Digimatic Indicators

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

ABSOLUTE Solar-Powered Digimatic Indicator ID-SS SERIES 543

MeasurLink® ENABLED
Data Management Software by Mitutoyo

- Solar powered, this series consists of environmentally friendly measuring instruments that do not require batteries, eliminating the need for battery replacement. Their minimum operating luminance is 40 lux (lx), lower than that inside a warehouse.
- The large-capacity built-in reservoir capacitor allows you to use the indicator for long periods of time under lighting conditions below the minimum level.
- All functions can be accessed by using the two or three large buttons on the front of the indicator.
- Origin recorded even if display disappears.
  The indicator includes an ABS (absolute) scale that allows the previously set origin to be restored even if the display disappears due to insufficient lighting, making it easy to resume measurement. This feature makes ID-SS ideal for long-time or multi-point measurement.
- Three types of accessories (optional) are available to enable spindle lifting in various measurement settings.
- Equipped with a data output port that enables incorporation into measurement networking and statistical process control systems. (Refer to page A-3)

543-500

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™

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

An inspection certificate is supplied as standard. Refer to page U-11 for details.

Technical Data

- Display: 6-digit LCD, sign
- Usable orientations: All
- Power supply: Solar battery (for indoor use)
- Minimum Operating illumination: 40 lux (lx)

Note: Rechargeable; can be used for approximately 3.5 hours when fully charged. Charging time is approximately 1.5 hours under 500 lux (lx) lighting conditions.

- Maximum response speed: No limit (scan-type measurement is not supported)

Functions

- Origin set (Zero-setting)
- Direction switching
- Data output
- Error alarm display

SPECIFICATIONS

Metric

ISO/JIS type ASME/ANSI/AGD type

Order No.	Range (mm)	Resolution (mm)	Maximum permissible error*1 (mm)			Measuring force MPL (N)	Back type	Net mass (g)
			MPE_E*2	Hysteresis MPE_H	Repeatability MPE_R			
543-500	12.7	0.001	0.003	0.002	0.002	1.5 or less	With lug	150
543-500B							Flat	140
543-505		0.01	0.02	0.02	0.01		With lug	150
543-505B							Flat	140

Inch/Metric

Order No.	Range	Resolution	Maximum permissible error*1			Measuring force MPL (N)	Back type	Net mass (g)
			MPE_E*2	Hysteresis MPE_H	Repeatability MPE_R			
543-501	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	150
543-501B							Flat	140
543-502							With lug	165
543-502B							Flat	140
543-506		0.0005 in /0.01 mm	±0.0010 in /0.02 mm	0.0010 in /0.02 mm	0.0005 in /0.01 mm		With lug	150
543-506B							Flat	140
543-507							With lug	165
543-507B							Flat	140

*1 These values apply at 20 °C.
*2 Error of indication for the total measuring range
Note: Regarding origin setting, refer to "Origin Setting of Digimatic Indicators" on page F-25.

F

Optional Accessories

Lifting lever

Lifting knob

Lifting cable

- Lifting
  Lifting lever **21EZA198** (ISO/JIS Type),
  21EZA199 (ASME/ANSI/AGD Type)
  Lifting knob **21EZA105** (ISO/JIS Type),
  21EZA150 (ASME/ANSI/AGD Type)
  Lifting cable **21JZA295**
- SPC Cable:
  905338 (1 m)
  905409 (2 m)
  (Refer to pages A-27 to A-29 for details.)
- USB Input Tool Direct (2 m): **06AFM380F**

Note: Please separately purchase **USB-ITPAK** since there is no data output switch on the measurement instrument. Refer to pages A-13, A-22 to A-24 for details.

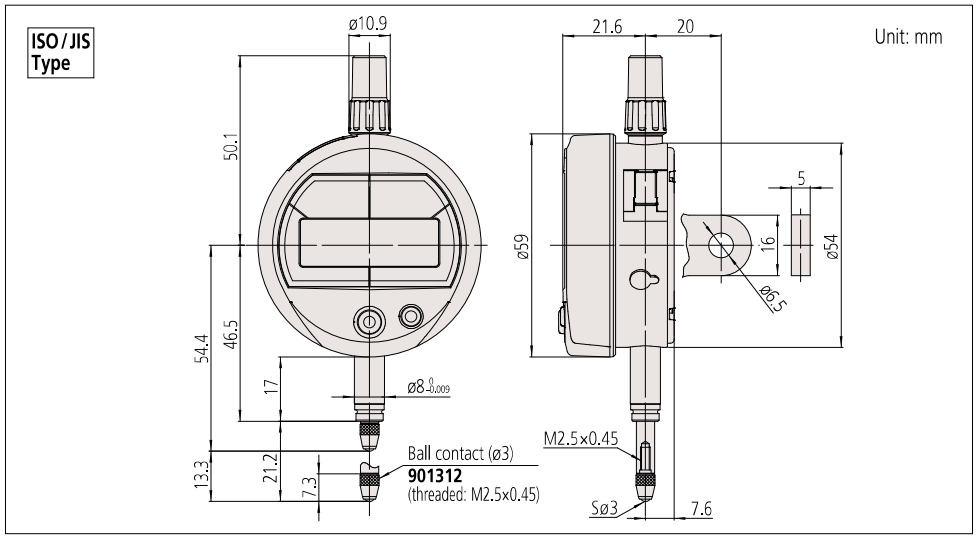
- Input Tool Series
  IT-016U (USB Keyboard Signal Conversion Type):
  264-016-10
  IT-007R (RS-232C Communication Conversion Type):
  264-007
  (Refer to page A-14 for details.)
- Connecting Cables for **U-WAVE-T** (160 mm):
  02AZD790F
  For foot switch: **02AZE140F**
  (Refer to pages A-19 to A-21 for details.)
- Digimatic Mini-Processor **DP-1VA LOGGER**: **264-505**
- Contact points for Mitutoyo's dial indicators
  (Refer to pages F-57 to F-60 for details.)
- Interchangeable backs for 2 series
  (Refer to page F-61 for details.)
- Measuring stands
  (Refer to pages F-84 to F-91 for details.)
- **ID-SS** can be used in standard work environments.
  The following is excerpted from JIS Z9110: 2010 General rules of recommended lighting levels; 5.4 Factories:

Luminance (lux)	Settings and procedures
1500	Very detailed visual work
750	Detailed visual work; design and drawing work
500	Regular visual work such as work carried out in a factory; monitoring work such as using instrument panels and control panels
300	Administrative work carried out in a warehouse
200	Control rooms, bathrooms, and places where manual light work is carried out
150	Work such as loading, unloading, and shifting loads
100	Hallways, corridors, entrances and exits, and warehouses
50	Indoor emergency staircases

Dimensions

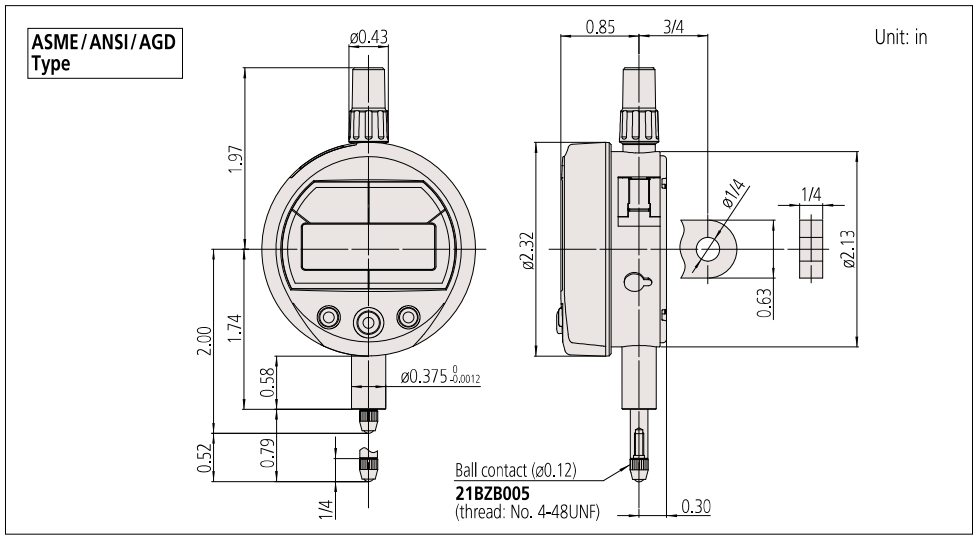
ISO/JIS Type

Unit: mm



ASME/ANSI/AGD Type

Unit: in



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Digimatic Indicators

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

ABSOLUTE Digimatic Indicator ID-SX SERIES 543

MeasurLink® ENABLED
Data Management Software by Mitutoyo

- Cost-effective oriented design
  ID-SX indicators use a button-type battery (SR44) and 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 / 94B / 95 / 95B / 96 / 96B
- These Digimatic indicators employ Mitutoyo's proprietary ABS (absolute) scale, which makes it possible to restore the origin point even if the power is turned off. This eliminates the need to perform origin restoration each time the power is turned on. Furthermore, this scale ensures that overspeed errors do not occur, which improves reliability.
- Equipped with a data output port that enables incorporation into measurement networking and statistical process control systems. (Refer to page A-3)

543-781
ID-S1012X

543-790
ID-S112X

543-794
ID-S112PX
IP53

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	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							Flat		140	
543-794						2.5 or less	With lug		150	IP53
543-794B							Flat		140	
543-781		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)	155	IP42
543-781B							Flat		155	

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	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							Flat		140	
543-792							With lug		165	
543-792B							Flat		140	
543-793		0.0001 in /0.001 mm					With lug		165	
543-793B							Flat		140	
543-795		0.00005 in /0.001 mm				2.5 or less	With lug		155	IP53
543-795B							Flat		155	
543-796							With lug		155	
543-796B							Flat		155	
543-782		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							Flat		140	
543-783							With lug		165	
543-783B							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

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™

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

An inspection certificate is supplied as standard. Refer to page U-11 for details.

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: No limit (except for scanning measurement)

Functions

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

Optional Accessories

- Lifting
  Lifting lever **21EZA198** (ISO/JIS Type), **21EZA199** (ASME/ANSI/AGD Type)
  Lifting knob **21EZA105** (ISO/JIS Type), **21EZA150** (ASME/ANSI/AGD Type)
  Lifting cable **21JZA295**
- SPC Cable:
  905338 (1 m)
  905409 (2 m)
  (Refer to pages A-27 to A-29 for details.)
- USB Input Tool Direct (2 m): **06AFM380F**

Note: Please separately purchase **USB-ITPAK** since there is no data output switch on the measurement instrument. Refer to pages A-13, A-22 to A-24 for details.

- 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 A-14 for details.)
- Connecting Cables for **U-WAVE-T** (160 mm): **02AZD790F**
  For foot switch: **02AZE140F**
  (Refer to pages A-19 to A-21 for details.)
- Digimatic Mini-Processor **DP-1VA LOGGER**: **264-505**
- Contact points for Mitutoyo's dial indicators (Refer to pages F-57 to F-60 for details.)
- Interchangeable backs for 2 series (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-10 for details.)

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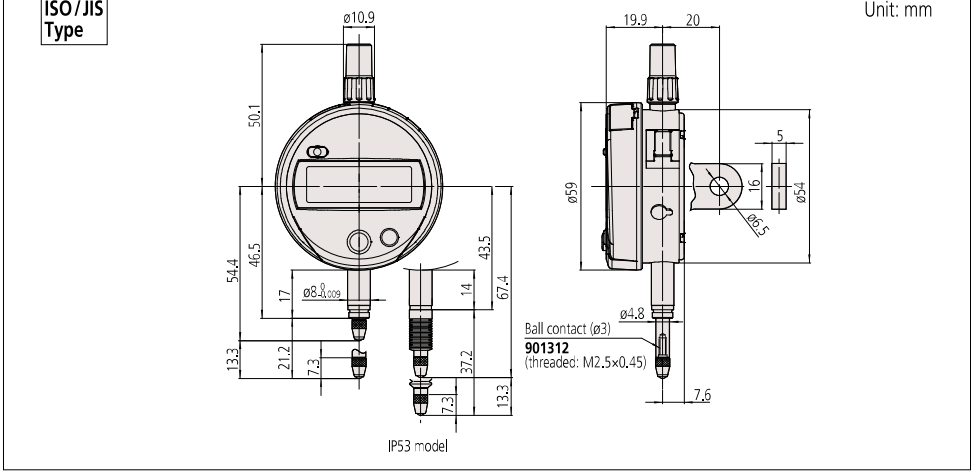
Dimensions

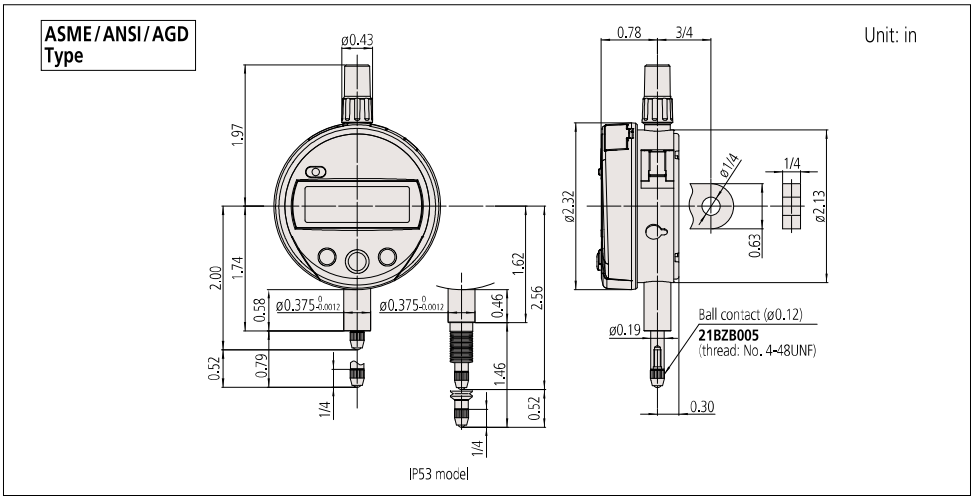
ISO / JIS Type

Unit: mm



ASME / ANSI / AGD Type

Unit: in



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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.
- Thanks to Mitutoyo's ABSOLUTE Linear Encoder, reliability has been increased due to elimination of 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.
- 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)

Measuring range 12.7 mm
543-390B

Low measuring force model
543-394B

Measuring range 25.4 mm
543-470B

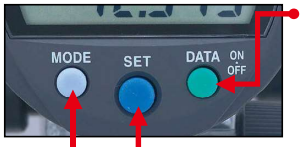
Measuring range 50.8 mm
543-490B

• 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.



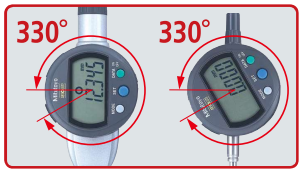
- Power switch
- Data output (when connected to an external device)
- Data hold (when no external device is connected)

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.



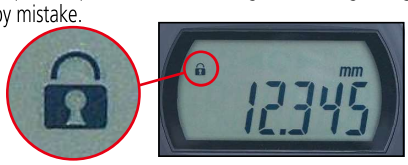
• Calculation: f (x) =Ax

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.

Typical application
Note: The measuring jig is not supplied with the **ID-CX**.

• Function Lock

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™

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

An inspection certificate is supplied as standard. Refer to page U-11 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.

Note: 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 Lock
- 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 cable: **21JZA295**
  (stroke 12.7 mm: 12.7 mm/0.5 in models)
  (stroke 25.4 mm: 25.4 mm/1 in and 50.8 mm/2 in models)
  Lifting knob:
  21EZA105 (12.7 mm/0.5 inch ISO/JIS type)*1
  21EZA150 (12.7 mm/0.5 inch ASME/ANSI/AGD type)*1
  21EZA197 (25.4 mm/1 inch models)
  21EZA200 (50.8 mm/2 inch models)
  Lifting lever:**137693** (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 models)*2
  02ACA773 (50.8 mm/2 inch models)*2

*2 Required when orienting the indicator upside down.

- Lug-on-Center Back:
  101040 (25.4 mm/1 in and 50.8 mm/2 in, ISO/JIS type)
  101306 (25.4 mm/1 in and 50.8 mm/2 in, ASME/ANSI/AGD type)
- SPC Cable:
  905338 (1 m)
  905409 (2 m)
  (Refer to pages A-27 to A-29 for details.)
- 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 A-14 for details.)
- Connecting Cables for **U-WAVE-T** (160 mm): **02AZD790F**
  For foot switch: **02AZE140F**
  (Refer to pages A-19 to A-21 for details.)
- Digimatic Mini-Processor **DP-1VA LOGGER**: **264-505**
- Contact points for Mitutoyo's dial indicators
  (Refer to pages F-57 to F-60 for details.)
- Interchangeable backs for 2 series
  (Refer to page F-61 for details.)
- Measuring stands (Refer to pages F-84 to F-91 for details.)

F

Usable orientation

- 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.

• 543-404 / 404B / 405 / 405B / 406 / 406B

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.

• 543-394 / 394B / 395 / 395B / 396 / 396B

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, flat-back)		Range (mm)	Resolution (mm)	Maximum permissible error*1 (mm)			Measuring force MPL (N)
				MPE$_E$*3	Hysteresis MPE$_H$	Repeatability MPE$_R$	
543-390	**543-390B**	12.7	0.001 / 0.01 (selectable)	0.003	0.002	0.002	1.5 or less
543-394*2	**543-394B***2						0.4 to 0.7
—	**543-470B**	25.4					1.8 or less
—	**543-490B**	50.8		0.005			2.3 or less
543-400	**543-400B**	12.7	0.01	0.02	0.02	0.01	0.9 or less
543-404*2	**543-404B***2						0.2 to 0.5
—	**543-474B**	25.4					1.8 or less
—	**543-494B**	50.8		0.04			2.3 or less

*1 These values apply at 20 °C.
*2 Low measuring force
*3 Error of indication for the total measuring range
Note: Regarding origin setting, refer to "Origin Setting of Digimatic Indicators" on page F-25.

Inch / Metric

Order No. (w/lug, flat-back)		Range (in)	Resolution	Maximum permissible error*1			Measuring force MPL (N)
				MPE$_E$*3	Hysteresis MPE$_H$	Repeatability MPE$_R$	
543-391	**543-391B**	0.5	0.0005 / 0.0001 / 0.00005 in	±0.0001 in / 0.003 mm	0.0001 in / 0.002 mm	0.0001 in / 0.002 mm	1.5 or less
543-392	**543-392B**						1.5 or less
543-395*2	**543-395B***2						0.4 to 0.7
543-396*2	**543-396B***2						0.4 to 0.7
—	**543-471B**	1	0.01 / 0.001 mm (selectable)				1.8 or less*4
—	**543-472B**						1.8 or less*4
—	**543-491B**	2		±0.0002 in / 0.005 mm			2.3 or less*4
—	**543-492B**						2.3 or less*4
543-401	**543-401B**	0.5	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
543-402	**543-402B**						0.9 or less
543-405*2	**543-405B***2						0.2 to 0.5
543-406*2	**543-406B***2						0.2 to 0.5
—	**543-475B**	1					1.8 or less*4
—	**543-476B**						1.8 or less*4
—	**543-495B**	2		±0.0015 in / 0.04 mm			2.3 or less*4
—	**543-496B**						2.3 or less*4

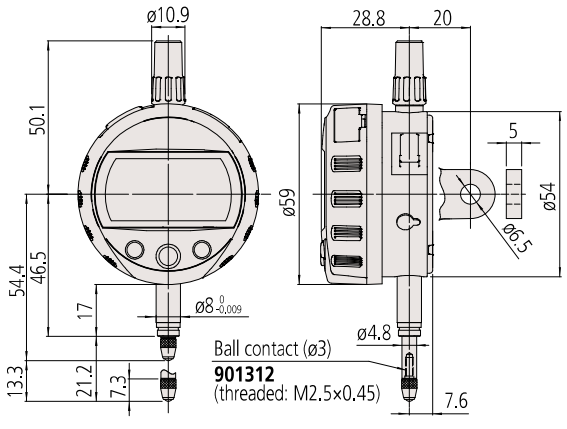
*1 These values apply at 20 °C.
*2 Low measuring force
*3 Error of indication for the total measuring range
*4 Applies for a spindle orientation between the spindle pointing vertically downward to the spindle horizontal.
Note: Regarding origin setting, refer to "Origin Setting of Digimatic Indicators" on page F-25.

DIMENSIONS

12.7 mm range models

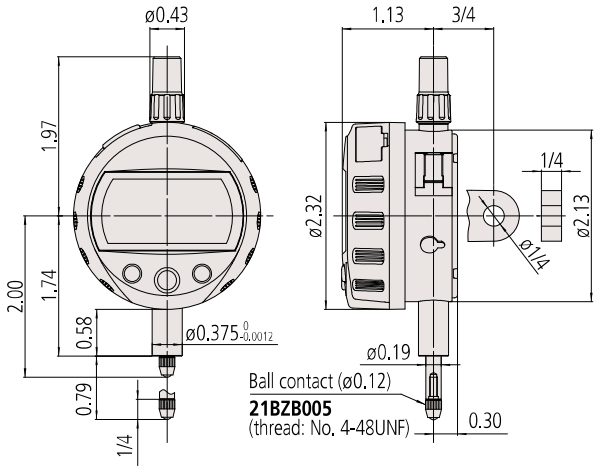
ISO / JIS Type

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.

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Digimatic Indicators

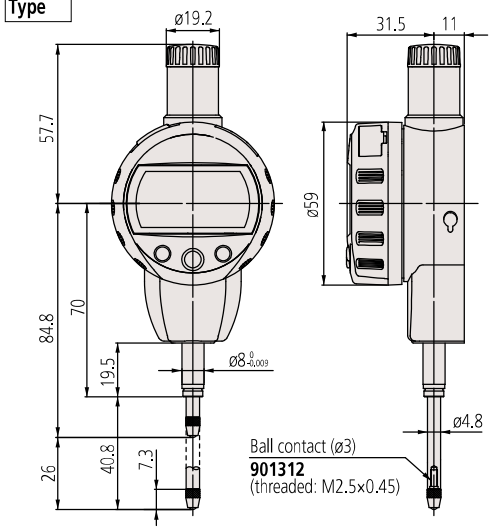
Comparison measuring instruments which ensure high quality, high accuracy and reliability.

DIMENSIONS

25.4 mm range models

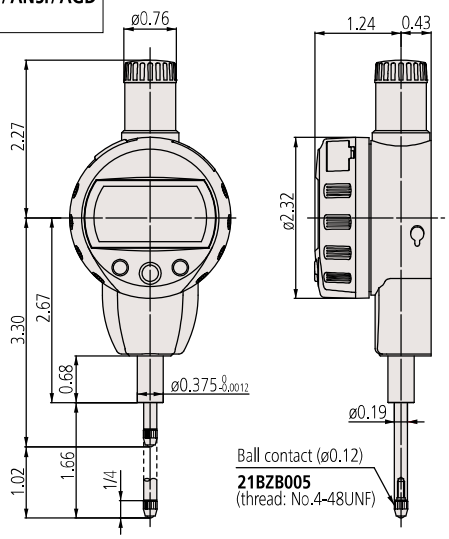
Unit: mm

ISO/JIS Type



Unit: in

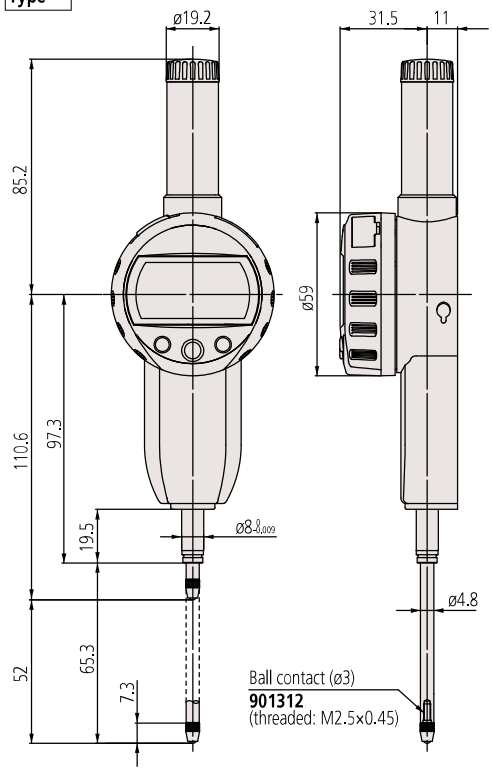
ASME/ANSI/AGD Type



50.8 mm range models

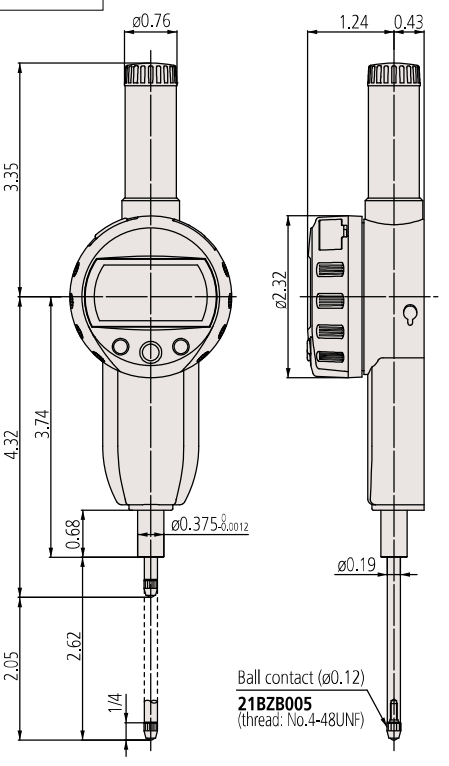
Unit: mm

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.

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™

Mitutoyo guarantees the product quality. PROPRIETARY INSPECTION CERTIFICATE

An inspection certificate is supplied as standard. Refer to page U-11 for details.

Digimatic Indicators

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

ABSOLUTE Digimatic Indicator ID-N/B SERIES 543 — with Dust/Water Protection Conforming to IP66

MeasurLink® ENABLED
Data Management Software by Mitutoyo

Functions

- Zero-setting (INC system)
- Presetting (ABS system)
- Direction switching
- Tolerance judgment
- LCD readout reversal
- Resolution switching
  (For 0.001 mm or 0.00005 in resolution models)
- Data output
- Display value holding
  (when no external device is connected)
- Low battery voltage alarm display
- Error alarm display

- Our unique ABS scale restores the last origin position automatically when the indicator is turned on.
- The chance of overspeed errors has been eliminated thanks to the ABS scale.
- Rated to IP66: can be used satisfactorily even in adverse environments where the indicator is subject to splashing by cutting fluid or coolant.
- Slim body design (body width: only 35 mm) is advantageous in multipoint measurement situations where space is restricted. The LCD readout can also be rotated 180° to allow reading from the most convenient direction.
- Succeeded in digitalization of the Back Plunger type widely used for dial indicators for **ID-B**. A 5 mm-stroke plunger with a higher degree of accuracy has been implemented by adopting a direct reading scale for plunger displacement.
- 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.
- Equipped with a data output port that enables incorporation into measurement networking and statistical process control systems. (Refer to page A-3)

543-575

543-585

IP66

TÜVRheinland CERTIFIED
www.tuv.com
ID 0000007161

IP66

TÜVRheinland CERTIFIED
www.tuv.com
ID 0000007162

Rated to IP66 water- and dust-proofing standard and oil resistance improved.

Body width 35 mm

LCD readout reversal function

SPECIFICATIONS

Metric

ISO/JIS type ASME/ANSI/AGD type

Order No.	Range (mm)	Resolution (mm)	Maximum permissible error (mm)			Measuring force MPL (N)	Remarks
			MPE*E	Hysteresis MPEH	Repeatability MPER		
543-570	12.7	0.01	0.02	0.02	0.01	2.5 or less	Slim type
543-580	5.0					2.0 or less	Back Plunger type
543-575	12.7	0.01/0.001 (selectable)	0.01/0.003	0.02	0.002	2.5 or less	Slim type
543-585	5.0					2.0 or less	Back Plunger type

Inch/Metric

Order No.	Range (in)	Resolution	Maximum permissible error			Measuring force MPL (N)	Remarks
			MPE*E	Hysteresis MPEH	Repeatability MPER		
543-571	0.5	0.0005 in/0.01 mm	±0.001 in/0.02 mm	0.001 in/0.02 mm	0.0005 in/0.01 mm	2.5 or less	Slim type
543-581	0.2					2.0 or less	Back Plunger type
543-576	0.5	0.00005/0.0005 in 0.001/0.01 mm (selectable)	±0.0001 in/0.003 mm	0.0001 in/0.002 mm	0.0001 in/0.002 mm	2.5 or less	Slim type
543-586	0.2					2.0 or less	Back Plunger type

* Error of indication for the total measuring range
Note: One silver oxide button cell (SR44) for monitor included

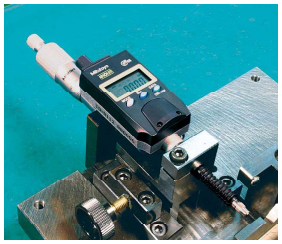
F

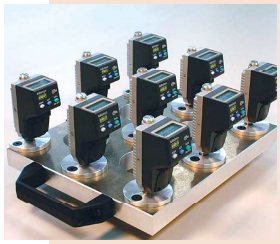
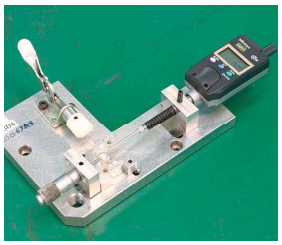
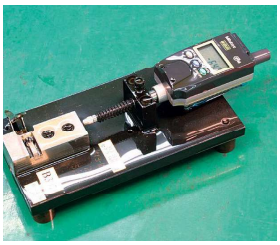
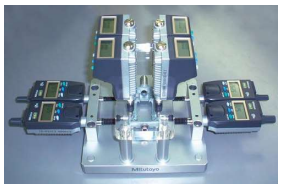
Mitutoyo

Digimatic Indicators

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

Typical applications



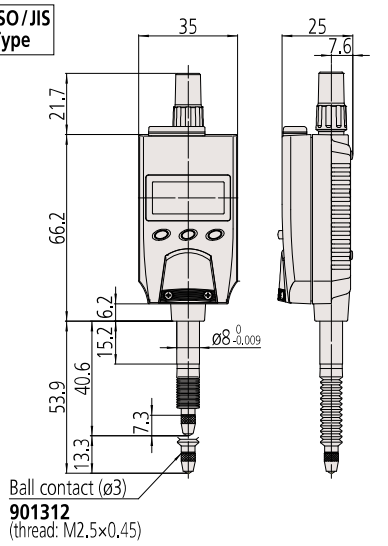






DIMENSIONS

Slim Type
ID-N

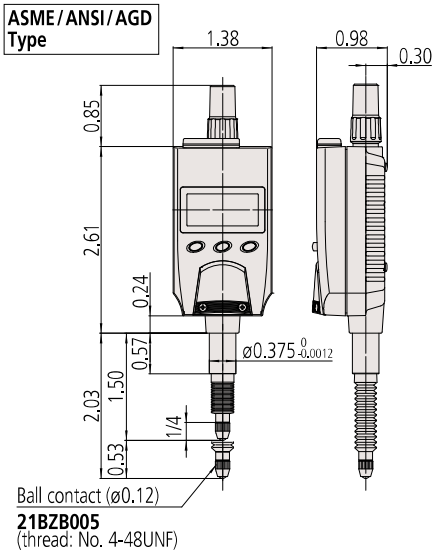
Unit: mm

ISO/JIS Type



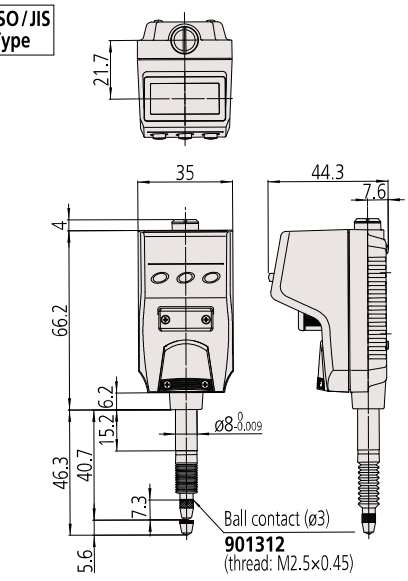
Unit: in

ASME/ANSI/AGD Type

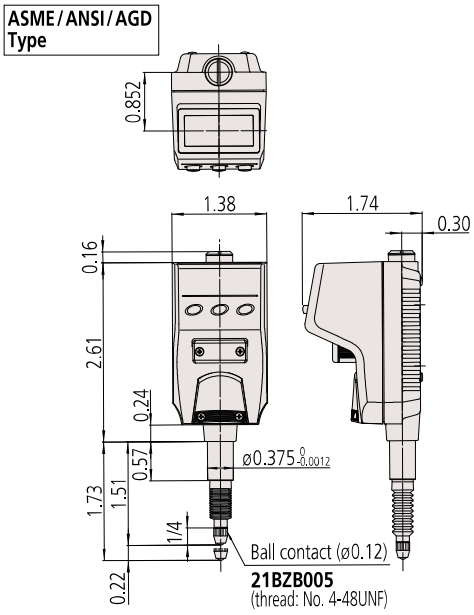


Back plunger Type
ID-B

ISO/JIS Type



ASME/ANSI/AGD Type



Optional Accessories

- Lifting knob (only for **ID-N**)
  21EZA105 (ISO/JIS type)
  21EZA150 (ASME/ANSI/AGD type)
  Spindle can be manually lifted. Remove the spindle cap for **ID-N** and attach the lifting knob to the spindle. Note that water resistance is not maintained in this configuration.

Typical application using the lifting knob

- Lug
  21EZA145 (ISO/JIS type)
  21EZA146 (ASME/ANSI/AGD type)
- Arm for **ID-B** (made-to-order)
- Rubber boot
  For oil resistance (NBR) **21EAA423** (for **ID-N**)
  21AAB562 (for **ID-B**)
  For durability (silicone) **238774** (for **ID-N**)
  21EAA212 (for **ID-B**)
- SPC cable:
  21EAA194 (1 m)
  21EAA190 (2 m)

SPC cable

Bifurcated connecting cable with zero-setting terminal

- USB Input Tool Direct (2 m): **06AFM380G**
- 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 A-14 for details.)
- Connecting Cables for **U-WAVE-T** (160 mm): **02AZD790G**
  For foot switch: **02AZE140G**
  (Refer to pages A-19 to A-21 for details.)
- Digimatic Mini-Processor **DP-1VA LOGGER**: **264-505**
- Bifurcated connecting cable with zero-setting terminal:
  21EAA210 (1 m)
  21EAA211 (2 m)
  Two of the wires inside the cable are separated for zero setting without touching the SET switch on the main body. Use these wires in combination with commercially available switches. Zero setting is performed by briefly connecting these two wires together (less than a second), and ABS preset & recall by connecting for a second or more.
- Contact points for Mitutoyo's dial indicators.
  (Refer to pages F-57 to F-60 for details.)

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™

PROPRIETARY INSPECTION CERTIFICATE

An inspection certificate is supplied as standard. Refer to page U-11 for details.

Functions

- Peak detection (MAX/MIN)
- Runout (MAX - MIN) Hold

Note: Peak detection
1) Sampling rate: 50 readings/sec
2) Capturing speed: 50 µm/sec (max.)

- Zeroset (INC system)
- Preset function (ABS system)
- Counting direction switching
- Tolerance judgment
  (P1, P2, P3, and INC can be stored)
- Resolution selection
- Simple calculation f(x) =Ax
- Analog bar resolution selection
- Key lock
- in/mm conversion (inch/mm models)
- Display hold (when no external device is connected)
- Data output
- External PC setting input
- Display rotation (330°)
- Low battery voltage alarm display
- Error alarm display

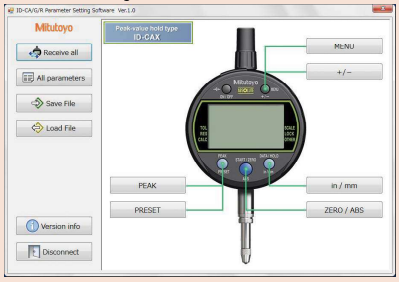
Optional Accessories

- Lifting
  Lifting lever
  21EZA198 (ISO/JIS Type),
  21EZA199 (ASME/ANSI/AGD Type)
  Lifting cable **21JZA295**
  Lifting knob
  21EZA105 (ISO/JIS Type),
  21EZA150 (ASME/ANSI/AGD Type)
- SPC Cable:
  905338 (1 m)
  905409 (2 m)
  (Refer to pages A-27 to A-29 for details.)
- 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 A-14 for details.)
- Connecting Cables for **U-WAVE-T** (160 mm):
  02AZD790F
  For foot switch: **02AZE140F**
  (Refer to pages A-19 to A-21 for details.)
- Digimatic Mini-Processor **DP-1VA LOGGER**: **264-505**
- Parameter setup kit: **21EZA313**

Note: Parameter setting software (can be downloaded for free from the Mitutoyo website) is also required.

Parameter setup kit

Parameter setting software



- Contact points for Mitutoyo's dial indicators
  (Refer to pages F-57 to F-60 for details.)
- Interchangeable backs for 2 series
  (Refer to page F-61 for details.)
- Measuring stands.
  (Refer to pages F-84 to F-91 for details.)

Digimatic Indicators

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

ABSOLUTE Digimatic Indicator ID-C SERIES 543 — Peak-Value Hold Type

MeasurLink ENABLED
Data Management Software by Mitutoyo

- Run-out/MAX-MIN Hold function enables GO/±NG judgment*1 for peak or difference values.
- Five buttons, status icons, and clear button indications allow for easy operation of a wide variety of functions.
- Wide LCD and new analog bar graph are now standard on all models.
- The ABS (absolute) scale restores the last origin position*2 automatically when the indicator is turned on, and realizes high reliability by eliminating over-speed errors.
- By using the parameter setup kit (optional) and the dedicated software, the functions and the parameters can be configured using a computer.
- Equipped with a data output port that enables incorporation into measurement networking and statistical process control systems. (Refer to page A-3)

*1 Tolerance judgment results cannot be output.
*2 Regarding origin setting, refer to "Origin Setting of Digimatic Indicators" on page F-25.

543-300/543-300B

SPECIFICATIONS

ISO/JIS type ASME/ANSI/AGD type

Metric

Order No. (w/lug, flat-back)	Range (mm)	Resolution (mm)	Maximum permissible error (mm) MPE$_E$*3	Hysteresis MPE$_H$	Repeatability MPE$_R$	Measuring force MPL (N)	Power supply	Battery life (normal use)*4	Net mass (g)
543-300	12.7	0.001/ 0.01 (selectable)	0.003	0.002	0.002	1.5 or less	CR2032x1 pc.	Approx. 1 year	180
543-300B									170

Inch/Metric

Order No. (w/lug, flat-back)	Range	Resolution	Maximum permissible error MPE$_E$*3	Hysteresis MPE$_H$	Repeatability MPE$_R$	Measuring force MPL (N)	Power supply	Battery life (normal use)*4	Net mass (g)
543-301	0.5 in/ 12.7 mm	0.00005/ 0.0001/ 0.0005 in, 0.001/0.01 mm (selectable)	±0.00010 in /0.003 mm	0.00010 in /0.002 mm	0.00010 in /0.002 mm	1.5 or less	CR2032x1 pc.	Approx. 1 year	180
543-301B									170
543-302									195
543-302B									170

*3 Error of indication for the total measuring range
*4 Applies only if not connected to a data processor. Battery life depends on use of the indicator. Use the above value as a guide only.
Note: Products with an Order No. suffixed "**B**" have a flat back.

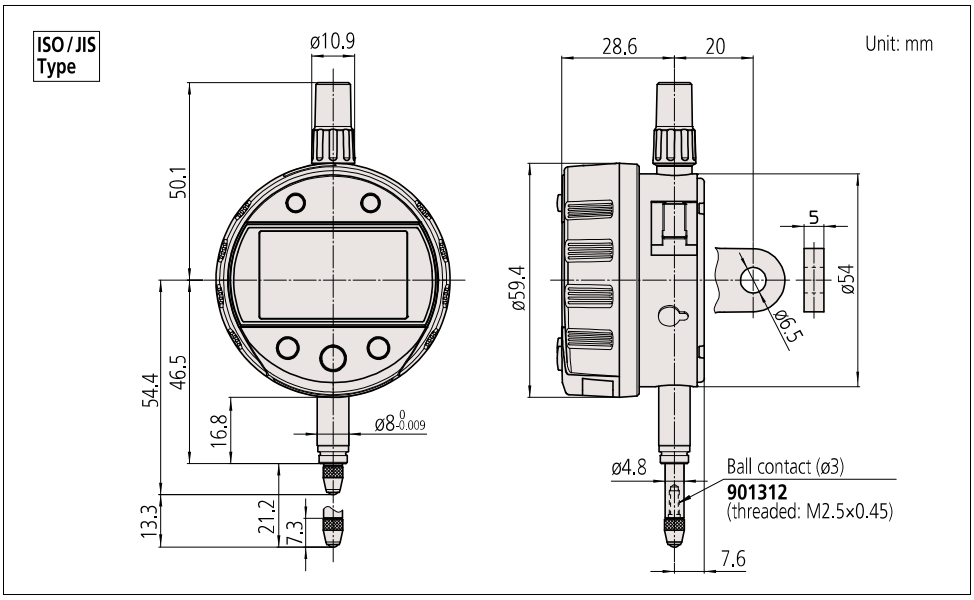
F

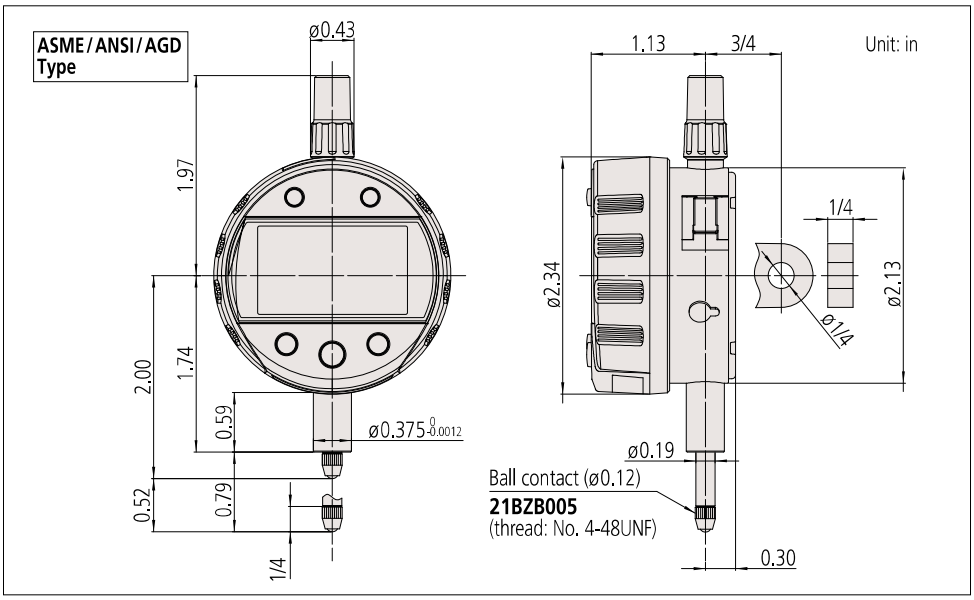
Mitutoyo

Digimatic Indicators

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

DIMENSIONS





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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™

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

An inspection certificate is supplied as standard. Refer to page U-11 for details.

Functions

- Minimum value detection

Note: Peak detection
1) Sampling rate: 50 readings/sec
2) Capturing speed: 50 µm/sec (max.)

- Preset (3 Preset values can be stored)
- Tolerance judgment
  (3 sets of upper and lower limits can be stored)
- Resolution selection
- Analog bar resolution selection
- Key lock
- Display hold (when no external device is connected)
- Data saving/calling
  (when no external device is connected)
- Data output
- External PC setting input
- Display rotation (330°)
- Low battery voltage alarm display
- Error alarm display

Optional Accessories

- SPC Cable:
  905338 (1 m)
  905409 (2 m)
  (Refer to pages A-27 to A-29 for details.)
- 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 A-14 for details.)
- Connecting Cables for **U-WAVE-T** (160 mm): **02AZD790F**
  For foot switch: **02AZE140F**
  (Refer to pages A-19 to A-21 for details.)
- Digimatic Mini-Processor **DP-1VA LOGGER**: **264-505**
- Parameter setup kit: **21EZA313**

Note: Parameter setting software (can be downloaded for free from the Mitutoyo website) is also required.

The ABSOLUTE Digimatic Bore Gage

ABSOLUTE Digimatic Bore Gages, which integrate the display with a bore gage measuring unit, are also available. Refer to pages C-43 and C-44 for details.

Digimatic Indicators

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

ABSOLUTE Digimatic Indicator ID-C SERIES 543 — Bore Gage Type

MeasurLink® ENABLED
Data Management Software by Mitutoyo

- Dedicated to inside measurement with minimum-value Hold and tolerance judgment functions*1.
  Use together with a Mitutoyo bore gage (refer to pages C-27 to C-42 for details).
- Five buttons, status icons, and clear button indications allow for easy operation of a wide variety of functions.
- Wide LCD and new analog bar graph are now standard on all models.
- Can store up to three sets of master reference values and tolerances, alleviating the need for multiple settings to master gages.
- The ABS (absolute) scale restores the last origin position*2 automatically when the indicator is turned on, and realizes high reliability by eliminating over-speed errors.
- By using the parameter setup kit (optional) and the dedicated software, the functions and the parameters can be configured using a computer.
- Equipped with a data output port that enables incorporation into measurement networking and statistical process control systems. (Refer to page A-3)

*1 Tolerance judgment results cannot be output.
*2 Regarding origin setting, refer to "Origin Setting of Digimatic Indicators" on page F-25.

543-310B

Typical application
The Bore Gage is optional.

SPECIFICATIONS

Metric

ISO/JIS type ASME/ANSI/AGD type

Order No.	Range (mm)	Resolution (mm)	Maximum permissible error (mm)			Measuring force MPL (N)	Power supply	Battery life (normal use)*4	Net mass (g)
			MPE$_E$*3	Hysteresis MPE$_H$	Repeatability MPE$_R$				
543-310B	12.7	0.001/0.01 (selectable)	0.003	0.002	0.002	1.5 or less	CR2032 ×1 pc.	Approx. 1 year	170

Inch/Metric

Order No.	Range	Resolution	Maximum permissible error			Measuring force MPL (N)	Power supply	Battery life (normal use)*4	Net mass (g)
			MPE$_E$*3	Hysteresis MPE$_H$	Repeatability MPE$_R$				
543-311B	0.5 in/ 12.7 mm	0.00005/0.0001/ 0.0005 in, 0.001/0.01 mm (selectable)	±0.00010 in /0.003 mm	0.00010 in /0.002 mm	0.00010 in /0.002 mm	1.5 or less	CR2032 ×1 pc.	Approx. 1 year	170
543-312B									

*3 Error of indication for the total measuring range
*4 Applies only if not connected to a data processor. Battery life depends on use of the indicator. Use the above value as a guide only.
Note: Flat back type only.

F

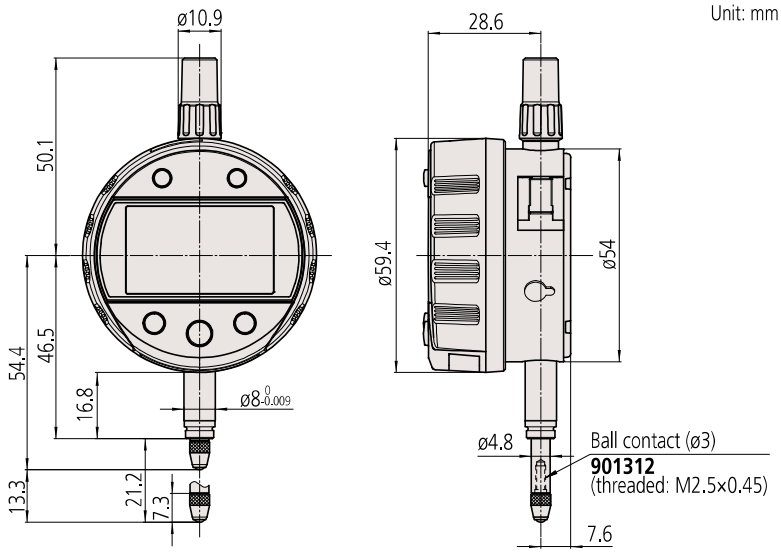
Digimatic Indicators

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

DIMENSIONS

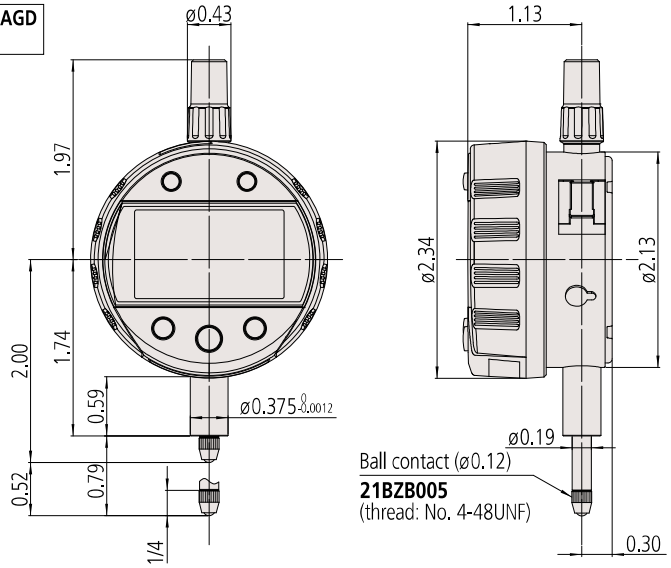
ISO / JIS Type

Unit: mm



ASME / ANSI / AGD Type

Unit: in



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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™

Mitutoyo guarantees the product quality. PROPRIETARY INSPECTION CERTIFICATE

An inspection certificate is supplied as standard. Refer to page U-11 for details.

Functions

- Calculation f (x') =Ax'+B+Cx'$^{-1}$ (x'=x+offset)
- Peak detection (MAX/MIN)
- Runout (MAX - MIN) Hold

Note: Peak detection
1) Sampling rate: 10 readings/sec
2) Capturing speed: 10 µm/sec (max.)
Settings can be changed to:
1) Sampling rate: 50 readings/sec
2) Capturing speed: 50 µm/sec (max.)

- Zero-setting (INC system)
- Preset (ABS system)
- Tolerance judgment (P1, P2, P3, and INC can be stored)
- Analog bar resolution selectable
- Key lock
- Display hold (when no external device is connected)
- Data output
- External PC setting input
- Display rotation (330°)
- Low battery voltage alarm display
- Error alarm display
- Resolution switching*

Resolution (mm)		
0.0002	0.005	0.1
0.0005	0.01	0.2
0.001	0.02	0.5
0.002	0.05	1

Resolution (in)		
0.00001	0.0002	0.005
0.00002	0.0005	0.01
0.00005	0.001	0.02
0.0001	0.002	0.05

* Since the calculation resolution is one micrometer (0.001 mm), using sub-micrometer resolution settings may result in the 4th-place digit being unreliable, particularly when B is set to a very low value and C=0. It does not change at all with certain combinations of calculation coefficient (for example, A=1, B=C=0). The 3rd-place digit representing micrometers (if displayed) is always reliable.

Optional Accessories

- Lifting
  Lifting lever **21EZA198** (ISO/JIS Type), **21EZA199** (ASME/ANSI/AGD Type)
  Lifting knob **21EZA105** (ISO/JIS Type), **21EZA150** (ASME/ANSI/AGD Type)
  Lifting cable **21JZA295**
- SPC Cable:
  905338 (1 m)
  905409 (2 m)
  (Refer to pages A-27 to A-29 for details.)
- 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 A-14 for details.)
- Connecting Cables for **U-WAVE-T** (160 mm): **02AZD790F**
  For foot switch: **02AZE140F**
  (Refer to pages A-19 to A-21 for details.)
- Digimatic Mini-Processor **DP-1VA LOGGER**: **264-505**
- Parameter setup kit: **21EZA313**

Note: Parameter setting software (can be downloaded for free from the Mitutoyo website) is also required.

- Contact points for Mitutoyo's dial indicators
  (Refer to pages F-57 to F-60 for details.)
- Measuring stands
  (Refer to pages F-84 to F-91 for details.)

Digimatic Indicators

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

ABSOLUTE Digimatic Indicator ID-C SERIES 543 — Calculation Type

MeasurLink ENABLED
Data Management Software by Mitutoyo

- Calculation function operates on spindle displacement.
  Entering the appropriate formula factors for a fixture dedicated to the application enables direct measurement readout, thereby eliminating any need for the conversion tables previously needed for those applications where fixtures are typically used.
- Five buttons, status icons, and clear button indications allow for easy operation of a wide variety of functions.
- Wide LCD and new analog bar graph are now standard on all models.
- The ABS (absolute) scale restores the last origin position*1 automatically when the indicator is turned on, and realizes high reliability by eliminating over-speed errors.
- By using the parameter setup kit (optional) and the dedicated software, the functions and the parameters can be configured using a computer.
- Equipped with a data output port that enables incorporation into measurement networking and statistical process control systems. (Refer to page A-3)

*1 Regarding origin setting, refer to "Origin Setting of Digimatic Indicators" on page F-25.

543-342B

SPECIFICATIONS

ISO/JIS type ASME/ANSI/AGD type

Metric

Order No.	Range (mm)	Resolution (selectable)	Maximum permissible error*2 (mm) MPE$_E$*3	Hysteresis MPE$_H$	Repeatability MPE$_R$	Measuring force MPL (N)	Power supply	Battery life (normal use)*5	Net mass (g)
543-340B	12.7	12 steps*5	0.003	0.002	0.002	1.5 or less	CR2032x1 pc.	Approx. 1 year	170
543-590B	25.4					1.8 or less*4			190
543-595B	50.8		0.006			2.3 or less*4			260

Inch/Metric

Order No.	Range	Resolution (selectable)	Maximum permissible error*2 MPE$_E$*3	Hysteresis MPE$_H$	Repeatability MPE$_R$	Measuring force MPL (N)	Power supply	Battery life (normal use)*5	Net mass (g)
543-341B	0.5 in /12.7 mm	12 steps*5	±0.0001 in /0.003 mm	0.0001 in /0.002 mm	0.0001 in /0.002 mm	1.5 or less	CR2032x1 pc.	Approx. 1 year	170
543-342B									
543-591B	1 in /25.4 mm					1.8 or less*4			190
543-592B									
543-596B	2 in /50.8 mm		±0.00025 in /0.006 mm			2.3 or less*4			260
543-597B									

*2 Valid for resolution set to 0.001 mm/0.00005 in and coefficients A=1, B=0 and C=0.
*3 Error of indication for the total measuring range
*4 Applies for a spindle orientation between the spindle pointing vertically downward to the spindle horizontal.
*5 Applies only if not connected to a data processor. Battery life depends on use of the indicator. Use the above value as a guide only.
Note: Flat back type only.

F

Mitutoyo

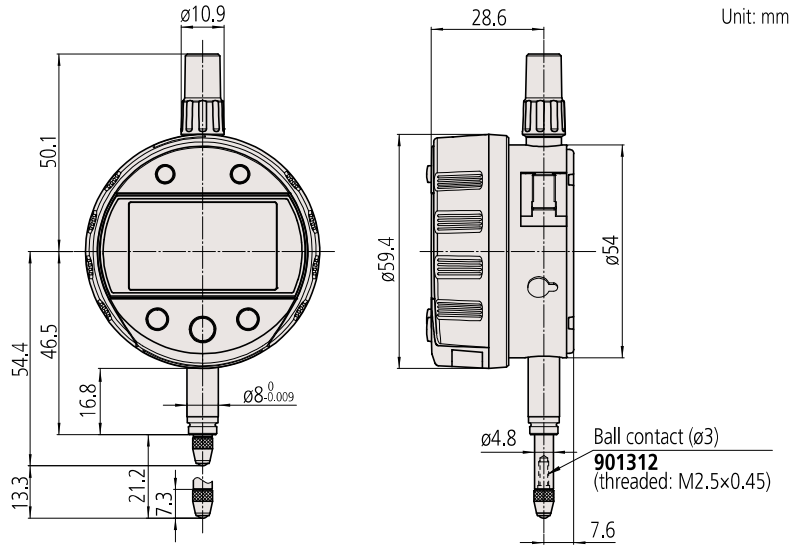
Digimatic Indicators

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

DIMENSIONS

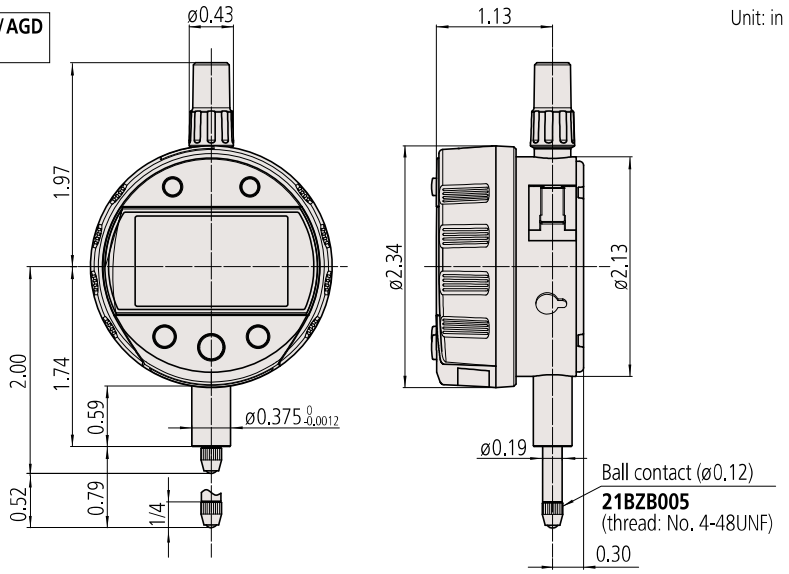
ISO / JIS Type

Unit: mm



ASME / ANSI / AGD Type

Unit: in



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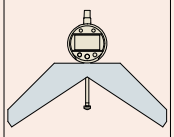
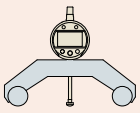
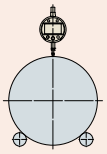
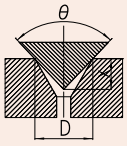
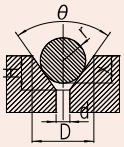
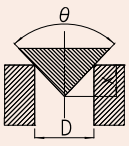
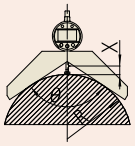
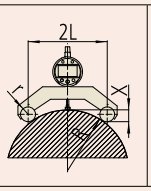
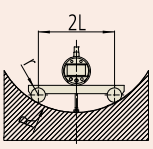
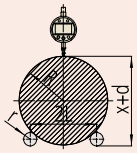
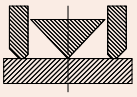
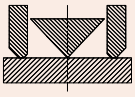
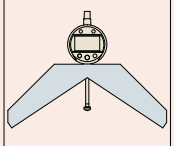
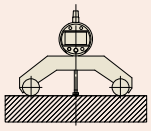
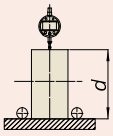
Typical applications

Examples of measuring various features

Item		D=Countersink diameter/Groove width; H=Countersink depth/Groove depth				R=Outside radius of round object		R=Inside radius of round object	R=Outside radius of round object
Fixture type*1									
Contact point		Cone	Ball		Cone	—			
Measuring method x: Spindle displacement									
Calculation		D=Ax	D=Ax+B	H=Ax+B	D=Ax	R=Ax	R=Ax+B+Cx^{-1}		R=A(x+d)+B+C(x+d)$^{-1}$
Coefficient values	A	$-2tan\frac{\theta}{2}$	$-2tan\frac{\theta}{2}$	-1	$-2tan\frac{\theta}{2}$	$-\frac{sin\frac{\theta}{2}}{1-sin\frac{\theta}{2}}$	$\frac{1}{2}$	$-\frac{1}{2}$	$\frac{1}{2}$
	B	0	$2r\left(\frac{1}{cos\frac{\theta}{2}}-tan\frac{\theta}{2}\right)$	$r\left(\frac{1}{sin\frac{\theta}{2}}-1\right)-\frac{d}{2tan\frac{\theta}{2}}$	0	0	$-r$	r	$-r$
	C	0	0	0	0	0	$\frac{L^2}{2}$	$-\frac{L^2}{2}$	$\frac{L^2}{2}$
Origin offset value (function ON/OFF)	d	0 (OFF)	0 (OFF)	0 (OFF)	0 (OFF)	0 (OFF)	0 (OFF)	0 (OFF)	d (ON)
ORIGIN-set position (x=0 position)									
Displayed measurement value at ORIGIN-set position (Value displayed when x=0)		0	Value of coefficient B	0	0	0	Err 30*2 (Overflow error of Display value)		Depends on value of d

*1 A dedicated fixture for a workpiece can be made to order.
*2 The error is cleared when the measured value returns to the displayable range as a result of moving the spindle.

F

Digimatic Indicators

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

ABSOLUTE Digimatic Indicator ID-C
SERIES 543 — Signal Output Function Type

- Enables a tolerance judgment to be output to external equipment for a measurement result against user-defined limits. Solid-state switching provides high reliability by avoiding metallic switch contacts.
- Output is enabled by directly connecting to external devices (sequencers, etc., for which a logical invert is available if required). The measurement and judgment results are displayed on the LCD. The judgment result is also indicated by 2 LEDs.
- A peak-detection function is equipped for measuring and judging peak values, such as runout.
- Positional detection is absolute (ABS system) relative to a set origin point*1 that does not need to be reset every time power is turned on. Furthermore, the ABS system ensures that overspeed errors do not occur.
- Provided with a 4 m cable.
- External power supply required is 5-24 VDC/ 100 mA (max.).
- Dust-water protection level: Conforms to IP54.

*1 Regarding origin setting, refer to "Origin Setting of Digimatic Indicators" on page F-25.

543-350

IP54

SPECIFICATIONS

Metric

ISO/JIS type ASME/ANSI/AGD type

Order No.	Range (mm)	Resolution (mm)	Maximum permissible error (mm)			Measuring force MPL (N)	Net mass (g)
			MPE*2	Hysteresis MPEH	Repeatability MPER		
543-350	12.7	0.001/0.01 (selectable)	0.003	0.002	0.002	2.5 or less	290
543-350B							285

Inch/Metric

Order No.	Range	Resolution	Maximum permissible error			Measuring force MPL (N)	Net mass (g)
			MPE*2	Hysteresis MPEH	Repeatability MPER		
543-351	0.5 in /12.7 mm	0.00005/0.0001/ 0.0005 in, 0.001/0.01 mm (selectable)	±0.00010 in /0.003 mm	0.0001 in /0.002 mm	0.0001 in /0.002 mm	2.5 or less	295
543-351B							285
543-352							295
543-352B							285

*2 Error of indication for the total measuring range
Note 1: LCD readout does not rotate.
Note 2: MAX/MIN holding: sample rate is 100 readings/s; max. rate of change of reading is 100 µm/s or less.
Note 3: Products with an Order No. suffixed "**B**" have a flat back
Note 4: Standard contact point: **901312** (ISO/JIS type), **21BZB005** (ANSI/AGD type)

ABSOLUTE™

An inspection certificate is supplied as standard.
Refer to page U-11 for details.

Functions

- Signal output (–NG/OK/+NG, N-ch open drain, logical invert is available)
- Remote control (peak start preset/zero-set)
- Peak detection (MAX/MIN)
- Runout range measurement (MAX - MIN)
- Zero-setting (INC system)
- Presetting (ABS system)
- Direction switching
- Tolerance judgment (3 pairs of ABS, INC memory function)
- Resolution switching
- Calculation: f(x) =Ax
- Key lock
- Calibration mode (Signal output in Digimatic code format)
- Error alarm display

Optional Accessories

- Lifting*1
  Lifting lever **21EZA198** (ISO/JIS Type), **21EZA199** (ASME/ANSI/AGD Type)
  Lifting cable **21JZA295**
  Lifting knob **21EZA105** (ISO/JIS Type), **21EZA150** (ASME/ANSI/AGD Type)
- Digimatic power supply unit: **21EZA345**
  To denote your AC power cable add the following suffixes to the order No.: **A** for UL/CSA, **D** for CEE, **DC** for CCC, **E** for KC. **No suffix** is required for JIS/100VAC.
  Used in the calibration mode when executing automatic inspection using i-Checker **IC2000**.
  In such a case, purchase connecting cable **21EAA194** (1 m), or **21EAA190** (2 m).

Note: It can't be used as a power suppy when using in the normal mode.

- Contact points for Mitutoyo's dial indicators.*2
- Measuring stands (Refer to pages F-84 to F-91 for details.)

*1 Dust-water protection is not guaranteed.
*2 Refer to pages F-57 to F-60 for details.

Output signals and LCD display

Wire	– NG	OK	+ NG	ABS data composition error
Orange (– NG)	Low	High	High	High
Green (OK)	High	Low	High	High
Brown (+ NG)	High	High	Low	High
LED	Red	Green	Red	Red flashing
LCD	◀	○	▶	"x.xxE" indication

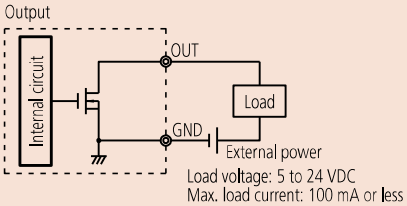
Note: Logical invert is available.

I/O Specifications

Wire	Signal	I/O	Description
Black	– V (GND)	—	Connected to minus (-) terminal
Red	+ V	—	Power supply (5 to 24VDC)
Orange	– NG	O	Tolerance judgment result output: Only the terminal corresponding to a judgment result is set to the low level.
Green	OK	O	
Brown	+ NG	O	
Yellow	PRESET_RECALL ZERO	I	External input terminal: If the relevant terminal is set to the low level, its signal becomes true.
Blue	PEAK_START	I	
Shield	FG	—	Connected to GND (Earth)

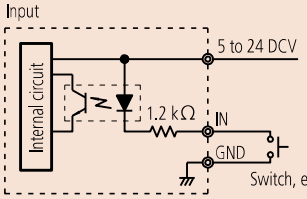
Note: Measurement data cannot be output.

Output



Load voltage: 5 to 24 VDC
Max. load current: 100 mA or less

Input

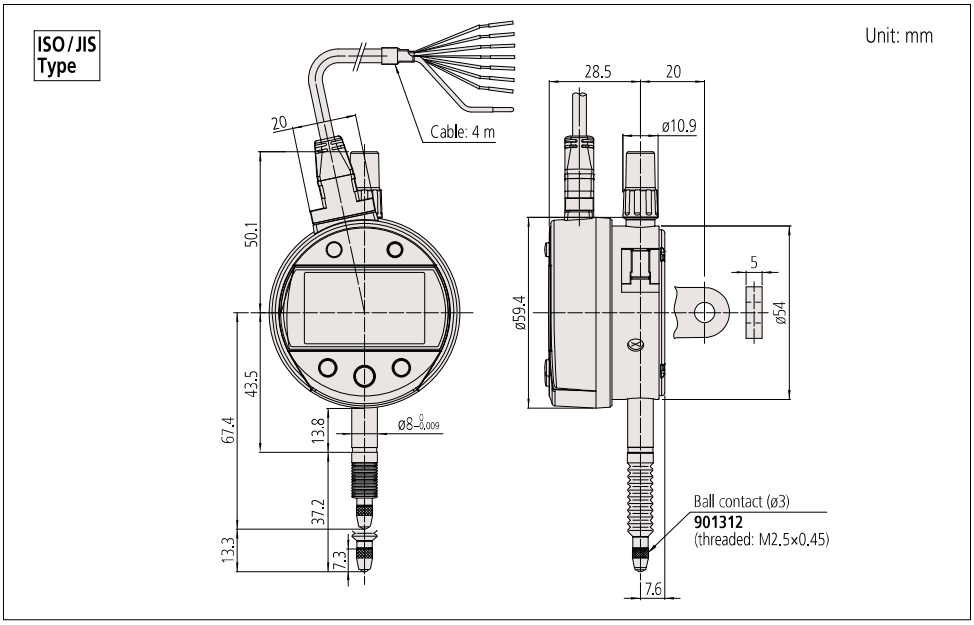


Input current: Max. 20 mA

DIMENSIONS

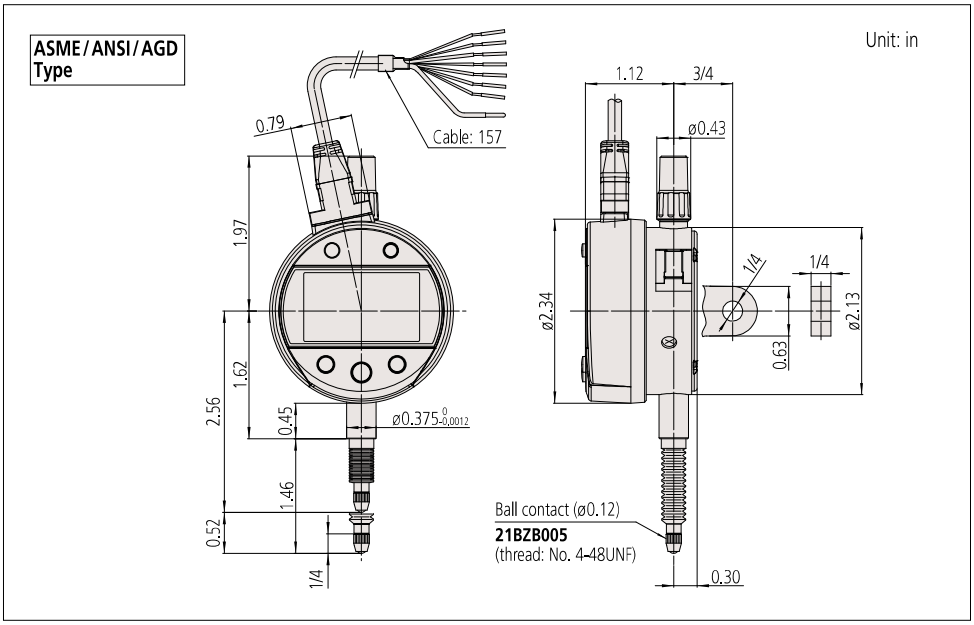
ISO / JIS Type

Unit: mm



ASME / ANSI / AGD Type

Unit: in



F

Digimatic Indicators

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

ABSOLUTE Digimatic Indicator ID-U SERIES 575 — Slim and Economical Design

MeasurLink® ENABLED
Data Management Software by Mitutoyo

- General-purpose indicator with a measuring range of 25.4 mm and a resolution of 0.01 mm.
- Cost-effective and user-friendly type which is equipped with only the basic functions necessary.
- 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.
- Battery life of approx. 20,000 hours in continuous use has been achieved.
- Easy-to-read large LCD readout with a character height of 8 mm.
- Equipped with a data output port that enables incorporation into measurement networking and statistical process control systems. (Refer to page A-3)

* Regarding origin setting, refer to "Origin Setting of Digimatic Indicators" on page F-25.

General-purpose type

575-121

SPECIFICATIONS

ISO/JIS type ASME/ANSI/AGD type

Metric

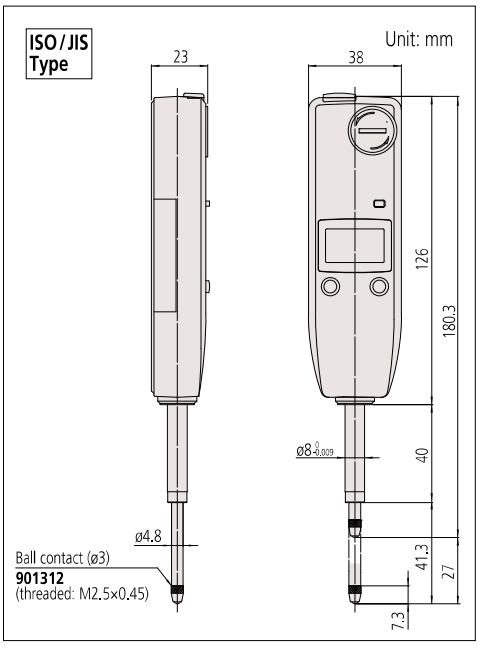
Order No.	Range (mm)	Resolution (mm)	Maximum permissible error (mm)			Measuring force MPL (N)
			MPE$_E$*	Hysteresis MPE$_H$	Repeatability MPE$_R$	
575-121	25.4	0.01	0.02	0.02	0.01	1.8 or less

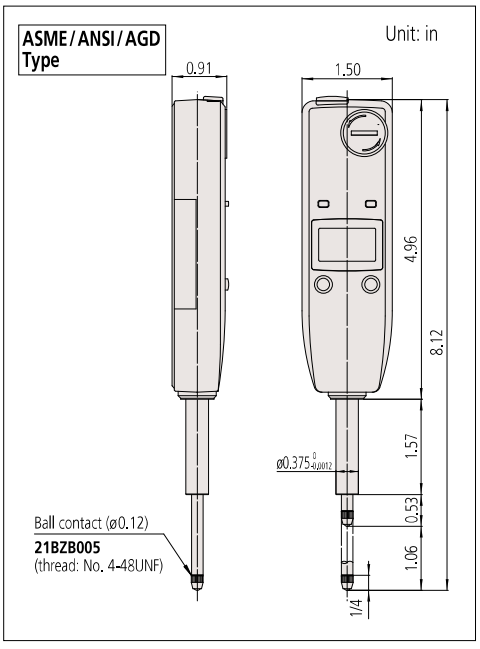
Inch/Metric

Order No.	Range	Resolution	Maximum permissible error			Measuring force MPL (N)
			MPE$_E$*	Hysteresis MPE$_H$	Repeatability MPE$_R$	
575-122	1 in/ 25.4 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	1.8 or less
575-123						

* Error of indication for the total measuring range

DIMENSIONS





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™

An inspection certificate is supplied as standard. Refer to page U-11 for details.

Technical Data

- Display: 5-digit LCD, sign
- Battery: SR44 (1 pc.), **938882** for initial operational checks (standard accessory)
- Battery life: Approx. 20,000 hours of continuous use. Approx. 5 years under normal use.

Note: It varies depending on use frequency and method. Please take the values as rough indications.

- Lifting lever: **137693**

Function

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

Optional Accessories

- Spindle lifting cable (stroke: 10 mm): **21JZA295**
- Contact points for Mitutoyo's dial indicators (Refer to pages F-57 to F-60 for details.)
- SPC Cable:
  905338 (1 m)
  905409 (2 m)
  (Refer to pages A-27 to A-29 for details.)
- USB Input Tool Direct (2 m): **06AFM380F**

Note: Please separately purchase **USB-ITPAK** since there is no data output switch on the measurement instrument. Refer to pages A-13, A-22 to A-24 for details.

- 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 A-14 for details.)
- Connecting Cables for **U-WAVE-T** (160 mm): **02AZD790F**
  For foot switch: **02AZE140F**
  Refer to pages A-19 to A-21 for details.
- Digimatic Mini-Processor **DP-1VA LOGGER**: **264-505**
- Measuring stands
  (Refer to pages F-84 to F-91 for details.)

F

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).

PROPRIETARY INSPECTION CERTIFICATE
Mitutoyo guarantees the product quality

An inspection certificate is supplied as standard. Refer to page U-11 for details.

Digimatic Indicators

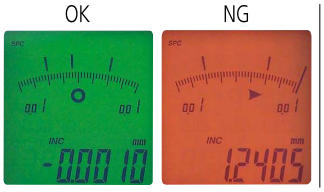
Comparison measuring instruments which ensure high quality, high accuracy and reliability.

Digimatic Indicator ID-H SERIES 543 — High Accuracy and High Functionality Type

MeasurLink® ENABLED
Data Management Software by Mitutoyo

- A top-level digital indicator that supports high accuracy and multi-functional measurement.
- Take advantage of its high accuracy backed up by 0.0005 mm/0.00002 inch inch resolution, remote control functionality via a handheld controller (or an RS-232C interface) and easy runout measurements with the well-established analog bar display.
- Functionality meets the needs of diverse measurement applications.

Tolerance judgment



Analog bar display

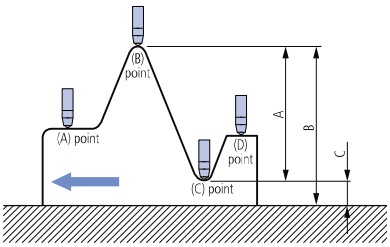
Resolution switching

- Measuring maximum value, minimum value and runout (MAX - MIN)

Maximum value/minimum value measurement

Difference/runout measurement

Example: Indicator traces between points <A> to <D>
Difference (or Total Runout) is displayed as <A>. Dimensions <B> (maximum value) and <C> (minimum value) can be retrieved from memory with a simple key sequence or using the remote control (optional).



- With the optional remote controller, operations such as zero-setting and presetting can be made without touching the indicator body, thereby avoiding disturbance to the set-up.
- An advanced, remote control system can be implemented with the built-in RS-232C interface and a PC.
- Equipped with a data output port that enables incorporation into measurement networking and statistical process control systems. (Refer to page A-3)

Remote controller (optional)

543-561

543-563

Technical Data

- Display: 7-digit LCD, sign, and analog bar with 2-color backlight
- Power supply: 6 V DC (via AC adapter) **06AFZ950***

* To denote your AC power cable add the following suffixes to the order No.: **JA** for UL/CSA and PSE, **D** for CEE, **DC** for CCC, **E** for BS, **K** for KC, **No suffix** is required for JIS/100 V

- Positional detection method: Photoelectric-type reflection linear encoder
- Maximum response speed: 1000 mm/s
- Lifting lever: **137693**

Optional Accessories

- Remote controller: **21EZA099**
- Lifting
  Lifting cable: **21JZA295** (stroke 30 mm)
  Lifting knob: **21EZA101**
- SPC Cable:
  936937 (1 m)
  965014 (2 m)
  (Refer to pages A-27 to A-29 for details.)
- USB Input Tool Direct (2 m): **06AFM380D**
- 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 A-14 for details.)
- Connecting Cables for **U-WAVE-T** (160 mm): **02AZD790D**
  For foot switch: **02AZE140D**
  (Refer to pages A-19 to A-21 for details.)
- RS-232C Connecting cable (2 m): **21EAA131**
- Lug-on-center back:
  101040 (ISO/JIS type)
  101306 (ASME/ANSI/AGD type)
- Contact points for Mitutoyo's dial indicators (Refer to pages F-57 to F-60 for details.)
- Digimatic Mini-Processor **DP-1VA LOGGER**: **264-505**
- Granite comparator stands (Refer to page F-88 for details.)
- Comparator stands (Refer to page F-90 for details.)

Comparator stand
215-505-10

Remote controller

Lifting cable

F

Digimatic Indicators

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

SPECIFICATIONS

Metric

Order No.*1	Range (mm)	Resolution (mm)	Maximum permissible error (mm)			Measuring force MPL (N)	Net mass (g)
			MPE$_E$*2	Hysteresis MPE$_H$	Repeatability MPE$_R$		
543-561	30.4	0.0005/ 0.001 (selectable)	0.0015	0.0015	0.001	2.0 or less	290
543-563	60.9		0.0025	0.0025		2.5 or less	305

Inch/Metric ☐ ISO/JIS type ☐ ASME/ANSI/AGD type

Order No.*1	Range	Resolution	Maximum permissible error			Measuring force MPL (N)	Net mass (g)
			MPE$_E$*2	Hysteresis MPE$_H$	Repeatability MPE$_R$		
543-562	1.2 in /30.4 mm	0.00002/ 0.00005/ 0.0001 in, 0.0005/ 0.001 mm (selectable)	±0.00006 in/ 0.0015 mm	0.00006 in/ 0.0015 mm	0.00004 in/ 0.001 mm	2.0 or less	300
543-564	2.4 in /60.9 mm		±0.0001 in/ 0.0025 mm	0.0001 in/ 0.0025 mm		2.5 or less	

*1 To denote your AC power cable add the following suffixes to the order No.: **A** for UL/CSA, **D** for CEE, **DC** for CCC, **E** for BS, **K** for KC, **No suffix** is required for JIS/100 V

*2 Error of indication for the total measuring range

Note 1: The indicator can output SPC (Digimatic) data consisting of up to 6 digits in full. If the data consists of 7 digits the first digit is not output (example: 123.4565 mm is output as 23.4565 mm).

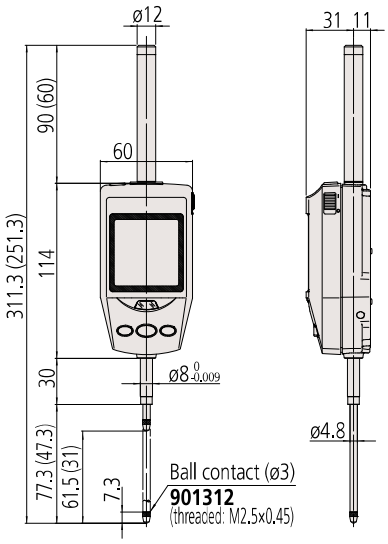
Note 2: Regarding origin setting, refer to "Origin Setting of Digimatic Indicators" on page F-25.

Note 3: The orientation for use can be from vertical (contact point pointing downward) to horizontal (spindle in horizontal orientation).

DIMENSIONS

ISO/JIS Type

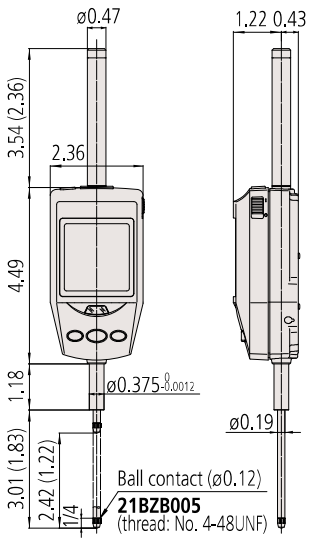
Unit: mm



Note: ( ) = **543-561**

ASME/ANSI/AGD Type

Unit: in



Note: ( ) = **543-562**

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™

PROPRIETARY INSPECTION CERTIFICATE

An inspection certificate is supplied as standard. Refer to page U-11 for details.

Digimatic Indicators

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

ABSOLUTE Digimatic Indicator ID-F SERIES 543 — with Back-lit LCD Screen

MeasurLink® ENABLED
Data Management Software by Mitutoyo

- Multi-functional.
- GO/±NG judgment function: If a judgment result shows an out of tolerance condition, the display backlighting changes from green to red.

Green indication for GO judgment

Red indication for ±NG judgment

- An analog bar indicator has been integrated to make upper/lower limit and turnover point reading more comfortable.
- The ABS (absolute) scale restores the last origin position*1 automatically when the indicator is turned on, and realizes high reliability by eliminating over-speed errors.
- Easy-to-read large LCD readout with the character height of 8.5 mm.

*1 Regarding origin setting, refer to "Origin Setting of Digimatic Indicators" on page F-25.

- External power supply type: an AC adapter is a standard accessory. Does not require battery replacement.
- The resolution can be switched between 0.001 mm/0.01 mm (or 0.001 in/0.0005 in/0.0001 in/0.00005 in).
- Equipped with a data output port that enables incorporation into measurement networking and statistical process control systems. (Refer to page A-3)

Multi-functional model

543-551

543-553

Technical Data

- Display: 6-digit LCD, sign, and analog bar with 2-color backlight
- Power supply: 9 VDC, 1.2 A (via AC adapter) **06AGC585***1
  *1 To denote your AC power cable add the following suffixes to the order No.: **JA** for UL/CSA and PSE, **D** for CEE, **DC** for CCC, **E** for BS, **K** for KC
- Lifting lever: **137693**

Functions

- Max/Min value hold
- Runout measurement (MAX - MIN)
- Zero-setting (INC system)
- Presetting (ABS system)
- Direction switching
- Tolerance judgment
- Digital display switching (0.01 mm ⟷ 0.001 mm)
- Analog resolution selection (±0.02, ±0.04, ±0.1, ±0.2, ±0.4 mm)
- Function Lock
- Data output
- Error alarm display

Optional Accessories

- Lifting cable: **21JZA295** (stroke 25.4 mm)
- Lug-on-center back:
  101040(ISO/JIS type)
  101306 (ASME/ANSI/AGD type)
- Auxiliary spindle spring:
  02ACA571 (25.4 mm/1 inch models)
  02ACA773 (50.8 mm/2 inch models)
- SPC cable:
  936937 (1 m)
  965014 (2 m)
  (Refer to pages A-27 to A-29 for details.)
- USB Input Tool Direct (2 m): **06AFM380D**

Note: Please separately purchase **USB-ITPAK** since there is no data output switch on the measurement instrument. (Refer to pages A-13 and A-22 to A-24 for details.)

- 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 A-14 for details.)
- Connecting Cables for **U-WAVE-T** (160 mm): **02AZD790D**
  For foot switch: **02AZE140D**
  (Refer to pages A-19 to A-21 for details.)
- Contact points for Mitutoyo's dial indicators*3
- Interchangeable backs for SERIES 2 models*4
- Digimatic Mini-Processor **DP-1VA LOGGER**: **264-505**
- Measuring stands*5
  *3 Refer to pages F-57 to F-60 for details.
  *4 Refer to page F-61 for details.
  *5 Refer to pages F-84 to F-91 for details.

SPECIFICATIONS

Metric

Order No.*2	Range (mm)	Resolution (mm)	Maximum permissible error (mm)			Measuring force MPL (N)	Net mass (g)
			MPE*3	Hysteresis MPE	Repeatability MPE		
543-551	25.4	0.001/ 0.01 (selectable)	0.003	0.002	0.002	1.8 or less	Approx. 240
543-557	50.8		0.003			2.3 or less	Approx. 330
543-553	50.8		0.006				

Inch/Metric

ISO/JIS type ASME/ANSI/AGD type

Order No.*2	Range	Resolution	Maximum permissible error			Measuring force MPL (N)	Net mass (g)
			MPE*3	Hysteresis MPE	Repeatability MPE		
543-552	1 in /25.4 mm	0.00005/ 0.0001/ 0.0005/ 0.001 in, 0.001/ 0.01 mm (selectable)	±0.0001 in /0.003 mm	0.00010 in /0.002 mm	0.00010 in /0.002 mm	1.8 or less	Approx. 240
543-558	2 in /50.8 mm		±0.0001 in /0.003 mm			2.3 or less	Approx. 330
543-554	2 in /50.8 mm		±0.00025 in /0.006 mm				

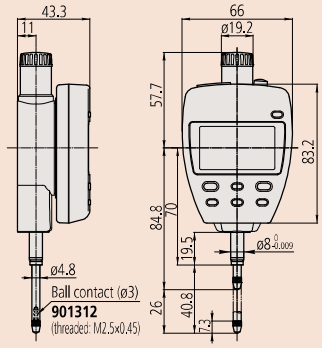
*2 To denote your AC power cable add the following suffixes to the order No.: **A** for UL/CSA, **D** for CEE, **DC** for CCC, **E** for BS, **K** for KC, **No suffix** is required for JIS/100 V
*3 Error of indication for the total measuring range

DIMENSIONS

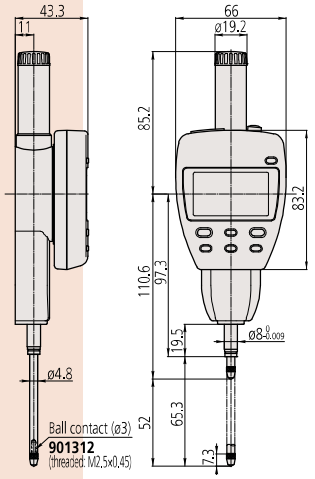
Unit: mm

ISO/JIS Type

543-551



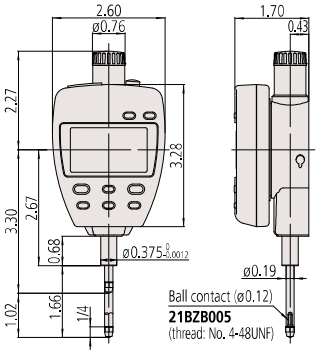
543-553, 543-557



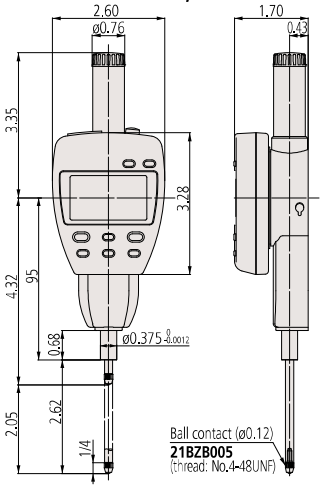
Unit: in

ASME/ANSI/AGD Type

543-552



543-554, 543-558



F

Mitutoyo

Digimatic Indicators

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

Supplemental information on Digimatic Indicators

Origin setting of Digimatic Indicators

Repeatability in the range of 0.2 mm from the lowest rest point is not guaranteed for Digimatic indicators. When setting the origin or presetting a specific value, be sure to lift the spindle at least 0.2 mm from the lowest rest point.

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).

EC Counter
SERIES 542 — Low-cost, Modular Type Display Unit

- –NG, OK and +NG tolerance judgment results can be displayed.
- Can be set to produce either tolerance judgment output or Digimatic output.
- Small size (96×48 mm) which conforms to DIN standards.

542-007

Functions

- Preset
- Tolerance judgment (3 steps)

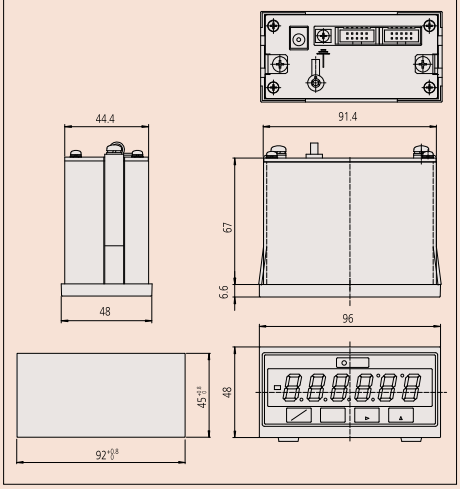
SPECIFICATIONS

Order No.		542-007*
Quantizing error		±1 count
Resolution ( ) indicates maximum display range		0.01 mm (±9999.99)/0.0005 in (±99.9995 in)/0.001 in (±999.999 in) 0.001 mm (±9999.999)/0.00005 in (±9.99995 in)/0.0001 in (±99.999 in) [automatic setting by gage]
Tolerance judgment display		LED display (3 steps: Amber, Green, Red)
External output (switching type)	Tolerance judgment output	–NG, OK, +NG (open-collector)
	Data output	Digimatic output
Control input		External PRESET, external HOLD
Operation temperature range		0 to 40 °C (RH 20 to 80 %, no condensation)
Storage temperature range		–10 to 50 °C (RH 20 to 80 %, no condensation)
External dimensions		96 (W) ×48 (H) ×84.6 (D) mm
AC adapter		AC adapter: (Japan/North America) **06AGC585JA**/(EU) **06AGC585D**/ (UK) **06AGC585E**/(Korea) **06AGC585K**/(China) **06AEG302DC**
Standard Accessories		AC adapter, rubber feet
Mass		220 g

* To denote your AC power cable add the following suffixes to the order No.: **A** for UL/CSA, **D** for CEE, **DC** for CCC, **E** for BS, **K** for KC, C and **No suffix** are required for PSE.

DIMENSIONS

Unit: mm



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