Mitutoyo PL Series 164, PL-Counter

Mitutoyo PL Series 164 PL-Counter for Linear Scale: Operation Manual

Model: PL Series 164, PL-Counter

Document Number: 029599

INTRODUCTION

This manual provides essential information for the safe and effective installation, operation, and maintenance of the Mitutoyo PL Series 164 PL-Counter for Linear Scales. Please read this manual thoroughly before using the product and retain it for future reference.

PL Series 164

PL-Counter (For Linear Scale)

M -123

Operation Manual

Figure 1: Cover of the Mitutoyo PL Series 164 PL-Counter Operation Manual.

OPERATOR SAFETY SUMMARY

Adherence to safety guidelines is crucial for preventing injury and equipment damage. Always follow local safety regulations and the specific instructions provided in this manual.

- Ensure the power supply matches the product's specifications.

- Do not operate the device in environments with excessive dust, moisture, or corrosive gases.

- Disconnect power before performing any installation, maintenance, or troubleshooting procedures.

- Only qualified personnel should perform repairs or internal adjustments.

INSTALLATION AND SETUP

1.1 Installation Environment and Precautions

Proper environmental conditions are essential for the PL-Counter's performance and longevity.

- **Environmental Conditions:** Install in a location free from direct sunlight, excessive vibration, dust, and humidity. Maintain operating temperature within specified limits.
- **Maintenance:** Regular cleaning and inspection are recommended to ensure optimal performance.

1.2 Mounting

Securely mount the PL-Counter to a stable surface.

1. **Mounting the Counter:** Use appropriate fasteners to attach the counter to the desired position. Ensure it is level and stable.
2. **Cable Connections:** Connect all cables (power, linear scale input) according to the wiring diagram. Ensure connections are secure to prevent signal loss or damage.
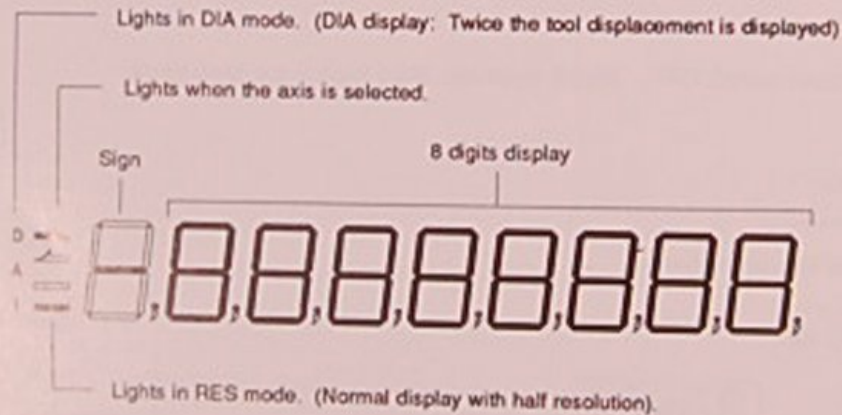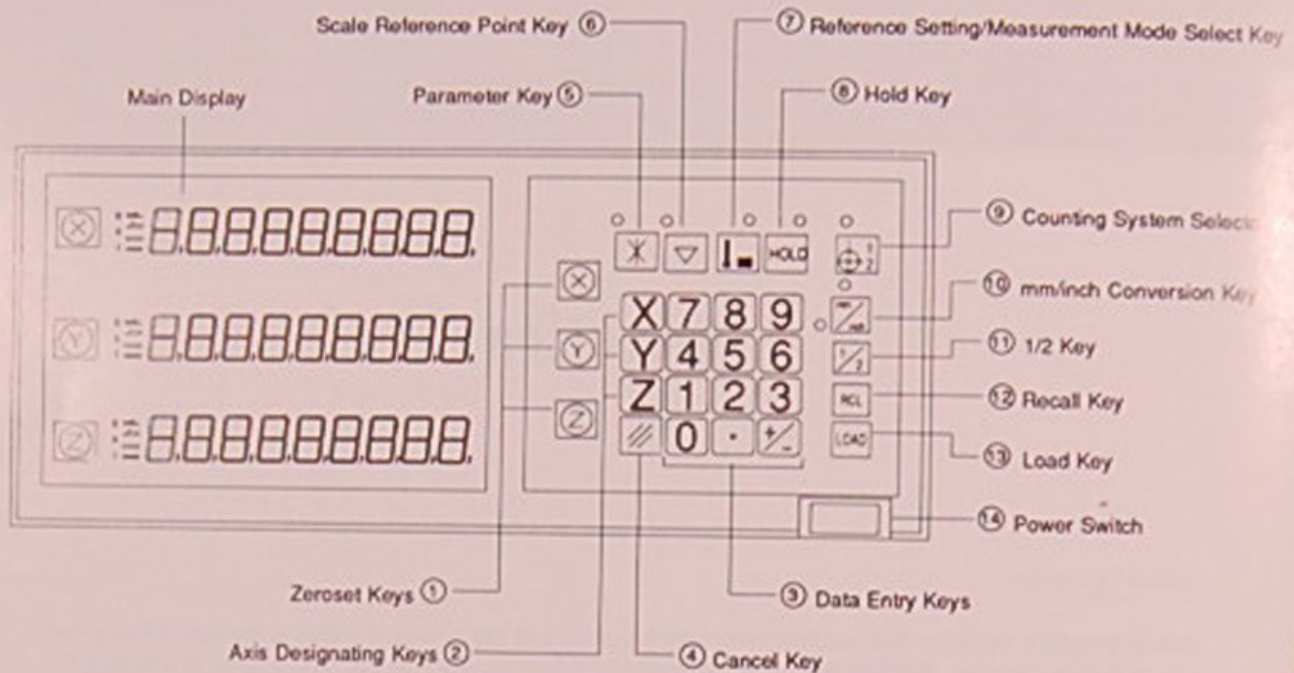
OPERATING INSTRUCTIONS

2.1 Nomenclature and Key Functions

Familiarize yourself with the front panel layout and key functions.

2.1   Nomenclature

2.1.1   Names of parts on front panel.

Figure 2: Front panel layout of the Mitutoyo PL-Counter, showing main display, axis designating keys, data entry keys, power switch, and other controls.

2.1.1 Names of Parts on Front Panel

Refer to Figure 2 for the location of the following components:

- **Main Display:** Shows measurement values.

Key diagram labels:

- Scale Reference Point Key ⑥
- ⑦ Reference Setting/Measurement Mode Select Key
- Main Display
- Parameter Key ⑤
- ⑧ Hold Key
- ⑨ Counting System Select
- ⑩ mm/inch Conversion Key
- ⑪ 1/2 Key
- ⑫ Recall Key
- ⑬ Load Key
- ⑭ Power Switch
- Zeroset Keys ①
- ③ Data Entry Keys
- Axis Designating Keys ②
- ④ Cancel Key

Display detail labels:

- Lights in DIA mode. (DIA display: Twice the tool displacement is displayed)
- Lights when the axis is selected.
- Sign
- 8 digits display
- Lights in RES mode. (Normal display with half resolution).

2.1.2   Key functions

	Symbol/Name	Function
①	⊗ ~ ⊘ Zeroset Keys	•Reset the displayed value to zero for each axis
②	X ~ Z Axis Designating Keys	•Designate the operating axis.

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- **Axis Designating Keys:** Selects the active measurement axis.
- **Data Entry Keys:** Used for numerical input.
- **Power Switch:** Turns the unit on/off.
- **Zerost Keys:** Resets the displayed value to zero for each axis.
- **Scale Reference Point Key:** Sets or recalls a reference point.
- **Parameter Key:** Accesses parameter settings.
- **Hold Key:** Freezes the current display value.
- **Counting System Select Key:** Switches between counting systems.
- **mm/inch Conversion Key:** Toggles between metric and imperial units.
- **Recall Key:** Recalls stored values.
- **Load Key:** Loads specific settings or data.

2.1.2 Key Functions

Symbol/Name	Function
Zerost Keys	Resets the displayed value to zero for each axis.
Axis Designating Keys	Designates the operating axis.
mm/inch Conversion Key	Toggles between metric and imperial units.
Hold Key	Freezes the current display value.

2.2 Basic Key Operations

1. **When power is turned ON:** The unit performs a self-check and displays the current measurement.
2. **Example of key entry of data:** Use the numerical keys to input values, followed by the Enter key (if applicable).
3. **Selecting counting systems:** Press the Counting System Select Key to cycle through available counting modes.
4. **Selecting mm/inch:** Press the mm/inch Conversion Key to switch between metric and imperial units.
5. **Zero setting the display:** Press the Zerost Key for the desired axis to set its display to zero.
6. **Preset - Recall 1/2:** Use these functions to store and recall frequently used values or settings.

2.3 Parameters

1. **Parameter functions:** The PL-Counter offers various parameters to customize its operation.
2. **Starting up and terminating parameter setting mode:** Press the Parameter Key to enter/exit parameter setting mode.
3. **Setting parameters:** Navigate through parameters using arrow keys and adjust values using data entry keys.

2.4 Measurement

1. **Hold function and scale reference point detection:** Use the Hold key to pause measurement. The system can detect and utilize scale reference points.
2. **Reference plane determination using touch signal probe:** Connect a touch signal probe for precise reference plane setting.
3. **Measuring dimensions using touch signal probe:** Utilize the probe for accurate dimensional measurements.
4. **Centering measurement:** Perform centering measurements using specific functions.
5. **Using the two counting systems:** Leverage the dual counting systems for complex measurements.

MAINTENANCE

Regular maintenance ensures the longevity and accuracy of your Mitutoyo PL-Counter.

- **Cleaning:** Gently wipe the display and housing with a soft, dry cloth. Avoid abrasive cleaners or solvents.
- **Inspection:** Periodically check all cables and connections for wear or damage.
- **Battery Replacement (if applicable):** If the unit uses internal batteries for memory backup, refer to the technical data for replacement procedures.

TROUBLESHOOTING

3.1 Troubleshooting Guide

This section provides solutions to common issues.

- **Error message and cure:** Consult the display for specific error codes and refer to the manual's detailed troubleshooting section for remedies.
- **Recovery from wrong key operation:** If an incorrect key is pressed, try pressing the Cancel key or restarting the unit.
- **General troubleshooting and cure:**

  - **No display:** Check power connection and fuse.
  - **Incorrect measurement:** Verify scale connection, parameter settings, and ensure the scale is clean.
  - **Unit unresponsive:** Power cycle the device. If the issue persists, contact customer support.

TECHNICAL DATA AND SPECIFICATIONS

3.2 Specifications

Feature	Description/Value
Counter types and functions	Multi-axis digital readout for linear scales.
Resolution and displayable range	Refer to product label or detailed technical sheet for specific values.
Display functions	8-digit display, sign indicator, various modes (DIA, RES).
Signal input connector and pin assignment	Specific connector type and pinout for linear scale input.
Counting function	Incremental and absolute measurement, various counting modes.
Power source	AC power adapter (voltage and current specified on unit).
Temperature range	Operating: 0°C to 40°C (32°F to 104°F). Storage: -20°C to 60°C (-4°F to 140°F).
Dimensions (W x H x D) and weight	Refer to product label or detailed technical sheet.
List of special accessories	Optional probes, cables, mounting brackets.

Supplement 1: Expansion/Contraction Factor

This supplement details the application and adjustment of expansion/contraction factors for precise measurement compensation, particularly in environments with temperature variations. Refer to manual section 029599 for specific

calculations and procedures.

WARRANTY INFORMATION

Mitutoyo products are manufactured to high-quality standards. For detailed warranty terms and conditions, please refer to the warranty card included with your product or visit the official Mitutoyo website. Keep your proof of purchase for warranty claims.

CUSTOMER SUPPORT

For technical assistance, service, or spare parts, please contact your local Mitutoyo distributor or visit the official Mitutoyo website for contact information.

Website: www.mitutoyo.com

Related Documents - PL Series 164, PL-Counter

	[Mitutoyo Linear Scales and Digimatic Scale Units - Precision Measurement Catalog](#) Explore Mitutoyo's extensive range of ABSOLUTE Digimatic Scale Units, Linear Scales, Digital Readouts, and Counters. Discover high-accuracy, robust, and reliable measurement solutions for industrial applications.
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	[Mitutoyo AOS Absolute Digimatic Caliper CD-AX/APX Series: Precision Measuring Tool](#) Discover the Mitutoyo AOS Absolute Digimatic Caliper CD-AX/APX Series, engineered with advanced AOS (Advanced Onsite Sensor) and electromagnetic induction absolute encoder technology for superior accuracy, durability, and coolant resistance. This brochure details key features, specifications, and the technological evolution of Mitutoyo's precision measuring instruments.
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[pdf] Guide

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Guide to interfacing Newall Linear Encoders with competitive digital readout displays We have linear encoders that are capable of interfacing with most displays. This is a partial compatibility list detailing some commonly found models. If you need assistance interfacing with a display that does no...
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