

OPERATING MANUAL

PLS HLE 1000



**PACIFIC LASER
SYSTEMS**

The Professional Standard

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INTRODUCTION

The PLS HLE 1000 is a self-leveling laser used for exterior horizontal layout. The rechargeable NIMH battery pack contains micro-controlled charging technology. The HLE 1000 may also be used with alkaline batteries.

CAUTION: DO NOT ATTEMPT TO CHARGE STANDARD ALKALINE BATTERIES OR WARRANTY WILL BE VOIDED.

The HLE 1000 may be controlled by the PLS RC 1000 remote control.

The instrument is water resistant and may be used in light rain, if necessary. Unit may not be submerged in water.

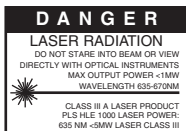


SAFETY INSTRUCTIONS

Safety instructions

Laser Safety

The PLS HLE 1000 is a class III laser according to 21CFR1040. Follow the instructions on the warning labels which are shown in the following illustrations:



PLS HLE 1000
Laser Power:
635 nm
<5mW
Laser Class III

Do not remove the attached warning labels. The manufacturer and its dealers are not liable for any defects and the consequences from this removal.

! Attention ! The internal laser sources comply with laser class III. Do not disassemble the instrument. In case of inappropriate repairs, laser radiation may arise in excess amounts of the marked labels and liability may be incurred if there is damage. In cases of inappropriate processing, malfunctions are possible without external visible damage.

DO NOT ATTEMPT TO CHARGE STANDARD ALKALINE BATTERIES.

Attention: This instrument contains NIMH rechargeable batteries. Batteries must be recycled or disposed of properly.

WEEE-Reg.: DE23874031



BATTERIES

The PLS HLE 1000 uses rechargeable NIMH batteries.

For on-board chargeable battery, insert the battery re-charger receptacle plug in the charging panel outlet of the battery cover back.

Insert converter's AC receptacle plug in an AC outlet and insert the converter's DC receptacle plug in the charging panel's DC outlet.

When the charging lamp is on, charging is in process.

When the charging lamp is green, charging is completed.

NOTE: The charging process takes approximately 7 hours to complete for rechargeable batteries.

AC/DC converter's suitable power range: 50-60Hz; voltage 85V-265V.

If it is necessary to replace the NIMH battery, the battery chamber may be removed by turning the lock washer on the battery chamber. Purchase replacement battery chamber from

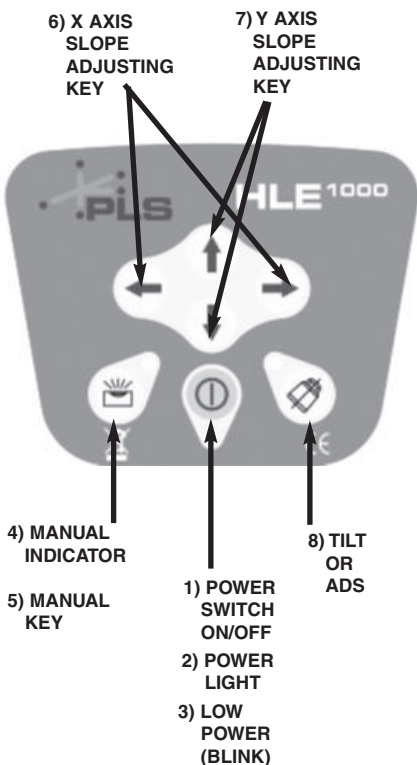


an authorized PLS dealer.



Use PLS HLE 1000 with caution in humid or wet weather conditions. Do not put the laser back into the case unless it is thoroughly dry. Condensation may corrode the battery connections and/or cause distortion of beams in lighthouse.

KEYPAD OPERATION FUNCTIONS AND INDICATORS



1) Power switch: turn on or off unit.

2) Power light: red light, power on.

3) Low Battery Indicator: LED blinks, the battery should be charged or replaced.

4) Manual Indicator: green LED on in manual mode.

5) Manual/automatic key: to change from automatic to manual leveling.


6) Adjustment key in X slope direction: when the instrument is in the manual mode, press to adjust slope of X direction.

7) Adjustment key in Y slope direction: when the instrument is in the manual mode, press to adjust slope of Y direction.

8) Tilt or ADS (automatic drift system) blinks slowly when active, blinks quickly to warn user of a change in alignment from original set up.

FUNCTIONS

Power switch


Press 1  (See keypad chart) The unit is self-leveling and power light is lit. Press the key again and the unit will turn off.



Rotation Mode

After laser has automatically leveled, the laser beam stops blinking. The laser will rotate at 1000 r.p.m. If the gradient exceeds $\pm 5^\circ$, the manual indicator will blink.

NOTE: If the unit does not level within 5 minutes, it will shut off.




Setting Slope

The PLS HLE 1000 can set slope on dual axes. Press the 5.  The manual indicator is on.

Setting slope of X direction: Aim X1 of the instrument in the direction necessary to set slope. Press 6.  

The laser beam moves upwards or downwards.

Setting slope of Y direction.

Aim Y1 of the instrument in the direction necessary to set slope. Press 7.   

The laser beam moves upwards or downwards.

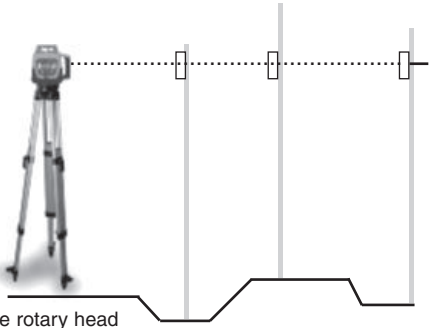
Automatic Drift System

Press 8. Press the TILT key, the power indicator blinks slowly. After the instrument has leveled automatically for about 3 seconds, the ADS function is activated. The power indicator will blink quickly, and automatic leveling function shuts off when the instrument is disturbed by external circumstances. At the same time, the laser module will stop scanning and start blinking.

APPLICATIONS

Height Transfer (Leveling)

Turn the instrument on. The leveling LED is flashing and the instrument is self leveling. If the LED lights



continuously the rotary head starts and the laser beam will be turned on. Attach the PLS HLD 1000 Detector at this reference point on a rod and move this height to zero. Now the respective difference in levels to the reference height can be measured on the ground. It is useful to use a flexible rod to measure positive and negative values simply.

Laying out Slope Using the PLS HLE 1000

Fasten the PLS HLE 1000 to a tripod and plumb up over the benchmark or hub. Make certain that the PLS HLE 1000 is positioned on the tripod so that the X axis points toward where you need slope. Auto-level the PLS HLE 1000 by depressing the #5 button. Once the laser is level and rotating at 1000 rpm, attach the detector to the grade rod. Take the grade rod with the detector attached to the end of the needed distance (end of pipe, footing or form board). Find level on the detector by a solid tone or by the solid line on the LCD. Next, depress the top center button on the remote (RC 1000) to engage the manual mode on the PLS HLE 1000. Then lower the detector by the correct distance based on the needed slope. Some examples are listed below. Depressing the right red button lowers the laser towards the detector. Hold down the right-pointing arrow key until the detector beeps that you are within range. Now fine-tune the laser adjustment by going up using the left-arrow key or down using the right-arrow key until the laser is locked on with a solid tone or by the solid line on the LCD.



Examples

-1% Slope @100'
Lower the detector on the grade rod 12" from level

-3% Slope @100'
Lower the detector on the grade rod 36" from level

-1% Slope @50'
Lower the detector on the grade rod 6" from level

-3% Slope @50'
Lower the detector on the grade rod 18" from level

-1% Slope @25'
Lower the detector on the grade rod 3" from level

-3% Slope @25'
Lower the detector on the grade rod 9" from level



For a positive slope layout, reverse the above examples.

APPLICATIONS

Caution ! The automatic leveling is switched off in manual mode. If the instrument gets bumped or moved it will not turn off. In the semi-manual mode the tilt control is active only in X direction. We recommend using a second detector to control the sloped plane.



REMOTE CONTROL

The PLS HLE 1000 may be used with the PLS RC 1000 infrared remote control. Point the remote in the direction of the PLS HLE 1000 for remote operation. Remote distance is 70 feet. There are 5 keys on the panel of the remote unit. The remote panel matches the keypad of the PLS HLE 1000. Pressing any key will make the indicator lamp blink once indicating remote signal is being sent.

CHECKING CALIBRATION

The PLS HLE 1000 should be checked, like all measuring instruments, before use. Set the PLS HLE 1000 on a stable surface. Turn the laser on and let it level. Mount the PLS HLD 1000 Detector at a fixed distance, e.g. at 90 feet, and move it onto the laser plane. Now turn the instrument around to each 90° point and let the instrument level. In each case, measure the difference to the first height. If the deviation is smaller than 3/32 inch, the instrument is within the specification. In the case of larger deviations the instrument has to be calibrated.

ROTARY SPECIFICATIONS

PLS HLE 1000:

Accuracy:	+/- 3/32 inch @ 100 feet 2.4mm @ 30meters
Leveling range:	± 5°
Operation range:	Radius +/- 1000 feet w/detector 304 meters
Rotation speed:	1000 rpm
Light source:	laser diode, wavelength 635nm, <5mW
Operating Temp:	4° F (-15C) to 122° F (50° C)
Storage Temp:	-22° F(-30° C) to 140° F (60° C)
Laser Class:	III
Power supply:	4 x C Size or NIMH Batteries
Operating time:	approximately 20 hours
Charging time:	maximum 7 hours (NIHM ONLY)
Protection grade:	IP65 (Water- resistant), not submersible
Size / Weight:	8 inch x 7 inch x 6 inch 200mm X 177mm X 152mm 4.7 lbs (unit only) 2.1 kg

PLS RC 1000 Remote Control:

Operating distance 70 feet

Charger LDG 2+2:

Input: 100-240V AC / 47-63Hz

Output: 12V / 1.25A

Do not attempt to charge Alkaline Batteries.

Design and specifications are subject to change without prior notice.

WARRANTY

In the event of a claim please contact your PLS dealer or PLS. Attempts at repair or detectable improper treatment will void any warranty claim. Please use the original transport case for shipment.

This product is warranted by PLS • Pacific Laser Systems to the original purchaser to be free from defects in material and workmanship under normal use for a period of one year from the date of purchase. During the warranty period and upon proof of purchase, the product will be repaired or replaced (with the same or similar model at our option) without charge for either parts or labor through PLS. The purchaser shall bear all shipping, packing and insurance costs. Upon completion of the repair or replacement, the unit will be returned to the customer, freight prepaid. The warranty will not apply to this product if it has been abused or altered. Without limiting the foregoing, battery leakage, dents or gouges to the plastic housing, broken optic windows, damage to the switch/LED membrane are presumed to result from misuse or abuse. Tampering with or removal of the caution or certifications labels voids this warranty.

Neither this warranty nor any other warranty, express or implied, including implied warranties of merchantability, shall extend beyond the warranty period. No responsibility is assumed for any incidental or consequential damages. This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

PLS HLD 1000 DETECTOR

1. SPECIFICATIONS

Available Distance: From rotary PLS HLE 1000 (2.0 ft.)

Accuracy: Precise detecting: $\pm 1\text{mm}$ ($\pm 0.04\text{in}$)

Rough detecting: $\pm 2\text{mm}$ ($\pm 0.08\text{in}$)

Detecting Indication: Bi-surface LCD, buzzer

Power: DC9V alkaline battery


Automatic Power-off Time: Approx. 20 minutes


Working Temperature: -20C° to $+50\text{C}^\circ$ (-4°F to $+122^\circ\text{F}$)

Dimensions: 135 (L) X 65 (W) X 24.5 (H)mm
6" x 2-3/4" x 1"

Weight: 0.15kg (0.44lbs) (with battery)

2. LCD

Precise Detecting
Reference Position
Display: 

Rough Detecting
Reference Position
Display: 

Higher than
reference
(fast
frequency
beep)

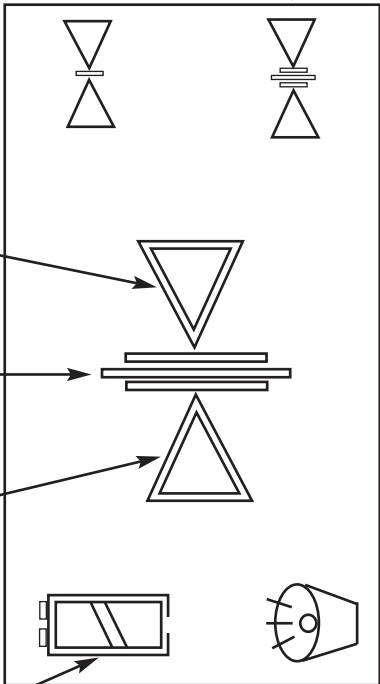
In reference
line (long
beep)

Lower than
reference
(slow
frequency
beep)

Poor Power:

Buzzer On:

Buzzer Off:



3. PANEL

LCD (Both on Front Shell & Back Shell)

Buzzer ON/OFF
Once power on, default of buzzer is on)

44mm
1 3/4 Inches

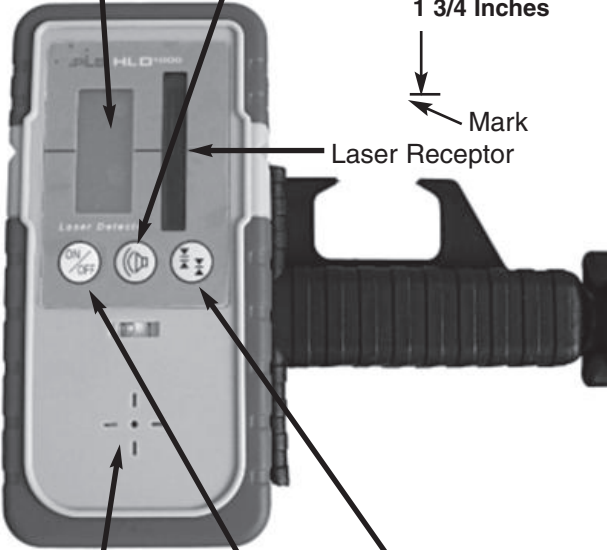
Mark

Laser Receptor

Detecting Mode

Buzzer

Power Switch







The Professional Standard

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