OPERATION INSTRUCTION
Digital indicator

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

Resolution: 0.001mm/0.00005

Code	Range	Accuracy (f$_{ges}$)	Hysteresis (f$_u$)	Remark
2103-10	12.7mm/0.5"	5µm	2µm	lug back
2103-25	25.4mm/1"	5µm	3µm	lug back
2103-50	50.8mm/2"	6µm	3µm	lug back
2103-10F	12.7mm/0.5"	5µm	2µm	flat back
2103-25F	25.4mm/1"	5µm	3µm	flat back
2103-50F	50.8mm/2"	6µm	3µm	flat back

1-Battery cover
2-"TOL" button
3-LCD display
4-"in/mm" button
5-"ABS" button
6-Stem(diameter Ø8mm)
7-Spindle
8-Contact point(thread M2.5X0.45)
9-"M" button
10-USB data output
11-"ZERO" button

Display
1-Analog pointer
2-Tolerance sign
3-Analog pointer resolution
4-Metric mode
5-Inch mode
6-Preset mode
7-Absolute measuring mode
8-Tolerance measuring mode
9-Measuring direction sign
10-Difference between the max. and min. measuring value
11-Minimum value track measurement
12-Maximum value track measurement
13-Set upper/lower limit
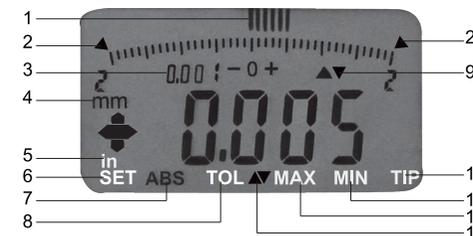
1. Install and remove battery(CR2032), the negative side of battery should face out(fig.1).

push
pull
negative

Fig.1

2. Display can be rotated by 320°。

3.Buttons:
Long press: longer than 2 seconds; short press: less than 2 seconds
TOL---Short press to enter into tolerance measuring mode. Under this mode," ▶ " at the upper right corner blinks if the reading is larger than the upper limit;, " ◀ " at the top left corner blinks if the reading is less than the lower limit.

---Long press to enter into tolerance set mode. " ▼ " appears and the last digit blinks. Short press "ZERO" button to position the digit, the digit blinks when it is positioned. Short press "in/mm" button to change the digit from 0 to 9. After setting the lower limit, short press "TOL" button, " ▲ " appears and the last digit blinks. Set the upper limit as seting the lower limit way. Short press "TOL" button to finish set and enter into tolerance measuring mode.If the lower limit is larger than the upper limit,"EEE" wil appear and the digital indicator enter into tolerance set mode again automatically.

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M---Short press, "MAX" appears and enter into maximum reading tracking mode. Short press again, "MIN" appears and enter into minimun reading tracking mode. Short press for the third time, "TIR" appears and to get the diference between the maximum and minimum reading of one measurement.

  ---Long press to change the analog pointer resolution between 0.001mm, 0.002mm, 0.004mm, 0.01mm in metric mode or 0.00005".0.0001"0.0002".0.0005" in inch mode.

   in/mm-Short press for inch and metric readig conversion

  ---Long press to change measuring direction. " ▲ " appears, the value increases if the spindle moves up. " ▼ " appears the value decreases if the spindle moves up.

ABS---.Short press for absolute and relative measuring mode conversion. The normal mode is absolute measuring mode("ABS'is on display). Short press the button to enter relative measuring mode at any point(this point is called "relative zero point"), "ABS" disappears and the reading is zero. in this mode, the reading is the distance to the "relative zero point".

   Press the button again to return back to absolute measuring mode.

  ---Long press to enter into initial reading set mode. "SET" appears and the last digit blinks. Short press "ZERO" button to position the digit, the digit blinks when it is positioned. Short press "in/mm" button to change the digit from 0 to 9. Long press "ABS" button to exit set mode.

ZERO---When display is powered on: short press to get initial reading on absolute measuring mode("ABS" is on display); long press to turn off display.

  ---When display is powered off: short press to turn on display.

Shutdown time setting:
After shutting down, press and hold the ABS button, short press the ZERO button to turn on, after displaying "----", release the
ABS button to enter the shutdown time mode setting, the default display is "6.0", which means it will automatically shut down
after 6 hours of standing, short press ABS The key can switch the value, and it can switch between
0 and 6 hours every 0.5 hour. When the switch display is "0.0", it means that the gauge will not automatically shut down.

4. Digital indicator should be mounted on a rigid holder to use.

5. Clamping: clamping the stem for flat back dial indicator, For lug back, the dial indicator can be mounted by clamping the lug or stem. If the dial indicator is mounted by clamping the stem, please do not apply excessive clamping force, which will affect the movement of the spindle.

6. During measurement, the spindle should be vertical to the workpiece surface, otherwise, the measurement may not be correct
   Caution: please do not move the spindle quickly or apply lateral force on the spindle.

7. After measurement, please oilthe contact point. The spindle should not be oiled, otherwise, the movement of the spindle will not be smooth.

8. If the digital indicator drops or be shocked, please inspect the measuring accuracy before using.

9.Optional accessories: SPC cable(7302-,7315-,7305-),backs(7330-L5/F5), contact points(series 6282).
   In order to get accurate measurement, it is necessary to choose contact point according to the shape of the workpiece Measuring columned workpiece should choose knife edge point, measuring spherical workpiece should choose flat point, the needle point should be choosen when measuring concave or complex shape workpiece.

10. One battery can last for one year use. If there is nothing on display or digits bluring, 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.

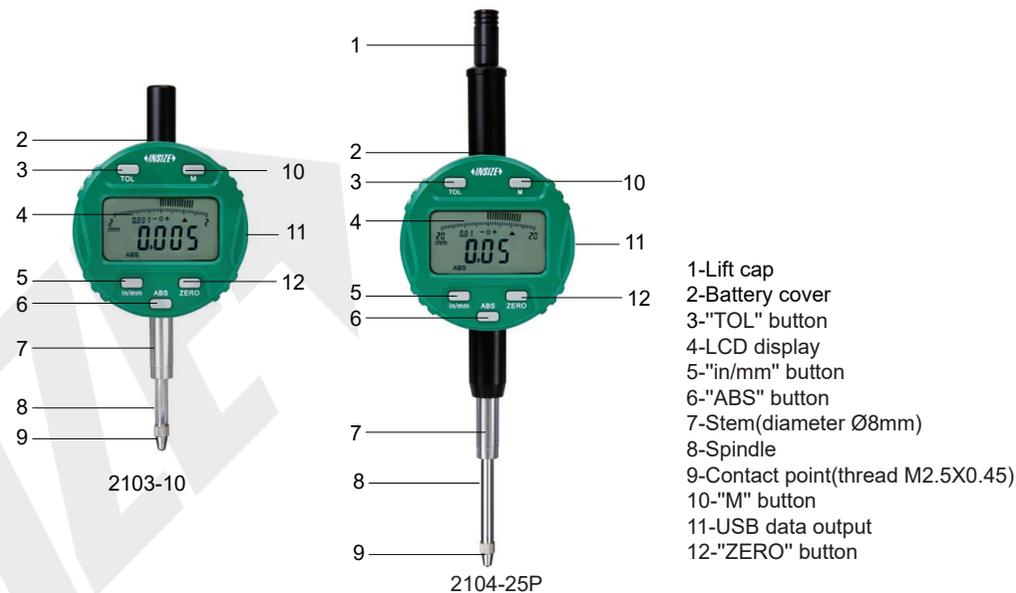11. Working temperature is 0-40°C/32-104°F, relative humidity should not exceed 80%.

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

Resolution   0.001mm/0.00005"

Code	Range	Accuracy	Hysteresis	Maximum measuring force	Remark
2103-10F	12.7mm/0.5"	5μm	2μm	1.5N	flat back
2103-25F	25.4mm/1"	5μm	3μm	2.2N	flat back
2103-50F	50.8mm/2"	6μm	3μm	2.5N	flat back
2103-10	12.7mm/0.5"	5μm	2μm	1.5N	lug back
2103-25	25.4mm/1"	5μm	3μm	2.2N	lug back
2103-50	50.8mm/2"	6μm	3μm	2.5N	lug back
2103-25P	25.4mm/1"	5μm	3μm	2.2N	flat back, with lift cap
2103-50P	50.8mm/2"	6μm	3μm	2.5N	flat back, with lift cap

Resolution   0.01mm/0.0005"

Code	Range	Accuracy	Hysteresis	Maximum measuring force	Remark
2104-10F	12.7mm/0.5"	20μm	10μm	1.5N	flat back
2104-25F	25.4mm/1"	20μm	10μm	2.2N	flat back
2104-50F	50.8mm/2"	30μm	10μm	2.5N	flat back
2104-10	12.7mm/0.5"	20μm	10μm	1.5N	lug back
2104-25	25.4mm/1"	20μm	10μm	2.2N	lug back
2104-50	50.8mm/2"	30μm	10μm	2.5N	lug back
2104-25P	25.4mm/1"	20μm	10μm	2.2N	flat back, with lift cap
2104-50P	50.8mm/2"	30μm	10μm	2.5N	flat back, with lift cap

2103-10

2104-25P

1-Lift cap
2-Battery cover
3-"TOL" button
4-LCD display
5-"in/mm" button
6-"ABS" button
7-Stem(diameter Ø8mm)
8-Spindle
9-Contact point(thread M2.5X0.45)
10-"M" button
11-USB data output
12-"ZERO" button

Display

1-Analog pointer
2-Tolerance sign
3-Analog pointer resolution
4-Metric mode
5-Inch mode
6-Preset mode
7-Absolute measuring mode
8-Tolerance measuring mode
9-Measuring direction sign
10-Difference between the max. and min. measuring value
11-Minimum value track measurement
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13-Set upper/lower tolerance
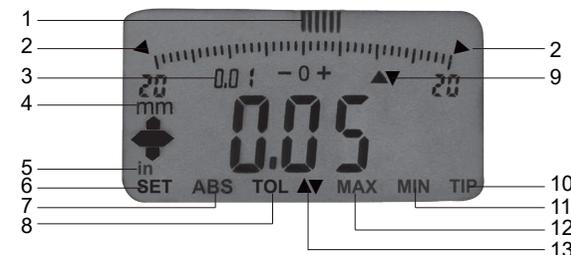
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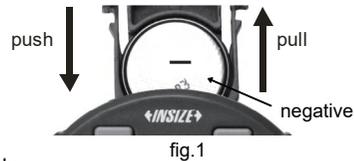
V5

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°.

3. Buttons:

Long press: longer than 2 seconds; short press: less than 2 seconds.

TOL --- Short press to enter the tolerance measurement mode. When the measured value exceeds the upper tolerance, the " ►" in the upper right corner flashes. When the measured value exceeds the lower tolerance, the "◄" in the upper left corner flashes. Short press the TOL key to exit the tolerance measurement mode.

--- Long press the key to enter the tolerance setting mode, "TOL" and "▼" appear at the bottom of the display, and the last digit of the displayed value blinks at the same time, and the lower tolerance can be set at this time. Short press in/mm key to switch the value of the current blinking bit, short press ZERO key to switch the number of bits, after the setting is completed, short press TOL key to save and enter into the next tolerance setting, at the same time, "TOL" and "▲" characters appear at the bottom of the display, then the upper tolerance can be set, and the setting method is the same as that of the lower tolerance.

If the lower tolerance is larger than the upper tolerance, the display will show "EEE" and return to the tolerance setting mode automatically.

M --- Short press, "MAX" will appear, and it will enter the tracking maximum mode. Short press again, "MIN" character appears, enter tracking minimum value mode. Short pres M for the third time, "TIR" will appear, and the difference between the max. and min. measuring value will be tracked.

in/mm --- Short press for metric/imperial conversion.

---Long press to change measuring direction. When "▲" is displayed for inward measurement, push up the spindle to increase the display value. When outward measurement "▼" is displayed, push up the spindle, the display value decreases.

ABS---Short press to change absolute/incremental measurement mode. Absolute measurement mode is the normal measurement mode and the "ABS" is displayed. Short press at any point (called "relative zero point"), enter the incremental measurement mode, this time the display value is 0. In incremental measurement mode, the display value is the distance from the measurement point to the "relative zero point". Short press again to return to absolute measurement mode.

---Long press to enter initial value setting mode. "SET" appears and the last digit of the display value is flashing, at this time, short press in/mm key to switch the value of the current flashing digit, short press ZERO key to switch the number of flashing digits, after the setting is completed, long press ABS key to save.

ZERO --- Power on state: short press to display the initial value in absolute measurement mode (displaying "ABS" character); long press to turn off the power.

--- Power off state: Short press to turn on the instrument.

False shutdown function:
Long press the ZERO button to turn off the digital indicator or leave it without operation for about 2h to turn off the screen, this is a false shutdown state, in this state, after restarting, it still retains the initial value and preset tolerance.

High and low frequency switching setting:
After power off, press and hold in/mm button, press ZERO button to turn on the digital indicator, release the button to enter the high and low frequency switching setting mode, press in/mm button to adjust the switching mode.
When "Fr-on" is shown, it means the function of automatic frequency switching will be opened, and it will automatically switch to low frequency after 3 seconds of no button operation and Spindle operation, and it will automatically switch to high frequency if there is a button operation or Spindle operation. In this state, it is more power-saving and suitable for routine measurement.
When"Fr-oF" is shown, it means the the automatic frequency switching function is turned off and the sensor keeps the high frequency status unchanged. Short press ZERO button to confirm and save the setting of high and low frequency switching mode, and exit to the working state. In this state, the power consumption is higher, the battery life is reduced, applicable to the need for high-speed movement of the measuring rod.

Shutdown time setting:
After power off, press and hold ABS button, press ZERO button to turn on the power,release the button to enter the power off time setting, press ABS button to switch the value, long press ABS button to switch the single digit and ten digit, every 1 hour a step, the longest automatic power off time is 99 hours, displays '-99-'. Note: Display '-00-' means no auto power off, display '-06-' means auto power off time is 6 hours, and so on. Short press ZERO key to confirm and save the setting time, exit the current mode.

4. Digital indicator should be mounted on a rigid holder to use.

5. Clamping: clamping the stem for flat back digital indicator. For lug back, the digital indicator can be mounted by clamping the lug or stem. If the digital indicator is mounted by clamping the stem, please do not apply excessive clamping force, which will affect the movement of the spindle.

6. During measurement, the spindle should be vertical to the workpiece surface, otherwise, the measurement may not be correct.
Caution: please do not move the spindle quickly or apply lateral force on the spindle.

7. After measurement, please oil the contact point. The spindle should not be oiled, otherwise, the movement of the spindle will not be smooth.

8. If the digital indicator drops or be shocked, please inspect the measuring accuracy before using.

9. Optional accessories: SPC cable, backs, contact points.
In order to get accurate measurement, it is necessary to choose contact point according to the shape of the workpiece. Measuring columned workpiece should choose knife edge point, measuring spherical workpiece should choose flat point, the needle point should be choosen when measuring concave or complex shape workpiece.

10. If the battery symbol appears on the display, 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.

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11. Working temperature is 0-40°C/32-104°F, relative humidity should not exceed 80%.

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