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Laser Technology, Inc.

TruPoint™ 200h

User's Manual

HYBRID MEASUREMENT TECHNOLOGY

LASER TECHNOLOGY, INC.
Measurably Superior®

LTI TruPoint 200h
User's Manual 1st Edition
Part Number 0144966

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Patents:
This product is covered by the following issued U.S. Patents: 9,354,051

Trademarks:
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TruPoint 200h Reference Information:
Record information about your TruPoint 200h in the table below.

	You can find this value:	**Value**
Serial Number	On the serial number sticker affixed to the TruPoint 200h	
Firmware Revision Number	See Page 35 for information.	

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Introduction

- The safety instructions and the user manual should be read through carefully before the product is used for the first time.
- The person responsible for the product must ensure that all users understand these directions and adhere to them.
- The symbols used have the following meanings:

  - **WARNING**
    Indicates a potentially hazardous situation or an unintended use which, if not avoided, will result in death or serious injury.

  - **CAUTION**
    Indicates a potentially hazardous situation or an unintended use which, if not avoided, may result in minor injury and/or appreciable material, financial and environmental damage.
  - **(!)** Important paragraphs which must be adhered to in practice as they enable the product to be used in a technically correct and efficient manner.

Precautions

Laser Classifications: the TruPoint 200h is designed with two different laser technologies to make distance measurements.

- **Phase Technology**: A technique for measuring distances that uses a laser beam with sinusoidally modulated optical power being sent to a target. Comparing the incoming wavelength with the phase of the outgoing light.
  - The device produces visible laser beams, which are emitted from the instrument.
  - Class 2 laser product in accordance with: "IEC60825: 2014 "Radiation safety of laser products".
    Do not stare into the laser beam or direct it towards other people unnecessarily. Eye protection is normally afforded by aversion responses including the blink reflex.

    - **WARNING**
      Looking directly into the beam with optical aids (e.g. binoculars, telescopes) can be hazardous.

    - **CAUTION**
      Looking into the laser beam may be hazardous to the eyes.

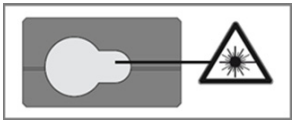

Figure 1

- **Pulse Technology**: calculates distance by measuring the time of flight of very short pulses of infrared light. Time of flight sensors derive range from the time it takes light to travel from the sensor to the target and return.

  - **Avoid staring directly at the laser beam for prolonged periods.**
    The TruPoint 200h is designed to meet FDA eye safety requirements and is classified as eye-safe to Class 1 limits, which means that virtually no hazard is associated with directly viewing the laser output under normal conditions. As with any laser device, however, reasonable precautions should be taken in its operation. It is recommended that you avoid staring into the transmit aperture while firing the laser. The use of optical instruments with this product may increase eye hazard.

Figure 2

  - **Never attempt to view the sun through the scope.**
    Looking at sun through the scope may permanently damage your eyes.
  - **Never point the unit directly at the sun.**
    Exposing the lens system to direct sunlight, even for a brief period may permanently damage the internal components.
  - **Avoid direct sun exposure on the eyepiece.**
    Exposing the eyepiece to direct sunlight can damage the internal display.
  - **Do not expose the instrument to extreme temperatures.**
    TruPoint 200h components are rated for a temperature range of -20 to +60° C (-4 to +140° F). Do not expose the instrument to temperatures outside this range whether in use or in storage.

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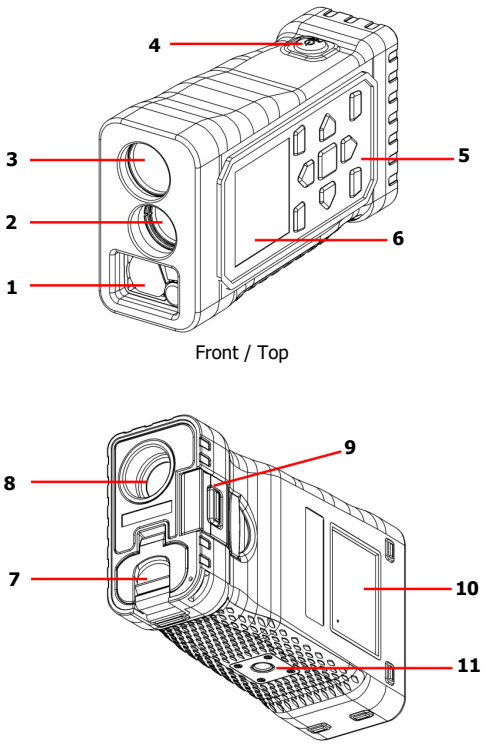
Section 1 - Introducing the LTI TruPoint™ 200h

Introducing the TruPoint 200h with Hybrid Measurement Technology (HMT) — the world's first laser to provide accurate long-range outdoor measurements PLUS short-range high accuracy indoor measurements. The laser combines a traditional laser rangefinder which uses pulse technology, with a tape laser that uses phase technology.

Features of the TruPoint 200h:

- Obtains extremely high accuracy at long ranges.
- Captures highly accurate short-range measurements, indoors or outdoors.
- Ensures targeting in every situation with bright a HUD LED display.



1 Phase Laser Lenses and Laser Pointer

2 Pulse Laser Transmit Lens

3 Pulse Laser Receive Lens

4 On/Fire Button

5 Key Pad: Navigation, On/Fire, Soft Keys, and Menu Buttons

6 Main Display (LCD)

7 Battery Door

8 Heads-Up Display (HUD), 2X Optics

9 End Piece

10 Product and Laser Class Information Labels

11 ¼-20 Tripod Mount

Figure 3

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Operations, Settings & Function Menus

Targeting Menu
Closest
Farthest
Range Gate
Filter
Continuous
Timer

Settings Menu
Bluetooth
Vibrate
Pointer
HUD Brightness
Rotation Lock
Systems

System Menu
Data Recall
HUD Aiming
Favorites
About
Configuration

Configuration
Factory Defaults
Firmware Upgrade

Functions Menu
Height
2D Missing Line
Area
Add/Subtract
Min/Max
Volume

Units of Measurement Menu
Feet/Degrees
Feet/Percent
Meters/Degrees
Meters/Percent

Measurement Modes
Slope Distance
Horizontal Distance
Vertical Distance
Inclination

Unpacking Your TruPoint 200h

When you unpack the TruPoint 200h, check to make sure that you received everything that you ordered, and that it all arrived undamaged.

Basic Package
TruPoint 200h
Carrying Case
Lens Cloth
LTI Lanyard

Compatible Accessories
Tripod
Mounting Brackets

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Understanding How the TruPoint 200h Works

The TruPoint 200h consists of two laser range sensors, an integrated tilt sensor, and a digital processor. The TruPoint 200h navigation buttons access and control the unit's internal user interface.

Laser Range Sensor

Pulse Laser: The laser range sensor emits invisible, eye safe, pulses of infrared light energy. The TruPoint 200h determines distance by measuring the time it takes for each pulse to travel from the rangefinder to the target, and back. The indicator is displayed whenever the laser is being transmitted. The laser may be active for a maximum of 10 seconds. The TruPoint 200h has a broad spectrum of sensitivity and can work with both reflective and non-reflective targets. See TruTargeting (below) for information about high quality and low-quality targets.

Phase Laser: The laser diode emits light pulses with a defined wavelength and pulse repetition frequency. Due to the runtime difference between the internal reference path and the external measurement path, the light pulses, reflected on a target and received from the TruPoint 200h, have experienced a phase shift in relation to the light pulses received through the internal reference path. That phase difference between those two signals is proportional to the distance between instrument and target.

Targets

When selecting a target, you should consider the following:

- *Color:* The brighter the color, the longer the range.
- *Finish:* Shiny finishes provide longer range than dull finishes.
- *Angle:* Shooting perpendicular to a target provides better range than shooting to a target at a sharp angle.
- *Lighting Conditions:* Overcast skies will increase the unit's maximum range, and sunny skies will decrease the unit's maximum range.

TruTargeting

The TruPoint 200h automatically provides the best accuracy and acquisition distance to a given target. Maximum measurement distance varies with target quality and environmental conditions.

Target quality influences the precision of measurements.

ⓘ Target quality can be affected by atmospheric conditions, such as heat shimmer, dust, target reflectance, traverse angle to target, and beam spread.

Tilt Sensor

The integrated tilt sensor measures vertical angles that the TruPoint 200h uses to calculate height and elevation and to determine slope-reduced horizontal distances. The instrument held level is at 0° and is rotated up through +90° and down through -90°.

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Section 2 - Quick Start

This example uses Horizontal Configuration (Page 11).

Figure 4

1. Start with the TruPoint 200h powered OFF and press the FIRE button to power on the unit. The LTI Logo will be displayed (Figure 5A). Next, the unit will run internal systems check. In the HUD, all segments will be displayed for 3 seconds (Figure 5B).
2. The main display will be in the ready state (Figure 5C). The default, display rotational lock is Automatic. To change this option see Page 12.

A B C

Figure 5

3. Adjust HUD Brightness: Long press to activate the HUD.
   - Short press to increase brightness level.
   - Continue to short press the button to cycle through the brightness settings (1-5). Press the FIRE button to select brightness setting.
4. Short press either FIRE button. The visible pointer will be power on.

   Note the indicator in the upper left portion of the display.

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5. Press-and-hold the FIRE button to initiate measurement. When the target is acquired the Slope Distance, Horizontal Distance, Vertical Distance & Inclination values will be displayed.

   The laser pointer will shut off once a measurement has been acquired.

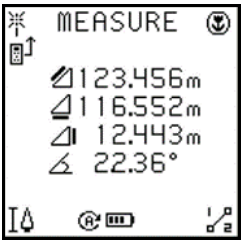

Figure 6

- These values will be saved in the Data Recall (Page 26).
- The values will be downloaded through the Bluetooth connection automatically when activated (Page 32).

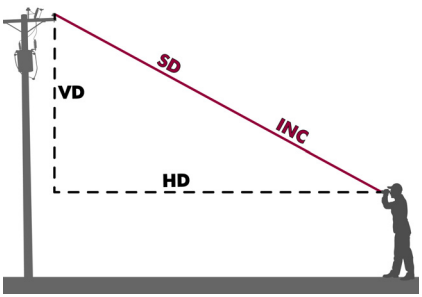

Figure 7

SD - Slope Distance

HD - Horizontal Distance

VD - Vertical Distance

INC - Inclination

6. Choose one of the following options:

   - Press the button to clear the measurement or error message.
   - Short press the FIRE button to clear the last measurement and activate the laser pointer.
   - Press-and-hold the FIRE button to clear the last measurement, activate the laser pointer and acquire the next measurement.

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Section 3 - Basic Operations

Battery

Installation

The TruPoint 200h is powered by 2 AA batteries. It is recommended to use Lithium AA batteries vs Alkaline AA batteries. The battery configuration is located on the lid of the battery compartment at the back of the instrument.

Battery Voltage Level

The TruPoint 200h continuously monitors its power source. LTI has defined an acceptable voltage range to ensure that the instrument has sufficient battery voltage to guarantee correct operation.

Battery Icon Appearance	Explanation
	100%
	75%
	50%
	25% Change batteries is recommended
	0% Locked out

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TruPoint 200h Orientation

This user's manual describes two display modes that can be used to hold the TruPoint 200h.

- **Horizontal mode**: LCD screen is normal, HUD is not powered on.

Figure 8

- **Vertical mode**: HUD is powered on and LCD screen is 90 degree rotated.

ⓘ HUD is enabled only when the unit is in vertical mode.

Figure 9

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Screen Rotated View

For better viewing, the LCD display screen rotates as the orientation of the laser is changed from Vertical to Horizontal.

Rotational Lock modes: Automatic, Vertical and Horizontal

The Rotation Lock option is available in the Settings Menu (Page 30).

V Vertical Orientation Only

H Horizontal Orientation Only,
HUD will not be displayed

A Automatic Selection, auto rotates when the laser orientation changes from Vertical to/from Horizontal

The icon will be displayed in the lower status area on the left side of the battery icon.

Figure 10 shows the screen display with the rotation icon highlighted:

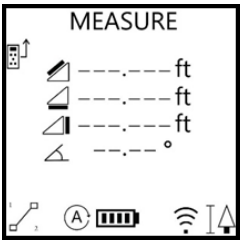

Figure 10

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Buttons

The TruPoint 200h has a 9-button keypad located on the top panel of the instrument. The buttons provide easy access to the instrument functions. This manual refers to the buttons while the laser is oriented as shown in Figure 11. The table below lists the buttons and the function of each.

NOTE:

- Short press: 0.1 - 1 second
- Long press: 2 seconds

Figure 11

•

(FIRE) 	Measurement Modes	From the off-state: Short press to power ON the TruPoint 200h.
		Measurement screen: Short press turns on the laser pointer.
		Distance Measurement: Short press to fire the laser.
	Settings, Systems, Function, Targeting, Units Menus	Short press to select options in these screens.
	Clear/OFF Down Navigation	During a measurement routine: Short press to clear a measurement; shut off the laser pointer.
		Press-and-hold: After 2 seconds the unit will shut down.
		Menu: Short press to navigate down.

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	Measuring Reference / Backlight	Short press: Change the measuring reference.
		Long press: Turn the LCD backlight on/off.
		Menu: Short press to navigate up.
	Function/ Settings	Short press: Enter the Function menu.
		Long press: Enter the Settings menu.
	Targeting/ Units	Short press: Enter the Targeting menu.
		Long press: Enter the Units menu.
	Right Navigation	Short press: Navigate right to next tile in a menu.
		Long press: HUD brightness.
	Left Navigation	Short press: Navigate left to next tile in a menu.
	Left Soft Key	Short press: Select the favorite function; navigate back to the last screen, accept icon selected.
	Right Soft Key	Short press: Select the favorite function; accept icon selected, cancel/exit menu screens.

Powering OFF the TruPoint 200h

Press-and-hold the  button for 2 seconds or longer to manually power off the unit. To conserve battery power, the TruPoint 200h powers itself OFF if no button presses are detected after a specified length of time:

- Bluetooth OFF: 5 minutes
- Bluetooth ON: 30 minutes

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Backlight on Main Display

Long press the Backlight button  to turn on/off the backlight for the main display.

ⓘ
- When the TruPoint 200h is powered OFF and then back on, the backlight will be off, and it must be turned back on.
- The LCD Backlight flashes as a light notification when a measurement is made, or any notification required.

Brightness in HUD

Heads-Up-Display (HUD) Brightness levels (1-5) can be changed two different ways:

❶ **In the Settings menu:**

1. Long press the 

button.
2. Navigate to the HUD Bright icon  .
The current brightness level will be displayed.
Example: HUD BRIGHT [2].
3. Short press the 

button to change the level.
4. Once the brightness level is selected, press the Right Soft Key  to accept.
    - To exit and not save the selected level, press the Left Soft Key  .

❷ **If the HUD is enabled by either fixed Vertical mode or Automatic mode with vertical position:**

1. Long press the button to enter the setting mode within the HUD Display.
2. Short press the button to change the brightness value (1-5).
3. Short press the button or FIRE button to accept brightness level and exit the brightness setting.

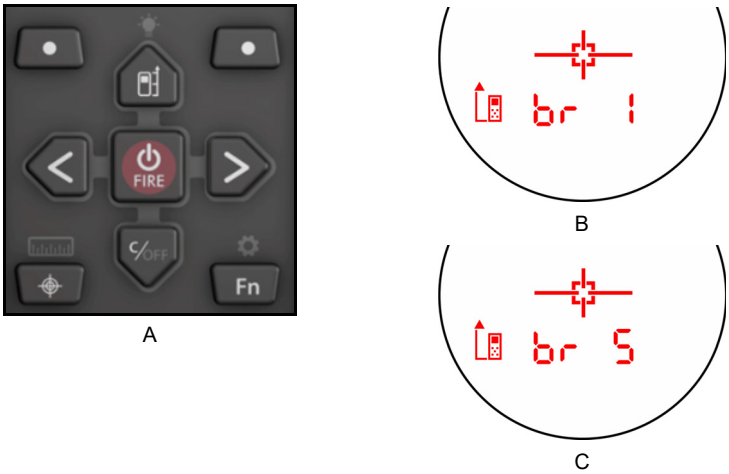

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Figure 12

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Main & HUD Display Indicators

Figure 13 shows the Black Mask LCD. The TruPoint 200h's internal software is organized into options. Each option represents a specific measurement or setup function and has a corresponding display indicator. Refer to the figure and the table below for information about each indicator.

- **Main Display**

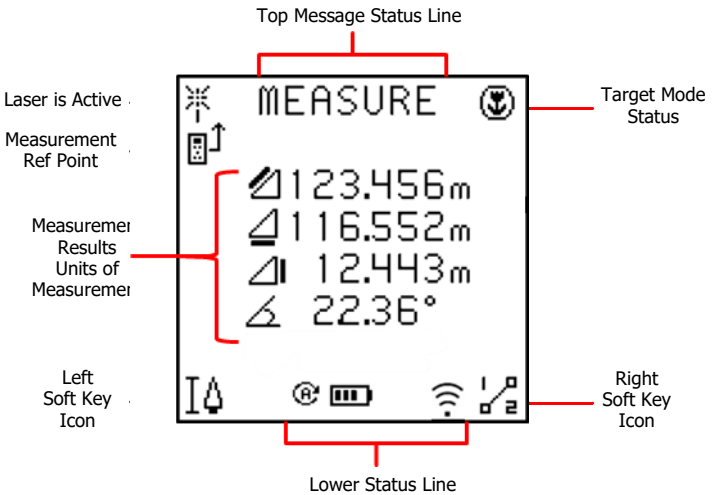

Figure 13

- **Top Message Status Line:**
  Indicates what Function is active or what Menu you are in.
- **Lower Status Line:**
  Indicates the Rotation Lock, battery status, Bluetooth activated and name of the icons
- **Left and Right Soft Keys:**
  In the Measurement Screen the icons are the favorites selected,
  ← to return to previous screen, ✓ to select or activate Settings or ✕ to exit the menu.

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- **Heads Up Display (HUD)**

Figure 14

Main Display	HUD	Description	Meaning
---,---	888.8.88	Main Display	Displays messages and measurement results.
°	°	Degrees	Inclination measurement units. Selection available in the Units of Measurement Menu (Page 54).
△%	△%	Percent Slope	
F	F	Feet	Distance measurement units. Selection available in the Units of Measurement Menu (Page 54).
M	M	Meters	
	N/A	Battery Status	In the main display indicates battery power.
N/A		Crosshair	Serves as the aiming point reference, both horizontally and vertically.
		Laser Status	*Visible and Flashing*: Laser is firing. *Visible and Steady*: Target is acquired. *Not Visible*: Laser is not active.
		Measurement Reference	The measuring point of the TruPoint 200h (Page 24).

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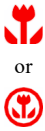
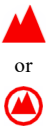
Main Display	HUD	Description	Meaning
		Inclination Measurement Mode (INC)	The angle of inclination between the TruPoint 200h and the target.
		Slope Distance Measurement Mode (SD)	Straight line distance between the TruPoint 200h and the target.
		Horizontal Distance Measurement Mode (HD)	Slope-corrected distance between the TruPoint 200h and the target, projected in the horizontal (XY) plane; a.k.a. Run.
		Vertical Distance Measurement Mode (VD)	Slope-corrected distance between the TruPoint 200h and the target, projected in the vertical (Z) plane; a.k.a. Rise.
		Missing Line Measurement Routine (ML)	Two-step Missing Line Routine finds the connecting vector (or missing line) between two points.
		Height Measurement Routine (HT)	Three-step height routine. The final calculation represents the vertical distance between the points on the target represented by ANG1 and ANG2.
	 or	Closest Target Mode	The unit logs multiple targets while FIRE is held down. The denotes that additional targets have been acquired. Of the targets acquired, the distance to the closest target displays.
	 or	Farthest Target Mode	The unit logs multiple targets while FIRE is held down. The denotes that additional targets have been acquired. Of the targets acquired, the distance to the farthest target displays.
	N/A	Range Gate Mode	The unit is restricted to targeting objects within specified ranges.

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Main Display	HUD	Description	Meaning
		Filter Mode	Similar to Standard, single shot mode, but the laser's sensitivity is reduced so it only detects pulses returned from a reflector.
		Continuous Mode	The laser can continuously acquire additional targets for a maximum of 10 seconds.
	N/A	Timer	The Timer delays the measurement (0, 3, 5, 10, 20, or 30 seconds) and is a single shot.
		Area	Uses two measurements to determine the area of a rectangle or square.
		Volume	Uses three shots to determine the volume of a room.
		Addition / Subtraction / Equal	Add multiple shots together or subtract a negative space from a measurement. This function can be used is horizontal measurement, height, 2D ML, area and volume.
	N/A	Min / Max	You "sweep" the laser pointer into a corner. The longest measurement is recorded. Very useful for accurate diagonal room or window/door measurements.
		Data Recall	Used to view the last 50 measurements or calculated solutions.
	N/A	Back	Return to the main measurement screen without selecting/saving an setting or option.
	N/A	Exit	Return to the main measurement screen.
	N/A	Accepts Selection	Accept the setting or option and then exit to the main measurement screen.

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Main Display	HUD	Description	Meaning
N/A		Although the TruPoint 200h does not use this indicator, it does appear during the Display Indicator Test.	
N/A		Although the TruPoint 200h does not use this indicator, it does appear during the Display Indicator Test.	

Icon display location summary in Horizontal LCD Mode:

Icon	Location
Farthest, Closest, Filter, Continuous Timer	TOP right
Range Gate, Battery, Rotation Lock	Lower Status Line

Icon highlights:

Icon Highlights	Explanation
White background	The icon is not selected.
Grey background	The icon is selected and active.
White background with outer frame	The icon is highlighted and will be selected if you press the  button.
Grey background with outer frame	The icon is selected and highlighted by the active cursor.

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Display Indicator Test

HUD

1. Start with the TruPoint 200h powered OFF, press-and-hold the FIRE button.
2. Look through the HUD and compare the in-scope display to Figure 15 to verify that all indicators are working properly.
3. Release FIRE to start normal operation.

Figure 15

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Error Codes

Error conditions can occur in a measurement or in the system hardware. To make sure that you never get an erroneous measurement, the TruPoint 200h monitors both system hardware and measurements. Error codes appear in the main display and are in the form of "E xx", where "xx" is an error code number (Figure 16).

Figure 16

Error Code	Explanation
Error 02 (E 02) Insufficient	The user released the fire button before the instrument acquired/validated a target.
Error 03 (E 03) Unstable	The return signal from the target is varying too much.
Error 06 (E 06) Tilt Error	Tilt data out of expected range.
Error 09 (E 09) Rejected	The acquired target is not in the user Range Gate values/settings.
Error 52 (E 52) Too Cold	The temperature is too low, displayed when the user tries to start a measurement.
Error 53 (E 53) Too Hot	The temperature is too high, displayed when the user tries to start a measurement.
Error 54 (E 54) Battery	The battery voltage is too low displayed when the user tries to start a measurement.
Error 55 (E 55) or above	Shut off unit and try again. If the same error repeats, please contact LTI Service Department.

ⓘ If an error code persists:

1. Release the FIRE button and press again to try to retake the measurement.
2. Remove and re-install the battery and then try to retake the measurement.
3. If the above steps do not resolve the error, contact LTI or an Authorized LTI Distributor for assistance. Refer to the inside front cover for LTI contact information.

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Measurement Point of Reference

The measurement point of reference of the TruPoint 200h can be changed by short pressing the button.

Main Display	HUD	Description
		Measurement Reference is from the front of the unit.
		Measurement reference is located at the center point of the unit, the ¼-20 thread.
		Measurement reference point is from the back of the unit.

The TruPoint 200h has a back Endpiece (Figure 17) for taking measurements from corners or edges. It is best to have the measurement reference point selected for the back of the instrument when taking measurements with the Endpiece.

Figure 17

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Section 4 - Settings Menu

The Settings Menu can be accessed from the measurement mode at any time by long pressing the Fn button. SETTINGS is displayed in the upper message area. Use the and buttons to highlight the desired icon. The icon description will be displayed in the lower message area. Short press the FIRE button to select the desired icon.

- **Bluetooth**: BLE, BT, Off (Page 26)
- **Vibrate** On/Off or (Page 27)
- **Aiming Laser** On/Off or (Page 28)
- **HUD Brightness** (Page 29)
- **Rotation Lock** , , or (Page 30)
- **System Menu** (Page 31)

At any time while in one of the menu screens, the user can go to the other menus by following the button presses explained in Figure 18.

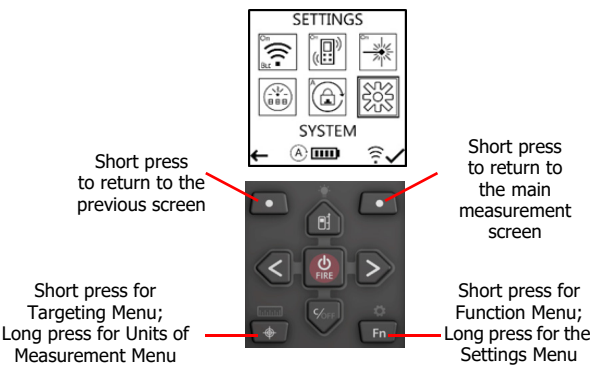

Figure 18

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Wireless (Bluetooth)

Bluetooth wireless technology is an industry standard specification for short-range wireless connectivity. As a short-range radio link, Bluetooth replaces cable connections between devices allowing you to download measurement data to any Bluetooth device.

1. Long press the Fn button and use the and buttons to highlight the Wireless Bluetooth icon , BLUETOOTH will be displayed in the lower message area.
2. Press the FIRE button to toggle Bluetooth from Off/On BT/ON BLE

Figure 19

- **OFF**: Turns the Bluetooth communications OFF.
- **ON BT**: Turns the Classic Bluetooth communications ON.
- **ON BLE**: Turns the BLE Bluetooth communications ON. Connectivity for Smart Devices.

3. Press the Left Soft Key to return to the main measurement screen. This does not select an option and exits without saving the Bluetooth setting option. The unit will return to the last saved option.
4. Press the Right Soft Key to accept Bluetooth setting option and exit to the main measurement screen. The TPt200h is ready to connect to a device.

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Vibrate

This feature provides short vibrating pulses/bursts to give a tactile confirmation and to reinforce that the laser has locked on the target. A measurement will be displayed at the same time the Vibrate feature is activated.

1. Long press the Fn button and use the and buttons to highlight the Vibrate icon, VIBRATE will be displayed in the lower message area.
2. Press the FIRE button to toggle the Vibrate setting on/off:
   - **ON**: Turns the Vibrate feature on.
   - **OFF**: Turns the Vibrate feature off.
3. Press the Left Soft Key to return to the main measurement screen.
   This does not select an option and exits without saving the Vibrate setting option.
   The unit will return to the last saved option.
4. Press the Right Soft Key to accept the Vibrate setting option and will exit to the main measurement screen.
5. When a target is acquired the unit will vibrate:
   - **One time**: Low quality target, measurement resolution is 0.0 (tenths).
     Range accuracy: ± 15cm (6 in)
   - **Two times**: High Quality target for pulse technology,
     measurement resolution is 0.00 (hundredths).
     Range accuracy: ± 2-4 cm (0.8 -1.5 in)
   - **Three times**: High quality target for phase technology,
     measurement resolution is 0.000 (thousandths).
     Range accuracy: ± 1.5 mm (0.05 in)

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Aiming Laser

The red laser pointer/dot is used for targeting to an object to obtain a measurement and be turned off or on. The red laser is the phase laser technology. When the aiming laser is off, the pulse laser technology can still obtain a measurement to a target.

- The device produces visible laser beams, which are emitted from the instrument. It is a Class 2 laser product in accordance with IEC60825-1: 2014 Radiation safety of laser products.
- Laser Class 2 product:
  - Do not stare into the laser beam or direct it towards other people unnecessarily. Eye protection is normally afforded by aversion responses including the blink reflex.
- **WARNING**
  - Looking directly into the beam with optical aids (e.g. binoculars, telescopes) can be hazardous.
- **CAUTION**
  - Looking into the laser beam may be hazardous to the eyes.

To use the Aiming Laser:

1. Long press the Fn button and use the and buttons to highlight the Aiming Laser icon. AIMING LASER will be displayed in the lower message area.
2. Press the FIRE button to toggle the laser pointer setting on/off
   - **ON**: Turns the laser pointer ON.
   - **OFF**: Turns the laser pointer OFF.
3. Press the Left Soft Key to return to the main measurement screen. This does not select an option and exits without saving the Aiming Laser setting option. The unit will return to the last saved option.
4. Press the Right Soft Key to accept Aiming Laser setting option and will exit to the main measurement screen.

ⓘ NOTE: If the selection was off, the laser indicator in the main display will have the OFF icon .

Draft B

HUD Brightness

The heads-up-display (HUD) brightness level can be set with 5 settings:

Option 1:

1. Long press the Settings Fn button and use the and buttons to highlight the HUD Brightness icon , HUD BRIGHT will be displayed in the lower message area.
2. Press the FIRE button to change and select the brightness level from 1-5.
3. Press the Left Soft Key to return to the main measurement screen. This does not select an option and exits without saving the HUD Brightness setting option. The unit will return to the last saved option.
4. Press the Right Soft Key to accept HUD Brightness setting option and will exit to the main measurement screen.

Option 2:

1. When the unit is the in the main measurement screen, in the vertical orientation, viewing through the HUD:
2. Long press the button (which is now pointing up) then short press the navigation button to change the brightness setting. The setting level change in sequence 1 to 5 and cannot go backwards (i.e changing from 3 to 2).
3. Press the FIRE button to accept or let the HUD time-out to accept the setting.

Draft B

Rotation Lock

The rotation lock is used to "lock" the main display in a certain orientation: Automatic, Vertical or Horizontal.

1. Long press the Settings Fn button and the ◀ and ▶ buttons to highlight the Rotation Lock icon. ROTATION LOCK is displayed in the lower message area.
2. Press the FIRE button to change the rotation lock options:
   - **Automatic**: Allows the display orientation change from horizontal to vertical automatically.
   - **Vertical**: Locks the display orientation for the vertical configuration.
   - **Horizontal**: Locks the display orientation for the horizontal configuration.
3. Press the Left Soft Key ← to return to the main measurement screen. This does not select an option and exits without saving the HUD Brightness setting option. The unit will return to the last saved option.
4. Press the Right Soft Key ✓ to accept Rotation Lock setting option and will exit to the main measurement screen.

ⓘ There could be a delay in the display change when in the Automatic mode if the laser is rotated too fast from one orientation to the other.

Draft B

System Menu

1. Long press the Settings Fn button and the and buttons to highlight the System Menu icon . SYSTEM will be displayed in the lower message area.
2. Press the FIRE button to enter the System menu. SYSTEM will be displayed in the upper message area. Use the and buttons to highlight the desired icon. The icon description will be displayed in the lower message area. Short press the FIRE button to select the desired icon.

   The System Menu includes five options used to set up the TruPoint 200h.

   - Data Recall
   - HUD Aiming
   - Favorites
   - About
   - Configuration

3. Press the Left Soft Key to return to the Setting Menu screen.
4. Press the Right Soft Key to return to the main measurement screen.

Draft B

Data Recall 

The TruPoint 200h will store the last 50 measurements or calculated solutions that can be recalled for review.

1. Long press the Settings  button and use the  and  buttons to highlight the System icon  SYSTEM will be displayed in the lower message area.
2. Press the  button to enter the System menu.
3. Navigate to the Data Recall icon  . DATA RECALL will be displayed in the lower message area.
4. Press the  button to select Data Recall
5. Use the  and  buttons to scroll through the last measurements collected.
6. Press the Left Soft Key  to return to System Menu screen.
7. Press the Right Soft Key  or to return to the main measurement screen.

ⓘ The last 50 measurements can be viewed only. Cannot retake a measurement or perform calculations. Once the storage is full, the oldest measurement will be deleted and unable to be viewed or recalled

Draft B

HUD Aiming

The HUD Aiming reticle is viewed in the heads-up display.

1. Long press the Settings Fn button and use the and buttons to highlight the System icon SYSTEM will be displayed in the lower message area.
1. Press the FIRE button to enter the System menu.
2. Navigate to the HUD Aiming icon. HUD AIMING will be displayed in the lower message area.
3. Press the FIRE button to select the HUD Aiming reticle options.
4. Use the and buttons to scroll through the options. Press the FIRE button to select the desired option.
   -
   -
   -
5. Press the Left Soft Key to return to the System Menu screen.
6. Press the Right Soft Key or to return to the main measurement screen.

Draft B

Favorites

In the Favorites menu the user can set a Function as one of the two Soft Key Favorites that will hyper to that function routine. No need to navigate through the Function menu to select the routine.

1. Long press the Fn button and use the and buttons to highlight the System icon. SYSTEM will be displayed in the lower message area.
2. Press the FIRE button.
3. Navigate to the Favorites icon. FAVORITES will be displayed in the lower message area.
4. Press the FIRE button to enter the Favorites menu. It will show the same tile selections as the FUNCTION menu (ie. Height, Area, Volume, +/-, Min/Max, etc.).
5. Use the and buttons to scroll through the options, highlight the desired Function to make a Soft Key Favorite and press either the Left or Right Soft Key to make that Function a favorite for that soft key.

Figure 20

6. Once the soft keys functions are selected, press the FIRE button to save the selected favorite functions and return to the main measurement screen.

ⓘ The soft keys cannot have same value. Attempting to set same function as the opposite side, the opposite side function will be changed.

Draft B

About

Information about the TruPoint 200h.

1. Long press the Fn button and use the and buttons to highlight the System icon. SYSTEM will be displayed in the lower message area.
2. Press the FIRE button.
3. Navigate to the About icon. ABOUT will be displayed in the lower message area.
4. Press the FIRE button. The following will be displayed:
   - Firmware Version
   - Date of Manufacture
   - Serial #
   - Bluetooth #
5. Press the Left Soft Key to return to the System Menu screen.
6. Press the Right Soft Key to return to the main measurement screen.

ⓘ LTI Technical Support may require this information when troubleshooting a problem.

Configuration

The Configuration menu includes 2 options: Factory Defaults and Firmware Upgrade.

1. Long press the Fn button and use the and buttons to highlight the System icon. SYSTEM will be displayed in the lower message area.
2. Press the FIRE button.
3. Navigate to the Config icon. CONFIG will be displayed in the lower message area.
4. Press the Left Soft Key to return to System Menu screen.
5. Press the Right Soft Key to return to the main measurement screen.

Draft B

Factory Defaults 

It is possible to restore the TruPoint 200h's default settings. Restoring the default settings affects some of the system setup options (See table below).

1. Use the  and  buttons to highlight the Factory Defaults icon  . "FACTORY DEFAULTS" will be displayed in the lower message area.
2. Press the  button to enter the menu.
   - Press the Left Soft Key  to return to the System Menu screen.
   - Press the Right Soft Key  to return to the main measurement screen.
3. Long press button (2 seconds) to restore factory settings. the unit will restart with the "TruPoint 200h"splash screen.

By selecting "Yes" to the Factory Reset, the following settings are restored to the factory default. Only perform the Factory Reset if you want all settings to return to the original values. The table below lists the parameters and the associated default settings. The third column lists the page reference for additional information

Parameter	Default Value	Page
Orientation of LCD	Automatic 	30
Measurement Mode	Standard	56
Backlight Main Display	Off	15
Measurement Reference Point	Front Position 	24
HUD Intensity Setting	3	29
Units	Meters/Degrees	54
Targeting Mode	Std (Standard)	56
Gate Value	Near 0m, Far 0m	57
Bluetooth	On BLE	26

Draft B

Parameter	Default Value	Page
Timer	0 (zero)	60
Vibrate	Off	27
Pointer	On	28
Memory (point recall)	Clears all stored measurements	32
Soft Keys	Left (Height) Right (Missing Line)	34

Firmware Upgrade

In the event of firmware upgrade availability, the TruPoint 200h laser firmware can be upgraded wirelessly with the LaserSoft WorkSite app. It is also possible to go back a firmware version to an older version, if necessary. Please refer to the LaserSoft WorkSite user's manual for more information.

Please ensure the following parameters are met before attempting to upgrade or downgrade laser firmware:

- Batteries are new or nearly new in the TruPoint 200h
- Android device is charged to at least half power or more
- TruPoint 200h is configured to receive a firmware upgrade
- TruPoint 200h is connected to WorkSite and the laser connection indicator is green

Configure the Laser

Before getting started, confirm the current firmware version number on the TruPoint 200h. To do so, long press the Fn button and use the and buttons to highlight the System icon and press the button. Then select About and the laser's current firmware version number displays at the top of the screen.

Draft B

To Upgrade the TruPoint 200h Firmware:

1. Long press the Fn button and use the and buttons to highlight the System icon and press the FIRE button.
2. Navigate to the icon then press the FIRE button.
3. Select Firmware Upgrade then press the FIRE button.
4. Press the FIRE button. The LCD on the laser should display the message shown in Figure 21.

Figure 21

To Perform the Firmware Upgrade Using the WorkSite Android App, see next page.

Draft B

To Perform the Firmware Upgrade Using the WorkSite Android App:

1. Tap  from the WorkSite Main Menu.
2. If the laser is ready, tap "My laser is ready." If not, tap "Help me configure my laser" (Figure 22) In this example, "My laser is ready" was chosen.
3. Tap to select the newest firmware version in the list of available options and then tap "Install" (Figure 23 A). A progress bar will be displayed (Figure 23 B).

   The upgrade process can take up to 5 minutes. DO NOT turn off the laser or the Android device until the upgrade completes.

4. The TruPoint 200h will shut off upon upgrade completion. The laser connection icon will show disconnected status (Figure 23 C).
5. Power the laser on and verify the current firmware version number

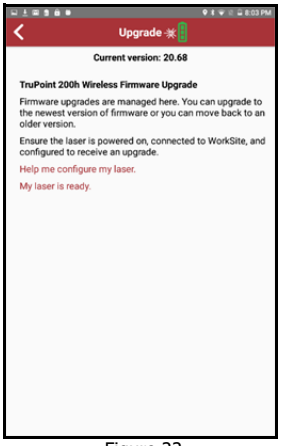
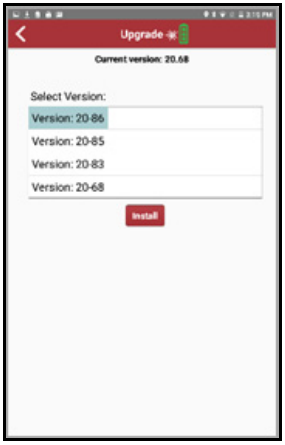
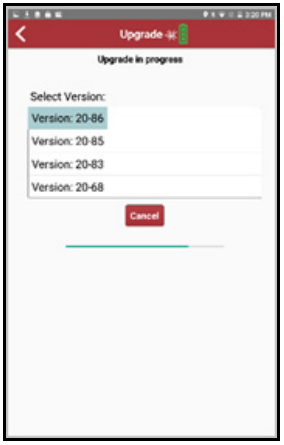


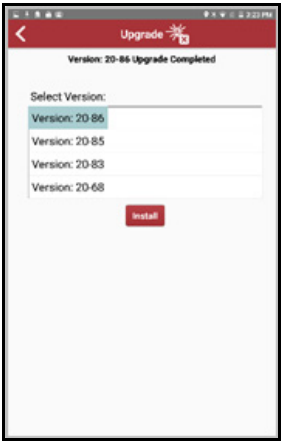
Figure 22



A



B



C

Figure 23

Draft B

Section 5 - Function Menu

The Function Menu can be accessed from the Measurement Mode at any time by short pressing the Fn button. Use the navigation buttons to highlight the desired Function icon. The icon description will be displayed in the lower message area. Short press the FIRE button to select the Function icon. Each option is described separately in the following sections.

- Height
- Missing Line
- Area
- Volume
- Add/Sub
- Min/Max

Height Routine

Height measurements involve a simple routine that prompts you to take 3 shots to the target: Horizontal Distance, Inclination Angle base and Inclination Angle top. The TruPoint 200h uses these results to calculate the height of the target. Figure 24 shows the shots required for the height routine.

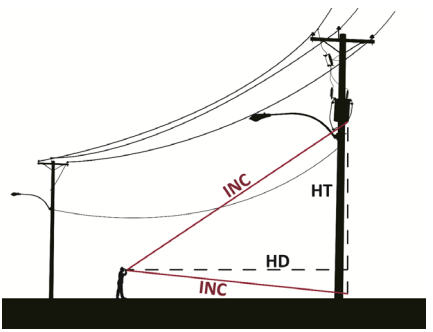


Figure 24

- **Shot 1**: HD
- **Shot 2**: INC to base
- **Shot 3**: INC to top

= Measured

= Calculated

1. Short press the Fn button and use the and buttons to highlight the icon.
2. Press the FIRE button to enter the Height measurement routine.

Draft B

HUD Routine

1. Select your target and look through the eyepiece, using the crosshair to aim to your target.

   The HT icon  , the HD icon  , and "Shot 1" will appear in the display prompting you to measure the Horizontal Distance to the "face" of the target.

2. Press-and-hold the 

button. The laser indicator  is displayed while the laser is active. The laser will remain active for a maximum of 10 seconds while acquiring data about the target.

   The measured horizontal distance appears briefly in the main display and then HT  ,

   Inclination icon  , degree symbol icon  are displayed along with the word ANG 1 prompting you to measure the inclination to base (or top) of the target.

3. Press-and-hold the 

button and aim to the base (or top) of the target. The measured inclination appears in the main display and is updated as long as us you continue to

   hold the 

button. The measured inclination is "locked" when you release button.

   The measured inclination appears briefly in the main display and then HT icon  , Inclination

   icon  , and the degree symbol icon  are displayed along with the word ANG 2 prompting you to measure the inclination to the top (or base) of the target.

4. Press-and-hold the 

button and aim to the top (or base) of the target. The measured inclination appears in the main display and is updated as long as you continue to

   hold the 

button. The measured inclination is locked when you release the 

button. The measured inclination appears briefly in the main display and then the calculated Height is displayed steady until you press any button or the unit powers OFF.

Draft B

Main Display Routine

1. Select your target and press the FIRE button, the laser pointer is active.
2. Shot 1 is displayed in lower message area prompting you to measure the Horizontal Distance  to the face of the target.
3. Aim the TruPoint to the target and press-and-hold the FIRE button to acquire the measurement to the target:
   - The laser sensor will remain active for a maximum of 10 seconds while acquiring data about the target.
   - The measured Horizontal Distance  value appears in the main display.
4. Shot 2 is displayed in lower message area and the first INC icon  has dashes indicating to take first angle measurement to the target base (or top).
5. Press-and-hold the FIRE button and aim to the base (or top) of the target. The measured inclination appears in the main display and is updated as long as us you continue to hold the FIRE button. The measured inclination is locked when you release the FIRE button. The measured inclination appears in the main display along with the Horizontal Distance measurement.
6. Shot 3 is displayed in lower message area and the second INC icon  has dashes indicating to take second angle measurement to the target top (or base).
7. Press-and-hold the FIRE button and aim to the top (or base) of the target. The measured inclination appears in the main display and is updated as long as you continue to hold the FIRE button. The measured inclination is locked when you release the FIRE button. The measured inclination appears in the main display.
8. The Horizontal Distance and the two inclination values are displayed in data area. The calculated height measurement results are displayed. RESULT is in the lower message area indicating the height has been calculated.

Draft B

ⓘ Button sequence during the height routine:

- Pressing the back key ← clears the last measurements (horizontal or inclination) and allows you to reshoot that measurement.
- Pressing the ✕ button soft key, it will exit the HEIGHT Function and goes to main measurement screen.
- Press the  button to clear last measurement and to re-shoot the previous point.
- The laser is not active while measuring the ANG1 and ANG2 values.

  As long as you hold the  button, the inclination reading is displayed and updated as the aiming point changes. The measured inclination is based upon the aiming point when you release the  button.
- When the height result is displayed, just press the  button to start the routine and repeat the steps.

Draft B

2D Missing Line Routine

The 2D Missing Line Routine calculates distances and angles to describe the relationship between two points in two-dimensional space (connecting vector). This routine is ideal for remote slope determinations and changes in elevation from one location.

The simple routine prompts you to take two shots to targets: Shot 1 and Shot 2. The TruPoint uses the results to calculate four variables between the two points: slope distance, inclination, horizontal distance, and vertical distance as shown in Figure 25.

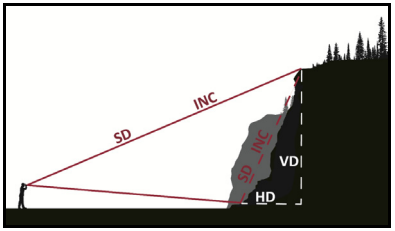


Figure 25

- **Horizontal Distance**: Horizontal component of the missing line.
- **Vertical Distance**: Change in elevation between point #1 and point #2.
- **Slope Distance**: Length of the missing line.
- Inclination between point #1 and point #2.

= Measured

= Calculated

If you were to actually stand at the location of Shot 1 and take a measurement to Shot 2, the calculated values would be from Shot 1 to Shot 2. If the first shot is father away and higher than the second shot, the measurement values: HD, SD will be positive values and INC, VD will be negative values. If the first shot is closer than second shot, the measurement values: HD, SD, INC, VD will be positive values.

1. Short press the "Function" Fn button and use the ◀ and ▶ buttons to highlight the 2D Missing Line icon.
2. Press the FIRE button to enter the Missing Line measurement routine.

Draft B

HUD Routine

1. Select your target and look through the eyepiece, using the crosshair to aim to your target.

   The ML icon  , HD icon  , and the Shot 1 will appear in the display prompting you to measure the Horizontal Distance to the target.

2. Press-and-hold 

button. The laser indicator  is displayed while the laser is active.
   The laser will remain active for a maximum of 10 seconds while acquiring data about the target.
   The measured horizontal distance appears briefly (2 seconds) in the main display.
3. Select your second target and look through the eyepiece, using the crosshair to aim to your target. The ML icon  , HD icon  , and Shot 2 will appear in the display which is prompting you to measure the Horizontal Distance to the target.

4. Press-and-hold 

button. The laser indicator  is displayed while the laser is active.
   The laser will remain active for a maximum of 10 seconds while acquiring data about the target.
   The measured horizontal distance appears briefly (2 seconds) in the main display

5. The ML icon  , HD icon  , and Horizontal Missing Line value is displayed.
   The results are from Shot 1 to Shot 2.

   At this time, you can press  or  to scroll and view the other missing line measurements results SD  , VD  and INC  . When scrolling, the ML icon  and each individual icon is displayed.

Draft B

Main Display Routine

1. Select your first target and press the FIRE button, the laser pointer is active and laser indicator will be display the pointer is on. Aim the laser pointer to the target. Shot 1 is displayed in lower message area prompting you to measure the Distance to the target.
2. Press-and-hold the FIRE button, the laser will remain active for a maximum of 10 seconds while acquiring data about the target. The measured horizontal, slope & vertical distance and inclination appear in the main display once the target is acquired for 2 seconds.
3. The measurements are cleared from the Shot 1 and Shot 2 is displayed in lower message area prompting you to take the seconds measurement; using the laser pointer, aim to the second target.
4. Press-and-hold the FIRE button, the laser will remain active for a maximum of 10 seconds while acquiring data about the target. The measured horizontal, slope & vertical distance and inclination appears in the main display once the target is acquired for 2 seconds.
5. The laser pointer is turned off, the Missing Line value results are displayed with RESULT in the lower message area and the results are from Shot 1 to Shot 2.

ⓘ Button sequence during the 2D Missing Line routine:

- Pressing the back key ← clears the last measurement and allows you to reshoot that measurement.
- Pressing the ✕ button soft key, exits the 2D Missing Line function and goes to main measurement screen.
- Press the button to clear last measurement and to re-shoot the previous point.
- When the 2D Missing Line result is displayed, just press the FIRE button to start the routine and repeat the steps.

Draft B

Area Routine 

Determines the area of a rectangle or square in two measurements.

The Area calculations can use either the slope distance  or horizontal distance 

of each shot for the length and width. Once on the Area function, press the  and  buttons before taking first measurement to navigate between the two.

Main Display Routine

1. Short press the  button and use the navigation buttons to highlight the Area Routine icon  .
2. Press the  button to enter the Area measurement routine.
3. Select your first target and press the  button, the laser pointer is active and the laser indicator  will be displayed while the laser pointer is on.
   - Aim the laser pointer to the target.
   - Shot 1 is displayed in lower message area prompting you to measure the Slope Distance to the "face" of the target
4. Press-and-hold the  button, the laser will remain active for a maximum of 10 seconds while acquiring data about the target. The measured slope distance appears in the main display once the target is acquired. Shot 2 is then displayed in the lower message area.
5. Aim the laser pointer to the other portion of the room/target and take the second measurement.
6. Press-and-hold the  button, the laser will remain active for a maximum of 10 seconds while acquiring data about the target. The measured slope distance appears in the main display once the target is acquired and the calculated Area result is displayed.

Draft B

HUD Routine

1. Select your target and look through the eyepiece, using the crosshair to aim to your target.

   The Area icon ,SD icon Shot 1 will appear in the display. The SD icon is flashing which is prompting you to measure the Slope Distance to the "face" of the target.

2. Press-and-hold the FIRE button. The laser indicator is displayed while the laser is active. The laser will remain active for a maximum of 10 seconds while acquiring data about the target. The measured slope distance appears briefly (2 seconds) in the main display
3. Select your second target and look through the eyepiece, using the crosshair to aim to your target. The Area icon , SD icon , and Shot 2 will appear in the display. The SD icon is flashing which is prompting you to measure the Slope Distance to the "face" of the target.

4. Press-and-hold the FIRE button. The laser indicator is displayed while the laser is active. The laser will remain active for a maximum of 10 seconds while acquiring data about the target. The measured Slope distance appears briefly (2 seconds) in the main display

5. The Area icon and the calculated Area result is displayed.

ⓘ Button sequence during the Area routine:

- Pressing the back key clears the last measurement and allows you to reshoot that measurement.
- Pressing the button soft key, it will exit the Area Function and goes to main measurement screen.
- Press the button to clear last measurement and to re-shoot the previous point.
- When the Area result is displayed, just press the FIRE button to start the routine and repeat the steps.

Draft B

Volume Routine

Determine the volume of a room with 3 shots.

NOTE: The Volume calculations can use either the Slope Distance or Horizontal Distance in the routine. In Slope Distance, three measurements (length, width, and height) will be slope measurements. In Horizontal Distance, the length and width will be horizontal measurements and the height will use vertical measurements of each shot for the length and width. Once in the Volume routine, press the and buttons before taking first measurement to navigate between the two. You can also navigate between the two different volume calculation results

Main Display Routine

1. Short press the Fn button and use the navigation buttons to highlight the Volume icon.
2. Press the FIRE button to enter the Volume measurement routine.
3. Select your first target and press the button, the laser pointer is active and laser indicator will be display the pointer is on. Aim the laser pointer to the target. Shot 1 is displayed in lower message area prompting you to measure the Distance to the "face" of the target
4. Press-and-hold the FIRE button, the laser will remain active for a maximum of 10 seconds while acquiring data about the target. The measured slope distance appears in the main display once the target is acquired. Shot 2 is then displayed in the lower message area.
5. Take the second measurement/shot. Aim the laser pointer to the other portion of the room/target.
6. Press-and-hold the FIRE button, the laser will remain active for a maximum of 10 seconds while acquiring data about the target. The measured slope distance appears in the main display once the target is acquired. Shot 3 is then displayed in the lower message area.
7. Take the third measurement/shot. Aim the laser pointer to the other portion of the room/target.
8. Press-and-hold the FIRE button, the laser will remain active for a maximum of 10 seconds while acquiring data about the target. The measured slope distance appears in the main display once the target is acquired. The Volume icon and the calculated Volume result is displayed.

Draft B

HUD Routine

1. Select your target and look through the eyepiece, using the crosshair to aim to your target.

   The Volume icon ,SD icon , Shot 1 will appear in the display. The SD icon is flashing which is prompting you to measure the Slope Distance to the "face" of the target.

2. Press-and-hold the FIRE button. The laser indicator is displayed while the laser is active. The laser will remain active for a maximum of 10 seconds while acquiring data about the target. The measured slope distance appears briefly (2 seconds) in the main display
3. Select your second target and look through the eyepiece, using the crosshair to aim to the target.

   The Volume icon, SD icon , Shot 2 will appear in the display. The SD icon is flashing which is prompting you to measure the Slope Distance to the "face" of the target.

4. Press-and-hold the FIRE button. The laser indicator is displayed while the laser is active. The laser will remain active for a maximum of 10 seconds while acquiring data about the target. The measured Slope distance appears briefly (2 seconds) in the main display.
5. Select your second target and look through the eyepiece, using the crosshair to aim to the target.

   The Volume icon , SD icon , and Shot 3 will appear in the display. The SD icon is flashing which is prompting you to measure the Slope Distance to the face of the target.

6. Press-and-hold the FIRE button. The laser indicator is displayed while the laser is active. The laser will remain active for a maximum of 10 seconds while acquiring data about the target. The measured slope distance appears briefly (2 seconds) in the main display.

   The Volume icon and the calculated Volume result is displayed.

ⓘ Button sequence during the Volume routine:

- Pressing the back key clears the last measurement and allows you to reshoot that measurement.
- Pressing the button soft key, exits the Volume Function and goes to the main measure screen.
- Press the button to clear last measurement and to re-shoot the previous point.
- When the Volume result is displayed, just press the FIRE button to start the routine and repeat the steps.

Draft B

Addition/Subtraction Routine

Add multiple shots together or subtract a negative space from a measurement. This function can be used in horizontal measurement, Height, 2D Missing Line, Area and Volume.

1. Short press the Fn button and use the and buttons to highlight the Addition/Subtraction Icon. Press the FIRE button to activate and enter the function to add or subtract a measurement.
    - To exit the Addition/Subtraction function, short press the Fn button and use the navigation buttons to highlight the Addition/Subtraction icon, Press the FIRE button to deactivate the function.

To Add/Subtract a Measurement

1. Enter the Add/Subtract Function menu.
2. SELECT is displayed in the lower message area, prompting you to use the arrow keys to select the measurement type for Addition/Subtraction: , , or .
3. Use the and buttons to move the arrow to the measurement that you want to Add/Subtract.
4. Select your target and press the FIRE button, the laser pointer is active and laser indicator pointer is on.
5. Press-and-hold the FIRE button, the laser will remain active for a maximum of 10 seconds while acquiring data about the target. The measurements appear in the main display once the target is acquired
6. Press the Right Soft Key "=" sign to enter the ADD/SUB menu screens.
    - Press the Left Soft Key to change the icon from Add to Subtract depending on the desired routine.
7. To ADD/Subtract either press the:
    - Press the FIRE button to return to a measurement screen and press the FIRE button to take a measurement.
    - Press the Right soft key equal sign to see the two measurements added/subtracted result.
8. Continue routine to add/subtract more measurements.

Draft B

Add/Subtract a Function Routine: Height, Missing Line, Area or Volume Values

The following is an example of the Area routine adding two values together. The other functions (Height, Missing Line, and Volume) adding or subtracting values, the routine will be very similar.

1. Enter the Add/Subtract Function menu from the steps above.
2. Short press the Fn button and use the navigation buttons to highlight the Area icon.
3. Press the FIRE button to enter the Area routine.
4. Follow the Area routine (Page 47). The screen will have the Addition/Subtraction icon in the lower Right Soft Key and back arrow in the Left Soft Key area.
5. The first Area is calculated and the results are displayed. The Right Soft Key now displays an "=" icon.
6. Short press the Right Soft Key "=" to enter the Addition/Subtraction routine.
   - The following is the addition sequence. The subtraction sequence would be the same except for subtracting the measurements from one another.
   - If a larger value is subtracted from a smaller value, a negative value will be calculated.
7. The first Area is displayed with a "+" and symbols to the left of the value, the Left Soft Key is "+" symbol and the Right Soft Key is the Area icon.
   - Short press the Left Soft Key to change from addition to subtraction symbols.
8. Short press the Right Soft Key A and the screen will return to the Area function routine. Take the second area measurements you want to add to the first value.
9. Short press the Right Soft Key "=" to see the two area results added.
   - Press the Left Soft Key "+" to change from Addition to Subtraction and review results.
10. If another area needs to be added/subtracted, Short press the Right Soft Key A and repeat the Area routine.
11. To exit the Add/Sub routine:
    - Short press the Fn button, navigate to the Addition/Subtraction icon and press the FIRE button. The main measurement screen will be in the Area function with the Addition/Subtraction function deactivated.
    - Short press the Right Soft Key "X" to exit the Area function and return to main measure screen.

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Min/Max Routine

In Min/Max mode, you "sweep" the laser point into a corner. The longest measurement is recorded. Very useful for accurate diagonal room or window/door measurements. Best used in the Horizontal Orientation using the LCD to review measurement results.

1. Short press the Fn button and use the navigation buttons to highlight the Min/Max icon.
2. Press the FIRE button enter the Min/Max measurement routine.
3. Select the first target and press the FIRE button, the laser pointer is active and the laser indicator will be displayed when the pointer is on. Aim the laser pointer to the target.
4. Press-and-hold the FIRE button to measure to the target, then pan to a new target. The minimum and maximum targets measured will be displayed.

ⓘ Button sequence during the Min/Max routine:

- Pressing the back key clears the last measurement and allows you to reshoot that measurement.
- Pressing the ✕ button soft key, it will exit the function and goes to main measurement screen.
- Press the button to clear last measurement and to re-shoot the previous point.
- When the measurement result is displayed, just press the FIRE button to start the routine and repeat the steps.

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Section 6 - Units Menu

Units of Measure

Choose between four different units of measurement for distance and inclination.

ⓘ Each time the TruPoint 200h is powered ON, it will return to the same unit setting that was last used.

Distance/Inclination

- Feet/Degree 
- Feet/Percent 
- Meter/Degree 
- Meter/Percent 

1. Long press the  button and use the navigation buttons to highlight the desired units of measurement. The name /description of the icon will be displayed in the lower message area.
2. Press the  button to select the units of measurements and to return to the main measurement screen.
   - Press the Left Soft Key  or the right soft key  to return to the main measurement screen without changing/saving the units of measurement selection.

Percent Slope

Percent slope (indicated by Per) is a calculation equal to 100 times the tangent of the inclination angle. It is a variant way of expressing the inclination. You can get percent slopes only in the basic measurement displays, never in the Height measurement displays. Note also that the instrument never downloads a percent slope. It always downloads the inclination angle.

ⓘ An inclination angle of 5 degrees for example is equal to a slope of about 8.75 percent.

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Section 7 - Targeting Menu

The TruPoint 200h has six target modes which allow you to select or eliminate targets and to take the most accurate measurements possible in various field conditions.

Target Mode	Main Display	HUD	Explanation
Closest			The distance to the closest target displays.
Farthest			The distance to the farthest target displays.
Range Gate		N/A	Restricts the TruPoint 200h to targeting objects within specified ranges.
Filter			The laser's sensitivity is reduced so it only detects pulses returned from a reflector.
Continuous			Continuously acquire additional targets for a maximum of 10 seconds.
Timer		N/A	Set a timer to delay a measurement.

1. Short press the  button and use the  and  buttons to highlight the target mode to be set. The name of the targeting mode will be displayed in the lower message area.
2. Press the  button to activate the desired targeting mode. The icon will be highlighted and once selected it will go back to the basic Measurement screen and have Targeting mode icon in upper right segment.
3. To change the Targeting mode, repeat step 1.
4. To cancel the Targeting mode:
    - Short press the  button
    - Press the Right Soft Key "OFF" to cancel any targeting mode and the Standard single shot mode will be active.
    - Press the Left Soft Key (back arrow) to return to the Main Measurement screen to keep the selected targeting mode.

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Targeting Modes

The selected Target Mode remains active until you select a different Target Mode.
Each time the TruPoint is powered ON, it returns to the same Target Mode that was last used.

Standard: Single Shot Mode

To select the standard single shot mode, Short press the "Targeting"  button and press the Right Soft key OFF to cancel any chosen Targeting Mode, go back to the main measurement screen and unit will be in Standard single shot mode.

- There is no icon in the upper right of the main display when selected.

Closest

The Closest icon  is displayed in the upper right in the main measurement screen when selected. Once the initial target is acquired, the TruPoint can acquire additional targets by continuing to press the  button. The multi measurement indicator  (LCD),  (HUD) denotes that additional targets have been acquired. The closest acquired target always appears in the main display or HUD.

Farthest

The Farthest icon  is displayed in the upper right in the main measurement screen when selected. Once the initial target is acquired, the TruPoint can acquire additional targets by continuing to press the  button. The multi measurement indicator  (LCD),  (HUD) denotes that additional targets have been acquired. The farthest acquired target always appears in the main display or HUD.

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Range Gate

Using the Range Gate option it is possible to artificially extend the instrument's minimum range and restrict its maximum range. The range minimum is the Short Gate and the range maximum is the Long Gate. The specified ranges, which are always slope distance values, form the gate window.

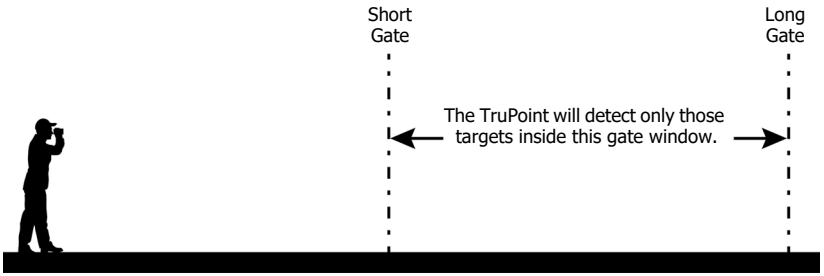

Figure 26

One of the uses of the gate window is to help you make certain you are getting the right target when objects near or just beyond the intended target present a danger of giving you false readings.

Range Gate has 4 modes.

- **Range Gate is disabled**
  Short Gate is disabled, Long Gate is disabled.
- **Short Gate only** 
  The Short Gate artificially extends the instrument's minimum range. The gate window extends from the Short Gate value to the maximum range of the instrument.
- **Long Gate only** 
  The Long Gate restricts the instrument's maximum range. The gate window extends from the instrument's minimum range to the Long Gate value.
- **Both Gates enabled** 
  The gate window extends from the Short Gate value to the Long Gate value.

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To select:

1. Short press the button. Use use the and buttons to the to highlight the Range Gate Icon. Press the button.
2. Use the and buttons to highlight either gate. To set the value, press the button on the desired gate. Edit right/left arrows will be displayed. Increase or decrease uses only the or buttons no matter how the unit positioned.
    - It is orientation-independent and the button is not active during this application.
    - Short press the arrow buttons to change the value by 1
    - Press-and-hold the arrow buttons to change the value faster.
3. Press the button to accept/set the value and the S/L Gate icon will be highlighted.
4. Continue/repeat steps to set the other gate if necessary.
    - Short press the right soft key to set and return to the main measurement screen.
    - Short press the Left Soft Key to cancel and exit to Targeting Menu screen. If a gate is set, the gate icon will be displayed in the lower status bar section of the main measurement screen.

ⓘ Limits:

- Short and Far gate limit: 1 - 500 m (1 - 1,500 ft)
- EXAMPLE: The gate window is restricted to a width of 1.5 meters (5 feet). If you set the gate window too narrow, the instrument automatically adjusts it by resetting either the short or long gate, taking the most recent value entered as the standard to recalculate the other by. If the short gate is already set at 10 feet, for example, and then you set the long gate to 12 feet, the instrument resets the short gate to 7 feet.
- "DISABLED" or ---m if gate is disabled.
- If the unit does not acquire a measurement within the gate window, it will show an 'E01' message (No Target Acquired) and stop measuring.The unit will not keep trying to get a measurement at this point.

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Filter

The Filter icon is displayed in the upper right in the main measurement screen when selected.

The Filter icon  is displayed in the upper right in the main measurement screen and in the HUD  when selected. In this mode, the laser's sensitivity is reduced to only detect pulses returned from a reflector. This means that the TruPoint will reject pulses from a non-reflective target.

1. Short press the  button. Use the  and  buttons to the to highlight the Filter icon  .
2. Press the  button to turn on the Filter Mode and return to the Measurement screen.

Continuous

The Continuous icon  is displayed in the upper right in the main measurement screen and in the HUD  when selected.

1. Short press the  button. Use the  and  buttons to the to highlight the Continuous icon  . Press-and-hold the  button and once the target is acquired, the TruPoint can continuously acquire additional targets for a maximum of 10 seconds. Upon releasing the  button, the most recently acquired target appears in the Main/HUD Display.

   ⓘ The multi measurement indicator is not displayed in this mode.

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Timer

The Timer delays measurement and is a single shot. The Timer can work with Functions, but cannot work with any other targeting modes

The Timer icon  is displayed in the upper right in the main measurement screen when selected. Indicating the timer is in stand-by mode

1. Short press the  button. Use the  and  buttons to the to highlight t he Timer Icon  .
2. Press the  button to select the timer function.
3. Use the  and  buttons to select the desired timer value in seconds and press the  button to return to the Measurement screen with the Timer icon active.
    - Press the Left Soft Key  to go back to Target menu with no change to the timer.
    - Press the right soft key  to exit to the Measurement screen with no timer active.
4. Press the  button to activate laser pointer, then press  again. The selected time (0, 3, 5, 10, 20, 30 seconds) will be displayed under the Timer icon and count down to zero and take a measurement.

ⓘ About the timer:
- It is updated at least once a second.
- It displays the number of seconds until the measurement will be taken.
- Once the timer reaches zero, the TruPoint measures to the target with a single shot and the values are displayed.

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Section 8 - Care

The batteries are the only user-replaceable parts in the TruPoint. Do not remove any screws. To do so will affect or void the LTI Limited Warranty.

Temperature Range

The instrument is rated for an operating temperature range of -20 to +60º C (-4 to +140º F). Do not expose the TruPoint to temperatures outside this range.

Protecting from Shock

The TruPoint is a precision instrument and should be handled with care. It will withstand a reasonable drop shock.

Transporting

When transporting the TruPoint, the unit should be secured in the provided carrying case. The provided neck strap can be used when carrying the TruPoint in the field.

Cleaning

Clean the TruPoint after each use, before returning it to its carrying case.

Check all of the following items:

- *Excess moisture*
  Towel off excess moisture, and air dry the instrument at room temperature with the batteries removed and the battery compartment open.
- *Exterior dirt*
  Wipe exterior surfaces clean to prevent grit buildup in the carrying case. Isopropanol may be used to remove dirt and fingerprints from the exterior.
- *Transmit and Receive Lenses*
  Use the provided lens cloth to wipe the lenses. Failure to keep the lenses clean may damage them. Never use aggressive cleaning agents or solvents.

Storing

If you won't be using the TruPoint for a long period of time, remove the batteries before storing the instrument.

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Section 9 - LTI Limited Warranty

What is Covered?

Laser Technology, Inc. (LTI) warrants this product to be in good working order. Should the product fail to be in good working order at any time during the warranty period, LTI will, at its option, repair or replace this product at no additional charge

Parts and products that have been replaced as a result of a warranty claim become the property of LTI.

What is the Period of Coverage?

This warranty remains in force for two years from the date of purchase from LTI or an authorized LTI product dealer; unless otherwise noted by LTI at the time of sale. LTI reserves the right to require written verification of the date of the original purchase of any product.

What is Not Covered?

LTI has no obligation to modify or upgrade any product once sold. Any reproduction of software products is strictly forbidden. This limited warranty does not include service to repair damage to the product resulting from:

- Accident
- Disaster
- Misuse
- Abuse
- Non-LTI modification
- Batteries or damage caused by batteries used in our products.

In no event will LTI be liable to you for any damages, including any lost profits, lost savings, or other incidental or consequential damages arising out of the use or inability to use such product. Furthermore, LTI shall not be held responsible if an LTI authorized dealer has been advised of the possibility of such damage, or for any claim by any other party.

What Will We Do to Correct Problems?

If this product is not in good working order as warranted above, your sole remedy shall be repair or replacement as provided above.

How does State Law Relate to this Warranty?

LTI hereby disclaims all other express and implied warranties for the product, including the warranties of merchantability and fitness for a particular purpose. Some states do not allow the exclusion of implied warranties, so the above limitations may not apply to you.

How do You Get Service?

In the unlikely event that your LTI product should require warranty or repair service, contact us to receive a Return Merchandise Authorization (RMA) number before returning your product.

If the product is delivered by mail, you agree to insure the product or assume the risk of loss or damage in transit. In addition, the shipping container or equivalent, will be sent prepaid and for door-to-door delivery.

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About the Warranty Validation Card

It must be completed and received by LTI in order to benefit from this limited warranty. If an LTI software product requires registration, this must also be completed to benefit from this limited warranty. Receipt of the warranty validation card not only activates the limited warranty, it also allows LTI to contact you directly when hardware or software upgrades become available.

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Section 10 - Serial Communication/String/Bluetooth

The TruPoint 200h has two Bluetooth options that have different serial protocols.

Bluetooth Classic: Compatible with LTI and 3rd party software/app solutions utilizing the LTI's Criterion 400 (CR400) communication protocol. Please contact LTI Service Tech Support for more information on download formats and serial interface communication messages.

Bluetooth LE (BLE): New designed LTI BLE communication protocol. App interface developers kit information is available, please contact LTI Service Tech Support for more information.

Bluetooth Classic Interface

The TruPoint 200h includes wireless Bluetooth communication. The measurement data downloaded from the TruPoint is in ASCII Hex format, and duplicates LTI's Criterion 400 (CR400) communication protocol and download messages.

Download Message Format

The CR400 data format follows the guidelines of the NMEA Standard for interfacing Marine Electronic Navigational Devices, Revision 2.0. NMEA 0183 provides for both standard and proprietary data formats. Since none of the standard formats are useful for the data transferred from the TruPoint 200h, special proprietary formats are used. Rules described in the NMEA standard governing general message structure, leading and trailing characters, numeric values, delimiting character, checksums, maximum line length, data rate, and bit format are followed exactly. As required by NMEA 0183, the CR400-format does not respond to unrecognized header formats, malformed messages, or messages with invalid checksums.

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Section 11 - Specifications

All specifications are subject to change without notice. Please refer to LTI's website for current specifications. If you are not able to locate the information on the website or if you do not have internet access, please contact LTI. Refer to the inside front cover for LTI contact information.

Dimensions: Size: 140 x 85 x 50 mm (5.5 x 3.3 x 2 in)

Weight: Weight: 310 g (11 oz) - excluding batteries

Construction: Polycarbonate internal chassis with high-quality

Environmental: IP67

Temperature: -20 to +60º C (-4 to +140º F)

Optics: 2X Magnification

Display: External LCD with Backlight; Internal LED reticle with 2X magnification

Laser Power: Pulse Technology: 1100 µW
Phase Technology: 950 µW maximum

Pulse Beam Divergence: 3 mrads

Measurement Range:

Max Distance: 500 m (1,640 ft) Pulse Technology
100 m (328 ft) Phase Technology

Inclination: ± 90°

Accuracy**:

Distance: ± 2-5 cm (0.8 - 2 in)* Pulse Technology;
± 1.5 mm (0.05 in) Phase Technology

Inclination: ±0.1° typical, ±30°***

**Typical Targets*: Target quality can be affected by atmospheric conditions, such as heat shimmer, dust, target reflectance, traverse angle to target and beam spread.

*** Nominal Calibration Distance (Reflective Target) or Angle Tolerance* is 95% level of Confidence under normal test conditions at a temperature of 23°C and Barometric Pressure of 101kPa.

****Additional angle related deviation* of ± 0.01° per degree up to ±45° in each quadrant. Applies at room temperature. For the whole operating temperature range the maximum deviation increases by ±0.1°.

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Range Resolution:	0.000 m/ft with phase laser 0.00 m/ft with pulse laser to high quality targets 0.0 m/ft with pulse laser to low-quality targets
Hybrid Targeting Modes:	Closest, Farthest, Continuous, Filter, Range Gate, Timer
Units of Measurement:	Feet, Meters, Degrees, Percent Slope
Communication:	Bluetooth Classic and Bluetooth SMART (Low Energy - BLE) wireless technology
Onboard Memory:	Recall up to 50 measurements
Power:	(2) AA batteries
Mount:	¼-20 Thread