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Digital Level

EN Digital Level



HSL08060D



Digital level instructions

Scope of application

The digital level is composed of the traditional spirit bubble measuring device and the new electronic digital display angle measuring device (fig 1). The spirit bubble measuring device is mainly used to measure and correct the horizontal and vertical state of the object to be measured. The electronic digital display angle measuring device is used to measure and check the state of any angle of the object quickly and accurately.

Safety Notes

- ◆ Read and observe all instructions carefully before using this instrument.
- ◆ Save these instructions for future reference

Functions :

- Depending on the current angle, the display can be rotated 90 °
- Absolute angle and relative angle can be measured;
- Measuring value can be held on the display;
- The audio signal can be switched ON/OFF
- Three display modes: °, mm/M, %;
- Four stage battery voltage status indication
- LCD illuminated display ;
- Automatic switch-off
- Ambient temperature display, Fahrenheit / Centigrade temperature conversion

Technical data :

- Digital display angle measuring range: 0° ~ 180° (2X90°)
- Resolution: 0.1°
- Accuracy: 0.029° = 0.50mm/m bottom datum
0.043° = 0.75mm/m top datum
- Battery voltage: 2x1.5V AAA DC
- Operating temperature: 0°C ~ +40°C
- Storage temperature: -10°C ~ +80°C

Press button

ON/OFF button :

Switch on/off。

HOLD button :

Hold a measured value

° ,mm/M,% button :

Change the units of measure

REF button :

Relative angle initialization

°F , °C/CAL button:

Fahrenheit / Celsius temperature conversion

Absolute Angle Calibration of level:

In mode of angle measurement, briefly press

°F, °C/CAL button to Display current Fahrenheit

temperature, press °F, °C/CAL button again

Converting to centigrade temperature.press °F ,

°C/CAL button the third time change to Angle

measurement mode, Sequential cycle Long

press °F, °C/CAL button more than 4 seconds

Change to Absolute horizontal calibration mode

(operating as below)

Sound/Light convert button :

Briefly press Sound/Light button to switch on

buzzer function, press button again to switch off

buzzer, Sequential cycle

Long press Sound/Light button more than 2 seconds

to switch on the backlight and turn it off by long

pressing Sound/Light button more than 2 seconds

again. Sequential cycle

Operations

Switch on

Press the on/off button in the shutdown state to

start the normal measurement state

Calibration:

◆ Calibration is needed to maintain the accuracy of the measurement when the room temperature difference varies greatly

◆ Only horizontal directions can be calibrated in this mode

- ◆ In this mode, the °, mm/M, % , REF and HOLD buttons are invalid. Other keys are valid
- Long press °, °C / CAL button more than 4 seconds, the LCD will display CAL1
- Put the instrument on a flat surface, Align to mark position. The number 1 starts to flash after brief pressing the °, °C / CAL button. Several seconds later the LCD will display CAL2; (figure 1)
- Rotate the instrument 180 degrees around the vertical axis. Number 2 starts to flash after pressing °, °C / CAL button. Several seconds later the LCD will display 0.0°. It indicate the calibration is complete and the instrument is in a normal state of measurement (see figure 2)

Figure 1



Figure 2



It could not be successfully calibrated under following states

- ◆ The calibrator deviates too much from the horizontal plane
- ◆ The level is shaking all the time
- ◆ The use of temperature difference over 5 degrees requires the user to calibrate the instrument to ensure the accuracy of the measurement

Measurement of angle

The relationship between the display and the angle when the level rotates in a circle is shown in the following table

Angle value	Display angle value	Angle symbol (diagram only below)	Display of adding or reducing angle	Audio indication	Display content rotation
0°	0.0°	0 —————	null	ring long	0°
0.1~89.9°	0.1~89.9°	0 ————— \	For each addition of 15 degrees, show one grid more.	null	0°
90.0°	90.0°	0 —————	null	ring long	0°
90.1~179.9°	89.9~0.1°	0 ————— /	For each reduction of 15 degrees, show a reduction of one grid.	null	180°
180.0°	0.0°	0 —————	null	ring long	180°

When the level reaches 0 °45 °90 °135 °180 °, the buzzer will ring long

The buzzer gave a short sound as it crossed 0 °45 °90 °135 °180 °

Relative angle initialization

1 second after pressing REF button the LCD will show 0.0 ° and REF flashes on the top of the screen. The current angle is taken as the starting angle, and the measured values are relative to that angle. Press REF again to return to absolute angle measurement mode.

Display mode switching

- Used to convert different units of measurement (default °)
- Unit cycle order: ° → **mm/M** → %;
- Unit conversion formula

If the current angle is A, mm / m as b, the slope is c

If $A \leq 45^\circ$ then $C = 100 * \tan A$ $B = 1000 * \tan A$

If $A \geq 45^\circ$ then $C = 100 * \tan(90 - A)$ $B = 1000 * \tan(90 - A)$

In rounding processing of B, Rounding up will be displayed as +, Rounding down will be displayed as -, otherwise there is no + /- symbol be displayed
Save 1 decimal place after decimal point for C but B is an integer

Holding a measured value

- When the HOLD button is triggered in the measurement mode to enter the data holding function, when the data holding function is effective, the H icon above flashes, the measurement is invalid, and the azimuth display icon remains unchanged
- Trigger the HOLD button again into measurement mode.

Sound On / Off

Press Sound/light button to exchange the function of sound on/off during working state

When the  icon is displayed on the LCD it indicates that the sound is valid otherwise the sound is invalid.

Backlight on / off:

Long press Sound/Light button for 2 seconds to exchange the function of backlight.

Battery voltage indication:

- When the voltage of the battery is higher than 2.7 ± 0.2 v, the LCD displays the sign  (showing 3 cells of electricity);
- When the voltage of the battery is less than 2.7 ± 0.2 v, the LCD displays the sign  (showing 2 cells of electricity);
- When the voltage of the battery is less than 2.5 ± 0.2 v, the LCD displays the sign  (showing 1 cell of electricity).
- When the battery voltage is less than 2.3 ± 0.2 v, the LCD display sign  (display blank) and licker once a second, the buzzer is ringing every 10 seconds, indicating that the battery is empty and needs to be replaced.

Switch off

There are two ways to turn off the instrument.

- Trigger the ON/OFF button in the working state
- No measurement in 3 minutes

Safety notes

- ◆ If it is not used for more than three months remove the battery to avoid leakage and store the battery in a cool, dry place.
- ◆ If the battery has leakage, use soft cloth to carefully wipe the liquid and avoid skin contact;
- ◆ Pay more attention to environmental protection, waste batteries should not be disposed of arbitrarily with household waste. please put it into the designated waste battery recycling facilities, burning is strictly prohibited;
- ◆ Never immerse a horizontal instrument in water

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