Digimatic Indicators

Comparison measuring instruments which ensure high quality, high accuracy and reliability.

ABLOLUTE Digimatic Indicator ID-CX SERIES 543 — Standard Type

MeasurLink® ENABLED
Data Management Software by Mitutoyo

- The ABS (absolute) scale restores the last origin position automatically when the indicator is turned on.
  Note: Regarding origin setting, refer to "Origin Setting of Digimatic Indicators" on page F-18.
- Thanks to Mitutoyo's ABSOLUTE Linear Encoder, reliability has been increased due to elimination of over-speed errors.
- Tolerance-judging measurement is available by setting upper and lower limit values.
- Battery life of approx. 7,000 hours in continuous use has been achieved with only one battery.
- Equipped with a data output port that enables incorporation into measurement networking and statistical process control systems (refer to page A-3).

Standard Type

Measuring range 12.7 mm **543-390B**

Low measuring force type **543-394B**

Measuring range 25.4 mm **543-470B**

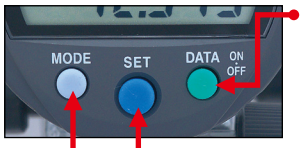
Measuring range 50.8 mm **543-490B**

• Large LCD

The large LCD incorporates 11 mm characters giving 1.5 times the character area of conventional products (which display 8.5 mm characters) making measurement values much easier to read.

• Three large buttons

The popular three-large button design, which is used in products such as the ABS coolant proof Digimatic indicators ID-N/B, makes buttons easier to press and operations easier to perform.



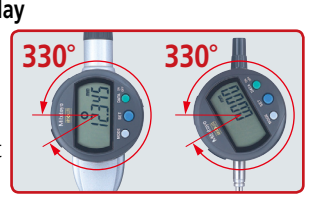
- Power switch
- Data output (when connected to an external device)
- Data hold (when no external device is connected)

Switches between the ABS (preset) and INC (zeroset) measurement modes

- Parameter setting mode
  Count direction switching, tolerance judgment setting, resolution switching, scale factor setting, and function lock setting
- inch/mm conversion (inch/mm models)

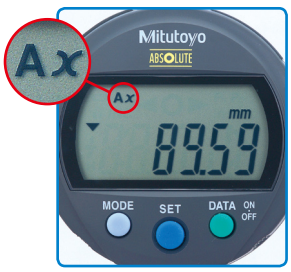
• 330° rotary display

The display can be rotated 330°, allowing use at a position where you can easily read the measurement value.



• Calculation: f (x) = Ax

Mounting the ID-CX on a measuring jig and setting the multiplying factor (to any practical value) allows direct indication of size (see example below) without using a conversion table and so improves measurement efficiency.



Usage example
Note: The measuring jig is not supplied with the ID-CX.

• Function locking

Ensures reliability of measurement by locking the settings to prevent preset function settings from being changed by mistake.

MeasurLink® ENABLED
Data Management Software by Mitutoyo

Products equipped with the measurement data output function can be connected to the measurement data network system MeasurLink (refer to page A-5 for details).

ABSOLUTE™ (Refer to page X for details.)

PROPRIETARY INSPECTION CERTIFICATE
Mitutoyo guarantees the product quality. Mitutoyo guarantees the product quality.

An inspection certificate is supplied as standard. Refer to page X for details.

Technical Data

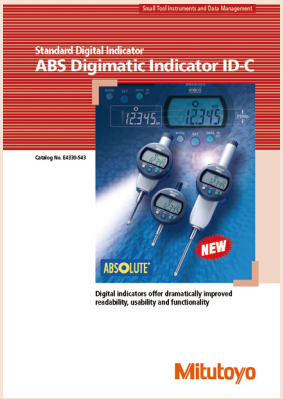
- Display: 6-digit LCD, sign
- Battery: SR44 (1 pc.), **938882** for initial operational checks (standard accessory)
- Battery life: Approx. 7,000 hours of continuous use. Approx. 1.2 years under normal use.
  *Depends on use of the indicator. The above values are reference values.
- Maximum response speed: No limit (except for scanning measurement)

Functions

- Zero-setting (INC system)
- Presetting (ABS system)
- Direction switching
- Tolerance judgment
- Resolution switching
  (For 0.001 mm or 0.00005 inch resolution models)
- Calculation: f(x) = Ax
- Function locking
- Data output
- Display value holding
  (when no external device is connected)
- 330° rotary display
- Low battery/voltage alarm display
- Error alarm display

Optional Accessories

- Lifting
  Lifting lever:
  21EZA198 (12.7 mm/0.5 inch ISO/JIS type)
  21EZA199 (12.7 mm/0.5 inch ASME/ANSI/AGD type)
  Lifting knob:
  21EZA105 (12.7 mm/0.5 inch ISO/JIS type)*
  21EZA150 (12.7 mm/0.5 inch ASME/ANSI/AGD type)*
  21EZA197 (25.4 mm/1 inch models)
  21EZA200 (50.8 mm/2 inch models)
  Lifting cable: **540774**
  Lifting lever:**137693** (for measuring range: 25.4 and 50.8 mm)
  (supplied with 25.4 mm and 50.8 mm models as standard.)
  * Not available for low measuring force models.
- Auxiliary spindle spring:
  02ACA571 (25.4 mm/1 inch models)**
  02ACA773 (50.8 mm/2 inch models)**
  **Required when orienting the indicator upside down.
- Center-lug back:
  101040 (25.4 mm/1 inch and 50.8 mm/2 inch, ISO/JIS type)
  101306 (25.4 mm/1 inch and 50.8 mm/2 inch, ASME/ANSI/AGD type)
- SPC Cable:
  905338 (1 m)
  905409 (2 m)
- USB Input Tool Direct (2 m): **06AFM380F**
- Input Tool Series
  IT-016U (USB Keyboard Signal Conversion Type) : **264-016-10**
  IT-007R (RS-232C Communication Conversion Type) : **264-007**
  Refer to page F-60 for details.
- Connecting Cables for **U-WAVE-T** (160 mm): **02AZD790F**
  For footswitch: **02AZE140F**
  Refer to page F-60 for details.
- Digimatic Mini-Processor DP-1VA LOGGER: **264-505**
- Contact points for Mitutoyo's dial indicators
  (Refer to pages F-51 to F-54 for details.)
  Interchangeable backs for 2 series
  (Refer to page F-55 for details.)
- Measuring stands (Refer to pages F-78 to F-85 for details.)



Refer to the ABS Digimatic Indicator ID-CX brochure (**E4330-543**) for details.

Setting measuring force on low measuring force models

• 543-404/404B/405/405B/406/406B

Spindle orientation	Spring	Weight (approximately 0.1N)	Maximum measuring force
Pointing vertically downward	Yes	Yes	0.5 N or less
	Yes	No	0.4 N or less
	No	Yes	0.3 N or less
	No	No	0.2 N or less
Horizontal	Yes	No	0.3 N or less

Note) Operation using configurations other than shown above is not guaranteed.

• 543-394/394B/395/395B/396/396B

Spindle orientation	Spring	Weight (approximately 0.1N)	Maximum measuring force
Pointing vertically downward	Yes	Yes	0.7 N or less
	Yes	No	0.6 N or less
	No	Yes	0.4 N or less
	No	No	Not guaranteed
Horizontal	Not guaranteed		

Note) Operation using configurations other than shown above is not guaranteed.

SPECIFICATIONS

ISO/JIS type ASME/ANSI/AGD type

Metric

Order No. (w/ lug, flat-back)		Range	Resolution	Overall accuracy*	Measuring force	Remarks
543-390	**543-390B**	12.7 mm	0.001 mm	0.003 mm	1.5 N or less	—
543-394	**543-394B**				0.4 N - 0.7 N	Low measuring force
—	**543-470B**	25.4 mm			1.8 N or less	—
—	**543-490B**	50.8 mm		0.005 mm	2.3 N or less	—
543-400	**543-400B**	12.7 mm	0.01 mm	0.02 mm	0.9 N or less	—
543-404	**543-404B**				0.2 N - 0.5 N	Low measuring force
—	**543-474B**	25.4 mm			1.8 N or less	—
—	**543-494B**	50.8 mm		0.04 mm	2.3 N or less	—

* Hysteresis: 0.002 mm (0.001/0.01 mm resolution type)
0.02 mm (0.01 mm resolution type)

* Repeatability: 0.002 mm (0.001/0.01 mm resolution type)
0.02 mm (0.01 mm resolution type)

Inch/Metric

Order No. (w/ lug, flat-back)		Range	Resolution	Overall accuracy*	Measuring force	Remarks
543-391	**543-391B**	0.5 in	0.0005/0.0001/ 0.00005 in / 0.01/0.001 mm	0.0001 in	1.5 N or less	—
543-392	**543-392B**				1.5 N or less	—
543-395	**543-395B**				0.4 N - 0.7 N	Low measuring force
543-396	**543-396B**				0.4 N - 0.7 N	Low measuring force
—	**543-471B**	1 in			1.8 N or less**	—
—	**543-472B**				1.8 N or less**	—
—	**543-491B**	2 in		0.0002 in	2.3 N or less**	—
—	**543-492B**				2.3 N or less**	—
543-401	**543-401B**	0.5 in	0.0005 in / 0.01 mm	0.001 in	0.9 N or less	—
543-402	**543-402B**				0.9 N or less	—
543-405	**543-405B**				0.2 N - 0.5 N	Low measuring force
543-406	**543-406B**				0.2 N - 0.5 N	Low measuring force
—	**543-475B**	1 in			1.8 N or less**	—
—	**543-476B**				1.8 N or less**	—
—	**543-495B**	2 in		0.0015 in	2.3 N or less**	—
—	**543-496B**				2.3 N or less**	—

* Hysteresis:
0.0005 in/0.0001 in/0.0005 in/0.001 mm/0.01 mm
0.0001 in / 0.002 mm (0.0005/0.0001/0.00005 in / 0.01/0.001 mm resolution type)
0.001 in / 0.02 mm (0.0005 in / 0.01 mm resolution type)

* Repeatability:
0.0001 in / 0.002 mm (0.0005/0.0001/0.00005 in / 0.01/0.001 mm resolution type)
0.001 in / 0.02 mm (0.0005 in / 0.01 mm resolution type)

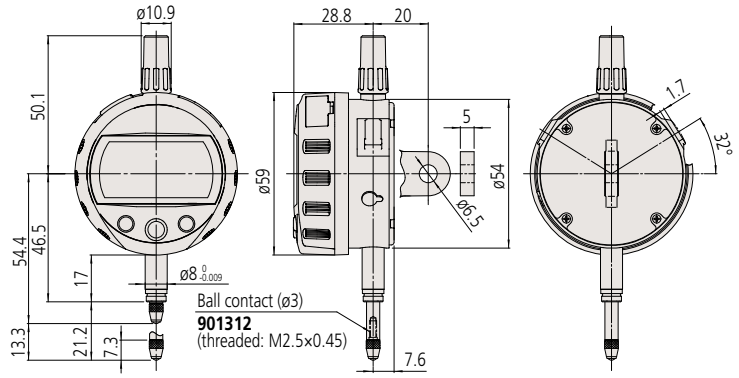
* Quantizing error of ±1 count is excluded
** Applies for a spindle orientation between the spindles

DIMENSIONS

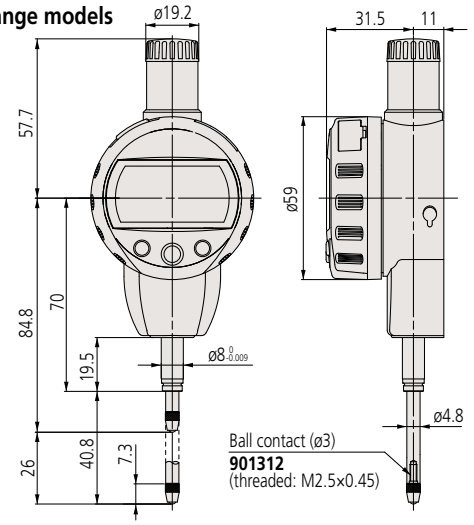
ISO/JIS Type

Unit: mm

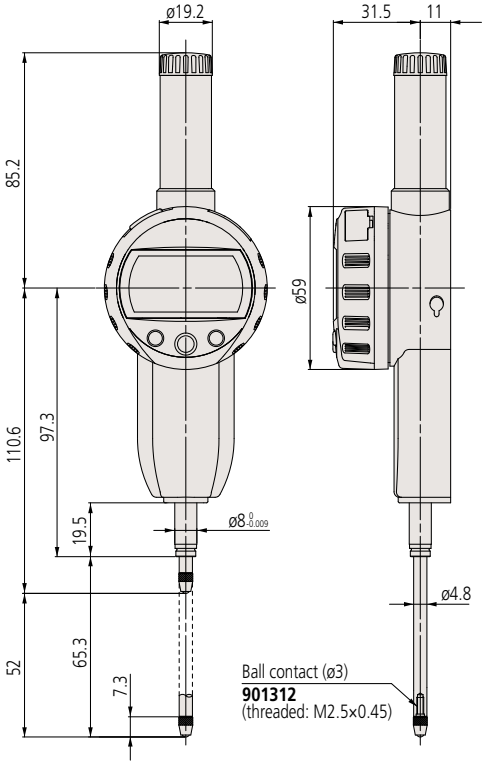
12.7 mm range models



25.4 mm range models



50.8 mm range models



Note 1: Dimensions of the inch (ANSI/AGD Type) dial indicator partly differ from those of the metric (ISO/JIS Type) indicator.
Note 2: Inch (ANSI/AGD Type) dial indicators are provided with a stem of 3/8 inch dia. and #4-48UNF thread mount for the contact point.
Note 3: Products with an Order No. suffixed "B" have a plain back, and other models have a center-lug back.
Refer to page F-55 for details of the backs.

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