral or symbol printed above the key (in numeric input mode)/Input alphabetic character in order they are listed (in alphabetic input mode)
{.}	Input a decimal point (during numeric input mode) Input code (in alphabetic input mode)

{+/-}	Input a plus or minus sign (during numeric input mode) Input code (in alphabetic input mode)
{ESC}	Cancel the input data
{TAB}	Shift to the next item
{B.S.}	Delete a character on the left
{S.P.}	Input a blank space (increments by 1 when setting the date and time)
{◀/▶}	Right and left cursor/Select other option
{▲}/{▼}	Up and down cursor
{ENT}	Select/accept input word/value.

● **Selecting options**

{▲}/{▼}	Move the cursor up/down
▶/◀	Move the cursor/selection item left/right or select other option
{TAB}	Shift to the next item
{S.P.}	Display other options
{ENT}	Select/accept the option

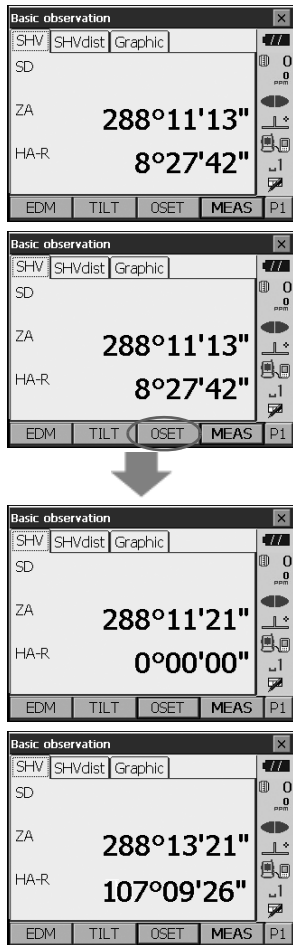
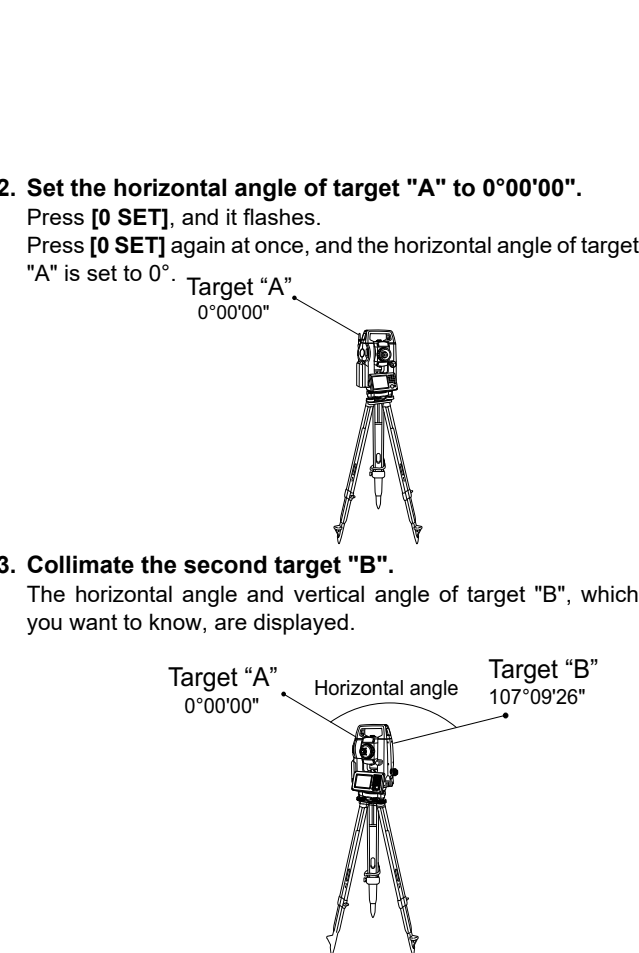
● **Selecting tabs**

{▲}/{▼}	Move tab/cursor in tab up/down
▶/◀	Display next tab at left/right

● **Others**

{ESC}	Return to the previous screen
-------	-------------------------------

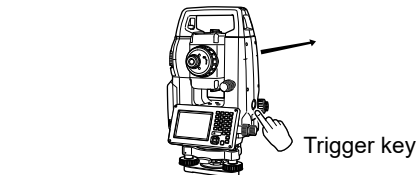
1. Collimate the first target "A".



- 1. Collimate the target center.**
Make sure that setting is applicable to the measurement conditions.
- 2. Press [MEAS].**
Distance measurement starts.

Note

- Press the trigger key when **[MEAS]** and **[STOP]** are indicated on the display unit. You can start/stop measurement.



The results of the measurement are displayed.
Hereafter, the results are updated whenever measurement is performed.

Press “SHVdist” tab, and the displayed contents are changed.
(Slope distance / Height difference / Horizontal distance / Vertical angle / Horizontal angle)

