

Standard Package Components

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

①	②	③	④	⑤	⑥	1	Main unit	1
						2	Battery (BDC70)	1
						3	Battery charger (CDC68A)	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	Hexagonal wrench (1.3 mm/2.5 mm)	1 each
						11	Silicon cloth	1
						12	Quick Manual (This sheet)	1
						13	CD-ROM (Operator's manual)	1
						14	Laser caution sign-board	1
						15	Carrying case	1
						16	Carrying strap	1
						17	Export restrictions card (Be sure to read)	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 Operator's manual is an electronic manual provided in a CD-ROM in PDF format. It is recommended that the manual files are backed up by transferring to your PC etc. Adobe Acrobat Reader DC is necessary in order to view these documents. The latest version of Acrobat Reader DC can be downloaded from the Adobe homepage.
- 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.

Quick Manual

GM-100 series

1019165-01-A

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/Wireless LAN

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 on board 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

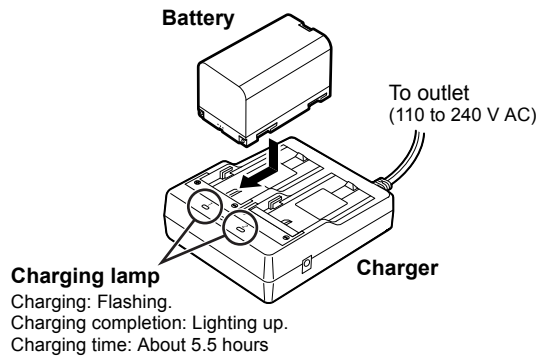
Refer to "LASER SAFETY INFORMATION" in your manual (PDF).

Using the Battery

Battery Charging

The battery (BDC70) 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 blinking.

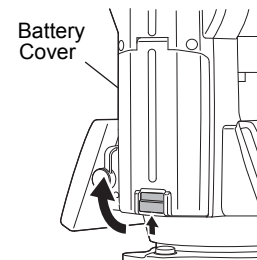


3. The lamp lights when charging is finished.

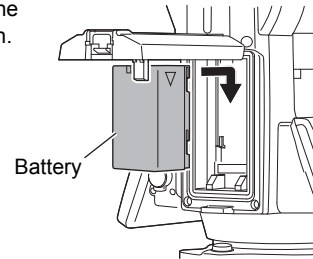
- Be sure to charge the battery within the charging temperature range. Charging temperature range: 0 to 40°C

Installing the Battery

1. Slide down the catch on the battery cover to open.



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

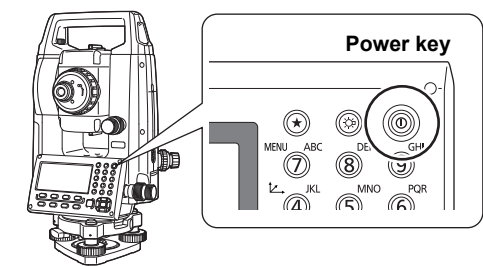


- Do not insert the battery inclined. Doing so may damage the instrument or battery terminals.

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

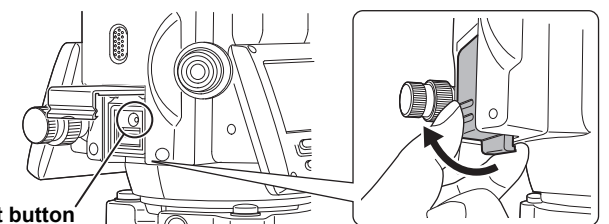
Power ON/OFF

Press the power key to power ON.



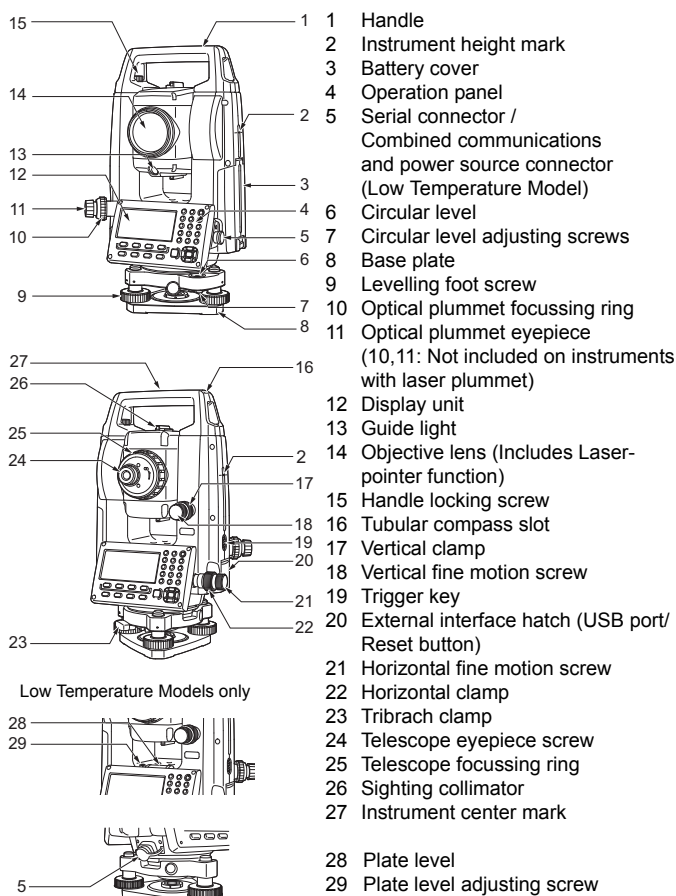
Press and hold (about 1 sec) power key to power OFF.

- If you are experiencing problems with the software, depress the reset button to reboot the program forcibly. Use a provided hexagonal wrench (1.3 mm/1.5 mm) or a tapered rod like a pin to depress down the reset button.



- Avoid using any sharp implement like a needle. Malfunction of the instrument could result.
- Pressing down the Reset button may result in file and folder data being lost.

Nomenclature



Display Functions

Angle measurement mode

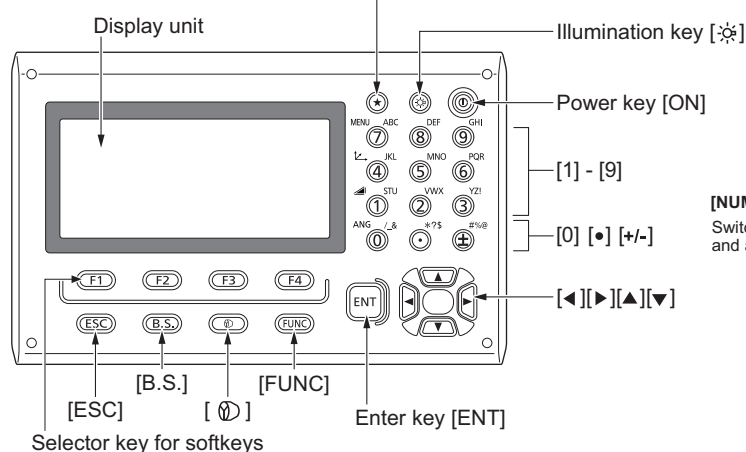
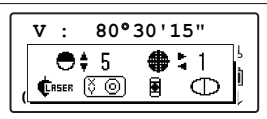
Vertical angle: **V : 80°30'15"**
 Horizontal angle: **HR: 120°30'40"**
 Softkey: **OSET HOLD HSET P1** ↓
 Page number (Next page exists.)

Distance measurement mode

Horizontal angle: **HR: 120°30'40"**
 Horizontal distance: **HD* 131.677 m***
 Relative elevation: **VD: -0.396 m**
 Softkey: **MEAS MODE NP/P P1** ↓

Starkey [★]

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.



Measuring screen

HR: 120°30'40"
HD* [r] -<<< m
VD m
MEAS MODE NP/P P1 ↓
 Measurement mode
 Laser is emitted

Menu screen

MENU 1/4
F1: TOP FIELD
F2: DATA COLLECT
F3: LAYOUT P ↓

Tilt screen Electric circular level

X -1'40"
Y 2'20"
EXIT

Input screen

SELECT A FILE
FN: _____
ALP SPC CLR ENT

Status screen (Special mode)

GM-103
S/N XX123456
VER. X.XXXX_XX
P ↓

Basic Key Operation

Keys	Name of Key	Function
{★}	Starkey	Switches to Starkey mode This mode is used for each presetting or displaying as follows. 1 Contrast of the display, 2 Reticle illumination, 3 Laser pointer, 4 Tilt correction, 5 Guide light, 6 Set audio mode, 7 Laser Plummet
{[↖]}	Coordinate meas. key	Switches to coordinate measurement mode
{[↗]}	Distance meas. key	Switches to distance measurement mode
{[ANG]}	Angle meas. key	Switches to angle measurement mode
{[MENU]}	Menu key	Switches to menu mode Starts measurement applications and performs various settings
{☀}	Illumination key	Lights up the display unit and key Switches the screen/key backlight and Reticle illumination ON/OFF
{[⊕]}	Target key	Switches between target types (prism mode/Sheet mode/Non-prism mode (Reflectorless mode))
{[FUNC]}	Function key	Switches Starkey mode pages (Laser plummet mounted model only)

Keys	Name of Key	Function
{0} - {9} / {,} / {±}	Alphanumeric characters key	Input letters/figures ☞ For entering alphanumeric characters, see Section 2.4 "How to Enter Alphanumeric Characters". in instruction manual.
{[ESC]}	Escape key	• Returns to the measurement mode or previous layer mode from the mode set • Switches to data collection mode or layout mode directly from the normal measurement mode • It is also possible to use as Record key in normal measurement mode. ☞ For selecting function of Escape key, see Chapter 17 "SELECTING MODE". in instruction manual.
{[B.S.]}	Backspace key	Delete a character on the left
{[ENT]}	Enter key	Selects/accepts input word/value
{[⊕]}	Power source key	Turns ON/OFF of power source (Press and hold: About 1 second)
{[F1] - [F4]}	Soft key (Function key)	Respond to the message displayed

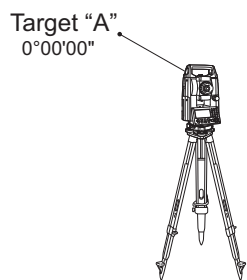
Angular Measurement

1. Press [ANG].

2. Collimate the first target "A".

3. Set the horizontal angle of target "A" to 0°00'00".

Press the [OSET] and press the [YES].

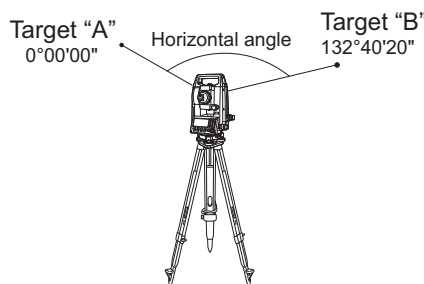


V : 80°30'15"
HR: 120°30'40"
OSET HOLD HSET P1 ↓

H ANGLE 0 SET
> OK?
--- --- [YES] [NO]

4. Collimate the second target "B".

The horizontal angle and vertical angle of target "B", which you want to know, are displayed.



V : 80°30'15"
HR: 0°00'00"
OSET HOLD HSET P1 ↓

V : 80°30'15"
HR: 132°40'20"
OSET HOLD HSET P1 ↓

Distance Measurement

1. Collimate the target center.

Make sure that setting is applicable to the measurement conditions.

V : 90°10'20"
HR: 120°30'40"
OSET HOLD HSET P1 ↓

2. Press [MEAS].

Distance measurement (Continuous measuring) starts.

Distance measurement mode can be switched between continuous measurement/N-time measurement by pressing [MEAS] during a distance measurement. Current mode is displayed in [].

The results of the measurement are displayed.

Hereafter, the results are updated whenever measurement is performed.

HR: 120°30'40"
HD* [r] << m
VD: m
MEAS MODE NP/P P1 ↓

HR: 120°30'40"
HD* 131.677 m
VD: -0.396 m
MEAS MODE NP/P P1 ↓

Pressing the [MEAS] key again, the display changes to horizontal (HR) and vertical (V) angle and slope distance (SD).

V : 90°10'20"
HR: 120°30'40"
SD* 131.678 m
MEAS MODE NP/P P1 ↓

Note

Pressing trigger key located on the side of the instrument will perform exactly the same operation with [MEAS].

