ABSOLUTE Digimatic Indicator ID-SX2 SERIES 543

- Cost-effective oriented design
  ID-SX2 indicators come with the minimum of functionality for ease of use. There is a choice of models in the lineup allowing selection of 0.01 mm, 0.001 mm or inch-based measurement resolutions.
- IP53 dust/water protection level
  The models listed below also provide IP53 dust/water protection level specifications:
  543-794(B)-10, **543-795(B)-10** and **543-796(B)-10**
- The ABS (absolute) scale restores the last origin position* automatically when the indicator is turned on, and realizes high reliability by eliminating over-speed errors.
- Equipped with a data output port that enables incorporation into measurement networking and statistical process control systems. (Refer to page A-3)

* Refer to "Origin Setting of Digimatic Indicators" on page F-25.

543-781-10
ID-S1012X2

543-790-10
ID-S112X2

543-794-10
ID-S112PX2

SPECIFICATIONS

Metric

ISO/JIS Type ASME/ANSI/AGD type

Order No.	Range (mm)	Resolution (mm)	Maximum permissible error*1 (mm) MPE$_E$*2	Hysteresis MPE$_H$	Repeatability MPE$_R$	Measuring force MPL (N)	Back type	Battery life*3	Net mass (g)	Dust/Water protection level*4
543-790-10	12.7	0.001	0.003	0.002	0.002	1.5 or less	With lug	Approx. 18,000 hours (Continuous use) Approx. 5 years (Normal use)	150	IP42
543-790B-10							Flat		140	
543-794-10						2.5 or less	With lug		155	IP53
543-794B-10							Flat		155	
543-781-10		0.01	0.02	0.02	0.01	1.5 or less	With lug	Approx. 20,000 hours (Continuous use) Approx. 5 years (Normal use)	150	IP42
543-781B-10							Flat		140	

Inch/Metric

Order No.	Range	Resolution	Maximum permissible error*1 MPE$_E$*2	Hysteresis MPE$_H$	Repeatability MPE$_R$	Measuring force MPL (N)	Back type	Battery life*3	Net mass (g)	Dust/Water protection level*4
543-791-10	0.5 in/ 12.7 mm	0.00005 in /0.001 mm	±0.0001 in /0.003 mm	0.0001 in /0.002 mm	0.0001 in /0.002 mm	1.5 or less	With lug	Approx. 18,000 hours (Continuous use) Approx. 5 years (Normal use)	150	IP42
543-791B-10							Flat		140	
543-792-10							With lug		165	
543-792B-10							Flat		140	
543-793-10		0.0001 in /0.001 mm					With lug		165	
543-793B-10							Flat		140	
543-795-10		0.00005 in /0.001 mm				2.5 or less	With lug		155	IP53
543-795B-10							Flat		155	
543-796-10							With lug		155	
543-796B-10							Flat		155	
543-782-10		0.0005 in /0.01 mm	±0.0010 in /0.02 mm	0.0010 in /0.02 mm	0.0005 in /0.01 mm	1.5 or less	With lug	Approx. 20,000 hours (Continuous use) Approx. 5 years (Normal use)	150	IP42
543-782B-10							Flat		140	
543-783-10							With lug		165	
543-783B-10							Flat		140	

*1 These values apply at 20 °C.
*2 Error of indication for the total measuring range
*3 The battery life varies, depending on the number of times a Digimatic indicator is used as well as the way it is used. The values listed above are approximations.
*4 This is only valid when the data socket cover is in place. Does not apply if the cover is removed, a lifting accessory is attached, or a connecting cable is attached.
Note: Regarding origin setting, refer to "Origin Setting of Digimatic Indicators" on page F-25.

MeasurLink® ENABLED Data Management Software by Mitutoyo

ABSOLUTE™

IP53

Applicable models:
See **SPECIFICATIONS**

Technical Data

- Display: 6-digit LCD, sign
- Usable orientation: All
- Scale type: ABSOLUTE electrostatic linear encoder
- Battery: SR44 (1 pc.), **938882** for initial operational checks (standard accessory)
- Maximum response speed: Unlimited (except for scanning measurement)

Functions

- Origin set (Zero-setting)
- Measuring direction switching
- Data output
- Low battery voltage alarm display
- Error alarm display

Optional Accessories

Lifting lever Lifting knob

- Lifting
  Lifting lever **21EZA198**
  Lifting knob **21EZA105**
  Lifting cable **21JZA295**
- SPC Cable:
  905338 (1 m)
  905409 (2 m)
- USB Input Tool Direct (2 m): **06AFM380F**

Note: Please separately purchase **USB-ITPAK** since there is no data output switch on the measurement instrument.

- Input Tool Series
  IT-020U (USB Keyboard Signal Conversion Type): **264-020**
  IT-007R (RS-232C Communication Conversion Type): **264-007**
- Connecting Cables for **U-WAVE-T** (160 mm): **02AZD790F**
  For foot switch: **02AZE140F**
- Digimatic Mini-Processor **DP-1VA LOGGER**: **264-505**
- Contact points for Mitutoyo's digimatic indicators (Refer to pages F-57 to F-60 for details.)
- Interchangeable backs for SERIES 2 models (Refer to page F-61 for details.)
- Measuring stands (Refer to pages F-84 to F-91 for details.)

IP53 dust/water protection level*

Level 5: Dust protection
While complete protection against intrusion of dust is not provided, protection is adequate to prevent dust intrusion in amounts that would inhibit the prescribed operations and safety of the electronic equipment.

Level 3: Protection against spraying water
The product suffers no harmful effects when subjected to water sprayed at an angle of up to 60° on both sides.

For details on the dust/water protection level test conditions, refer to IEC 60529: 2001 and JIS C 0920: 2003.

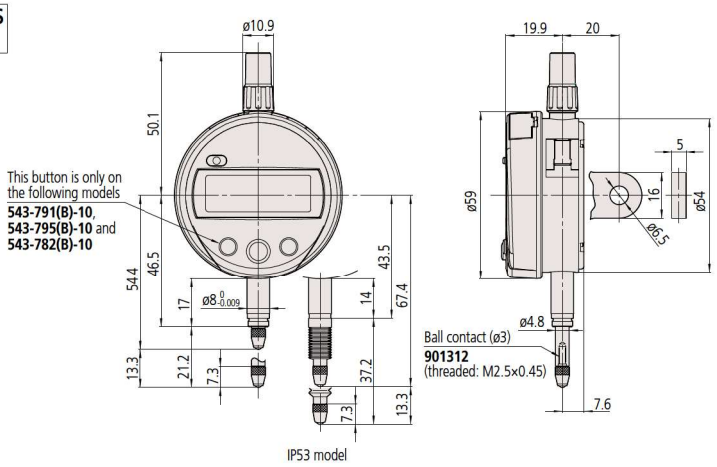
* IP code is the degree of protection against the intrusion of solid foreign objects and water.
Mitutoyo offers a lineup of coolant proof, **ID-N/B** indicators that have excellent resistance to oil, water and dust and so are suitable for use in environments that include splashing cutting fluid. (Refer to page F-8 for details.)

F

DIMENSIONS

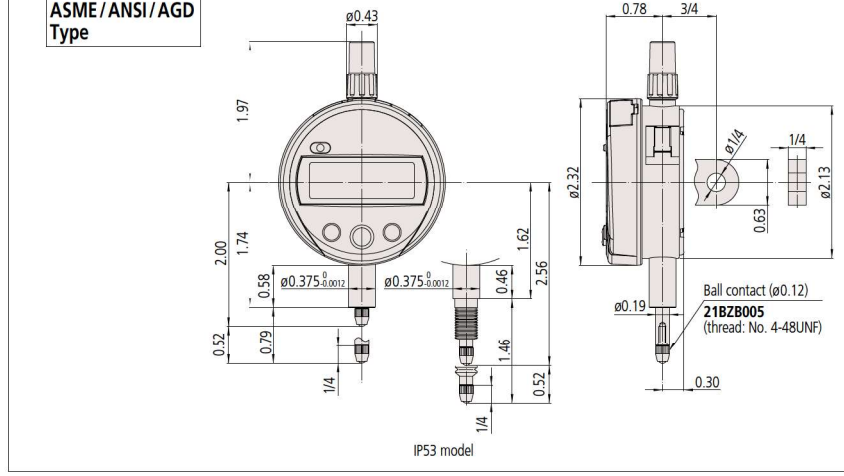
ISO / JIS Type

Unit: mm



ASME / ANSI / AGD Type

Unit: in



F

MeasurLink® ENABLED
Data Management Software by Mitutoyo

ABSOLUTE™

PROPRIETARY INSPECTION CERTIFICATE

ABSOLUTE Digimatic Indicator ID-CNX SERIES 543 — Standard Type

- Supports bidirectional communication between the **ID-C** and the computer, enabling data output to a computer and setting of various functions of **ID-C** from a computer.
- The ABS (absolute) scale restores the last origin position* automatically when the indicator is turned on, and realizes high reliability by eliminating over-speed errors.
- Tolerance judgment can be performed by setting upper and lower tolerance limits. The judgment result (GO/NO-GO) can be displayed in full-size characters.
- An analog bar indicator has been integrated to make upper/lower limit and turnover point reading more comfortable.
- Battery life of approx. 2.5 years under normal 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)

* Refer to "Origin Setting of Digimatic Indicators" on page F-25.

Measuring range 12.7 mm **543-700B**

Low measuring force model **543-705B**

Measuring range 25.4 mm **543-720B**

Measuring range 50.8 mm **543-730B**

• Large LCD

A large LCD with an analog bar graph to improve the readability of measurement values.

• Three large buttons

The ease of use has been greatly enhanced thanks to these three large buttons. The user can freely set any frequently used function to the buttons.

- 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 type)

• 330° rotary display

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

• Calibration schedule warning

An icon is displayed on the LCD to notify the user of the set calibration schedule. This function facilitates the proper precision management of the measuring instrument.

The calibration schedule warning icon starts blinking at a set time (e.g. 1 week before the calibration date) before the limit. If the limit is exceeded, the entire screen starts blinking to notify the user.

Technical Data

- Display: 7-digit LCD, sign, and analog bar
- Battery: CR2032 (1 pc.) for initial operational checks (standard accessory)
- Battery life: Approx. 2,700 hours of continuous use. Approx. 2.5 years under normal use.

Note: Depends on use of the indicator. The above values are reference values.

- Maximum response speed: Unlimited (except for scanning measurement)

Functions

- Peak detection (MAX/MIN)
- Runout range measurement (MAX - MIN)
- Zero-setting (INC system)
- Presetting (ABS system)
- Measuring direction switching
- Tolerance judgment
- Resolution switching (For 0.0005 mm or 0.00002 inch resolution type)
- Simple calculation: f(x) =Ax
- Function Lock
- Calibration schedule warning
- Auto power ON/OFF
- 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 type)
  Lifting cable: **21JZA295**
  (stroke 12.7 mm: 12.7 mm/0.5 inch type)
  Lifting knob:
  21EZA105 (12.7 mm/0.5 inch type)*1
  21EZA197 (25.4 mm/1 inch type)
  21EZA200 (50.8 mm/2 inch type)
  Lifting lever: **21EAA426** (for measuring range: 25.4 and 50.8 mm)
  (supplied with 25.4 mm and 50.8 mm models as standard.)

*1 Not available for low measuring force models.

- Auxiliary spindle spring:
  02ACA571 (25.4 mm/1 inch type)*2
  02ACA773 (50.8 mm/2 inch type)*2

*2 Required when orienting the indicator upside down.

- SPC Cable:
  06AGL011 (1 m)
  06AGL021 (2 m)
- USB Input Tool Direct (2 m): **06AGQ001F**
- Input Tool Series
  IT-020U (USB Keyboard Signal Conversion Type): **264-020**
  IT-007R (RS-232C Communication Conversion Type): **264-007**
- Connecting Cables for **U-WAVE-T** (160 mm): **02AZG011**
  For foot switch: **02AZG021**
- Connecting unit for **U-WAVE-TM/TMB: 02AZF700** (12.7 mm/0.5 inch type)
- Digimatic Mini-Processor **DP-1VA LOGGER**: **264-505**
- Contact points for Mitutoyo's digimatic indicators (Refer to pages F-57 to F-60 for details.)
- Interchangeable backs for SERIES 2 models (Refer to page F-61 for details.)
- Measuring stands (Refer to pages F-84 to F-91 for details.)

Spindle orientation for measurement

- Standard models with measuring range 12.7 mm: Usable in all orientations.
- Models with measuring range 25.4 or 50.8 mm: Usable between the contact point pointing downward and spindle in horizontal orientation. To use the contact point pointing upward, the auxiliary spindle spring (optional) is required.
- Low measuring force model: See "Setting measuring force on low measuring force models" below.

Setting measuring force on low measuring force models

The measuring force of models with low measuring force can be set by combining standard accessory springs and weights.

• 543-715(B)/716(B)/717(B)

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

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

• 543-705(B)/706(B)/707(B)

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

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

SPECIFICATIONS

Metric

ISO/JIS type ASME/ANSI/AGD type

Order No. w/lug	Order No. Flat back	Range (mm)	Resolution (mm)	Maximum permissible error MPE*1 (mm) MPE$_E$*3	Hysteresis MPE$_H$	Repeatability MPE$_R$	Measuring force MPL (N)	Net mass (g) w/lug	Net mass (g) Flat back
543-700	**543-700B**	12.7	0.0005/ 0.001/0.01 (selectable)	0.003	0.002	0.002	1.5 or less	175	165
543-705*2	**543-705B***2						0.4 to 0.7	170	160
—	**543-720B**	25.4					1.8 or less	—	195
—	**543-730B**	50.8		0.005			2.3 or less	—	260
543-710	**543-710B**	12.7	0.01	0.02	0.02	0.01	0.9 or less	170	160
543-715*2	**543-715B***2						0.2 to 0.5	165	155
—	**543-725B**	25.4					1.8 or less	—	190
—	**543-735B**	50.8		0.04			2.3 or less	—	245

*1 These values apply at 20 °C.
*2 Low measuring force
*3 Error of indication for the total measuring range

Inch/Metric

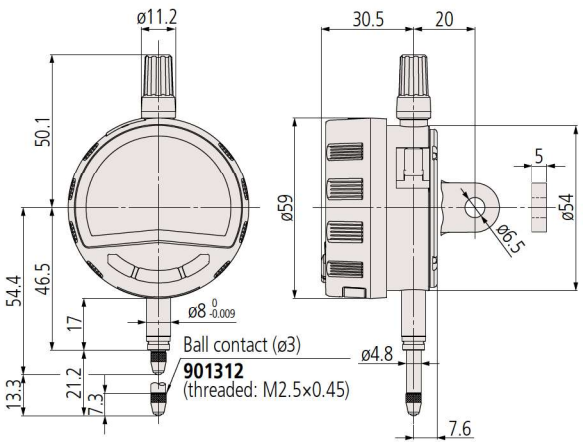
Order No. w/lug	Order No. Flat back	Range	Resolution	Maximum permissible error MPE*1 MPE$_E$*3	Hysteresis MPE$_H$	Repeatability MPE$_R$	Measuring force MPL (N)	Net mass (g) w/lug	Net mass (g) Flat back
543-701	**543-701B**	0.5 in/ 12.7 mm	0.00002/ 0.00005/ 0.0001/ 0.0005 in 0.0005/ 0.001/ 0.01 mm (selectable)	±0.00012 in /0.003 mm	0.00008 in /0.002 mm	0.00008 in /0.002 mm	1.5 or less	175	165
543-702	**543-702B**						1.5 or less	195	165
543-706*2	**543-706B***2						0.4 to 0.7	170	160
543-707*2	**543-707B***2						0.4 to 0.7	190	160
—	**543-721B**	1 in/ 25.4 mm					1.8 or less	—	195
—	**543-722B**						1.8 or less	—	195
—	**543-731B**	2 in/ 50.8 mm		±0.0002 in /0.005 mm			2.3 or less	—	260
—	**543-732B**						2.3 or less	—	260
543-711	**543-711B**	0.5 in/ 12.7 mm	0.0005 in/ 0.01 mm	±0.001 in /0.02 mm	0.001 in /0.02 mm	0.0005 in /0.01 mm	0.9 or less	170	160
543-712	**543-712B**						0.9 or less	190	160
543-716*2	**543-716B***2						0.2 to 0.5	165	155
543-717*2	**543-717B***2						0.2 to 0.5	185	155
—	**543-726B**	1 in/ 25.4 mm					1.8 or less	—	190
—	**543-727B**						1.8 or less	—	190
—	**543-736B**	2 in/ 50.8 mm		±0.0015 in /0.04 mm			2.3 or less	—	245
—	**543-737B**						2.3 or less	—	245

*1 These values apply at 20 °C.
*2 Low measuring force
*3 Error of indication for the total measuring range

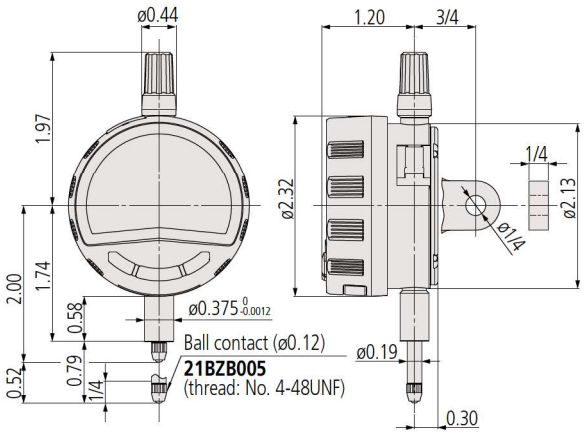
DIMENSIONS

12.7 mm range models

ISO/JIS Type Unit: mm



ASME/ANSI/AGD Type Unit: in



Note: Products with an Order No. suffixed "**B**" have a plain back, and other models have a center-lug back. Refer to page F-61 for details of the backs.

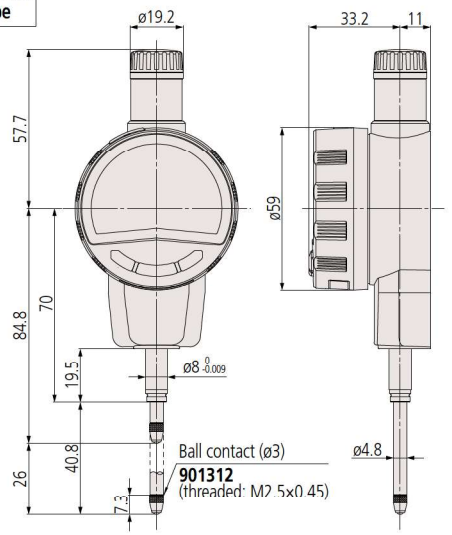
F

DIMENSIONS

25.4 mm range models

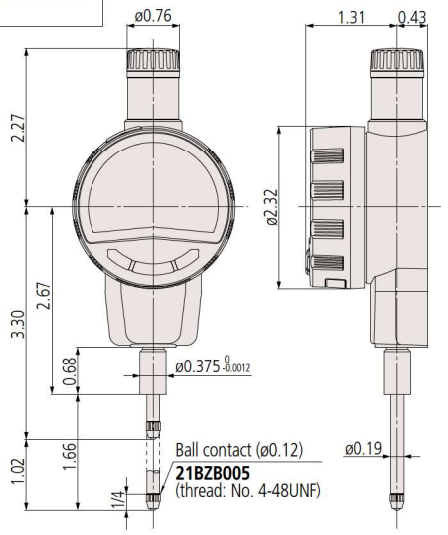
Unit: mm

ISO / JIS Type



Unit: in

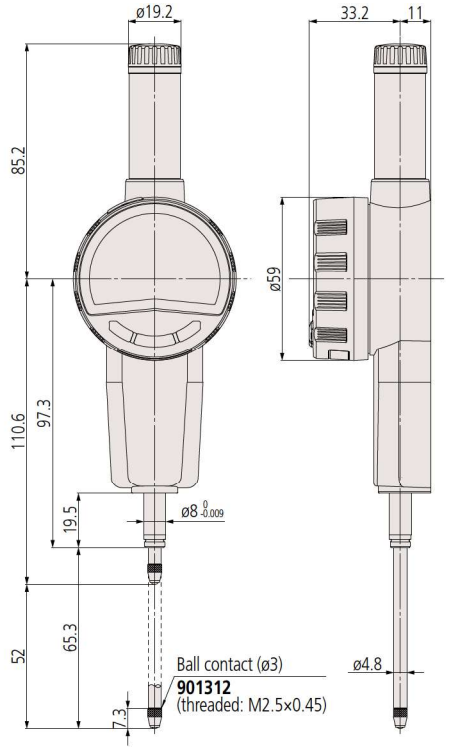
ASME / ANSI / AGD Type



50.8 mm range models

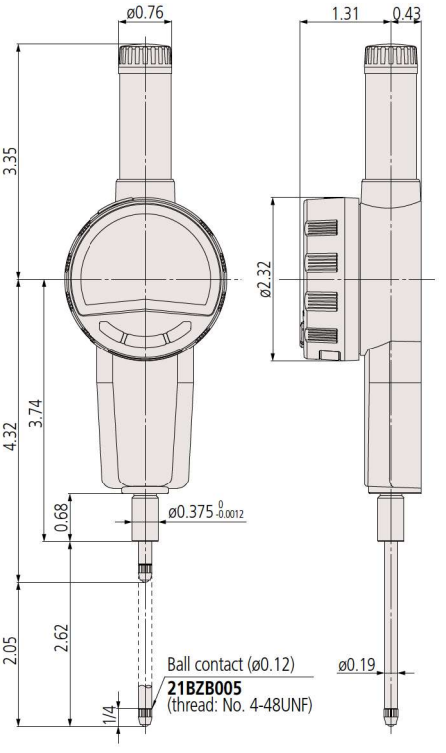
Unit: mm

ISO / JIS Type



Unit: in

ASME / ANSI / AGD Type



Note: Products with an Order No. suffixed "**B**" have a plain back, and other models have a center-lug back. Refer to page F-61 for details of the backs.