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

ABSOLUTE Solar-Powered Digimatic Indicator ID-SS SERIES 543

- Solar powered
- An environmentally friendly measuring instrument that does not require batteries, eliminating the hassle and cost of battery replacement. Can operate down to a minimum light level of 40 lux – lower than the level in a warehouse.
- Built-in recharger The large-capacity built-in reservoir capacitor allows you to use the indicator for long periods of time under light conditions below the minimum level.*
- User-friendly buttons 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 light, making it easy to resume measurement. This feature makes ID-SS ideal for long-time or multi-point measurement.

SPECIFICATIONS

Metric SO/JIS type ASME/ANS								
Order No	Pango	Posolution		Pomarks				
order No.	Nange	Nesolution	Overall*2	Hysteresis	Repeatability	Reflidiks		
543-500		0.001 mm	0.002 mm	0.002 mm	0.002 mm	With lug		
543-500B	12.7 mm	0.00111111	0.003 11111	0.002 11111	0.002 11111	Flat		
543-505	12.7 11111	0.01 mm	0.02 mm	0.02 mm	0.01 mm	With lug		
543-505B		0.01 11111	0.02 11111	0.02 11111	0.01 11111	Flat		

Inch/Metric

Order No	Pango	Percelution			Pomarka		
Order No.	Range	Resolution	Overall* ²	Hysteresis	Repeatability	Nemarks	
543-501						With lug	
543-501B		0.00005 in	±0.0001 in	0.0001 in	0.0001 in	Flat	
543-502		/0.001 mm	/0.003 mm	/0.002 mm	/0.002 mm	With lug	
543-502B	0 E in/12 7 mm					Flat	
543-506	0.5 11/12.7 11111					With lug	
543-506B		0.0005 in	±0.0010 in	0.0010 in	0.005 in	Flat	
543-507		/0.01 mm	/0.02 mm	/0.02 mm	/0.01 mm	With lug	
543-507B						Flat	

*1 Quantizing error of ±1 count is excluded.

*2 Overall magnification and linearity.

Dimensions



Note 1: Dimensions of the inch (ANSI/AGD Type) dial indicator partly differ from those of the metric (ISO/JIS Type) indicator. Note 2: Inch (ANSI/AGD Type) dial indicators are provided with a stem of 3/8 inch dia. and #4-48UNF thread mount for the contact point.



MeasurLink[®] ENABLED

Data Management Software by Mitutoyo



MeasurLink' ENABLED

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).

(Refer to page X for details.)

SOLUIE



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

Technical Data

- Display: 6-digit LCD, sign
 Measuring force: 1.5 N or less
 Usable positions: All

- Power supply: Solar battery (for indoor use)
 Minimum Operating light: 40 lux
- Note: A built-in reservoir capacitor allows a fully charged ID-SS to be used for about 3.5 hours under light illumination below the minimum level. The charging time differs depending on the environment, but it usually takes about 1.5 hours for a fully discharged ID-SS to fully recharge under light conditions of 500 lux.
- Maximum response speed: No limit (scan-type measurement is not supported)

Functions

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

Optional Accessories

Lifting lever



Lifting cable



Optional Accessories

Lifting

Lifting lever

- 21EZA198 (12.7 mm/0.5 inch ISO/JIS type) 21EZA199 (12.7 mm/0.5 inch ASME/ANSI/AGD type)
- Lifting knob
- 21EZA105 (12.7 mm/0.5 inch ISO/JIS type)*
- 21EZA150 (12.7 mm/0.5 inch ASME/ANSI/AGD type)*
- 21EZA197 (25.4 mm/1 inch models)
- 21EZA200 (50.8 mm/2 inch models)

Lifting cable: 540774

Lifting lever: 137693 (for measuring range: 25.4 and 50.8 mm) (supplied with 25.4 mm and 50.8 mm models as standard.) * Not available for low measuring force models.

- •Auxiliary spindle spring: 02ACA571 (25.4 mm/1 inch models)*
- **02ACA773** (50.8 mm/2 inch models)** **Required when orienting the indicator upside down. Lug-on-senter back:
- 101040 (25.4 mm/1 inch and 50.8 mm/2 inch, ISO/JIS type) 101306 (25.4 mm/1 inch and 50.8 mm/2 inch, ASME/ANSI/AGD type) • Measuring stands (Refer to pages F-78 to F-85 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)	Location (permissible work)
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

MeasurLink' ENABLED

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).



(Refer to page X for details.)



An inspection certificate is supplied as standard. Refer to page X 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/DIN Type), 21EZA199 (ASME/ANSI/ AGD Type) Lifting knob 21EZA105 (ISO/JIS/DIN Type), 21EZA150 (ASME/ANSI/ AGD Type)
- Lifting cable **540774** SPC Cable:
- 905338 (1 m)
- 905409 (2 m)

• USB Input Tool Direct (2 m) : 06AFM380F

- *Please separately purchase USB-ITPAK since there is no data output switch on the measurement instrument. Refer to pages A-20 to A-22 for details. • Connecting Cables for **U-WAVE-T** (160 mm):
- 02AZD79ŐF
- For footswitch: **02AZE140F** Refer to page F-60 for details. Digimatic Mini-Processor DP-1VA LOGGER: **264-505** Contact points for Mitutoyo's dial indicators (Refer to pages F-51 to F-54 for details.)
- Interchangeable backs for 2 series (Refer to page F-55 for details.)
- Measuring stands (Refer to pages F-78 to F-85 for details.)

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 degrees 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.



Mitutoyo

Refer to the ABS Digimatic Indicator ID-S Series brochure (E12013) for details.

ABSOLUTE Digimatic Indicator ID-SX SERIES 543

- 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





SPECIFICATIONS

Metric						120/1	s/Din Type		ANSI/AGD Type
Order No.	Rango	Resolution	Accuracy*1			Back type	Measuring	Battery life* ³	Dust/Water
	nange		Overall* ²	Hysteresis	Repeatability	васк туре	force	Dattery life	protection level*4
543-790						With lug	1 EN or loss	18.000 hours	1042
543-790B		0.001 mm	1 mm 0.003 mm	0.002 mm 0.002 mm	Flat	1.510 01 1855	(Continuous use)	IF4Z	
543-794					0.002 11111	With lug	2.5N or less	Approx. 5 years (Normal use)	
543-794B	12 7 mm					Flat			1535
543-781	12.7 11111	12.7 11111				With lug		20,000 hours	
543-781B		0.01 mm	0.02 mm	0.02 mm	0.01 mm	Flat	1.5N or less	(Continuous use) Approx. 5 years (Normal use)	IP42

Inch/Metric Accuracy* Dust/Water Measuring Order No. Range Resolution Back type Battery life*3 Overall*2 protection level*4 Repeatability Hysteresis force 543-791 543-791B With lug Flat 0.00005 in 543-792 /0.001 mm With lug 1.5N or less IP42 543-792B 543-793 18,000 hours Flat 0 0001 in +0.0001 in 0.0001 in 0.0001 in (Continuous use) Approx. 5 years With lug 543-793B /0.001 mm Flat /0.003 mm /0.002 mm /0.002 mm 543-795 0.5 in/ With lug (Normal use) 543-795B 543-796 12.7 mm 0 00005 in Flat 2.5N or less IP53 /0.001 mm With lug 543-796B Flat 543-782 With lug 20,000 hours 543-782B 0.0005 in ±0.0010 in 0.0010 in 0.0005 in Flat Continuous use IP42 .5N or less Approx. 5 year (Normal use) 543-783 /0.01 mm /0.02 mm With lug /0.02 mm /0.01 mm vears Flat 543-783B

*1 These values apply at 20 °C, and quantizing error of ±1 count is excluded.
*2 Overall magnification and linearity.

The battery life varies, depending on the number of times the Digimatic indicators are 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.

Dimensions



Note 1: Dimensions of the inch (ANSI/AGD Type) dial indicator partly differ from those of the metric (ISO/JIS Type) indicator. Note 2: Inch (ANSI/AGD Type) dial indicators are provided with a stem of 3/8 inch dia. and #4-48UNF thread mount for the contact point.

MeasurLink[®] ENABLED

Data Management Software by Mitutoyo

- ABS (absolute) scale
- 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).

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

ABLOLUTE Digimatic Indicator ID-CX SERIES 543 — Standard Type

 The ABS (absolute) scale restores the last origin position automatically when the indicator is turned on.

Note: Regarding origin setting, refer to "Origin Setting of Digimatic Indicators" on page F-18.

- Thanks to Mitutoyo's ABSOLUTE Linear Encoder, reliability has been increased due to elimination of over-speed errors.
- Tolerance-judging measurement is available by setting upper and lower limit values.

- **MeasurLink**[®] ENABLED Data Management Software by Mitutoyo
- 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).



size Actual

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.



ower 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

F-5

 Parameter setting mode Count direction switching, tolerance judgment setting, resolution switching, scale factor setting, and function lock setting

- inch/mm conversion
- (inch/mm models)

• 330° rotary display

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



• Calculation: f (x) = Ax

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



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

• Function locking

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



MeasurLink' ENABLED

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).

ABS**O**LUTE



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

(Refer to page X for details.)

Technical Data

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

Functions

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

Optional Accessories

• Lifting

Lifting lever 21EZA198 (12.7 mm/0.5 inch ISO/JIS type) 21EZA199 (12.7 mm/0.5 inch ASME/ANSI/AGD type)

- Lifting knob
- 21EZA105 (12.7 mm/0.5 inch ISO/JIS type)* 21EZA105 (12.7 mm/0.5 inch ASME/ANSI/AGD type)* 21EZA197 (25.4 mm/1 inch models) 21EZA200 (50.8 mm/2 inch models)

Lifting cable: 540774

- Lifting lever: 137693 (for measuring range: 25.4 and 50.8 mm) (supplied with 25.4 mm and 50.8 mm models as standard.) * Not available for low measuring force models.
- Auxiliary spindle spring: 02ACA571 (25.4 mm/1 inch models)**
- 02ACA773 (50.8 mm/2 inch models)**
- **Required when orienting the indicator upside down.
- Center-lug back: 101040 (25.4 mm/1 inch and 50.8 mm/2 inch, ISO/JIS type) 101306 (25.4 mm/1 inch and 50.8 mm/2 inch, ASME/ANSI/AGD type) • SPC Cable:
- 905338 (1 m)
- 905409 (2 m)
- USB Input Tool Direct (2 m): 06AFM380F
- Input Tool Series
 IT-016U (USB Keyboard Signal Conversion Type) : 264-016-10
 IT-007R (RS-232C Communication Conversion Type) : 264-007 Refer to page F-60 for details. • Connecting Cables for **U-WAVE-T** (160 mm): **02AZD790F**
- Connecting cables for OvAVE-1 (100 mm). 02A2D For footswitch: 02AZE140F Refer to page F-60 for details.
 Digimatic Mini-Processor DP-1VA LOGGER: 264-505
 Contact points for Mitutoyo's dial indicators (Refer to pages F-51 to F-54 for details.)
- Interchangeable backs for 2 series (Refer to page F-55 for details.)
- Measuring stands (Refer to pages F-78 to F-85 for details.)



Mitutovo

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

Mitutoyo

SPECIFICATIONS Motric

Metric					SO/JIS type	ASME/ANSI/AGD type			
Order No. (w/	/ lug, flat-back)	Range	Resolution	Overall accuracy*	Measuring force	Remarks			
543-390	543-390B	12.7 mm	0.001 mm		1.5 N or less	—			
543-394	543-394B	12.7 mm		0.003 mm	0.4 N - 0.7 N	Low measuring force			
—	543-470B	25.4 mm			1.8 N or less	_			
—	543-490B	50.8 mm		0.005 mm	2.3 N or less	—			
543-400	543-400B	12.7 mm			0.9 N or less	—			
543-404	543-404B	12.7 11111	0.01 mm	0.02 mm	0.2 N - 0.5 N	Low measuring force			
—	543-474B	25.4 mm	0.01 11111		1.8 N or less	—			
—	543-494B	50.8 mm		0.04 mm	2.3 N or less	—			

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

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

0.2 N or less 0.3 Nor less

Maximum measuring

force 0.5 N or less

0.4 N or less

0.3 N or less

Horizontal	Yes	No	0.3 N or less	
ote) Operation u not guarant	ising cor eed.	figurations other the	an shown above is	

Setting measuring force on low measur-

Weight

pproximately 0.1N)

Yes

No

Yes

No

• 543-394/394B/395/395B/396/396B

• 543-404/404B/405/405B/406/406B

Sprina

Yes

Yes

No

No

ing force models

Spindle

orientation

Pointing vertically

downward

Horizontal

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

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

Inch/Metric						
Order No. (w/	lug, flat-back)	Range	Resolution	Overall accuracy*	Measuring force	Remarks
543-391	543-391B			0.0001 in	1.5 N or less	—
543-392	543-392B	0.5 in			1.5 N or less	—
543-395	543-395B	0.5 IN	0.0005/0.0001/ 0.00005 in /		0.4 N - 0.7 N	Low measuring force
543-396	543-396B				0.4 N - 0.7 N	Low measuring force
—	543-471B	1 in			1.8 N or less**	_
_	543-472B	1 111			1.8 N or less**	—
—	543-491B	2 in		0.0002 in	2.3 N or less**	—
_	543-492B	2 111			2.3 N or less**	—
543-401	543-401B				0.9 N or less	
543-402	543-402B	0.5 in			0.9 N or less	
543-405	543-405B	0.5 11		0.001 in	0.2 N - 0.5 N	Low measuring force
543-406	543-406B		0.0005 in / 0.01 mm	0.001 111	0.2 N - 0.5 N	Low measuring force
—	543-475B	1 in			1.8 N or less**	
_	543-476B	1 111			1.8 N or less**	
—	543-495B	2 in		0.0015 in	2.3 N or less**	
_	543-496B	2 11 1		0.0015 III	2.3 N or less**	_
* Hysteresis:				* Repeatability:		

0.0005 in/0.0001 in/0.0005 in/0.001 mm/0.01 mm 0.0001 in / 0.002 mm (0.0005/0.0001/0.00005 in / 0.01/0.001 mm resolution type)

0.001 in / 0.02 mm (0.0005 in / 0.01 mm resolution type)

0.0001 in / 0.002 mm (0.0005/0.0001/0.00005 in / 0.01/0.001 mm resolution type)

0.001 in / 0.02 mm (0.0005 in / 0.01 mm resolution type)



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



Note 1: Dimensions of the inch (ANSI/AGD Type) dial indicator partly differ from those of the metric (ISO/JIS Type) indicator.

(threaded: M2.5×0.45)

Note 2: Inch (ANSI/AGD Type) dial indicators are provided with a stem of 3/8 inch dia. and #4-48UNF thread mount for the contact point.

Note 3: Products with an Order No. suffixed "B" have a plain back, and other models have a center-lug back.

Refer to page F-55 for details of the backs.



F-6



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**

- 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.



 Built-in tolerance judgment function provides OK, +NG, or –NG judgment of measurement with respect to the preset upper and lower limit values, indicating the status of a measurement with the appropriate symbol. The symbols can be displayed much larger.

MeasurLink[®] ENABLED

Data Management Software by Mitutoyo

 Equipped with a data output port that enables incorporation into measurement networking and statistical process control systems. (refer to page A-3).



Body width 35 mm

mm

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



LCD readout reversal function

Metric				SO/JIS Lype ASIVIE/AINSI/AGD Lype
Order No.	Range	Resolution	Accuracy*	Remarks
543-570	12.7 mm	0.01 mm	0.02 mm	Slim type ID-N
543-580	5.0 mm	0.01 11111	0.02 11111	Back Plunger type ID-B
543-575	12.7 mm	0.01 mm / 0.001 mm	0.01 mm / 0.002 mm	Slim type ID-N
543-585	5.0 mm	0.01111117 0.00111111	0.0111117 0.003 11111	Back Plunger type ID-B
Inch/Metric	I			

Order No.	Range	Resolution	Accuracy*	Remarks
543-571	0.5 in	0.000E in .0.01 mm	0.001 in	Slim type ID-N
543-581	0.2 in	0.0005 III, 0.01 IIIIII	0.001 111	Back Plunger type ID-B
543-576	0.5 in	0.01 mm / 0.001 mm	0.00012 in	Slim type ID-N
543-586	0.2 in	0.0005 in / 0.00005 in	0.00012 111	Back Plunger type ID-B

MeasurLink[®] ENABLED

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).

(Refer to page X for details.)

Functions

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

Optional Accessories

- SPC Cable:
- 905338 (1 m)
- 905409 (2 m)
- USB Input Tool Direct (2 m) : 06AFM380F
- Connecting Cables for U-WAVE-T (160 mm) : 02AZD790F For foot switch : 02AZE140F
 - Refer to page F-60 for details.
- Digimatic Mini-Processor DP-1VA LOGGER: 264-505
- 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.

Using the lifting knob



- Lua 21EZA145 (ISO/JIS type)
- 21EZA146 (ASME/ANSI/AGD type)
- Arm for ID-B (made-to-order)
- Rubber boot For oil resistance (NBR) 02ACA376 (for ID-N) 125317 (for ID-B)

238774 (for ID-N) For durability (silicon) 21EAA212 (for ID-B)

- SPC cable: 21EAA194 (1 m)
- 21EAA190 (2 m)
- 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 F-60 for details. • Connecting Cables for U-WAVE-T (160 mm) :02AZD790G
- For footswitch: 02AZE140G
- Refer to page F-60 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-51 to F-54 for details.)

*Quantizing error of ±1 count is excluded



Usage examples









DIMENSIONS









Bifurcated connecting cable with zero-setting terminal



Mitutoyo

Refer to the ABS Coolantproof Digimatic Indicator ID-N/ID-B brochure (**E4302-543**) for details.



Note 1: Dimensions of the inch (ANSI/AGD Type) dial indicator partly differ from those of the metric (ISO/JIS Type) indicator. Note 2: Inch (ANSI/AGD Type) dial indicators are provided with a stem of 3/8 inch dia. and #4-48UNF thread mount for the contact point.



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

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

- Run-out/MAX-MIN Hold function enables GO/±NG judgment for peak or difference values.
- Simple selection of many functions with five buttons and status icons.
- Wide LCD and new analog bar graph are now standard on all models.
- Sampling is performed fifty times per second for accurate detection of maximum and minimum values.
- 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.
- 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). 543-300/543-300B

SPECIFICATIONS

Metric			ISO/JIS type	ASME/AN	ISI/AGD type			
Order No. (w/lug, flat-back)	Range	Resolution	Overall* ²	Accuracy* Hysteresis	Repeatability	Power supply	Battery life (normal use)* ³	Net weight
543-300 543-300B	12.7 mm	0.001/0.01 mm	0.003 mm	0.002 mm	0.002 mm	CR2032 x 1 pc.	Approx. 1 year	180 g 170 g

Inch/Metric	I							
Order No. (w/lug, flat-back)	Range	Resolution	Overall* ²	Accuracy* Hysteresis	Repeatability	Power supply	Battery life (normal use)* ³	Net weight
543-301			±0.00010 in 0.000			CR2032 x 1 pc.	Approx. 1 year	180 g
543-301B	0.5 in/12.7 mm ^{0.}	5 in/12.7 mm 0.00005/0.0001/0.0005 in ± /0.001/0.01 mm //		0.00010 in	0.00010 in			170 g
543-302			/ 0.003 mm	/0.002 mm	/0.002 mm			195 g
543-302B								170 g

*1 Quantizing error of ±1 count is excluded. Valid for resolution set to 0.001 mm/0.00005 inch and coefficient A=1.

*2 Overall magnification and linearity

*3 Applies only if not connected to a data processor. Battery life depends on use of the indicator. Use the above value as a quide only.

DIMENSIONS



Note 1: Dimensions of the inch (ANSI/AGD Type) dial indicator partly differ from those of the metric (ISO/JIS Type) indicator. Note 2: Inch (ANSI/AGD Type) dial indicators are provided with a stem of 3/8 inch dia. and #4-48UNF thread mount for the contact point. MeasurLink[®] ENABLED

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).

ABS**O**LUTE



MeasurLink[®] ENABLED

Data Management Software by Mitutoyo

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

(Refer to page X for details.)

Functions

- Peak value hold (maximum and minimum value)
- Runout value Hold (difference between maximum/minimum values)

- (difference between maximum/mini 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

- Key lock in/mm conversion (inch/mm models)
- Display hold (when external device is connected)
 Data output
 External PC setting input
 Display rotation (330^o)
 Low battery voltage alarm display
 Error alarm display

Optional Accessories

- Controllar Accessories
 Eifting
 Lifting lever
 21EZA198 (ISO/JIS/DIN Type),
 21EZA199 (ASME/ANSI/ AGD Type)
 Lifting knob
 21EZA105 (ISO/JIS/DIN Type),
 21EZA150 (ASME/ANSI/ AGD Type)
 Lifting cable 54072
 - Lifting cable **540774** SPC Cable:
- 905338 (1 m) 905409 (2 m)
- USB Input Tool Direct (2 m) : 06AFM380F
 Input Tool Series
 IT-016U (USB Keyboard Signal Conversion Type) :
 - 264-016-10

IT-007R (RS-232C Communication Conversion Type) : 264-007

- Refer to page F-60 for details. Connecting Cables for U-WAVE-T (160 mm): 02AZD790F For footswitch: 02AZE140F Refer to page F-60 for details. Digimatic Mini-Processor DP-1VA LOGGER: 264-505
- Parameter setup kit: 21EZA313 Note: Parameter setting software (can be downloaded for free from the Mitutoyo website) is also required.



Parameter setting software



- Contact points for Mitutoyo's dial indicators (Refer to pages F-51 to F-54 for details.)
- Interchangeable backs for 2 series (Refer to page F-55 for details.)
- Measuring stands (Refer to pages F-78 to F-85 for details.)

Mitutoyo

MeasurLink' ENABLED

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).



(Refer to page X for details.)



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

Functions

- Minimum value detection 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 external device is connected)
- Data saving/calling
- (when external device is connected)
- Data output
 External PC setting input
- Display rotation
 Low battery voltage alarm display
- Error alarm display

Optional Accessories

- SPC Cable:
- 905338 (1 m) 905409 (2 m)
- USB Input Tool Direct (2 m) : 06AFM380F
- Input Tool Series
- IT-016U (USB Keyboard Signal Conversion Type) : 264-016-10
- IT-007R (RS-232C Communication Conversion Type) : 264-007
- Refer to page F-60 for details • Connecting Cables for U-WAVE-T (160 mm) :
- 02AZD790F For footswitch : 02AZE140F Refer to page F-60 for details.
- Digimatic Mini-Processor DP-1VA LOGGER: 264-505
- 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.



- ABSOLUTE Digimatic Indicator ID-C SERIES 543 — Bore Gage Type
- Dedicated to inside measurement with minimum-value Hold and tolerance judgment functions.
- Measurement data memory function (9 measurement results can be stored)
- Simple operation of many functions with five buttons and status icons.
- Wide LCD and new analog bar graph are now standard on all models.
- 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.
- 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).





SPECIFICATIONS

Metric	I		pe		GD type			
Order No. *	Pango	Resolution		Power	Battery life	Net		
Order No."	Naliye		Overall* ²	Hysteresis	Repeatability	supply	(normal 'use)* ³	weight
543-310B	12.7 mm	0.001/0.01 mm	0.003 mm	0.002 mm	0.002 mm	CR2032 x 1 pc.	Approx. 1 year	170 g
*Flat back only								

Inch/Metric

Order Ne *	Pango	Pecolution		Power	Battery life	Net		
Order No."	Nange	Resolution	Overall* ²	Hysteresis	Repeatability	supply	(normal 'use)*3	weight
543-311B	0.5 in/	0.00005/0.0001/0.0005 in	±0.00010 in	0.00010 in	0.00010 in	CR2032	Approx 1 year	170 a
543-312B	12.7 mm	/ 0.001/0.01 mm	/ 0.003 mm	/ 0.002 mm	/ 0.002 mm	х 1 рс.	Арргох. Туеаг	170 g

*Flat back only

*1 Quantizing error of ±1 count is excluded. Valid for resolution set to 0.001 mm/0.00005 inch

*2 Overall magnification and linearity.

*3 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.

DIMENSIONS



Note 1: Dimensions of the inch (ANSI/AGD Type) dial indicator partly differ from those of the metric (ISO/JIS Type) indicator. Note 2: Inch (ANSI/AGD Type) dial indicators are provided with a stem of 3/8 inch dia. and #4-48UNF thread mount for the contact point.

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

ABSOLUTE Digimatic Indicator ID-C SERIES 543 — Calculation Type

- 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.
- Peak-Value Run-out/MAX/MIN Hold enables GO/±NG judgment for peak value.
- Simple operation of many functions with five buttons and status icons.
- Wide LCD and new analog bar graph are now standard on all models.
- 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.

SPECIFICATIONS

Order No *	Pango	Resolution (selectable)	Accuracy*1			Massuring force	Dower cupply	Battery life	Net
Order No."	Nange		Overall* ²	Hysteresis	Repeatability	Medsuring force	Power supply	(normal'use)*4	weight
543-340B	12.7 mm		0.002			1.5 N or less		Approx. 1 year	170 g
543-590B	25.4 mm	12 steps*4	0.005 11111	0.002 mm	0.002 mm	1.8 N or less* ³	CR2032 x 1 pc.		190 g
543-595B	50.8 mm		0.006 mm			2.3 N or less* ³			260 g

```
* Flat back only
Inch/Metric
```

12										
I	Order No *	Range	Resolution		Accuracy*1		Measuring force	Power supply	Battery life	Net
	oraci no.	nunge	(selectable)	Overall* ²	Hysteresis	Repeatability	Incusuring force	· offer suppry	(normal use)*4	weight
l	543-341B	0.5 in					1 E N or loss			170 a
	543-342B	/12.7 mm		±0.0001 in	0.0001 in /0.002 mm	0.0001 in /0.002 mm	1.5 10 01 1655	CR2032 x 1 pc.	Approx. 1 year	170 g
	543-591B	1 in	12 ctopc *4	/ 0.003 mm			1.9 Norlocc*3			100 a
	543-592B	/25.4 mm	IZ Steps				1.0 N 01 less			190 g
	543-596B	2 in		±0.00025 in			2 2 N or loss *3			260 a
	543-597B	/50.8 mm		/ 0.006 mm			2.5 N 01 1855			200 y

* Flat back only

*1 Quantizing error of ±1 count is excluded. Valid for resolution set to 0.001 mm/0.00005 inch and coefficients A=1, B=0 and C=0. *2 Overall magnification and linearity.

*3 Applies for a spindle orientation between the spindle pointing vertically downward to the spindle horizontal.

*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.

DIMENSIONS



Note 1: Dimensions of the inch (ANSI/AGD Type) dial indicator partly differ from those of the metric (ISO/JIS Type) indicator. Note 2: Inch (ANSI/AGD Type) dial indicators are provided with a stem of 3/8 inch dia. and #4-48UNF thread mount for the contact point.

F-11

MeasurLink' ENABLED

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).

(Refer to page X for details.)

ABS**O**LUTE



MeasurLink[®] ENABLED

Data Management Software by Mitutoyo

543-342B

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

Functions

- Calculation f (x') = $Ax' + B + Cx'^{-1}$
- (x' = x + offset)
- Peak detection (Max/Min)
- Runout value Hold (difference between max. and min. value)
- Peak detection sampling rate (Switchable) 10 times/s (FAST Mode OFF) 50 times/s (FAST Mode ON)
- · 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 external device is connected)
- Data output
- External PC setting input
- Display rotation (330°
- Low battery voltage alarm display
- Error alarm display Resolution switching*⁵

		5	 				
Reso	olution (r	nm)	Resolution (inch)				
0.0002	0.005	0.1	0.00001	0.0002	0.005		
0.0005	0.01	0.2	0.00002	0.0005	0.01		
0.001	0.02	0.5	0.00005	0.001	0.02		
0.002	0.05	1	0.0001	0.002	0.05		

*5: 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/DIN Type),
- 21EZA199 (ASME/ANSI/ AGD Type)
- 21EZA105 (ISO/JIS/DIN Type), Lifting knob
- 21EZA150 (ASME/ANSI/ AGD Type) Lifting cable 540774
- SPC Čable:
- 905338 (1 m)
- 905409 (2 m)
- USB Input Tool Direct (2 m) : 06AFM380F
- Input Tool Series IT-016U (USB Keyboard Signal Conversion Type) : 264-016-10

IT-007R (RS-232C Communication Conversion Type) : 264-007

- Refer to page F-60 for details. • Connecting Cables for U-WAVE-T (160 mm) : 02AZD790F
- For footswitch : 02AZE140F
- Refer to page F-60 for details.
- Digimatic Mini-Processor DP-1VA LOGGER : 264-505 • 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-51 to F-54 for details.) Measuring stands
- (Refer to pages F-78 to F-85 for details.)

Fixture examples









Examples of measuring various features

ltem		D = Countersink dia	meter / Groove width	; H = Countersink de	pth / Groove depth	R = Outside radius of round object R = Inside radius of round object			R = Outside radius of round object
Fixture type*									
Contact point		Cone	Ba	all	Cone		Flat or radius	to suit feature	
x = Spindle displacement from ORIGIN set position (retracti is the positive-go direction)	Spindle lacement n ORIGIN set ition (retraction be positive-going oction)		21	PHX pHX					
Calculation $(x' = x)$	+ d)	D = Ax	D = Ax' + B	H = Ax' + B	D = Ax'	R = Ax'	R = Ax'	+ B + C/x'	R = A(x') + B + C/(x')
	А	$-2tan\frac{\theta}{2}$	—2tan θ	-1	—2tan θ	$-\frac{\frac{\sin\frac{\theta}{2}}{1-\sin\frac{\theta}{2}}}{1-\sin\frac{\theta}{2}}$	<u>1</u> 2	$-\frac{1}{2}$	<u>1</u> 2
Coefficient values	В	0	$2r\left(\frac{1}{\cos\frac{\theta}{2}}-\tan\frac{\theta}{2}\right)$	$r\left(\frac{1}{\sin\frac{\theta}{2}}\right) - \frac{d}{2\tan\frac{\theta}{2}}$	0	0	—r	r	-r
	С	0	0	0	0	0	$\frac{L^2}{2}$	$-\frac{L^2}{2}$	$\frac{L^2}{2}$
Origin offset value	d	0	0	0	0	0	0	0	0
ORIGIN-set position of spindle *									
Displayed measurement value at ORIGIN-set position of spindle		0	Value of coefficient B	0	0	0	Err 30 ** (Overflow error of Display value)		Depends on value of d ***

* The spindle position at which the ORIGIN is set. This is when the contact point is touching either the reference plane or the calibrated artefact, as shown.

** The 'Err30' message shown in the display is extinguished when the spindle is moved into the measurement range. *** The value of d is chosen to suit the radius range to be measured, the stroke of the indicator and the best spindle position for the ORIGIN. Note that the value of x' should not be allowed to approach zero as this is a highly non-linear region of the equation and measurement accuracy will deteriorate rapidly. A spreadsheet simulation will aid selection of the best value of d for particular r, L and R values.

Notes

Fixtures suited to individual workpieces can be made to order.
 Measuring accuracy is subject to fixture accuracy and workpiece form accuracy.



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.
- Measurements are absolute (ABS system) relative to an origin point^{*1} as set by the user, which holds indefinitely so does not require resetting at every power-on.
- Provided with a 4 m cable.
- External power supply required is 5-24VDC / 100mA (max).
- Dust-water protection level: Conforms to IP54.
- *1 Regarding origin setting, refer to "Origin Setting of Digimatic Indicators" on page F-18.

SPECIFICATIONS

Metric					ISO/JIS ty	rpe 📃 ASM	e/ANSI/AGD type
Order No. (w/	/ lug, flat-back)	Range	Resolution	Overall* ³	Accuracy*2 Hysteresis	Repeatability	Measuring force
543-350	543-350B	12.7 mm	0.001/0.01 mm	0.003 mm or less	0.002 mm	0.002 mm	2.5 N or less
Inch/Metric							
Order No. (w/	/ lug, flat-back)	Range	Resolution	Overall* ³	Accuracy*2 Hysteresis	Reneatability	Measuring force

I KOOK NIO ()A/		1 122000					I NACOCI FIDA TORCO
	(lug, liat-back)	Range	Resolution	Overall* ³	Hysteresis	Repeatability	ivieasuring force
543-351	543-351B	0.5 in	0.00005/0.0001/0.0005 in	±0.00010 in	0.0001 in	0.0001 in	2.5 Norloss
543-352	543-352B	/12.7 mm	/ 0.001/0.01 mm	/ 0.003 mm or less	/0.002 mm	/ 0.002 mm	2.5 N 01 less
Mataci							

Notes

- 1) LCD readout does not rotate.
- 2) Max./min. holding: sample rate is 100 readings/s; max. rate of change of reading is 100 µm/s.
- Products with an Order No. suffixed "B" have a flat back
 Standard contact point: 901312 (ISO/JIS type), 21BZB005 (ANSI/AGD type)
- *2 Quantizing error of ±1 count is excluded. Valid for resolution set to 0.001 mm/0.00005 inch and coefficient A=1.
- *3 Overall magnification and linearity.

DIMENSIONS



Note 1: Dimensions of the inch (ANSI/AGD Type) dial indicator partly differ from those of the metric (ISO/JIS Type) indicator. Note 2: Inch (ANSI/AGD Type) dial indicators are provided with a stem of 3/8 inch dia. and #4-48UNF thread mount for the contact point.





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

(Refer to page X 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.)
- 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*³
- Lifting lever 21EZA198 (ISO/JIS/DIN Type), 21EZA199 (ASME/ANSI/ AGD Type) Lifting knob 21EZA105 (ISO/JIS/DIN Type), 21EZA150 (ASME/ANSI/ AGD Type)
- Lifting cable 540774
- Digimatic power supply unit: 21EZA345
 Note: 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).

- * It can't be used as a power supplier when using in the normal mode.
- Contact points for Mitutoyo's dial indicators.*4 Interchangeable backs for Series 2 models. Dust-water protection is not guaranteed. Use the waterproof types of Series 2 for plain backs if required.*⁵
- Measuring stands (Refer to pages F-78 to F-85 for details.)
- *3 Dust-water protection is not guaranteed. *4 Refer to pages F-51 to F-54 for details. *5 Refer to pages F-55 for details.

Output signals and LCD display

Wire	– NG	OK	+ NG	Composition error
Orange (– NG)	Low	High	High	High
Green (OK)	High	Low	High	High
Brown (+ NG)	High	High	Low	High
LCD	4	0	♠	"x.xxE" indication

* Logical invert is available

I/O Sp	pecifications		
Wire	Signal	1/0	Description
Black	– V (GND)	—	Connected to minus (-) terminal
Red	+ V	_	Power supply (5 - 24VDC)
Orange	– NG	0	Tolerance judgment
Green	OK	0	result output: Only the
Brown	+ NG	0	terminal corresponding to a judgment result is set to the low level.
Yellow	PRESET_RECALL ZERO	I	External input terminal: If the relevant terminal is set
Blue	PEAK_START	I	to the low level, its signal becomes true.
Shield	FG	_	Connected to GND (Earth)

Note: Measurement data cannot be output.



Input current: Max. 20 mA

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(Refer to page X 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.
- Battery life: Approx. 20,000 hours of continuous use. Approx. 5 years under normal use.
 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) : 540774
- SPC Cable: 905338 (1 m)
- 905409 (2 m)
- USB Input Tool Direct (2 m) : 06AFM380F
- *Please separately purchase **USB-ITPAK** since there is no data output switch on the measurement instrument. Refer to pages A-13, A-20 to A-22 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 F-60 for details.

- Connecting Cables for U-WAVE-T (160 mm): 02AZD790F
- For footswitch : **02AZE140F** Refer to page F-60 for details.
- Digimatic Mini-Processor DP-1VA LOGGER: 264-505
- Contact points for Mitutoyo's dial indicators (Refer to pages F-51 to F-54 for details.)
- Measuring stands
 (Refer to pages F-78 to F-85 for details.)

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

- General purpose indicator with the measuring range of 25.4 mm / 1 inch.
- 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. Regarding origin setting, refer to "Origin Setting of Digimatic Indicators" on page F-18.
- Battery life of 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).



Data Management Software by Mitutoyo



SPECIFICATIONS

Metric		I			ASIVIE/AINSI/AGD Type
Order No. (w	/ lug, flat-back)	Range	Resolution	Accuracy*	Measuring force
_	575-121	25.4 mm	0.01 mm	0.02 mm	1.8 N or less

Inch/Metri

Inch/Metric					
Order No. (w.	/ lug, flat-back)	Range	Resolution	Accuracy*	Measuring force
—	575-122	1 in / 25 / mm	0.000E in / 0.01 mm	0.001 in / 0.02 mm	1.9 Norloss
—	575-123	1 1117 25.4 11111	0.0005 117 0.01 11111	0.001 117 0.02 11111	1.0 N 01 1855

*Quantizing error of ±1 count is excluded

DIMENSIONS



Note 1: Dimensions of the inch (ANSI/AGD Type) dial indicator partly differ from those of the metric (ISO/JIS Type) indicator. Note 2: Inch (ANSI/AGD Type) dial indicators are provided with a stem of 3/8 inch dia. and #4-48UNF thread mount for the contact point.

F-14



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

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

- This new-generation digital indicator offers the excellent accuracy and functionality expected from the top class of indicator.
- 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



• Measuring maximum value, minimum value and runout (difference between a maximum and a minimum value)





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Data Management Software by Mitutoyo

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

- 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-232 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)

543-563



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).



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

Technical Data

- Display: 7-digit LCD, sign, and analog bar with 2-color backlight
 - Power supply: 6V DC (via AC adaptor) 06AEG180
 * 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/100V
 - Positional detection method: Photoelectric-type reflection linear encoder Maximum response speed: 1000 mm/s
 - Lifting lever: 137693

Optional Accessories

- Lifting
- Lifting knob : 21EZA101 Lifting cable : 540774 (stroke 30 mm)
- Lug-on-center back: 101040 (ISO/JIS type) 101306 (ASME/ANSI/AGD type)
- Remote controller : 21EZA099
- RS-232 Connecting cable (2 m) : 21EAA131
- SPC Cable:
- 936937 (1 m)
- 965014 (2 m)
- USB Input Tool Direct (2 m) : 06AFM380D
- Connecting Cables for U-WAVE-T (160 mm) :

02AZD790D

- For footswitch: 02AZE140D Refer to page F-60 for details.
- Digimatic Mini-Processor DP-1VA LOGGER: 264-505 Contact points for Mitutoyo's dial indicators
- (Refer to pages F-51 to F-54 for details.) • Granite comparator stand: 215-156-10
- Comparator stand: 215-505-10



Mini-Processor **DP-1VA LOGGER**



controller





543-561

SPECIFICATIONS

Metric	I		
Order No.*	Range	Resolution	Accuracy**
543-561	30.4 mm	0.0005 mm,	0.0015 mm
543-563	60.9 mm	0.001 mm	0.0025 mm
* To denote your AC power cable add the following suffixes to			

the order No.: A for UL/CSA, **D** for CEF, **DC** for CCC, **E** for BS, **K** for KC, **No suffix** is required for JIS/100V

** Quantizing error of ±1 count is excluded.

Inch/Metric	ISO/JIS type ASME/ANSI/AGD type		
Order No.*	Range	Resolution	Accuracy**
543-562	1.2 in / 30.4 mm	0.00002 in, 0.00005 in, 0.0001 in, 0.0005 mm, 0.001 mm	0.00006 in / 0.0015 mm
543-564	2.4 in / 60.9 mm		0.0001 in / 0.0025 mm

* 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/100V

DIMENSIONS



Note 1: Dimensions of the inch (ANSI/AGD Type) dial indicator partly differ from those of the metric (ISO/JIS Type) indicator.
 Note 2: Inch (ANSI/AGD Type) dial indicators are provided with a stem of 3/8 inch dia. and #4-48UNF thread mount for the contact point.
 Dimensions in parentheses () apply to the 30.4 mm range model



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

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

- GO/±NG judgment function: If a judgment result shows an out of tolerance condition, the display backlighting changes from green to red.
- An analog bar indicator has been integrated to make upper/lower limit and turnover point reading more comfortable.

Green indication for GO judgment Red indication for ±NG judgment



- Equipped with a data output port that enables incorporation into measurement networking and statistical process control systems (refer to page A-3).
- Easy-to-read large LCD readout with the character height of 8.5 mm.
- External power supply type: an AC adapter is a standard accessory.

- **MeasurLink**[®] ENABLED Data Management Software by Mitutoyo
- The resolution can be switched between 0.001 mm /0.01 mm (or 0.001 inch /0.0005 inch /0.0001 inch /0.00005 inch).

Multi-functional model



SPECIFICATIONS

Metric	1		
Order No.*	Range	Resolution	Accuracy**
543-551	25 mm		0.003 mm
543-557	50 mm	0.001 mm, 0.01 mm	0.003 mm
543-553	50 mm		0.006 mm

* 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/100V

**Quantizing error of ±1 count is excluded.

DIMENSIONS



Note 1: Dimensions of the inch (ANSI/AGD Type) dial indicator partly differ from those of the metric (ISO/JIS Type) indicator. Note 2: Inch (ANSI/AGD Type) dial indicators are provided with a stem of 3/8 inch dia. and #4-48UNF thread mount for the contact point.

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MeasurLink[®] ENABLED

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).



(Refer to page X for details.)

Technical Data

- Display: 6-digit LCD, sign, and analog bar with 2-color backlight
- Power supply: 9V DC (via AC adaptor) 06AEG302* 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/100V
- Lifting lever: 137693

Functions

- Max/Min value hold
- Runout measurement
- 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 locking
- Data output
- Low battery voltage alarm display • Error alarm display

Optional Accessories

- Lifting cable: 540774 (stroke 25.4 mm) Auxiliary spindle spring: 02ACA571 (25.4 mm/1 inch models)*
- 02ACA773 (50.8 mm/2 inch models)*
- * Required when orienting the indicator upside down. • Lug-on-center back 101040(ISO/JIS type)
- 101306 (ASME/ANSI/AGD type)
- SPC cable: 936937 (1 m)
- 965014 (2 m)

Accuracy**

0.00012 in

/0.003 mm 0.00012 in

/0.003 mm

/0.006 mm

0.00024 in

Resolution

0.00005 in. 0.0001 in

0.0005 in, 0.001 in,

0.001 mm, 0.01 mm

ISO/JIS type ASME/ANSI/AGD type

- 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 F-60 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 F-60 for details.
- Connecting Cables for U-WAVE-T (160 mm) : 02AZD790D

For footswitch: 02AZE140D Refer to page F-60 for details.

- Digimatic Mini-Processor DP-1VA LOGGER: 264-505
- Contact points for Mitutoyo's dial indicators
 Interchangeable backs for Series 2 models*⁵
- Measuring stands
- * 4 Refer to pages F-51 to F-54 for details. * 5 Refer to page F-55 for details.

Application

Difference/Runout measurement

Example: Indicator travel from points A to D

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



Range

1 inch

/25.4 mm

2 inch /50.8 mm

2 inch /50.8 mm

K for KC, No suffix is required for JIS/100V

*Quantizing error of ±1 count is excluded.

* 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,

Inch/Metric Order No.

543-552

543-558

543-554

Supplemental information on Digimatic Indicators

Origin setting of Digimatic Indicators



The stability of measurement within 0.2 mm from the start of spindle travel is not guaranteed, so this region should not be used during operation.



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).

• Preset

Tolerance judgment (3 steps)

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

EC-100

542-007

MeasurLink[®] **ENABLED** Data Management Software by Mitutoyo

- –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 x 48 mm) which conforms to DIN standards.

DIMENSIONS



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 - 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 cable		AC adapter: (Japan/North America)06AEG302JA /(EU)06AEG302D / (Britain) 06AEG302E /(Korea) 06AEG302K /(China) 06AEG302DC	
Mass		220 g	

Mitutow

ON OFF

* 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.



Measurement Data Storage using Digimatic Indicators (optional)

Digimatic Indicators ID-H and ID-F (Connector type D)

Dedicated connecting cables (optional)

Interface for connecting to PC or PLC, and dedicated printer and its connecting cable.

PC connection (wired system) ··· USB Input Tool Direct (refer to page A-13)

USB-ITN-D (2 m): 06AFM380D



Dedicated cable for models with SPC data output (1) 1 m: 936937

2 m: 965014

PC connection (wireless system) ··· U-WAVE (refer to page A-17)

U-WAVE-T (IP67): 02AZD730G U-WAVE-T (buzzer): 02AZD880G



- Dedicated cable for models with SPC data output (2) For standard 160 mm 02A7D790D For footswitch: 02AZE140D
- Dedicated printer connection (only for wired system) ··· **DP-1VA LOGGER** (refer to page A-23)



Dedicated cable for models with SPC data output (1) 1 m: 936937

- 2 m: 965014
- Connecting to PC, PLC, etc. by RS-232C communication (only for wired system)*
- ··· IT-007R (refer to page A-14), MUX-10F (refer to page A-24)



Dedicated cable for models with SPC data output (1) 1 m: 936937 2 m: 965014

*only ID-F

Digimatic Indicators other than ID-H/ F/Ň/B (Connector type F)

Dedicated connecting cables (optional)

Interface for connecting to PC or PLC, and dedicated printer and its connecting cable.

PC connection (wired system) ··· USB Input Tool Direct (refer to page A-13)

USB-ITN-F (2 m): 06AFM380F



Dedicated cable for models with SPC data output (1) 1 m: 905338

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2 m: 905409
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PC connection (wireless system) ··· U-WAVE (refer to page A-17)

U-WAVE-T (IP67): 02AZD730G U-WAVE-T (buzzer): 02AZD880G



- Dedicated cable for models with SPC data output (2) For standard 160 mm: 02AZD790F For footswitch: 02AZE140F
- Dedicated printer connection (only for wired system) ··· DP-1VA LOGGER (refer to page A-23)



Dedicated cable for models with SPC data output (1) 1 m: 905338

2 m: 905409

Connecting to PC, PLC, etc. by RS-232C communication (only for wired system)

... IT-007R (refer to page A-14), MUX-10F (refer to page A-24)



Dedicated cable for models with SPC data output (1) 1 m: 905338

2 m: 905409

Digimatic Indicators ID-N and ID-B (Connector type G)

Dedicated connecting cables (optional)

Interface for connecting to PC or PLC, and dedicated printer and its connecting cable.

• PC connection (wired system) ··· USB Input Tool Direct (refer to page A-13)

USB-ITN-G (2 m): 06AFM380G



Dedicated cable for models with SPC data output (1) 1 m: 21EAA194 2 m: 21EAA190

PC connection (wireless system) ··· U-WAVE

(refer to page A-17)

U-WAVE-T (IP67): 02AZD730G U-WAVE-T (buzzer): 02AZD880G



Dedicated cable for models with SPC data output (2) For standard 160 mm: 02AZD790G

- For footswitch: 02AZE140G
- Dedicated printer connection (only for wired system) ··· DP-1VA LOGGER (refer to page A-23)



Dedicated cable for models with SPC data output (1) 1 m: 21EAA194 2 m: 21EAA190

- Connecting to PC, PLC, etc. by RS-232C communication (only for wired system)
- ··· IT-007R (refer to page A-14), MUX-10F (refer to page A-24)



Dedicated cable for models with SPC data output (1) 1 m: 21EAA194 2 m: 21EAA190

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