

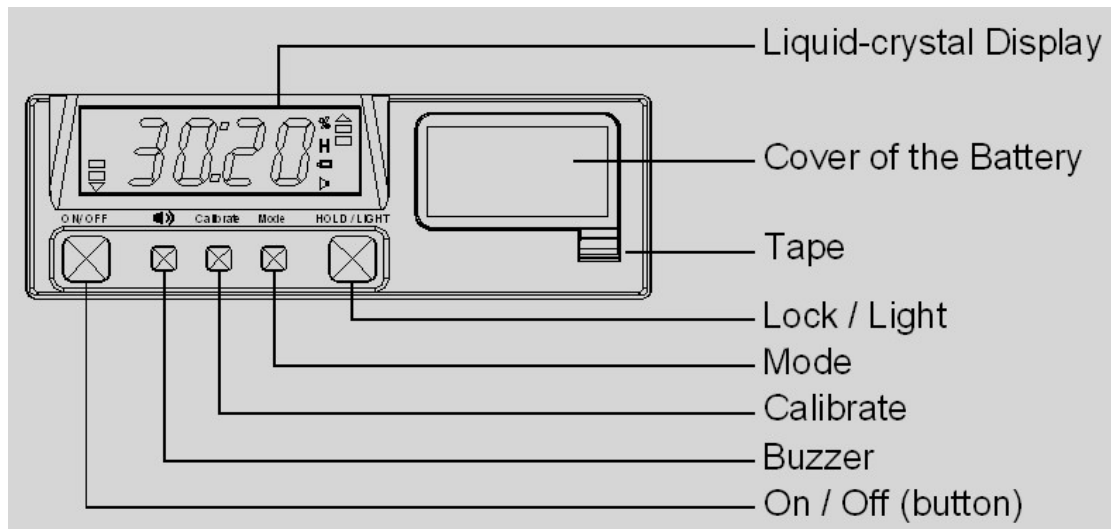


## Operation Manual for the Electronic Module of the Digital Level

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### Matters Requiring Attention

- I Please carefully read this Operation Manual for professional operation and keep it in good condition for future reference.
  - I No minor is allowed to operate this product without any professional guidance.
  - I Please operate and store this product under normal temperature so that to prolong the life expectancy of the product.
  - I Please do not immerse the product in water.
  - I In order to save energy and reduce battery consumption, the product can automatically power off after it has been kept idle for the duration of 120 seconds.
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**Note:** The above diagram shows that the right side is 30.20 degrees higher than the left side. The upward-pointing arrow implies this side is higher than the other one and the downward-pointing arrow implies this side is lower than the other one.

The direction of measurement is the horizontal sextant angle between the top and bottom side of the instrument and the object being measured. When the angle exceeds 180 degrees, the system will automatically rotate the value being displayed by 180 degrees for the convenience of reading.

### On/Off Button:

The button “ON/OFF” is used to power on or off the Digital Level. When the instrument is turned off, keep pressing the button for 3 seconds, the buzzer will make one sound, the system will enter into the default mode, namely, the Angle Measurement Mode. When the Digital Level is turned on, keep pressing the On/Off button for 3 seconds, the system will be powered off. The background light of the Liquid-crystal Display will be shut off at the same time when the instrument is powered off.

## **Automated Voice Enable:**



This button is set to enable (disable) the Automated Voice. When the instrument is turned on, press this button instantly, the system will give out one sound and the symbol of Automated Voice will appear at the top of the display, implying that the function of Automated Voice is enabled. When the Automated Voice has been enabled, press this button instantly, the system will give out one sound and the symbol of Automated Voice at the top of the display will disappear, implying the function of Automated Voice is disabled. When the Automated Voice is enabled, the system will keep giving out sound for the angle of  $0^\circ$  or  $90^\circ$ . The size of the black mark under the arrow will increase in proportion as the set angle increases and the system will give out sound when the size of the black mark increases.

Horizontal Calibration (The calibration point is determined at 0 degree)

Press the button "Calibrate", the system will enter into the mode of Calibration. Please refer to the Operation Instruction for Calibration for details.

## **Switch between Modes of Measurements**

The button “Mode” can be used to switch between modes.

When the instrument is turned on, press this button instantly, the following functions can be realized:

A: Common Inclination Angle Mode (Default Mode)

B: Percentage Mode. Under this mode, the symbol of percentage, namely, the “%” will appear above the figures.

C. Relative Angle Mode and the Switch between Common Inclination Angle Mode and Relative Angle Mode. Under Relative Angle Mode, any angle can be set as zero degree. (the calibration point). In order to differentiate Relative Angle Mode from Common Inclination Angle Mode, the displayed value of an angle will twinkle in every one second. When the Automated Voice is enabled, the system will give out one sound every time when the current mode is changed. Under the Relative Angle Mode, the Automated Voice will keep giving out intermittent sound.

### **Indication Locking**

The button of “HOLD / LIGHT” is set to lock the displayed value. When the instrument is turned on, the current value of angle can be locked by instantly pressing the button. Under

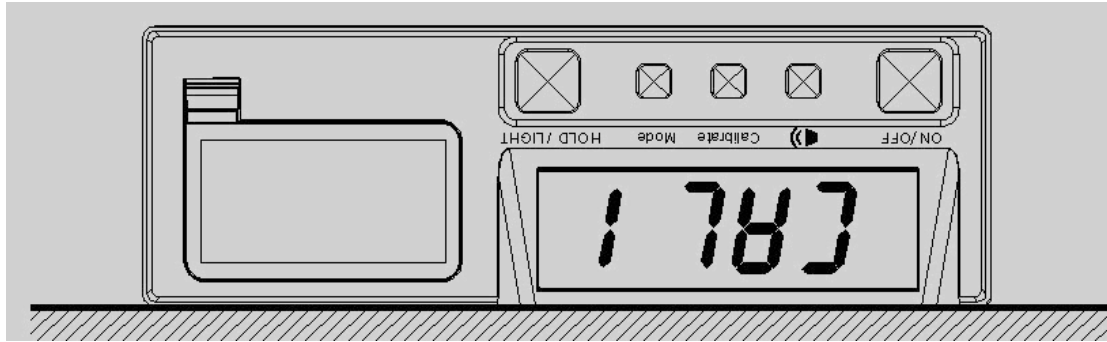
this mode, the symbol “H” will be displayed. The value can be unlocked by instantly pressing the same button again and the symbol “H” will disappear.

### **Background Light On / Off**

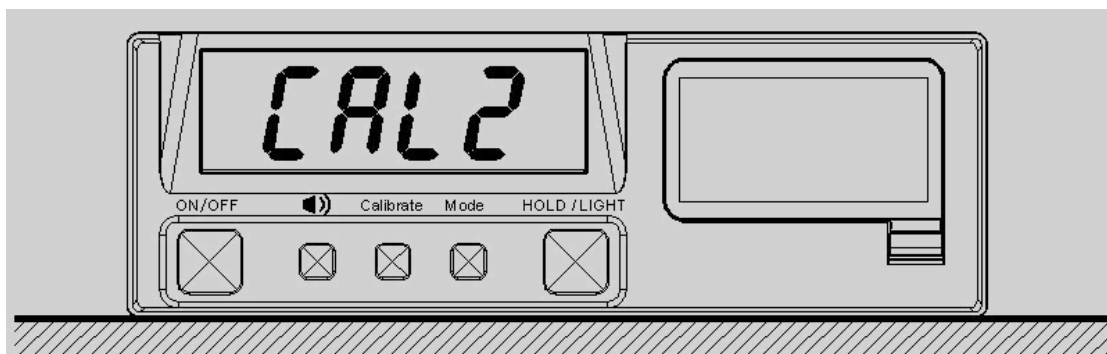
When the instrument is powered on, keep pressing the button “**HOLD / LIGHT**” for 3 seconds, the background light of the liquid-crystal display will be turned on and the system will give out one sound. The background light can be turned off by keeping pressing again the same button for 3 seconds and the system will give out one sound. The system will keep the background light on when the instrument is being operated, shutdown the background light after the instrument has been kept idle for 20 seconds and resume the background light when the operation starts again.

### **Operation Instruction for Horizontal Calibration:**

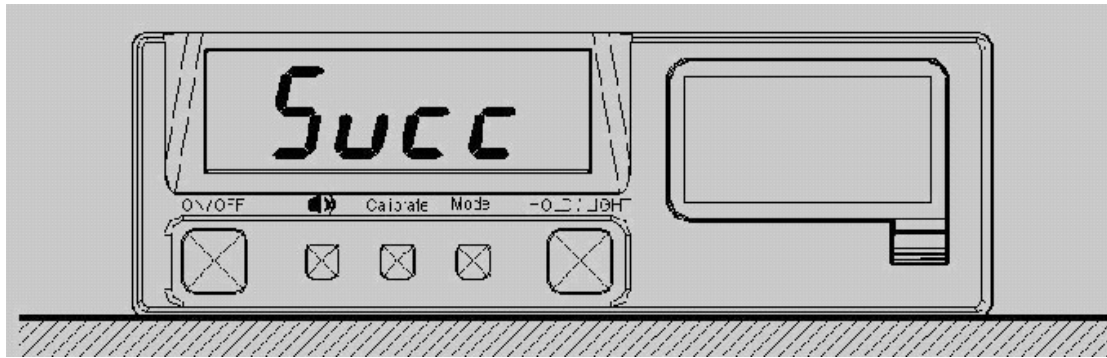
1. Turn on the Digital Level and place it on a Standard Horizontal Platform.
2. Keep pressing the button “**Calibrate**” for 3 seconds, the system will enter into the mode of Angle Calibration, the LCD will display “CAIL1” and the buzzer will give out one sound.



3. The system will display “CALL2” after 5 seconds. Rotate the Digital Level by 180 degrees in the vertical plane and place it on the horizontal plane. Place the Digital Level stably on the platform with its top facing downward and front side the operator.



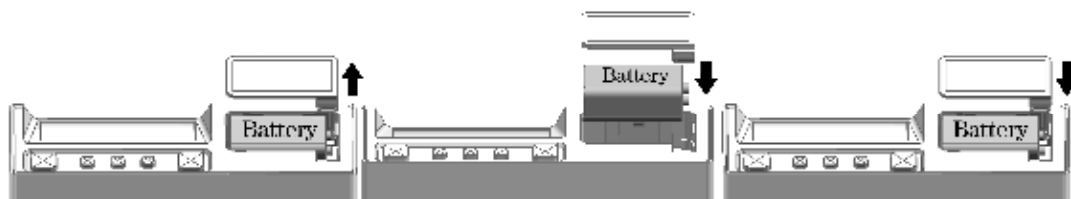
4. After another 5 seconds, the symbol “Succ” will be displayed and the buzzer will give out one sound, implying that the instrument has been successfully calibrated. After another 2 seconds, the system will restore back to the original mode – the mode before the calibration.



5. The calibration fails when the system restores back to the original mode - the mode before the calibration, without displaying the symbol “Succ” .

Note: The process of calibration is actually the process of determining the reference point, namely, the “0° ” of the whole instrument and this will not affect the output parameter of the instrument.

#### Change of Battery:




1. Open and remove the cover of the battery holder.
2. Pull out the exhausted battery from the battery socket.
3. Install a new battery into the battery holder. (Before you install the battery, please make sure both your hands and the instrument are kept dry)

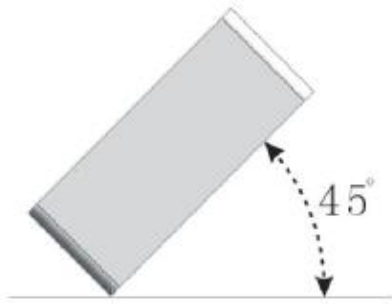
4. Fit the battery into the battery socket and close the cover of the battery holder. (Before you close the cover of the battery holder, please make sure the positive (+) and negative (-) poles of the battery are correctly positioned). In this way, you can avoid the damage to the instrument.

### **Malfunction and Solutions:**

If the system fails to display the correct value due to some accidents such as the external collision etc., you can solve the problem by powering off the instrument, taking out the battery from the body of the tape, keeping pressing the button “ON\_OFF” for 1 minute and then placing the battery back to the battery holder. Please contact the supplier if the problem can not be solved in this way.

### **Implications of the Symbols**

1. When the electricity is insufficient, the symbol of battery “” will twinkle to remind the user to change the battery as soon as possible.
2. Because this instrument is only suitable for Two-axis Measurement, when the angle between the third axis (that is, the front and back side of the Digital Level) is less than 45°, the symbol of wrong information “Err” will be displayed.



### **Technical Parameter:**

Battery: 9V PP3 alkaline battery

Weight: around 100 g (exclude battery)

Automatic Power-off Function: When the instrument is on, it will automatically power off after the period of 120 seconds during which no button is pressed or the change of angle is kept to be equal to or less than  $0.1^\circ$ .

Stand-by Time: Around 700 days. (The battery shall be taken out for storage if the instrument will be kept idle for a long time period)

Operating temperature range:  $-10^\circ\text{C}$ -- $+60^\circ\text{C}$

Storage temperature range:  $-20^\circ\text{C}$ -- $+80^\circ\text{C}$

Operating humidity range :  $< 90\%RH$

Measurement range:  $0\sim 90$  degrees / quadrant x 4 quadrants, that is, 360 degrees.

Display resolution:  $0.10^\circ$ .

Precision: The precision of measurement is less than  $0.1^\circ$ . Under the condition that the temperature error band within the operating temperature range (that is, the temperature drift) is less than  $0.05^\circ$ ,

the long term temperature drift is kept below 0.1° and the repetitive error below 0.07°.

Automated Voice Implication: 0-degree, 90-degree and 180-degree.

Outside dimension (MM): 160x52.5x21.5 (length X width X thickness)

Dimension of the display: 71.5x23.5 (length x width)

Product: Electronic Module of the Digital Level Model No.: LV- 99L01A Rated Voltage: 9V Place of Origin: China
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※ **Note: Specifications subject to change without notice.**