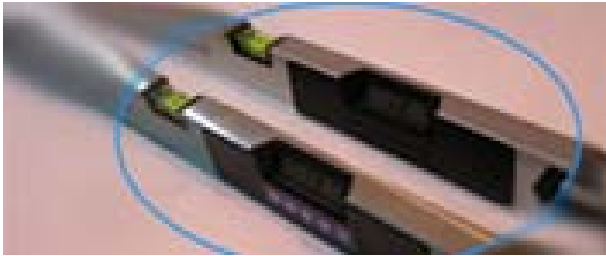


VTT-360 DIGITAL LEVEL METER OPERATON MANUAL

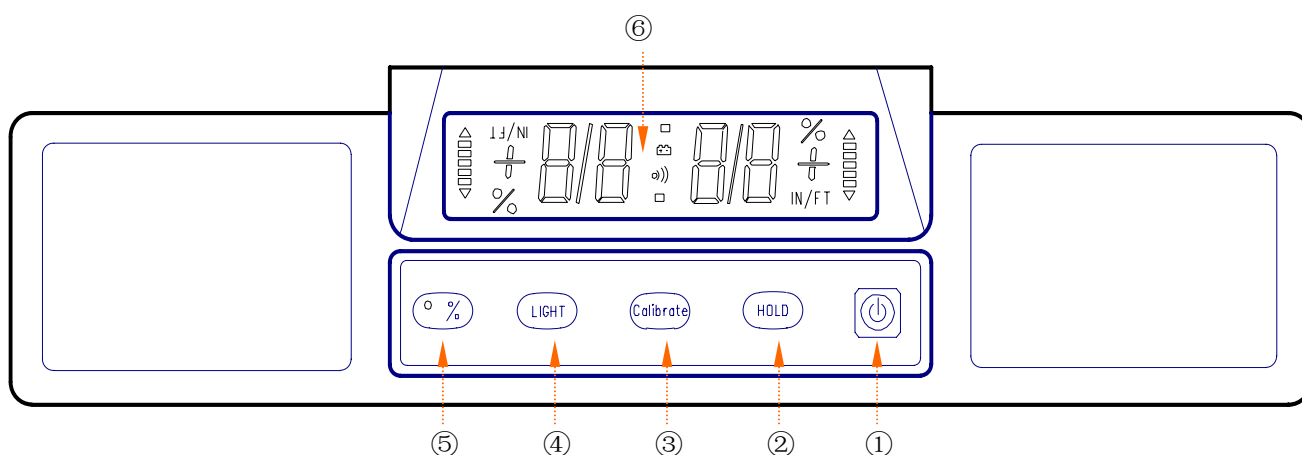


Vigor developed high accuracy low cost, digital level meter for construction application. Thanks for the advantaged MEMS technology and ASIC technology to build 0.1° accuracy at 0°, 90°, 180°, 270°, 360° and accuracy is 0.2° for another angles.

Feature and specifications:

- Large liquid crystal display readout
- easy read at any position, data display turn automatically
- Covers 360° (Displays 0° to 360° or 4x90°)
- automatically turn off after 5 minutes(other also available)
- data hold function
- Measurements can be gravity or reference based
- Stores an entire series of measurements (option)
- Stored data retrieved manually or sent to a computer with RS232 interface(option)
- Calibration anywhere, anytime if want
- Back light function for dark environment
- ° and % measurement unit interchange(other unit also available)
- larger than 8 hours continuous working time with 9V battery
- Battery power supply, easy change
- MEMS & ASIC,SMD technology
- high shock resistance 20000g for sensor
- 0.1° resolution
- 0.1° accuracy when vertical or horizontal
- 0.2° accuracy at any angle
- 0.2° total thermal drift within -5 to 50°C
- operating temperature range:-5 to 50°C (+23°F to +122°F)
- storage temperature range: -20 to 80°C (+4°F to +185°F)
- housing and LCD, PCB board, keyboard can be customized

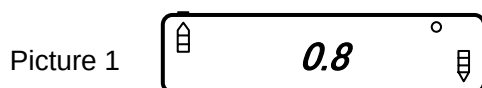
Operation of standard display and keyboard:



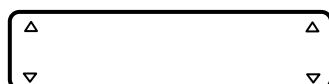
- 1、 Power switch key 
- 2、 Data hold 
- 3、 calibration 
- 4、 LCD backlight 
- 5、 Degree (°) and percent (%) interchange 
- 6、 LCD display 

Operation

- 1、 put battery into the box at the back of level meter, the LCD will display all characters within 1sec.. Like as picture 1, then display the current angle value and tilt direction.



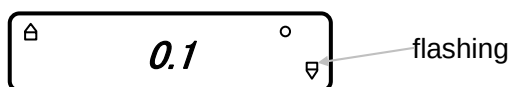
- 2、 Press the power switch  and LCD normally the LCD. Bellowing picture will keeping 3 seconds.



After that, the angle and its direction will be displayed, which means entering the measurement status.

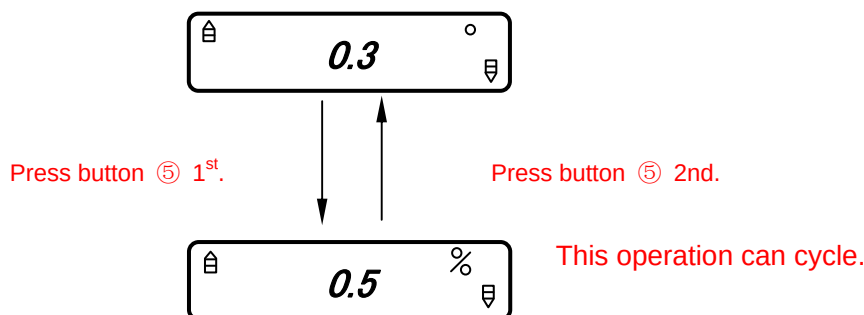
When keeping the meter in the same status or in nonuse for 5 minutes, the LCD  will turn off automatic as the meter is in save power status. Once press the button , the meter will enter the measurement status again. Such operation can cycle via pressing the switch button.

- 3、 Press hold button ②, the meter will enter date holding status, LCD will display the currently data and keep it while the light on both side of the LCD will flash.:



In holding status, the display of LCD will not change with the meter's moving and rotating. Otherwise pressing the hold button② again, the meter will be back to the measurement status again.

- 4、 The meter will enter calibration status when pressing calibration button③.(See details in Chapter 4)
- 5、 Press the backlight button ④, light will be on to emblaze the LCD. This will help users to use the meter conveniently in nights and some dark occasions. Press the backlight button④ again, light will be off.
- 6、 The measurement data will be transferred between“° ”and“%” after press the Degree (°) and percent (%) interchange button⑤. For example:



- 7、 Lower power alarm: When the power is low ($5.5V \pm 0.5V$) , the low power logo “ LCD will flash to indicate users to replace new battery in order to ensure the measurement correct.
- 8 Beeping signal: When the measurement data reaches 0° and 90° (0.0%), a beeping signal will Happen which suggest the users now in a **relative** horizontal and vertical.(Or the horizontal/vertical reference plane)
- 9 Adjustment help: In order to help the user to recognize the direction of inclination, especially for small angle, the two sides of LCD have the rotatable logo which point to vertical ($0^\circ - 45^\circ$) and horizontal plane ($45^\circ - 90^\circ$) .
- 10、 Reverse measurement display: All of the letters in LCD is symmetry from top to buttom. That is to say all these inclination data, unit and direction point logo can rotate with the meters rotation. This will help users a lot to read the data easily. Please note the display of data is in resolution 0.1° or 0.1% .

Veracity checking:

In order to ensure the veracity of measurement data, control measurement tolerance, we suggest that before operate the meter or change user, it is necessary to check the meter's veracity, even do

re-calibration to the meter.

- 1、 Put the meter on the plane(no matter is horizontal ones and vertical ones), and keep it in the corner or marker its position, wait about 10 minutes, read the date from LCD display.
- 2、 Then rotate the meter 180° in the selected plane, and keep it in the corner or marker its position, wait about 10 minutes, read the date from LCD display again.
- 3、 If those two results have a difference more than 0.1° (0.2%),
- 4、 Users can make traditional bleb level meter to check the veracity of the meter. In the same limited position and plane, when bleb in the center of two cycles, the meter will display 0.0° - 0.1° or 89.9° - 90° . Otherwise it should also re-calibrate the meter.

Note: The veracity checking should include all of working plane and the position selection will effect veracity.

Calibrate meters:

Put the meter on the plane(no matter is horizontal ones and vertical ones), and keep it in the corner or marker its position. Then press the switch button①, about 10 seconds later, hold calibration button③ until it displays “CAL1” and flashing display the first inclination data. Loose the button ③ and rotate the meter 180° vertically in the selected plane, about 10 seconds later, hold calibration button③ until it displays “CAL2” and flashing display the second inclination data. Then loose the calibration button ③, the calibration will be finished after “BI” listening.

Note:

- A、 When press the calibration button, do not move, shake or virbrat the meter. On the top of the horizontal and vertical plane, the meter can also be calibrated. But what's important is the relating plane used to calibrate is no more than 5° to the horizontal and vertical plane. If it's more than 5° in processing “CAL1”, there will be four times “BI” and the meter will be back to measurement status. This shows the calibration is not permit at this position. Users should select another position and relating plane to do calibration. If it's more than 5° in processing “CAL2”, the LCD will display “---” in flashing. It will invalid to press calibration button ③. So it can not calibrate the meter either. Only press the swith button ① to exit calibration and choose another position and relating plane to do calibration.
- B、 In the course of calibration, users can press the switch button① anytime to stop the calibration operation.

