←INSIZE→ OPERATION INSTRUCTION
Digital Indicators For Bore Gages

This digital indicator is a dedicated digital display for internal measuring instruments, used for assembling internal measuring instruments. The inner diameter gage is used for comparative measurement, mainly for measuring the inner diameter of holes.

Caution: Prevent liquid from getting into digital indicator to damage electronics.

Code	Range	Resolution	Accuracy	Hysteresis	Remark
2108-10F	12.7mm/0.5"	0.002mm/0.0001" (can switch to:0.01mm/0.0005")	20µm	10µm	flat back
2108-101F	12.7mm/0.5"	0.001mm	5µm	2µm	flat back

1-Battery cover
2-'ZERO/CAL' button
3-Display
4-'START' button
5-'MIN/SET' button
6-'DATA' button
7-Output
8-'ON/OFF' button
9-Stem(Ø8mm)
10-Spindle
11-Probe
12-Digital tranmission signal light
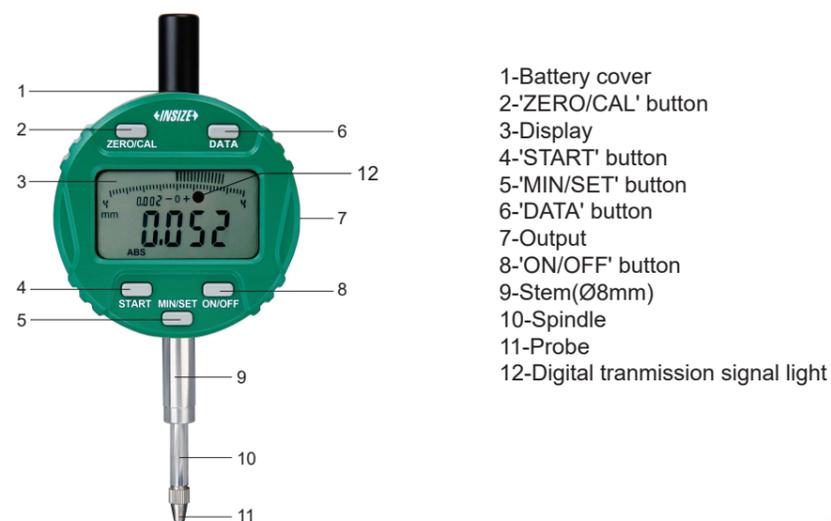
1. Install and remove battery(CR2032), the negative side of battery should face out(fig.1).

push   pull

negative

fig.1

2. Display can be rotated by 320°(fig.2).

320°

fig.2

3. Buttons:
Long press: more than 2 seconds; short press: less than 2 seconds.
ON/OFF---Short press to turn on or turn off display.
MIN/SET---Short press to enter into minimum reading tracking mode, "MIN" blinks. Short press again to exit and "MIN" disappears.
　　　---Long press to enter the preset value setting mode. "SET" is displayed at the bottom of the display, and the tail of
　　　　the value "+000.000" flashes. Short press the "START" button to switch the number of flashing digits (from 0 to
　　　　9), short press the "ON/OFF" button to switch the digits from right to left, long press the "MIN/SET" button to save
　　　　the settings and exit.
ZERO/CAL---Long press for calibration in minimum tracking mode.
　　　　---Short press to set zero in absolute measuring mode;
　　　　　long press to change the indicator's resolution.
　　　　　2108-10F:change the indicator's resolution, In metric mode :0.01mm/0.002mm; In inch mode:0.0005″/0.0001″.
　　　　　2108-101F:change analog pointer resolution, In metric mode :0.001mm/0.002mm/0.004mm/0.01mm;
　　　　　　　　　　In inch mode:0.00005″/0.0001″/0.0002″/0.0005″
START---Short press(after calibration) to enter into measuring mode.
　　　---Long press for metric and inch conversion.
DATA---Short press to data transmission.

4. Measuring instruction:
(1) Relative measurement (displayed value is the difference between measured size and setting ring)
Calibration (set initial value to 0):
---Select an appropriate setting ring and place the bore gage into setting ring, short press "MIN/SET" button, 'MIN' blinks and it enter into minimum reading tracking mode. Sway bore gage for several times, the bore gage will find the minimum reading automatically, and " MIN" stop blinking.
---Take out the bore gage and then long press "ZERO/CAL" button, "CCC" appears for seconds, calibration is finished.
Measuring:
---Insert the bore gage into workpiece, short press "START" button, "MIN" blinks and enter into measuring mode and sway the bore gage, the bore gage will find the minimum value automatically. "MIN" stop blinks, the measurement is completement, and then take out the bore gage. At this time, the reading is the difference between the measured size and the setting ring. If the reading is negative, the measureddiameter is less than the setting ring diameter, if the reading is positive, the measured diameter is larger than the setting ring diameter.
---Take out the bore gage, place it in the measured workpiece, and short press "START" button again to turn into the next measurement.
---After the measurement is completed, short press "MIN/SET" button to exit the measurement mode.
---When measuring again, recalibration is required.

(2) Absolute measurement (the initial value is the setting ring size, display value is the actual value)
Calibration (set initial value to setting ring size):
---Select an appropriate setting ring and set the initial value to the setting ring size, refer to "MIN/SET" button operation instruction.
---First, place the bore gage into the setting ring, short press the "MIN/SET" button, "MIN" blinks and enter into the minimum value tracking mode. Sway the bore gage left and right several times, and it will automatically track the minimum value. When "MIN" stops blinking, and the minimum value tracking is completed.
---Take out the bore gage from setting ring, long press "ZERO/CAL" button and "CCC" appears, calibration is completed . At this time, the initial value is the setting ring size.
Measurement:
---Place the bore gage into the measured workpiece, short press "START" button, and "MIN" blinks to enter into measurement mode. Sway the bore gage left and right several times, and the gage will automatically track and display the minimum value. The "MIN" stops blinking, and the measurement is completed, you can take out the bore gage. At this time, the reading is the actual size of the workpiece which is measured.
---Take out the bore gage, place it into the measured workpiece, and short press the "START" button again to turn into the next measurment.
---After the measurement is completed, short press "MIN/SET" button to exit the measurement mode.
---When measuring again, recalibration is required.

5. The digital indicator has automatic shutdown and high/low frequency switching functions, and the specific operations are as follows:
(1). False shutdown automatic shutdown function:
　　By default, if you press "ON/OFF" button or let it in a state with no any operation for about 2 hours, the digital display will automatically shut down, and be in a false shutdown state. In this state, push the measuring rod or press "ON/OFF" button to turn on digital indicator.
(2). Real shutdown time setting:
　　After shutting down, press and hold the "MIN/SET" button, short press the 'ON/OFF" button to turn on, release the "MIN/SET" button to enter the shutdown time mode setting, the default display is "06", which means it will automatically shut down after 6 hours of no operation. Short press "MIN/SET" button can switch the value, long press "MIN/SET" button can switch between individual and ten digits, the valuse can switch from 0 to 99 hours with 1 hour step, . (When the switch display is "00", it means the digital indicator will not automatically shut down.) Short press the "ON/OFF" button to confirm and save the setting, exit the current mode.
(3). High and low frequency switching settings:
　　After shutting down, press and hold the "START" button, and shortly press "ON/OFF" button to turn on, after displaying "Fr-on", release the "START" button to enter the high and low frequency switching mode setting, short press the "START" button to adjust the switching mode, display "Fr-on" means that the automatic frequency switching function is turned on. After 3 seconds without button operation and push rod operation, it will automatically switch to high frequency. Display "Fr-oF", which means that the automatic frequency switching function is turned off, and the sensor keeps the high frequency state unchanged. Short press the "MIN/SET" button to confirm and save the high and low frequency switching mode settings, and exit to the working state.
　　In the "Fr-on" mode, when the meter is not operated for 3 seconds in this mode, the meter will automatically switch to low frequency, so the power consumption is lower, and it is more power-saving, suitable for use in the routine measurement state.
　　In the "Fr-oF" mode, the gage will continue to maintain high frequency, high power consumption, and reduced battery life. It is suitable for occasions where high-speed movement of the measuring rod is required.
6. The original data remains after power off, no need to recalibrate after power on.
7. Optional accessories: data output cable(7302-, 7305-, 7315-)
8. One battery can last for one year use. If there is nothing on display or digits blurring, battery voltage is too low, please replace battery. If the digits do not change when buttons are pressed or spindle is moved, take out battery and put it back after 1 minute. If the indicator is not be used for a long period of time, please remove the battery. Otherwise, liquid may leak from the battery and damage the indicator.
9. Working temperature is 0~40°C/32~104°F.

MN-2108-C/E

V1

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