Optical Remote Control Compatible, High-Accuracy Digital Indicator

DIGIMATIC INDICATOR ID-H

Bulletin No. 1817

World-Class Digital Indicator Delivers Higher Measuring Accuracy and Multi-functionality

Mitutoyo

Digimatic Indicator ID-H

This new-generation digital indicator offers the excellent accuracy and functionality expected from this class of indicator. Take advantage of its high accuracy backed up by 0.5µm resolution, remote control operation via a handheld controller (or RS-232C interface) and easy runout measurements at a glance using the analog bar display.

Accuracy and Resolution Meet the Needs of High Accuracy Measurement

Resolution .000020" (0.5µm)
Accuracy 1.5µm (1.20"/30.4mm range), 2.5µm (2.40"/60.9mm range)

Measuring range:
1.20" (30.4 mm)

543-562A (inch)

543-561A (mm)

Measuring range:
2.40" (60.9 mm)

543-564A (inch)

543-563A (mm)

Note that the Inspection Certificate supplied with each instrument, which assures product quality and safety, cannot be used for obtaining a Calibration Certificate since the purchase date is not stated.

Mitutoyo

Functionality Meets the Needs of Diverse Measurement

• Tolerance judgment

OK, +NG or -NG is shown for a measurement based on the upper/lower limit values currently set. If an out-of-tolerance value is detected, the backlight turns red to help with workpiece sorting operations.

• Analog bar display

The analog bar display makes it easy to quickly find maximum/minimum readings.
Seven ranges from ±.0004" to ±3.15" (±0.01mm to ±80mm) can be selected to suit the task at hand.

• Measuring maximum value, minimum value and runout

Maximum value/minimum value measurement

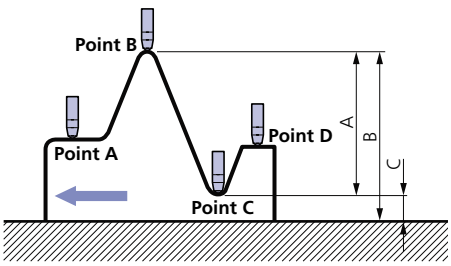
Maximum or minimum values are automatically held and displayed.

Difference/Runout measurement

Difference (or Total Runout, on a circular workpiece) between a maximum and a minimum value is held and displayed. The maximum/minimum values are stored in memory and can also be displayed.

Example: Indicator travel from points A to D

Difference (or Total Runout) is displayed as A. Dimensions B (maximum value) and C (minimum value) can be recalled from memory with a simple key sequence.



• Large characters

The 7-digit digital display uses large characters for ease of reading.

• Maximum/minimum value based measurement

A comparison measurement can be made on the basis of the detected maximum or minimum values that has been zero-set. For example, this method is convenient for measurement in which the maximum value at a workpiece peak is zero-set and other values are measured in comparison with this vaue.

• Remote operations

The indicator can be operated remotely by using the remote controller, or a personal computer via the built-in RS232C interface.

• Two ways of measuring

A measurement can be made relative to zero (Incremental) or relative to an arbitrary value entered into the display (Absolute), whichever is most convenienent.

• Function lock

The setting conditions can be locked to prevent them being accidentally changed during use.

• Resolution switching

The resolution can be selected to be .00002" (0.0005mm) (0.5µm) or .00005" (0.001mm) (1µm).

• Direction switching

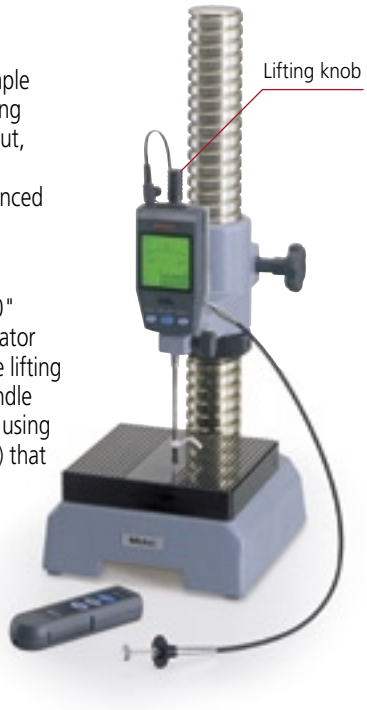
The counting direction can be reversed.

• Selectable output mode

This indicator not only supports simple recording of measurement data using the well-established Digimatic output, but also enables integration into a measurement system through advanced control via the RS-232C interface.

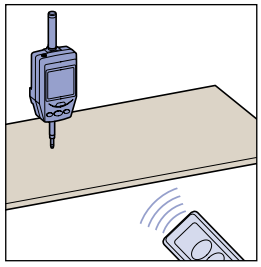
• Remote spindle lifting

The spindle can be lifted up to 1.20" (30mm) without touching the indicator body by using the dedicated spindle lifting cable (optional accessory). The spindle can be lifted over the full stroke by using the lifting knob (optional accessory) that attaches to the top of the spindle.



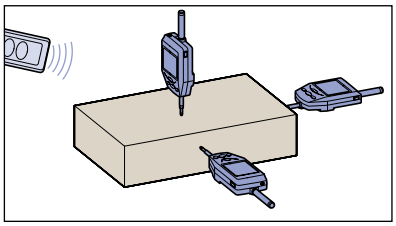
Operation with the Remote Controller (Option)

Operations such as zero-setting and presetting can be made without touching the indicator, thereby avoiding disturbance to the set-up. Also, if multiple indicators are used in an integrated measurement system then an arbitrary ID number can be set for each one in order to enable remote operation of a specific indicator, or remote operation of all indicators.



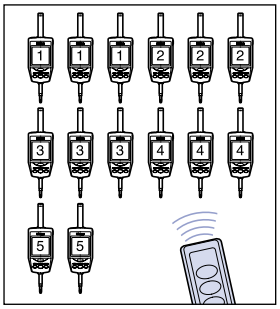
• Advantages of remote control

Remote operation without contact with the indicator body ensures stable measurement. Additionally, the remote controller supports measurement in situations where access to indicators is difficult.



If the remote controller ID is set to '00', the controller operates all indicators. If the controller ID is set to the ID of one indicator group, the controller operates only that specific group of indicators. Up to 14 group ID numbers can be set up in the controller.

If indicators are used for multipoint measurement, the remote controller is convenient for measurements on multiple axes since the controller can set multiple indicators to zero concurrently.



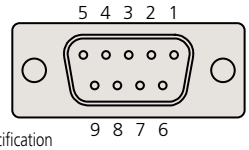
Main Functions

- **Measurement mode switching:** Switches between the different types of measurement (normal, maximum/ minimum, and runout).
- **Zero-setting:** Sets the display to zero at any arbitrary position (Incremental measurement).
- **Preset value recall:** Recalls a preset value entered into memory (Absolute measurement).
- **Peak value reset:** Resets the maximum value, minimum value or runout value already stored so the indicator is ready to make the next measurement.
- **Data output:** Outputs measurement data to an external device.

Building an Advanced Control System via the RS-232C Interface

An advanced, remote control system can be manufactured with the built-in RS-232C interface and a PC. A stable, high-accuracy measurement system can be implemented without touching any indicator in the system. (Optional, dedicated cables are required.)

· Since the indicator supports RS-232C interface commands with key operations, the indicator can be operated from the PC using these commands. It is also possible to perform statistical processing and management of measurement data by installing a control program in the PC.



Receptacle
D-sub 9-pin (female)
Inch screw thread specification

• RS-232C Specifications

1. Pin assignments in the dedicated cable.

Pin No.	Signal name	Input/ Output	Definition (Purpose)
1	N.C.	–	No connection
2	TXD	OUT	Transmit data
3	RXD	IN	Receive data
4	DSR	IN	Data set ready
5	GND	–	Ground
6	DTR	OUT	Data terminal ready
7	CTS	IN	Clear to send
8	RTS	OUT	Request to send
9	N.C.	–	No connection

2. Communication protocol (EIA/TIA232 compatible)

Home position	DCE (modem definition), dedicated cable to be used.
Communication method	Half-duplex, TTY protocol
Baud rate	4800, 9600bps
Bit configuration	Start bit: 1
	Data bit: (7 or 8) ASCII, upper case
	Parity bit: None, even, or odd
	Stop bit: 2
Communication condition setting	Setting with a parameter

Specifications

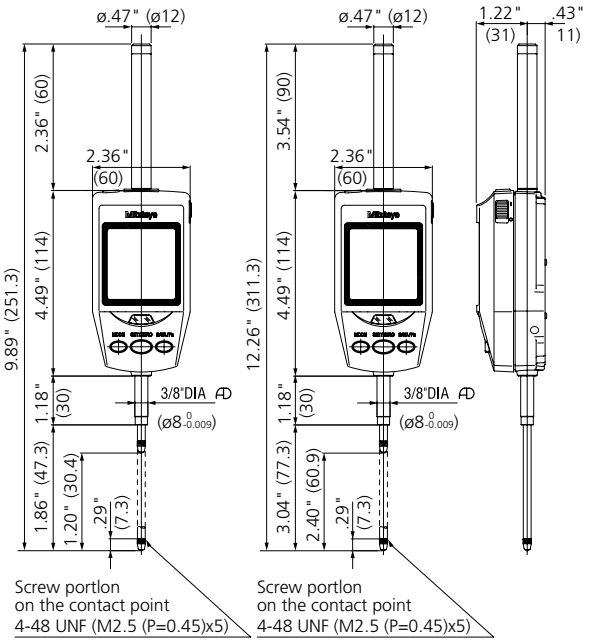
Order No.	543-562A	543-564A	543-561A	543-563A
Measuring range	1.2" (30.4mm)	2.4" (60.9mm)	30.4mm	60.9mm
Resolution	Switchable between .00002" (0.0005mm) and .00005" (0.001mm)		Switchable between 0.0005mm and 0.001mm	
Displacement accuracy (at 20°C)	.00006" (0.0015mm)	.0001" (0.0025mm)	0.0015mm	0.0025mm
Quantizing error	±1 count			
Measuring force	2.0N or less	2.5N or less	2.0N or less	2.5N or less
Measuring orientation	Between vertical (spindle pointing down) and horizontal			
Positional detection method	Photoelectric-type reflection linear encoder			
Maximum response speed	39.37in/sec. (1000mm/sec.)			
Display	7-digit LCD, sign, and analog bar with 2-color backlight			
Contact point	Sphere R=.06" (1.5mm) (cemented carbide)			
Operating temperature range	32°F to 104°F (0°C to 40°C)			
Storage temperature range	14°F to 140°F (-10°C to 60°C)			
Main unit mass	.64 lbs	.67 lbs	290g	305g
Power supply	120V, 50/60Hz AC adapter (6V, 1A)			

Up to 6 digits can be output from the Digimatic port, with truncation from the leading digit if greater than this limit. For example, if the display shows the 7-digit value '123.4565', only '23.4565' would actually be output.

External Dimensions

543-562A **543-564A**

Unit: inch (mm)



Accessories

Standard Accessories

- User's Manual
- Inspection Certificate
- Lifting Lever (Knob)
- AC Adapter

Optional Accessories

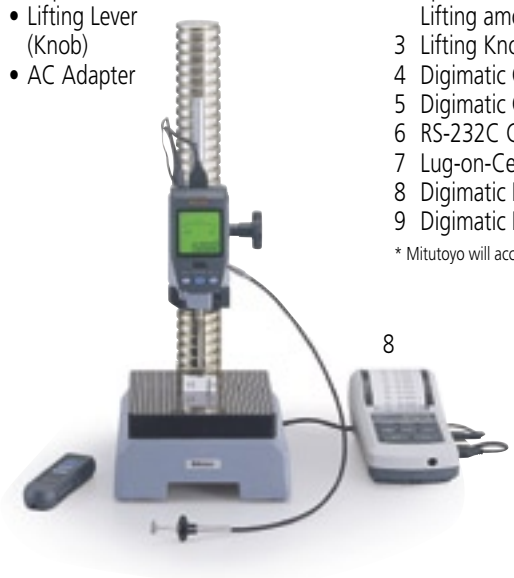
1	Remote Controller	**21EZA099**
2	Spindle Lifting Cable Lifting amount: 1.18" (30mm)	**540774**
3	Lifting Knob	**21EZA101**
4	Digimatic Connecting Cable 40" (1m)	**936937**
5	Digimatic Connecting Cable 80" (2m)	**965014**
6	RS-232C Connecting Cable 80"(2m)	**21EAA131**
7	Lug-on-Center Back	**101306**
8	Digimatic Mini Processor/Printer	**264-504-5A**
9	Digimatic Presetter	**543-003**

* Mitutoyo will accept a special order for an air lifter upon request.

Recommended Stands

(for 543-562A & 543-564A)

- Granite Comparator Stand **517-890**
- Comparator Stand **215-514**
- Comparator Stand **215-831**



215-514

- Coordinate Measuring Machines
- Vision Measuring Systems
- Surface, Form and Contour Measurement
- Optical Measuring
- Sensor Systems
- Hardness Measuring
- Digital Scale and DRO Systems
- Small Tool Instruments and Data Management

Mitutoyo America Corporation
www.mitutoyo.com

M³ Solution Center

Michigan
(734) 459-2810

Massachusetts
(978) 692-8765

Illinois
(630) 978-5385

Indiana
(317) 577-6070

California
(626) 961-9661

No. Carolina
(704) 875-8332

Note: All our product details, in particular the illustrations, drawings, dimensional and performance details and other technical specifications contained in this publication are to be considered to be approximate average values. To this extent, we reserve the right to make changes in design, technical data, dimensions and weight. Our specified standards, similar technical rules and technical specifications, descriptions and illustrations of the products are correct at the time of printing. The current version of our general terms and conditions also apply. Only offers which we have submitted can considered to be definitive.

Mitutoyo

Precision is our Profession

We reserve the right to change specifications and prices without notice.

0105-10 • Printed in USA • April 2005