

Quickmike MDQ



Safety Precautions

To ensure operator safety, use this product in conformance with the directions, functions and specifications given in this User's Manual. Use under other conditions may compromise safety.

WARNING

- Always keep batteries out of reach of children. If swallowed, consult a physician immediately.
- Batteries should never be short-circuited, disassembled, deformed or come in contact with extreme heat or flames.
- If battery alkaline liquid comes in contact with the eyes, flush eyes immediately with clean water and consult a physician. If battery alkaline liquid comes in contact with the skin, flush the exposed area thoroughly with clean water.

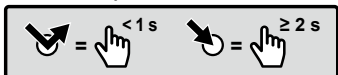
CAUTION

- Never attempt to charge the primary battery. Never reverse the positive-negative terminals when mounting. Improper battery handling or mounting may cause the battery to explode, cause battery leakage and/ or serious bodily injury or malfunctioning.
- The measuring faces of this product are sharp. Always handle with care to avoid injury.

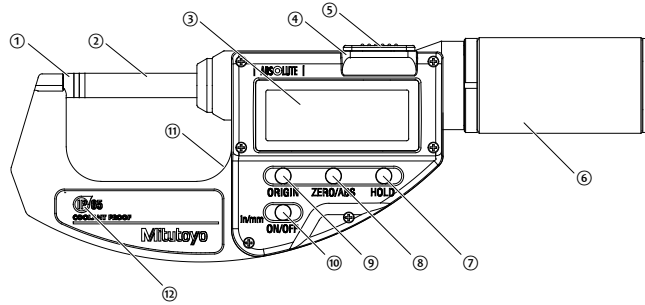
NOTICE

- Do not disassemble or modify. This may cause damage.
- Do not use or store the product in a place with sudden temperature changes. Adapt the product to room temperature before use.
- Do not store the product in a place with high humidity or a lot of dust.
- Firmly close the battery compartment cover if the product is used in a place where it is directly exposed to splashes of coolant, etc. When mounting the output cable and cover, firmly tighten the mounting screws so that there is no gap. As well, apply anti-rust treatment after use. Rust may cause malfunction.
- Do not use even waterproof types submerged, as coolant ingress cannot be completely prevented. Complete prevention of coolant ingress, etc., may also not be possible if the product is used in locations exposed to direct jets of liquid.
- Do not apply excessive force or subject to sudden impacts such as dropping.
- Be sure to perform reference point setting before measurement.
- Remove dust, cutting chips, etc. before and after use.
- When cleaning, wipe this product with a soft cloth moistened with diluted neutral detergent. Do not use an organic solvent such as thinner, which may cause the product to deform or malfunction.
- The spindle structure prevents pulling out, so do not try to forcibly retract in excess of the measurement range. This may cause damage.
- Dirt on the spindle may lead to malfunction. If the spindle becomes dirty, wipe it clean with a cloth containing a small amount of alcohol and apply a small amount of micrometer oil (Part No. 207000).
- Do not write numbers, etc. with an electric pen. This may cause damage.
- The display of this product automatically turns off if not used for 20 minutes or more. Press the [ON/OFF] button to turn the display on again.
- The battery supplied is for confirming the functions and performance of the product. Note that this battery may not fulfill the expected life.
- If the product is to be out of use for 3 months or more, remove the battery before storage. Liquid leakage from the battery may damage the product.
- Malfunction or damage due to depleted batteries, etc. is not covered by the warranty.

Button icon operation



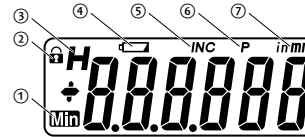
1. Names of Components



- ① Anvil
- ② Spindle
- ③ LCD
- ④ Data output connector
- ⑤ Cover
- ⑥ Thimble (ratchet friction type)
- ⑦ [HOLD] button
- ⑧ [ZERO/ABS] button
- ⑨ [ORIGIN] button
- ⑩ [ON/OFF in/mm] button (*only for in/mm model)
- ⑪ Battery compartment cover (at rear)
- ⑫ Waterproof mark

Display

- ① Minimum value hold display
- ② Function lock display
- ③ Displayed value hold display
- ④ Battery voltage low display (error display)
- ⑤ Incremental measurement (INC) display
- ⑥ Preset display
- ⑦ Unit display



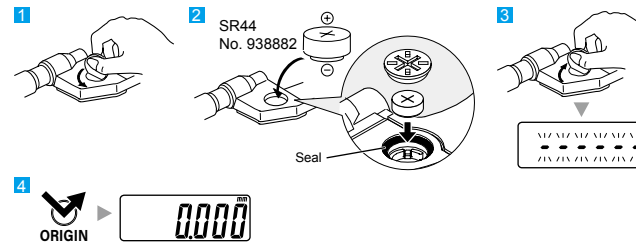
2. Installing the Battery

NOTICE

- Be sure to use SR44 (silver oxide button battery No. 938882) for the battery.
- Always align the battery compartment cover with the threads and install so that the seal does not protrude. The product may display an error or malfunction if the battery compartment cover or seal is not mounted correctly.
- Re-installing the batteries will erase the ORIGIN (reference point) position. Perform reference point setting again (refer to "4. ORIGIN (Reference Point) Setting").
- Follow local rules and regulations regarding battery disposal.

The battery is not installed into the product at purchase. Install the battery as follows.

- 1 Rotate the battery compartment cover counter-clockwise to remove it.
- 2 Install the battery (button type silver-oxide battery; Part No. 938882) with the positive side facing up.
- 3 Position the battery compartment cover and rotate clockwise to attach. Moving on, set the ORIGIN (reference point).
- 4 Press the [ORIGIN] button.
⇒ Count display appears and counting starts.



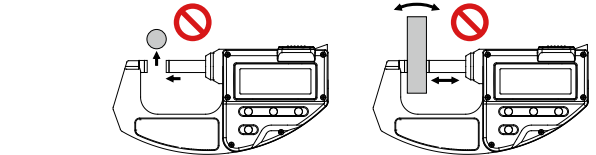
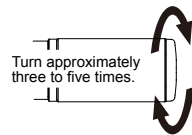
Tips

If an abnormal display is shown, such as an error display or not counting, etc., try removing the batteries and reinstalling.

3. Precautions for Use

Measuring Force

- Be sure to use the thimble to apply a constant measuring force when making measurements. The appropriate measuring force is achieved with the following procedure: make light contact between the measurement surfaces and the workpiece, stop momentarily, and then manually turn the thimble about three to five times.
- Removing the workpiece from the measurement surfaces while measuring force is applied will cause the spindle to advance and the measured value to change. Always read the measured value while the workpiece remains clamped. Hold the workpiece to stabilize measured values. If the workpiece moves, the measuring force will change, introducing variations in the displayed value.



Temperature

This product, especially the 0.001 mm resolution model, is easily influenced by temperature changes. Abrupt temperature changes should be avoided and sufficient time should be allowed to adjust to ambient temperature before measuring.

Precautions after Use

- After use, clean the entire product and check that none of the parts are damaged. If using in places exposed to water-based cutting fluid, always apply anti-rust treatment after cleaning.
- For storage, leave a gap of 0.2 to 2 mm open for the measurement surfaces.
- For long-term storage, apply anti-rust treatment to the spindle using micrometer oil (Part No. 207000).

4. ORIGIN (Reference Point) Setting

NOTICE

- For reference point setting, use a periodically inspected reference gage (gauge block, micrometer standard bar, etc.).
- Reference point setting and measurement should be made in the same orientation and conditions and with the procedure as below.
- If the reference point changes due to temperature changes, reconfigure the ORIGIN.

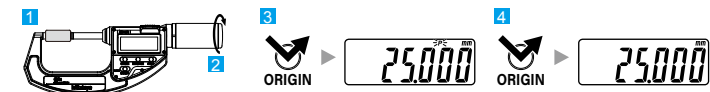
ORIGIN (Reference Point) Setting

- 1 Clean both anvil and spindle measurement surfaces, together with the micrometer standard bar if it is used to remove all debris or dust.
- 2 For 0 to 30 mm measurement range:
After making light contact with both measurement surfaces, stop momentarily, and then apply the appropriate measuring force (Refer to "3. Precautions for Use ■ Measuring Force").
For outside the 0 to 30 mm measurement range:
After the spindle makes light contact with the standard bar sandwiched between the measurement surfaces, stop momentarily, and then apply the appropriate measuring force (Refer to "3. Precautions for Use ■ Measuring Force").
- 3 Press the [ORIGIN] button.
⇒ Check that [P] is blinking and the ORIGIN (reference point) value* is displayed (*Refer to "Tips" on the following page).
- 4 Press the [ORIGIN] button again.
⇒ [P] turns off and the ORIGIN (reference point) value is set.

- For 0 to 30 mm measurement range:



- For above the 0 to 30 mm measurement range (e.g., 25 to 55 mm):



Tips

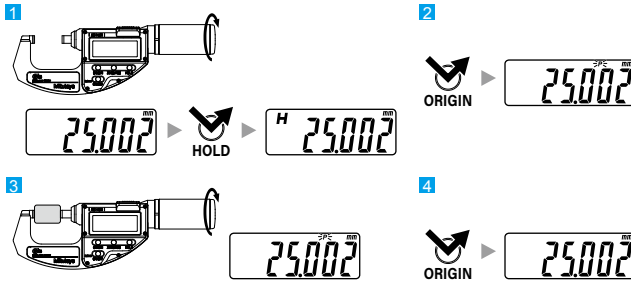
- The display of this product automatically turns off if not used for 20 minutes or more. Press the [ON/OFF] button to turn the display on again.
- If the [ORIGIN] button is accidentally pressed while making a measurement, press the [ZERO/ABS] button to return to the former state. If this does not enable the product to recover, perform "4. ORIGIN (Reference Point) Setting" once more.
- The following table shows the relationship between measurement range and ORIGIN (reference point) value.

Measurement range	ORIGIN (reference point) value	Measurement range	ORIGIN (reference point) value
0 - 30 mm	0.000 mm	0 - 1.2 in	0.00000 in
25 - 55 mm	25.000 mm	1 - 2.2 in	1.00000 in
50 - 80 mm	50.000 mm	2 - 3.2 in	2.00000 in
75 - 105 mm	75.000 mm	3 - 4.2 in	3.00000 in

■ ORIGIN (Reference Point) Setting: Using a reference gage other than the standardly equipped micrometer standard bar:

First set the ORIGIN (reference point) using the standardly equipped micrometer standard bar.

- Turn the thimble until the target value is displayed, and then press the [HOLD] button to hold the value.
- Press the [ORIGIN] button.
⇒ [P] blinks.
- Clamp the reference object and apply the appropriate measuring force by turning the thimble (Refer to "3. Precautions for Use ■ Measuring Force").
- Press the [ORIGIN] button again.
⇒ [P] turns off and setting is complete.



Tips

To return to the default ORIGIN (reference point) value, reinstall the batteries.

5. Selecting Measurement Mode and Type

■ Measurement Mode

This product provides the following 2 measurement modes. Select as appropriate for the workpiece.

- Normal measurement**
The displayed value changes in accordance with the spindle feed.
- Minimum value hold measurement**
Measurements are made using the Minimum Value Hold function (Min display on). The displayed value (hold value) is refreshed only when the spindle is advanced beyond the hold value position. The display will not change while the spindle is retracted. (Refer to "7. Button Functions • Minimum Value Hold Function ON/OFF")

■ Measurement Type

Measurement modes include the following 2 measurement types. Select as appropriate for the workpiece.

- (Refer to "7. Button Functions ■ Switching Measurement Type/Displayed Value Zero Reset")
- Absolute measurement (ABS)**
Measures the length from the set ORIGIN (reference point).
- Incremental measurement (INC)**
Zeros the displayed value with the master and measures a difference between the master and a workpiece.

6. Measurement Method

NOTICE

If the spindle measurement surface is brought into contact with the workpiece hard, the workpiece may deform and measurement results may be affected.

- Clean both the anvil and spindle measurement surfaces and the workpiece to remove all debris or dust.
- Gradually and lightly bring the measurement surfaces into contact with the workpiece in the same orientation and conditions as for reference point setting, apply the appropriate measuring force, and then read the indicated value.

7. Button Functions

■ Power ON/OFF: [ON/OFF in/mm] Button

- Press the [ON/OFF in/mm] button.
⇒ Power turns ON.



- Press and hold the [ON/OFF in/mm] button.
⇒ Power turns OFF.



■ Switching Measurement Type/Displayed Value Zero Reset: [ZERO/ABS] Button

- Press the [ZERO/ABS] button.
⇒ [INC] display lights up and the display is set to zero (incremental measurement).



- Press and hold the [ZERO/ABS] button.
⇒ [INC] display turns off and the length from the reference point (anvil measurement surface) is displayed (absolute measurement).



■ Display Value Hold/Minimum Value Hold Function: [HOLD] Button

- Holding and Releasing Displayed Values
- Press the [HOLD] button.
⇒ [H] display lights up and the displayed value is held
The displayed value will not change even if the spindle moves.



- Press the [HOLD] button.
⇒ [H] display turns off and the hold is released.
The current spindle position is displayed.



- Minimum Value Hold Function ON/OFF
- Press and hold the [HOLD] button.
⇒ [Min] display lights up and the Minimum Value Hold function is enabled.



Tips

Pressing the [HOLD] button while the Minimum Value Hold function is ON enables the held minimum value to be reset to the current spindle position.



- Press and hold the [HOLD] button.
⇒ [Min] display turns off and the Minimum Value Hold function is disabled.
The current spindle position is displayed.



■ Unit Switching (only for in/mm model): [ON/OFF in/mm] Button

- Press the [ON/OFF in/mm] button with the power ON.
⇒ Units will switch.



8. Function Lock Function (Mistaken Operation Prevention)

This product has a Function Lock function in order to avoid accidental changes to the reference point position.

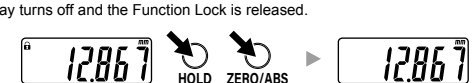
Setting the Function Lock causes the [L] LCD to light up and disables the [ORIGIN] button, [ZERO/ABS] button, and in/mm button (export specifications only), with only the "Hold Operation" and "Power ON/OFF Operation" functions enabled.

• Function Lock Function ON/OFF

- First press and hold the [HOLD] button, then press and hold the [ZERO/ABS] button.
⇒ [H] display and [L] display light up in sequence ([H] turns off).



- First press and hold the [HOLD] button, then additionally press and hold the [ZERO/ABS] button.
⇒ [L] display turns off and the Function Lock is released.



9. Errors and Troubleshooting

Error Display	Causes and Countermeasures
ABS Synthesis Error 123E	Although this may be momentarily displayed while the spindle is moving, it is a normal artifact of internal processing. If it occurs while the spindle is not moving, the internal sensor has failed. In this case, repair is required: consult with your dealer or agent or with our sales office.
Power Voltage Drop 12.867	Battery is depleted. Replace with a new battery.
Hardware Error Err H	A hardware error was generated. In this case, repair is required: consult with your dealer or agent or with our sales office.
Sensor Contamination Detection Error Err C	A sudden change in temperature may create condensation on the detector, or it may be contaminated by other sources. <ul style="list-style-type: none"> Turn the power OFF and allow the product to adapt to the temperature for about 2 hours. If it does not recover after adapting to the temperature, repair is required: consult with your dealer or agent or with our sales office.

10. Specifications

Individual Specifications

Series No.	Maximum measuring length	Maximum permissible error J_{MPE}^{*1}	Resolution
293	30, 55 mm	$\pm 2 \mu\text{m}$	0.001 mm
	80, 105 mm	$\pm 3 \mu\text{m}$	
	1.2, 2.2 in	± 0.0001 in	0.00005 in
	3.2, 4.2 in	± 0.00015 in	
342	15 mm	$\pm 3 \mu\text{m}$	0.001 mm
369	30, 55 mm	$\pm 4 \mu\text{m}$	0.001 mm
	1.2, 2.2 in	± 0.0002 in	0.00005 in
422	30, 55 mm	$\pm 3 \mu\text{m}$	0.001 mm
	1.2, 2.2 in	± 0.00015 in	0.00005 in

*1: Maximum permissible error for indicated value via contact with full measuring face J_{MPE} (20 °C)

Common Specifications

- Display : LCD (6-digit and minus sign)
- Power supply : Button type silver-oxide battery (SR44 No.938882), x1
- Battery life : With typical use approximately 5 years, with continuous use 18,000 hours or more
- Temperature range : 5 °C to 40 °C (operating temperature), -10 °C to 60 °C (storage temperature)
- Standard accessories : standard bar (equipped as standard except for 0-30 mm and 0-1.2 in measurement range models)
- IP protection level : IP54 (refer to IEC60529 for details.)
 - Protection against dust (level 6): Protects the equipment against the penetration of dust.
 - Protection against water jets (level 5): Protects the equipment against water jets from any direction.

11. Output Function

Display Value External Output

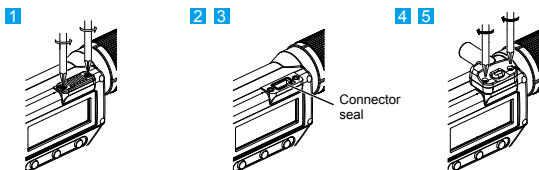
The displayed value can be output to a device by connecting the product and the external device with a connection cable (option).

NOTICE

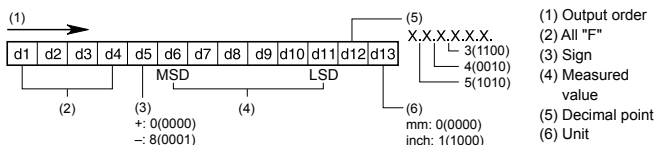
- Always use the 0-size Phillips screwdriver (No.05CZA 619) included with the connection cable (option) when installing/removing screws, and tighten to a torque of 5 to 8 cN·m or so.
- Install so that the seal does not protrude. Waterproof functioning will decrease if not installed correctly.

Install connection cables using the following procedure.

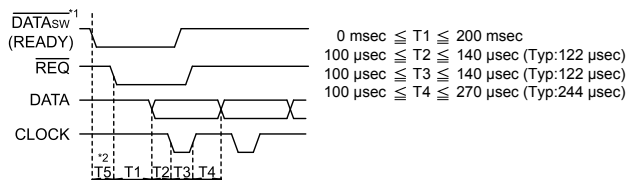
- 1 Use the Phillips screwdriver included with the connection cable to remove the cover fixing screws (M1.7 x 0.35 x 2.5, No.04AAB543).
- 2 Remove the cover.
- 3 Check that the connector seal (No.04AAC126) is correctly installed at the proper position (do not remove the connector seal).
- 4 Mount the connection cable plug.
- 5 Hold the plug manually so that there is no gap between the plug and the Quickmike body, and fasten the fixing screws on the plug



Output Data Format



Timing Chart



*1: DATAsw is LOW while the data output button is being pressed.

*2: The time T5 until DATAsw goes to the LOW level and REQ is input is determined by the data processing device performance.

12. Options

- Connection cable: No.05CZA662 (1 m)
- Connection cable: No.05CZA663 (2 m)

13. Off-Site Repairs (Subject to Charge)

Off-site repair (subject to charge) is required in the case of the following malfunctions. Contact your nearest dealer or our sales office.

- Faulty spindle operation
 - If the spindle is scratched, these scratches may interfere while the spindle is retracting, causing faulty operation.
 - Operation may also suffer if the spindle is rusted.
- Inconsistent measured values
 - If a shock is applied to the measurement surfaces, or if burrs appear on the measurement surfaces. This may affect accuracy.
- Count value error/faulty operation
 - If the thimble of this product is retracted too far, the internal sensor will be damaged. This may cause count errors or faulty operation.



Tài liệu được tổng hợp bởi đội ngũ kỹ thuật của **NPOWER**
 Bản quyền nội dung thuộc về **Mitutoyo**

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