Laser Distance Meter

5040H,5060H,5080H,5100H

User's manual

Thanks for purchasing our series hand-held laser range finder products in Model H.

Before using this device please first read the safety policy and direction for use carefully.

I. Safety policy

⚠ Before using this product, please read all the terms and operational guide listed in this manual carefully. The improper operation not in accordance with the direction of use may result in damaged device, influence on measuring accuracy and the personal injury on the user or other third party.

⚠ Do not try to open or repair the device by yourself in any way, the illegal modification or change on the performance of the laser transmitter in this device is strictly prohibited. Please keep this device properly, do not place this device on somewhere the children could touch and reach, please avoid any use by other irrelevant persons.

⚠ Using the laser of the device to shine on the eyes and other parts of the body of yourself or other person is strictly prohibited.

⚠ Using the laser transmitter to shine on the object with high-reflective surface is strictly prohibited.

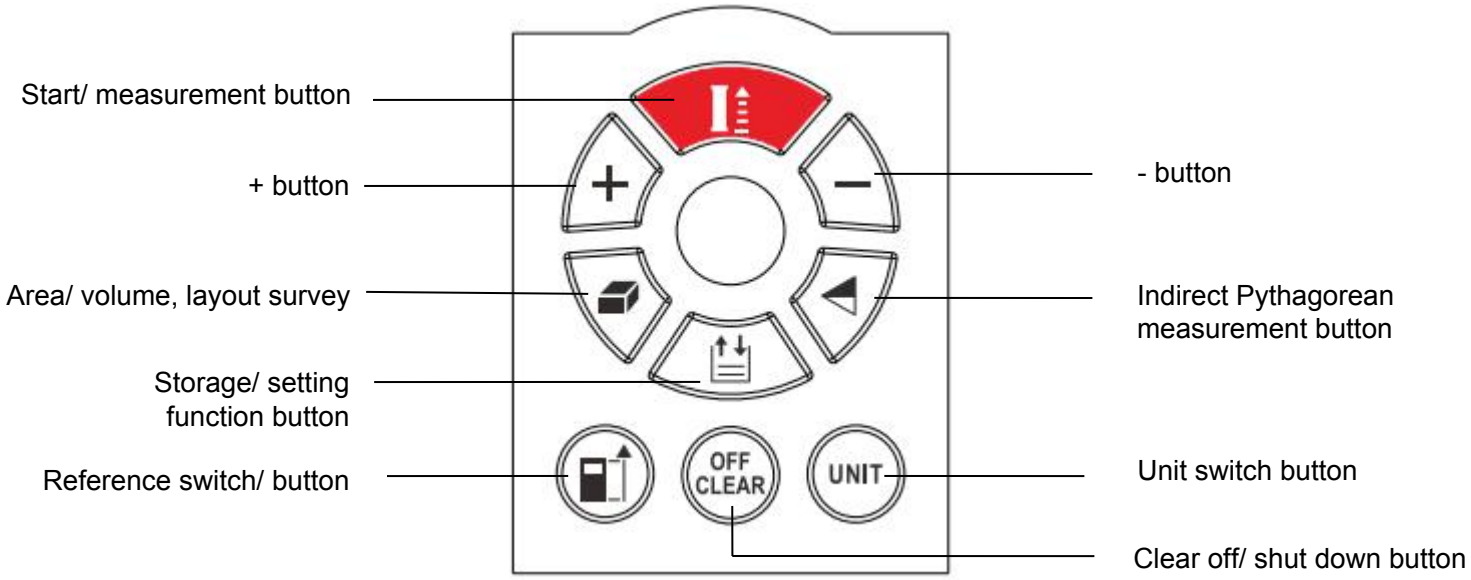
⚠ The electromagnetic radiation of this device may cause the interference on other equipment and devices, please do not use this device nearby the plane or medical instruments. Do not use this device under the flammable and combustible environment.

⚠ Do not dispose the replaced batteries from the device and the scrapped devices with the household garbage together, please treat the replaced batteries from the device and the scrapped devices according to the state or local laws and regulations.

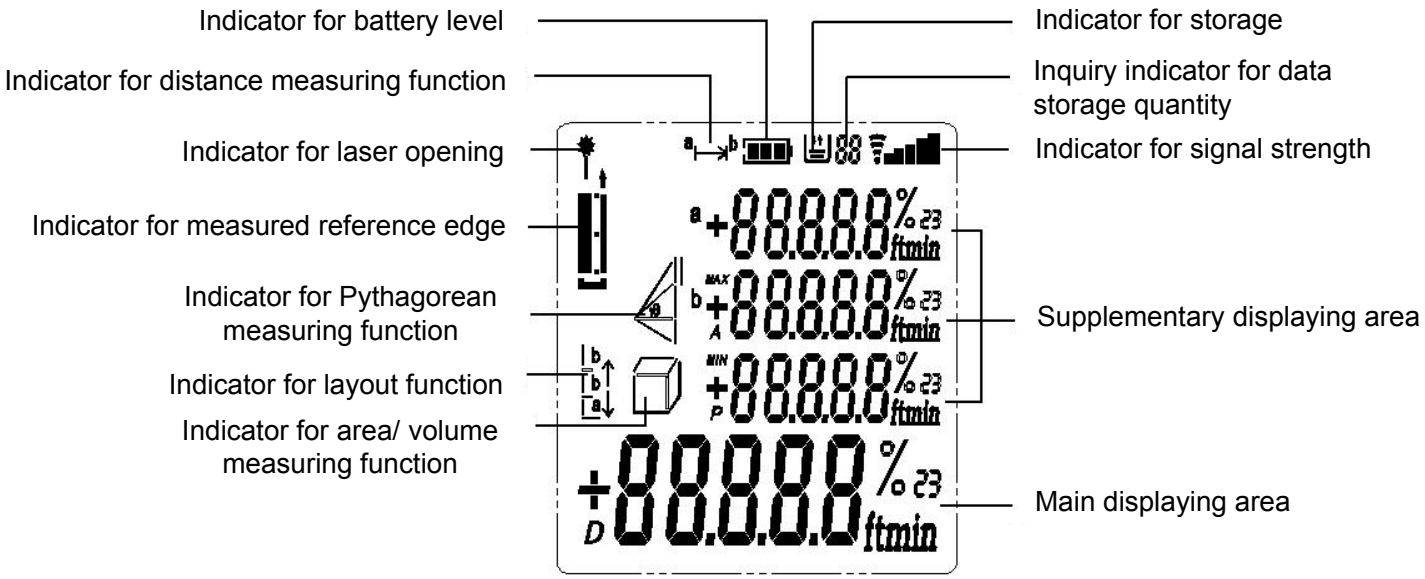
⚠ Do not try to repair the device without consent or by yourself. Any quality problem occurred in the device or any doubts during using the device please contact with your local dealer or our company in time, we shall solve the problem at the first time accordingly.

II. Instruction for operation

● Keyboard



● Display screen



● Power installation and replacement

To open the core of battery cabin behind the device, to put the batteries in to cabin correctly according to the polar indication of battery, then close the cover of battery cabin. Please use two 1.5V AAA size alkaline batteries for this device (for rechargeable battery, the 1.2V AAA size Ni-MH rechargeable battery can be used only).

If the device won't be used for quite a long time, please take out the battery from cabin.

1) Starting device, menu setting

● Device starting/ shut-down

Under the shut-sown status, to press button shortly, the device can be started and enter into stand-by mode for measurement. Under the power-on status, press OFF CLEAR for long time to shut down the device. While there is no further button operation for 480 seconds under the power-on status, the device shall be shut down automatically.

● Unit setting

Press UNIT button to make the unit switch, the m (meter), ft (foot), in (inch) can be taken as available length unit for switch; both the m^2(sq. meter), ft^2(sq. foot),can be taken as available area unit for switch; both the m^3(cubic meter), ft^3(cubic foot),can be taken as available cube unit for switch.

● Reference setting

Press button to select the measurement benchmark for reference, there are two references available in the system: front-end reference , rear-end reference ; the default setting was set as the rear-end reference while starting the device.

● Back light on/off

While the back light is opened, to press for long time, to set the back light on/ off on display screen. While the back light is opened, within 60 seconds there's no further operation on the device, the back light of display screen will be closed automatically.

● Clear-off function

Shortly press OFF CLEAR button to start the clear-off function (canceling the last instruction and returning to last step, clearing off the measured results).

● Outdoor mode on/ off

Press button for more than 3 seconds, to set the outdoor mode on/off function. The default setting for outdoor mode while starting the device is off.

- Inquiry for history records

Press button, the screen shows , showing that the device entered into inquiry function for history records, to search the last 20 sets of data stored automatically by pressing +/— button.

- Indicator for signal strength

The shown on the screen shall imply the strength of reflected signals, the less section codes shown on the screen shall mean the relatively weakened strength of reflected signal.

- Indicator for battery level

The shown on the screen is the indicator for battery level, while this indicator is shown as on the screen, it may show the deficient battery level and the battery need to be replaced accordingly.

- Self-serviced calibration

In order to guarantee the accuracy of the device, it provides the function of self-serviced calibration.

Calibration method: Press button for a long time, the sign shall be shown on the screen and flashed accordingly, during that time continuously press button, until "CAL. 0" appeared on the screen, now the figure "CAL." will be flashed at the end of, showing that the device entered into self-serviced calibration mode, and then the user could press +/- buttons to adjust this value according to the error of the device, after the adjustment finished, to press button to confirm that the device quit from the calibration mode. The available error range for adjustment shall be: -7mm～7mm.

2) Measuring function

- Distance measurement: single measurement

While the laser is turned off, shortly press button to open the laser, then the laser sign shall flash on the screen, while the laser locked the target measuring point, press the button again for the distance measurement in single time, the measured result data will be shown on the main displaying area.

- Distance measurement: continuous measurement

While the laser is turned on, press the button for about 2 seconds then the device will enter into continuous measurement mode, right now the main measuring area will show the measured result data in real time, the supplementary displaying area will show the max and min measured values during the measuring process this time. In the continuous measurement mode, shortly press or button, it will quit the continuous measurement mode.

● Area measurement

Shortly press  button, the  will be appeared on the screen, showing that it entered into area measurement mode and please perform following operations according to instruction.

Currently the longer edge of this rectangular sign will flash, while the measuring point is locked, press  button for the measurement on the longer edge of the rectangular, now the shorter edge of the rectangular will flash and the measuring point need to be locked once again, press the  button for measurement on shorter edge of the rectangular.

The device will calculate the area automatically, and calculated result will be shown in the main displaying area, the measured results of both the longer and shorter edges of the rectangular will be shown in the supplementary displaying area.

Press the  button, clear off the last measured result, and arrange the new measurement. Press the  button to quit the area measurement mode.

● Volume measurement

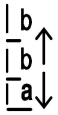
Shortly press the  button, the  will be appeared on the screen, showing that it entered into volume measurement mode, please perform following operations according to the instruction:

Now the longer edge of this cuboid will flash, after the measuring point is locked, press  button for measurement on the length edge of the rectangular, and then the width edge of the cuboid will flash, the measuring point need to be locked again, and press the  button for measurement on the width edge of the cuboid. And now the cuboid sign will flash, to lock the measuring point once again, to press the  button for measurement on the height edge of the cuboid.

The device will calculate the volume automatically, and the calculated result will be shown in the main displaying area, the measured length, width and height of the cuboid will be shown in the supplementary displaying area.

Press the  button to clear off the last measured result and arrange the new measurement. Press the  button to quit the volume measurement mode.

● Layout function

Press the  button for 2 seconds, the display screen will show the  sign, showing that it entered into layout measurement mode. To set the a,b value of layout, press the  button to select the digits for a value or b value, press the +/- button to adjust the selected digit number.

After the a value is set, press  button to switch onto b value setting, after the b value is set, press the  button to finish the layout setting, and enter into layout measurement mode.

During the layout setting, press the  button to finish the layout setting, and enter into layout measurement mode.

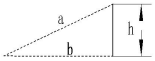
After entering into layout measurement mode, the set distance value for the most recent layout point will be shown in the supplementary displaying area, and the main displaying area will show the distance between current position and this layout point, the positive value means that it's longer than the distance to the layout point, the negative value means that it's shorter than the distance to the layout point. Once the distance to the most recent layout point is less than 0.1m, the buzzer will start to tweet (if the buzzer is closed then it won't tweet accordingly), and the voice of the buzzer will be changed obviously when it reached the layout point.

The distance to the layout point shall be: a+b×n (n is the natural number with non-zero value.)

To press the OFF CLEAR button to quit the layout measurement mode.

● Indirect measurement with Pythagorean theorem

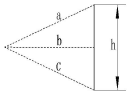
Pythagorean theorem, to provide the convenience for the indirect measurement by the user under the certain circumstances, press the button to select the indirect measurement model with Pythagorean theorem.

1) 

To measure the hypotenuse a and cathetus b, then get the value of another cathetus h through indirect calculation.

Press the button, the screen will show , and the hypotenuse a will flash, after the measuring point is locked, to press the button to measure the hypotenuse of the triangle, then the cathetus will flash, after the measuring point is locked, to press the button to measure the cathetus of the triangle. Later on the device will calculate the value of another cathetus h and show the calculated result in the main displaying area. The measured results of a and b will be shown in the supplementary displaying area.

Press the button, clear off last measured result, and arrange the new measurement.

2) 

To measure the hypotenuse a,c and the cathetus b, then to get the value of another edge h with indirect calculation.

Press the button twice, the screen will show , the hypotenuse a will flash, after the measuring point is locked, press the button to measure the hypotenuse a, then the cathetus will flash, after the measuring point is locked, press the button to measure the cathetus b of the triangle, then the hypotenuse c will flash, after the measuring point is locked, to press the button to measure the hypotenuse c of the triangle, later on the device will calculate the value of another edge h automatically, and show the calculated result in the main displaying area. The measured results of a and b and c will be shown in the supplementary displaying area.

Press the button, clear off the last measured result, and arrange the new measurement.

3) 

To measure the hypotenuse a, b and cathetus c, then get the value of h with indirect calculation.

Press the button three times, the screen will show , and the hypotenuse will flash, after the measuring point is locked, press the button to measure the hypotenuse a of the triangle, then the hypotenuse b will flash, after the measuring point is locked, press the button to measure the hypotenuse b, the cathetus b will flash then, after the measuring point is locked, to press the button to measure the cathetus c, later on the device will calculate the value of edge h automatically, and show the calculated result in the main displaying area. The measured results of a and b and c will be shown in the supplementary displaying area.

Press the button, clear off the last measured result, then arrange the new measurement.

Note:

In Pythagorean measurement model, the length of cathetus must be shorter than the length of hypotenuse for calculation in device, otherwise the error prompt will be shown on the screen.

In Pythagorean measurement model, in order to guarantee the measurement accuracy, the same starting point must be selected accordingly, and the measurement should be performed in accordance with the instructed measuring order with the hypotenuse, cathetus.

- Plus and minus measurement function

1) The distance measurement in single time shall be operated in accumulative way through the plus/ minus operation.

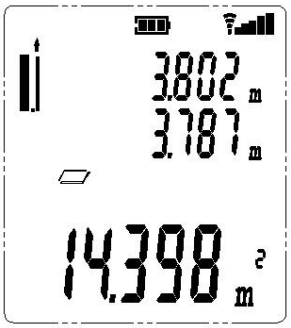
Press the + button, the "+" will be shown in the supplementary displaying area of the screen (in the third line) and enter into accumulative plus measurement model.

Press the button, the last measured value, the currently measured value and the accumulated value of above two will be shown on the screen, the last measured value and the currently measured value will be shown in the supplementary displaying area, and the accumulated value of above two will be shown in the main displaying area.

Press the - button, the "-" will be shown in the supplementary displaying area (in the third line) and enter into the accumulative minus measurement model, press the button, the last measured value, the currently measured value and the accumulative minus value of above two will be shown on the screen, the last measured value and the currently measured value will be shown in the supplementary displaying area, and the accumulative minus value of above two will be shown in the main displaying area.

2) The accumulative plus / minus area

Press + button, the "+" will be shown in the supplementary displaying area of the screen (in the third line), as per shown in figure 2, then according to the area measurement method to measure the second area value, the result can be get as per shown in figure 3, finally press the button to get the accumulated value of both the two measured area values, the two measured area values will be shown in the supplementary displaying area, and the accumulated value will be shown in the main displaying area, the result is shown in the figure 4.



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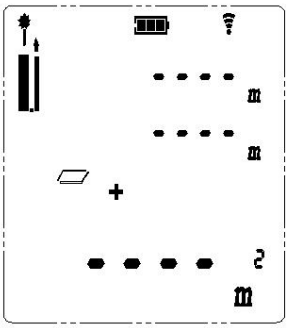

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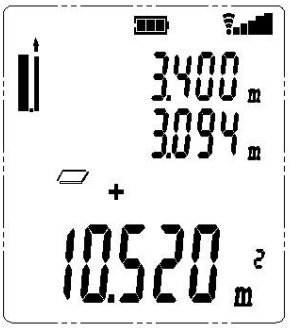

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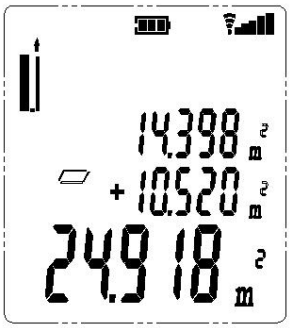

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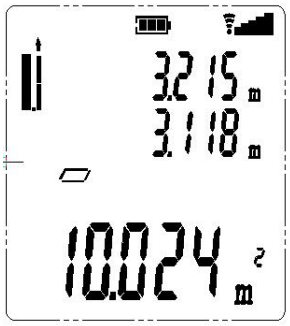
According to the area measurement method to measure the first area value, the result can be get as per shown in figure 5, press the - button, the "-" will be shown in the supplementary displaying area of the screen (in the third line), as per shown in figure 6, then according to the area measurement method to measure the second area value, the result can be get as per shown in figure 7, finally press the button to get the accumulative minus value of both the two measured area values, the two measured area values will be shown in the supplementary displaying area, and the accumulative minus value will be shown in the main displaying area, the result is shown in the figure 8.



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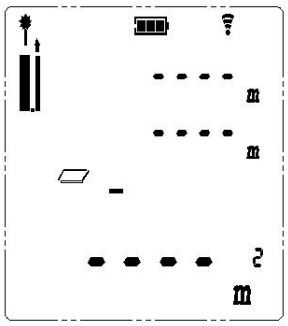

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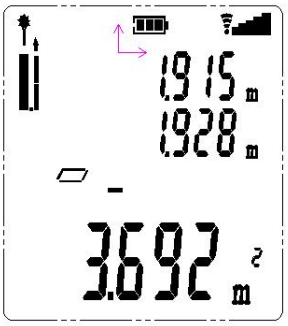

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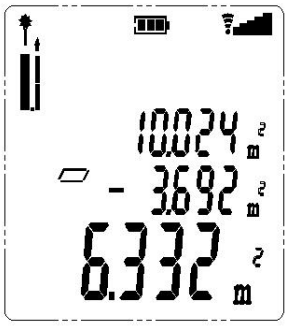

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3）The accumulative plus / minus volume

The operation for accumulative plus / minus volume shall be similar as the operation for the accumulative plus / minus area.

III. Prompt message

While using the device, the main displaying area may occur following messages:

Message	Reason	Solution
B.L	Too low battery voltage	To replace the new battery
T.L	Too low temperature	To warn up the device
T.H	Too high temperature	To cool the device
D.H	Data overflow	To measure again
S.L	Too weaker signal strength	To measure the target point with stronger reflective ability or use the sighting board.
S.H	Too stronger signal strength	To measure the target point with weaker reflective ability or use the sighting board
H.F	Hardware error	To start/ shut down the device again, in case of starting/ shutting down device failed to solve such problem, please contact your local dealer.

IV. Technical parameters

SPECS and model	H-40 H-50 H-60 H-70 H-80 H-100 H-120
Measurement accuracy	±1.5mm *
Measuring range	0.03-40/50/60/70/80/100/120m
Min display unit	1mm
Single measurement time	0.1～4
Measuring unit	M(meter) /ft(foot) /in(inch)
Laser grade	Grade II
Laser type	635nm
Laser power	<1mW
Continuous distance measurement	supported
Area measurement	supported
Volume measurement	supported
Pythagorean measurement	supported
Plus/ minus measurement on area/volume/ Pythagorean	supported
Min and max Measurement value	supported
Data storage	20
Measuring reference switch	supported
Lighting on display screen	supported
Buzzer	supported
Battery type	AAA size alkaline battery 1.5Vx2 / AAA size Ni-MH rechargeable battery 1.2V*2 (rechargeable type)
Battery's service life	For 15000 times measurement.
Water-proof and dust-proof grade	IP54
Working temperature	0°C－40°C
Storage temperature	-20°C－60°C
Automatic shut-down of laser	60 seconds
Automatic shut-down of device	480 seconds
Size	120mm x 53mm x 29mm

* There shall be quite big error in measurement accuracy under the poor measuring conditions (such as too stronger environmental light, too higher or lower diffuse reflection factor of the measured points.)

** Under the outdoor model, the laser power may increase, please use the device carefully under the precondition that observe the local laws and regulations.

V. Maintenance

The storage of the device under the environment with high temperature and high moisture for long time is prohibited, while the device won't be used for quite a long time, please take out the batteries and put the device into the accompanied portable bag and then store it in the cool and dry place.

Please keep the device clean, the wet soft cloth can be used to wipe off the dust on the surface, but the use of erosive washing solution is prohibited to clean the device.

Please do not drop the device into the water.

To wipe the optical parts surface according to the method of wiping the camera lens (including the laser exit window and the lens for signal reception.)

Delton

1141 Budapest, Fogarasi út 77.
Tel.: *220-7940, 220-7814, 220-7959,
220-8881, 364-3428 Fax: 220-7940
Mobil: 30 531-5454, 30 939-9989

1095 Budapest, Mester u. 34.
Tel.: *218-5542, 215-9771, 215-7550,
216-7017, 216-7018 Fax: 218-5542
Mobil: 30 940-1970, 20 959-0930

www.holdpeak.hu

E-mail: info@delton.hu Web: www.delton.hu