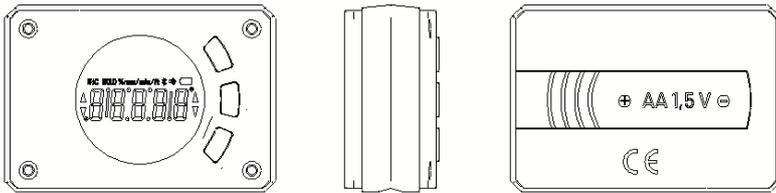# SOLA Level box

1.PRODUCT OUTLOOK

2.PRODUCT DESCRIPTION

SOLA LEVEL BOX COULD DO LEVEL MEASURING AND RELATIVE MEASURING, WITH HOLD, FLIP OVER READING, BACKLIGHT AND SOUNDING FUNCTION. SMALL SIZE, EASY FOR CARRYING, GOOD FOR MANY APPLICATIONS.

3.PRODUCT FEATURES

3.1MEASURING UNIT: °, %, mm/m, in/ft

3.2RESOLUTION:0.05°/ 0.1°（could choose by APP）， default is 0.1°

3.3Accuracy: 0&90°：0.05°；1° to 89°：0.2°

3.4Measuring range：°：4*90°

3.5Backlight: When turn on, white backlight is on

3.6Number changing or any press button will active the backlight. 1min no movement, backlight will automatically shut off.

3.7Hold function：Short press"HOLD"button at any angle will hold the measurement, symbol "HOLD"will show on the display.

3.8Relative measuring：customer could set relative 0 at any angle.

3.9Auto shut off in 3 minutes if no operation or number not move.

3.100/45°/90°sounding function: different frequency sounding for closing to 0/45°/90°. When angle close to 0/45°/90°，from 1.55°to 0.8°(1time/second),from 0.75°-0.3°（2times/second）， from 0.25°-0.05°（4times/second）， 0.00°continue sounding.

Different voice at anti-clockwise direction and clockwise direction.

Different sound in situation the right side is not inclined compare in the situation the left side is not inclined"

default – sound is OFF

3.11Power：DC1.5V(AA×1)

3.12Full view LCD

3.13Flip over display when over 90 degree.

3.14Battery life: 80 hours(bluetooth on, backlight off),65 hours(bluetooth on, backlight on)（The result is been calculated base on battery capacity is 2500mAH, we will do the real calculation when getting the mass production battery）

3.15Dropping resistant：All function running okay after 2 meters dropping test.

3.16Buetooth function：After installing the battery, device will on, bluetooth will on automatically at the same time. When connected, device will continue sending the current value to the APP. Bluetooth is ON at every time when product is on"

3.17BLE ID：SOLA_Go!_smart_00500(unique ID on each product, but not continue number). When device be connected in successful, there is no chance for connect with other ones in the same area.

3.18APP could show the displayed value, APP could operate the product.

3.19After connecting one time, cell phone will be automatically be connected later.

3.20Bluetooth protocol：4.0BLE

?Bluetooth transfer distance：10meter in barrier free area, other bluetooth device around will not effect this device.

3.21Warning out of tolerance longitudinally: when measuring near 0°and 90°，if the longitudinal axle (fore-and-aft direction) inclination exceeds 30°，it will display "- - - - - -" which means substantial deviation in the measurement and no accurate value can be provided.

3.221.1V low voltage warning.(battery sign will keep flashing when reach 1.1V. The product could keep run 2 hours since 1.1V until power off automatically)

3.23Default state when installing battery/on：：ABS status，unit °，backlight on，sounding off, bluetooth on. ABS didn't be shown on the display

4. PRODUCT TECHNIC DATA

4.1Temperature:

4.1.1 Working temperature ：-10°C (14°F) to 50°C (122°F)

4.1.2Storage temperature or shipping temperature:：-20°C (-4°F) to 60°C (140°F)

4.2Working humidity：≤85%

4.3 (EMC)：Class II

4.4IP level：IP54

4.5FCC certificate

4.6REACH, ROHS will be supplied by GEMRED self-declaration

5. PRESS BUTTON OPERATION:

"ON/OFF" Button
At off status, short press to turn on the device.
At on status, press button for 2seconds to turn off the device.

HOLD Button
Short press it to enter/exit the HOLD mode, under HOLD mode, LCD will have symbol "HOLD" be displayed.
Long press(2 seconds) HOLD button to enter the INC mode and set relative ZERO, long press (2 seconds) it again to return to ABS mode.

MODE Button
Short press it to convert between unit（°, %, mm/m, in/ft）；
Long press (2 seconds) it to turn on/off the sounding function (under sounding function, LCD will have sound symbol be displayed.)

"ON/OFF" Button + "MODE" Button
Press ON/OFF Button and MODE Button at the same time could enter the mode to choose the resolution 0.1°or 0.05°.
Remarks：Default resolution is 0.1°，next time turn on the device will keep in default setting no matter which resolution been chosen last time.

Calibration（Calibration already been done at facotry, customer no need to do the calibration before using. If you want to calibrate again, you could follow the following steps.）

At on status, long press (2 seconds) ON/OFF and HOLD at the same time to enter the calibration.
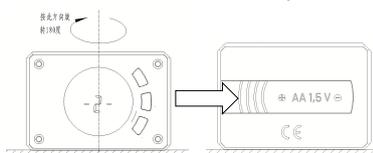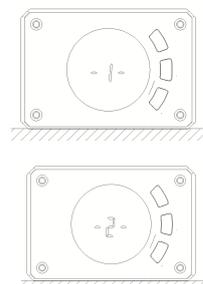
a、Level calibration

a1、ZERO point calibration

（1）Put the device at a flat surface, at on status, long press(2 seconds) the ON/OFF and HOLD button at the same time to enter the calibration and "-1-" will be displayed. As following picture.

（2）Short press ON/OFF button，"-1-" flashing，keep the device no movement until"-2-" be displayed. As following picture.

（3）Turn 180°of the device at the same position. As following picture.

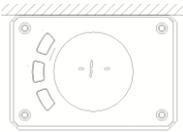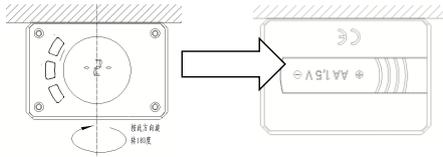（4）Short press ON/OFF button，"-2-" flashing, keep the device no movement until the device automatically exit the calibration status, calibration is done.
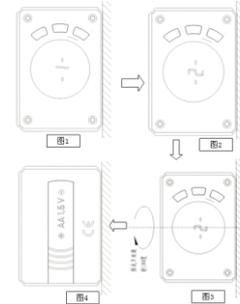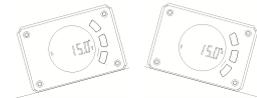
a2、180°position calibration

(1) Put the device at a flat surface, at on status, long press(2 seconds) the ON/OFF and HOLD button at the same time to enter the calibration and "-1-" will be displayed. As following picture.

(2) Short press ON/OFF button · "-1-" flashing · keep the device no movement until"-2-" be displayed. As following picture.

(3) Turn 180°of the device at the same position. As following picture.

(4)Short press ON/OFF button · "-2-" flashing, keep the device no movement until the device automatically exit the calibration status, calibration is done.

b、Vertical position calibration

(1)Put the device at a flat surface, at on status, long press(2 seconds) the ON/OFF and HOLD button at the same time to enter the calibration and "-1-" will be displayed. See picture 1.

(2)Short press ON/OFF button · "-1-" flashing · keep the device no movement until"-2-" be displayed. See picture 2.

(3)Turn 180°of the device at the same position,See picture 3.4.

(4)Short press ON/OFF button · "-2-" flashing, keep the device no movement until the device automatically exit the calibration status, calibration is done.

6.LCD DISPLAY SYMBOL " ▼ 、▲ " :

Right end is higher than left end · LCD will display"▲　▼" · Left end is higher than right end, LCD will display" ▼ ▲".
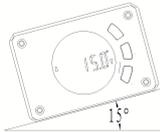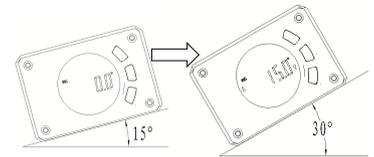No arrow be displayed at 0 point.

7. PRODUCT FUNCTIONS:

Preparation before usages: to open the battery compartment on the back of the product, insert one piece AA alkaline battery into the compartment and then close the battery compartment.

7.1 Absolute measurement: Long press "HOLD" Button to enter the ABS mode, LCD will display the measured value between the measuring surface and the earth level.
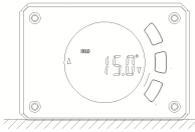
7.2 Relative measurement: Put the device on the first measured surface, long press "HOLD " button to enter INC mode and LCD will display 0.0°and symbol "INC" be displayed, put the device to another measured surface, the LCD will show the angle between these two measured surfaces.(as the following picture)
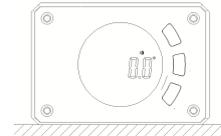
7.3 HOLDING function : During measuring period, short press HOLD button could freeze the measuring value and the LCD will show "HOLD" symbol, short press it again could exit the HOLDING function.(see following picture)

7.4 Backlight : Press any button or number changing all could active the backlight, no movement or press in 1 minute the backlight will off automatically.

7.5 SOUND function : The device has sound reminding function. Long press"MODE" button to enter or exit SOUND function(LCD has sound symbol be displayed).
Under SOUND funciton, at 0°, 45°、90°will have different frequency sound reminding. (For details pls check no. 3.10)
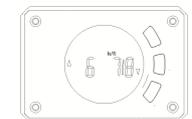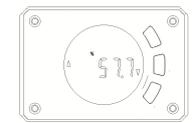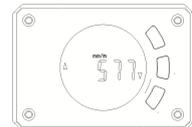
7.6 Inclination measurement : short push on the button of "MODE" may convert between "°, mm/m, % and in/ft " and get the corresponding symbol at the same time.

mm/m : when the angle is between 0 and 45°, H=L • tgα; when the angle is between 45°and 90°, H=L * 1/tgα). L=1000（mm）.
  e.g.: when α=30°, H=L* tg30°(calculated at the resolution of 0.1mm/m)=577.0mm/m
  Remarks:mm/m is calculated from °, the result is the round data.

% : when the angle is between 0~45°, H=L*tgα ; when angle is between 45°~90°,H=L* (1/tgα). Of which L=100（mm）.
E.g.: when α=30°, H=L • tg30° (calculated according to the resolution of 0.1 %) =57.7%
Remarks: % is calculated from °, the result is the round data.

in/ft : When the angle is between 0~45°, H=INT（(1000*L* tgα) /125)*125/1000); when the angle is between 45°~90°, H=INT((1000*L • (1/tgα) /125)*125/1000). Of which L=12（in）.
E.g.: when α=30°, H=L • tg30° (calculated according to the resolution of 1/8 in/ft) =6 7/8 in/ft

8. PRODUCT MAGNET

The product will not fall off when stick upside down on iron or steel plates. Magnet will not effect the display, when shipping, the magnet also will not effect the other product which been shipped together.

9.PRODUCT MATERIAL, COLOR AND SIZE

Press button: Rubber
Print of ON/OFF button may will be red
Printing on press button : White
Red plastic part : RAL3020 or refer to SOLA sample.
Black plastic part : RAL9017
Plastic housing : ABS
Measuring surface : PA66+50% Fiberglass
Surface roughness of plastic part : VDI 3400 - 27
Appearance size : 80*55*27mm
Screws : self-cutting Torx screw for plastic housing(COLOR BLACK)
Put sticker "mold and the parts out of the mold will be only used for SOLA" on the mold.
No QC sticker on the product.
S/N number should put on the battery compartment

10. TROUBLE SHOOTING

Problem	Possible cause	Solution
1.No display, ambiguous display or jumping numbers	Lower voltage, no battery or incorrect installation of battery	Re-install battery or replace battery
2. Erratic display	Lower voltage	Replace battery
3.Number skip or frozen display	Internal error	Remove battery, wait 1 minute and replace

11. OTHERS

11.1 The copyright bellows to our company. No copy is permitted.