

# Pipe Laser (PL150)

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Congratulations on your choice of this  **DaveBell**<sup>TM</sup> Pipe Laser. For the purpose of long-term use of this instrument, we suggest you to read this instruction manual carefully before using it.

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## 1. Features and Functions

PL150 pipe laser could project self-leveled laser beam or specify grads laser beam. It could supply the accurate level and grads reference for the tunnel excavating, pipe layout and all other construction purpose, with convenient operation.

### Features

- Automatic leveling, laser flash when beyond the self-leveling range with LCD symbol indication.
- Large range grads setting
- Laser point centering function
- Sleep function
- Remote control function
- Many accessories could enlarge the use range.
- Great waterproof and dustproof performance

## 2. User Safety

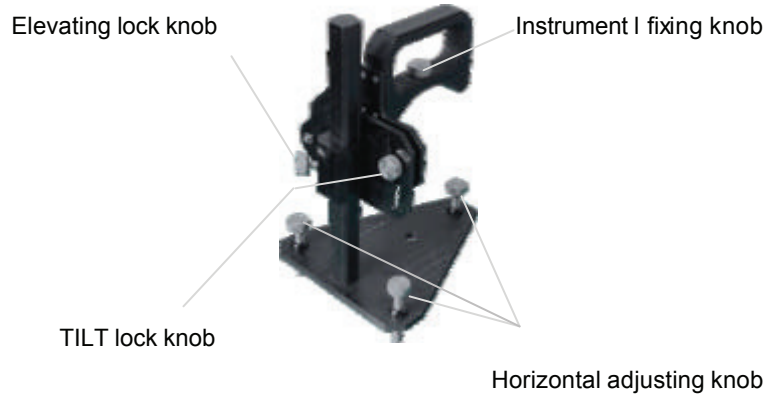
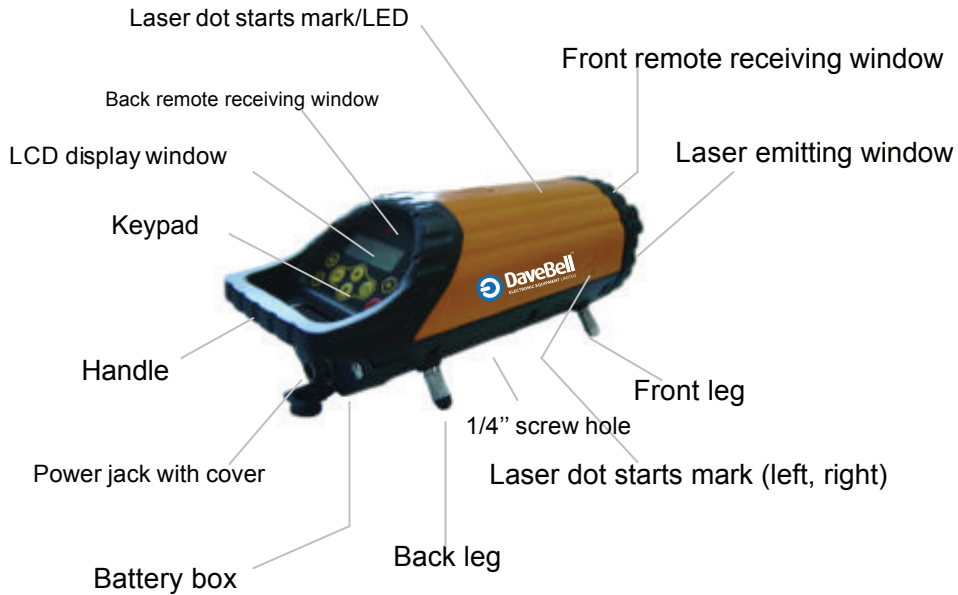
Laser output sign is located near the output window

- Do not stare into laser beam directly
- Do not disassemble the instrument or attempt to perform any internal servicing. Repairs and servicing could be performed only by authorized service centers
- The instrument complies with the safety classification standards of laser radiation



### 3. Nomenclature

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#### Multi-function mount



**Target**



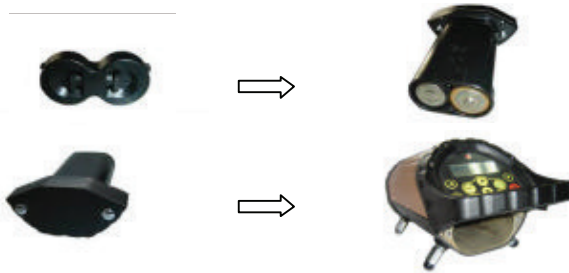
Different legs

#### 4. Operation Instruction

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##### 4.1 Battery installation

a) Put 4\*D alkaline battery into the battery box as the polarity direction indication. Then take the battery box cover back, and then install the battery box into the instrument;



Alkaline battery box installation

b) Install the rechargeable battery box to the instrument.



Rechargeable battery box installation

##### 4.2 Rechargeable battery charge

Plug the adapter pin into the charging jack to charge the battery. The charging LED is red during the charge process, and it will turn to green when battery is full.



Charging LED

Adapter



**Charge the battery box directly**



**Charge the battery box when it is inside the instrument**

**Note:**

- a) Please recharge the battery when it is no power that could help you to extend its use life.
- b) Please charge the rechargeable battery every 2-3 months after the instrument leaves the factory.

**4.3 Instrument place**

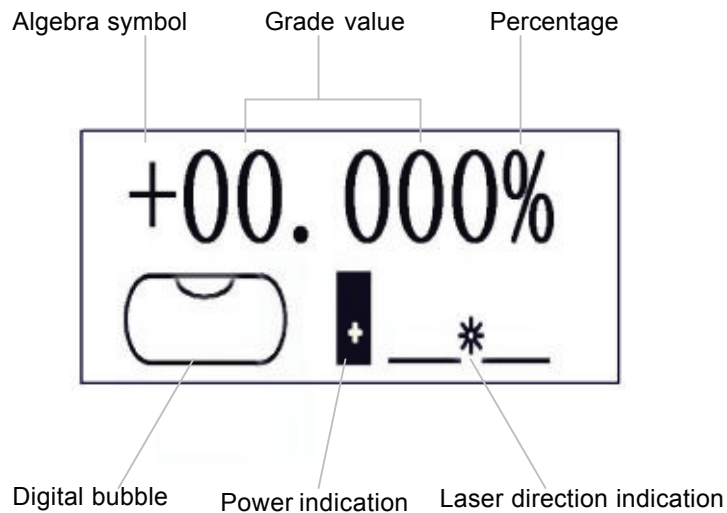
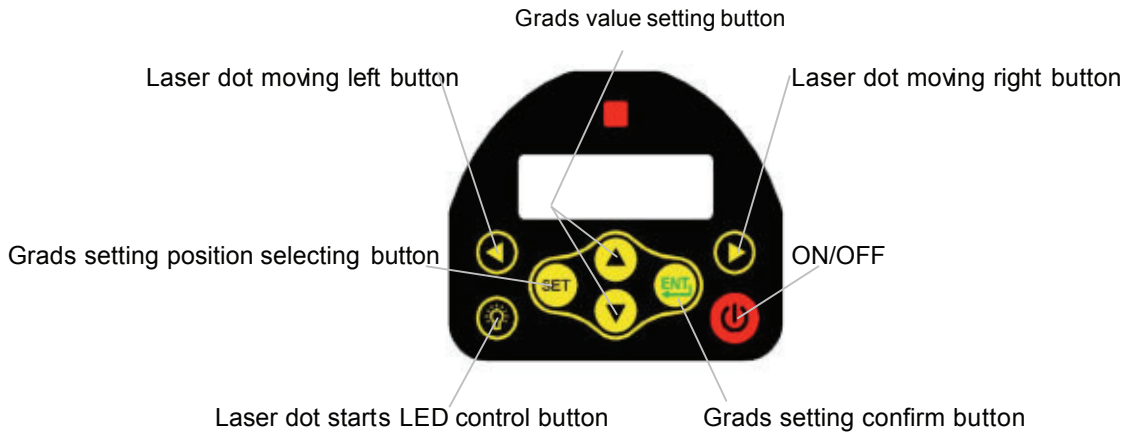
The instrument could be placed on a platform. Choose the legs of different length to fit for different pipe(standard legs could fit for the pipes of diameter 150mm, 200mm, 250mm, 300mm, 400mm, 500mm).



The instrument could be fixed on the LS355 multi-function mount by the top screw, loosen the elevating lock knob could adjust the height, loosen the TILT lock knob could adjust the TILT angle..



#### 4.4 Keypad

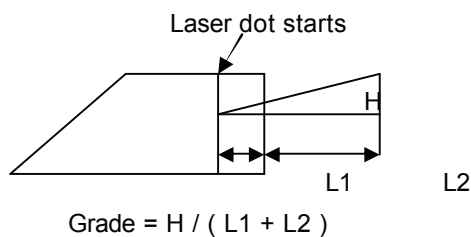


#### 4.5 On/Off

- a. Press On/ off key to turn on the instrument, it will self-level.
- b. Instrument shows the last grade.



#### 4.6 Laser dot starts LED control button

Power on and press this key, the green LED light, to indicate the position where laser starts, it relate with the grads counting.



#### 4.7 Laser dots moving left/right button

##### 1) Laser dot center function

- After turn on the instrument, press   simultaneity for one second, the laser dot will be centered automatically.
- When the dot is centering, LCD shows symbol ? \*? ;
- After it is centered, the LCD display shows symbol --\*--

##### 2) Laser dot scan function

- When instrument is working, press the Laser dots moving left button, the dot will move to the left, press the Laser dots moving right button, the dot will move to the right. And the dot move slowly by single button press, moving speed become quickly by continually press.
- When laser dot is moving, LCD display shows the relevant laser dot position.

\*--- symbol flash means laser dot is in the left limited position

-\*--- symbol mean the laser dot is on the left

--\*-- symbol mean the laser dot is centered





---\*- symbol mean the laser dot is on the right

----\* symbol flash means laser dot is in the right limited position

#### 4.8 Grads setting position selecting button

Power on and press the grads setting button, the grads value number "+00.000%" will move to the right from "+" to the end, when it move to the end, user press this key and could make it move back to the "+" symbol. Choose relevant symbol bit and data bit, the chosen bit flash.

#### 4.9 Grads value setting button

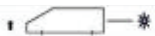
- In the grads setting mode, please change the grads value by pressing this button. When press  button, if symbol bit is chosen, it will change to "+". If data bit is chosen, the data will increase; the biggest No. is "9". When press  button, if symbol bit is chosen, it will change to "-". If data bit is chosen, the data will decrease; the smallest is "0". Hold on pressing the button will set the data bit quickly.
- Hold the   buttons together, that could set the grad value to be "0".

#### 4.10 Grads setting confirm button


After the grads setting is done, please press the grads setting confirm key, after that, the instrument will emit laser as the set grads value. When instrument is self-leveling, the grade value symbol keep flashing, and it stop flashing when instrument is leveled.

#### 4.11 Beyond Tolerance alarm (Front and back)

When the laser is placed to over inclined (front and back) or the grade is beyond the self-leveling range, the laser will alarm (laser beam flash, the symbol which on LCD flash), Then you need to reset the laser to make it in the self-leveling range, please see the below pictures:

- When LCD shows:  ,

User need to lower the handle side until the symbol is going.

- When LCD shows:  ,

User need to higher the handle side until the symbol is going.



Note:

User could set the grade value in the beyond Tolerance alarm mode.

#### 4.12 Beyond Tolerance mode (right and left):

The LCD has bubble symbol which used to indicate the laser incline status. When is laser is place over inclined, the accuracy is bad. Please place the instrument to make the bubble symbol centered, when instrument indicate beyond tolerance (right and left)



Symbol flash mean the left side of laser is beyond the allowed range, it will affect the accuracy.



Symbol do not flash means the left side of laser is high but still in the allowed range, the laser could work well.



Symbol means the laser is leveled, its accuracy is the best at this status, we suggest you to use the laser in this status.



Symbol do not flash means the right side of laser is high but still in the allowed range, the laser could work well.



Symbol flash mean the right side of laser is beyond the allowed range, it will affect the accuracy.

#### 4.13 Battery indication

Power on, instrument check the battery capacity and show the power status on the LCD display by a power symbol.



Means full battery, no need to charge;






Low power, user still could use



Means no power, user need to charge the battery immediately, otherwise the instrument can not work.

#### 4.14 Remote function

- Instrument come with remote, the keypad function of the remote is same as the instrument (except  ).
- Press the  button on the remote when instrument in power on, it will enter the sleep mode. Then instrument save the current data and stop working..
- Laser beam is off in the sleep mode, laser dot start mark LED flash slowly. When press the  button of the remote again, it will wake the instrument. If instrument is in the sleep mode for more than 30 minutes, it will power off automatically.
- Remote range: front (laser output window end) 50m, back (handle end) 10m.

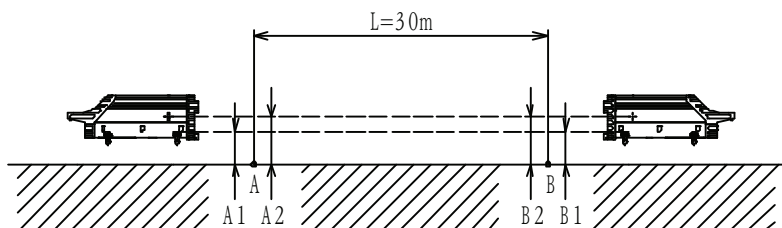


#### 4.15 Instrument status table

Instrument status	Laser	Symbol
Leveled	No laser	Grade value symbol not flash
Leveling	Flash quickly	Grade value symbol flash
Beyond Tolerance (Front and back)	Flash slowly	Beyond Tolerance (Front and back) symbol flash
Beyond TILT Tolerance (Left and right)	N/A	Beyond TILT Tolerance (Left and right) symbol flash
Beyond SCAN Tolerance ( Left and right )	N/A	Beyond SCAN Tolerance ( Left and right ) symbol flash
Sleep	Off	No display

### 5. Self-check and calibration

#### 5.1 Accuracy self-check



- Find a road, parking lot, or plane which is almost leveled (undulation should be less than 10cm/30m);
- Pick 2 points (A and B) whose distance is about 30m between each other. The distance needn't to be measured exactly, but please mark the 2 points;
- Put the instrument behind point A, turn it on, and warm-up for 10 minutes;
- Set the grade to be 00.000%;
- Let the laser line to go through point A and B, then make the instrument self-leveling.
- Accurately measure height from center of laser line to point A and point B, note it as A1, B1.



## 6. Application Demonstrations



## 7. Specification

Laser wavelength	635nm
Laser Class	Class III
Output range	600m
Grads range	-20% ~ +40%
Horizontal accuracy	± 0.05mm/m
Grads accuracy	± 0.15mm/m
Self-leveling range	± 5°
Left and right scan	±4°

Working temperature	-20 C ~ +50 C
IP grade	IP68
Power	4* D alkaline batteries or rechargeable Ni-MH battery pack
Size	F132mm× 380mm
Weight	6Kg

## 8. Maintenance

- The instrument should be carefully operated and properly preserved, and any violent shock or falling will possibly result in the damage of instrument.
- Do not attempt to disassemble the instrument, and the unprofessional disassembly will result in the damage of instrument.
- Keep the cleanness of instrument, especially the laser output window, and remove dust by the gentle operation of soft clean cloth.
- Take the batteries out when the instrument is not in use for a long time, and keep the instrument in the carrying case when it is unused.

