

New Products



ABSOLUTE Digimatic Indicator ID-C (Peak-Value Hold Type)

Refer to page F-9 for details.



ABSOLUTE Digimatic Indicator ID-C (Bore Gage Type)

Refer to page F-10 for details.



ABSOLUTE Digimatic Indicator ID-C (Calculation Type)

Refer to pages F-11 to F-12 for details.



ABSOLUTE Digimatic Indicator ID-C (Signal Output Function Type)

Refer to pages F-13 for details.



Digimatic Indicators



Dial Indicators



Dial Test Indicators



Dial Indicator Applications and Stands



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

Digimatic Indicators

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 under minimum light conditions 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) sensor 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.



543-500

ISO/JIS type ASME/ANSI/AGD type

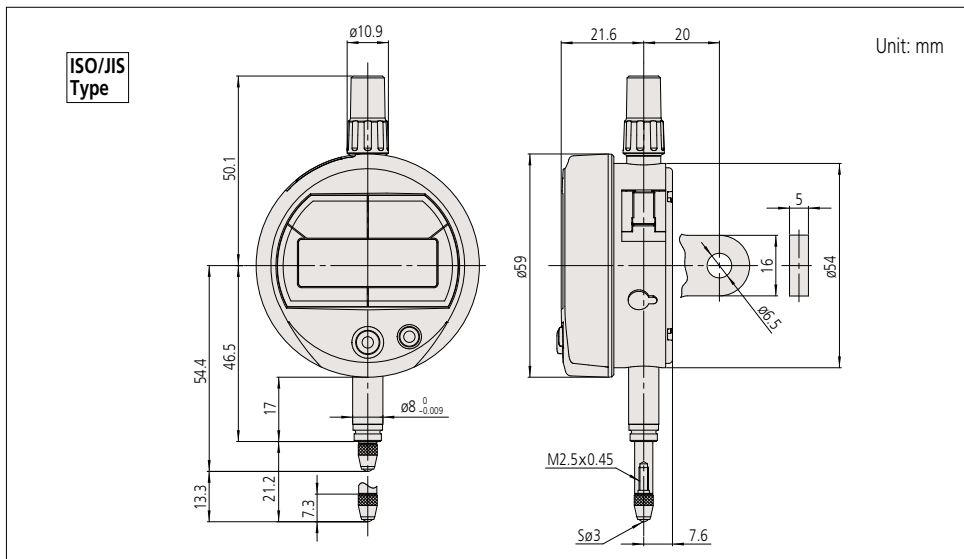
SPECIFICATIONS

Order No.	Range	Resolution	Accuracy			Remarks	
			Overall*	Hysteresis*	Repeatability*		
543-500	12.7mm	0.001mm	0.003mm	0.002mm	0.002mm	With lug	
543-500B						Flat	
543-505		0.01mm	0.02mm	0.02mm	0.02mm	0.01mm	With lug
543-505B						Flat	

Order No.	Range	Resolution	Accuracy			Remarks
			Overall*	Hysteresis*	Repeatability*	
543-501	.5"	.00005"/0.001mm	±.0001"/0.003mm	.0001"/0.002mm	.0001"/0.002mm	With lug
543-501B						Flat
543-502						With lug
543-502B		Flat				
543-506		.0005/0.01mm	±.0010"/0.02mm	.0010"/0.02mm	.005"/0.01mm	With lug
543-506B						Flat
543-507	With lug					
543-507B	Flat					

* 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" dia. and #4-48UNF thread mount for the contact point.

Technical Data

Display: 6-digit LCD and sign
Scale type: ABSOLUTE electrostatic linear encoder
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 conditions 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)
Stem dia: 8mm (ISO/JIS type) or 3/8" (ANSI/AGD type)

Functions

Origin set (zero-set)
Count direction switching
inch/mm conversion (inch/mm models)
Data output
Alarm: Counting value composition error
Insufficient illumination intensity or change

Optional accessories



Optional Accessories

- **Lifting**
Lifting lever **No.21EZA198** (ISO/JIS/DIN Type),
Lifting knob **No.21EZA199** (ASME/ANSI/ AGD Type),
Lifting knob **No.21EZA105** (ISO/JIS/DIN Type),
Lifting knob **No.21EZA150** (ASME/ANSI/ AGD Type)
Lifting cable (**No. 540774**)
- SPC Cable:
No.905338 (1m)
No.905409 (2m)
- USB Input Tool Direct (2m) : **06ADV380F**
- Connecting Cables for **U-WAVE-T** (160mm):
No.02AZD790F
For footswitch **02AZE140F**
Refer to page F-60 for details.
- Digimatic Mini-Processor DP-1VR: **264-504**
- 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 page F-79 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



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

Technical Data

Display: 6-digit LCD and sign
 Scale type: ABSOLUTE electrostatic linear encoder
 Usable orientation: All
 Power supply: SR44, part No. **938882** for initial operational checks (standard accessory)
 Maximum response speed: No limit (scan-type measurement is not supported)
 Operating temperature range: 0 to 40°C
 Storage temperature range: -10 to 60°C

Functions

Origin set (zero-set) : The display can be zeroed at any chosen position.
 Direction switching : The measuring direction can be switched.
 in/mm reading (inch/mm models only)
 Measurement data output: These indicators have a measurement data output socket, which makes it possible to output measurement to the DP-1VR mini processor or to a PC through an input tool. Furthermore, the U-WAVE measurement data wireless communication system can be used to wirelessly input measurement data to a PC.
 Error warning

Optional accessories

- Lifting**
 - Lifting lever **No.21EZA198** (ISO/JIS/DIN Type), **No.21EZA199** (ASME/ANSI/AGD Type)
 - Lifting knob **No.21EZA105** (ISO/JIS/DIN Type), **No.21EZA150** (ASME/ANSI/AGD Type)
 - Lifting cable **No. 540774**
- SPC Cable:
 - No.905338** (1m)
 - No.905409** (2m)
- USB Input Tool Direct (2m) : **06ADV380F**
- Connecting Cables for **U-WAVE-T** (160mm):
 - No.02AZD790F**
 For footswitch: **02AZE140F**
 Refer to page F-60 for details.
- Digimatic Mini-Processor DP-1VR: **264-504**
- 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 page F-79 to F-85 for details.)

IP53 dust/water protection level

Level 5: Dust protection

While complete protection against invasion of dust is not provided, protection is adequate to prevent dust 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, please refer to IEC 60529:2001 and JIS C 0920:2003.

IP code is the degree of protection against 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 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: **543-794/948/95/95B/96/96B**

- ABS (absolute) sensor
 These Digimatic indicators employ Mitutoyo's proprietary ABS (absolute) sensor, 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 sensor ensures that overspeed errors do not occur, which improves reliability.
- Long battery life
 One button battery (SR44) provides approximately 20,000 hours of continuous use for .0005"/0.01mm resolution models.



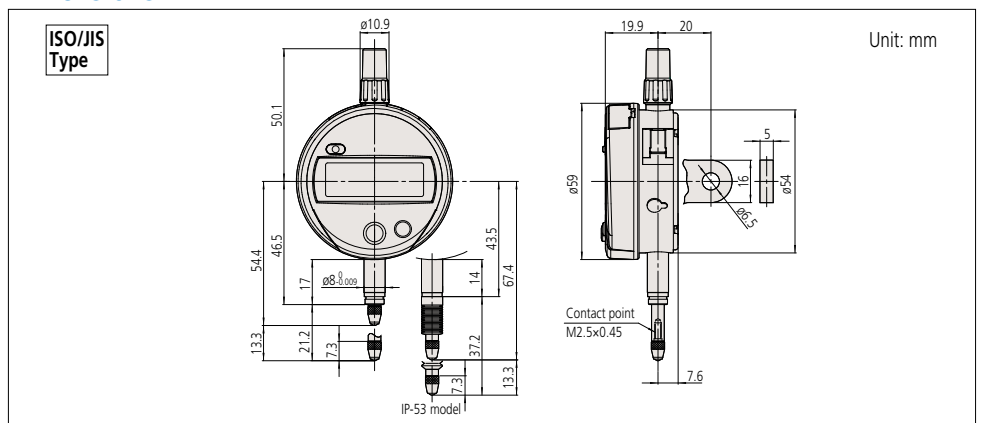
SPECIFICATIONS

Order No.	Range	Resolution	Accuracy*1			Back type	Measuring force	Battery life*3	Dust/Water protection level*4
			Overall*2	Hysteresis	Repeatability				
543-790	12.7 mm	0.001 mm	0.003 mm	0.002 mm	0.002 mm	With lug	1.5N or less	18,000 hours	IP42
543-790B						Flat			
543-794						With lug	2.5N or less	IP53	
543-794B						Flat			
543-781						0.01 mm	0.02 mm	0.02 mm	0.01 mm
543-781B	Flat								

Order No.	Range	Resolution	Accuracy*1			Back type	Measuring force	Battery life*3	Dust/Water protection level*4
			Overall*2	Hysteresis	Repeatability				
543-791	5"/12.7 mm	.00005"/0.001mm	±.0001"/0.003mm	.0001"/0.002mm	.0001"/0.002mm	With lug	1.5N or less	18,000 hours	IP42
543-791B						Flat			
543-792						With lug	2.5N or less	IP53	
543-792B						Flat			
543-793						.0001"/0.001mm	±.0001"/0.003mm	.0001"/0.002mm	.0001"/0.002mm
543-793B	Flat								
543-795	.00005"/0.001mm	.00005"/0.001mm	±.0001"/0.003mm	.0001"/0.002mm	.0001"/0.002mm	With lug	1.5N or less	20,000 hours	IP42
543-795B						Flat			
543-796						With lug	2.5N or less	IP53	
543-796B						Flat			
543-782						.0005"/0.01mm	±.0010"/0.02mm	.0010"/0.02mm	.0005"/0.01mm
543-782B	Flat								
543-783	With lug								
543-783B	Flat								

*1 These values apply at 20°C, and do not include ±1 count allowance for quantization error.
 *2 Overall magnification and linearity.
 *3 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" dia. and #4-48UNF thread mount for the contact point.

Digimatic Indicators

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

ABLOLUTE Digimatic Indicator ID-CX SERIES 543 — Standard Type

- The ABS (absolute) sensor 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-judging measurement is available by setting upper and lower limit values.
- Battery life of approx. 7,000 hours in continuous use has been achieved with only one battery.
- Equipped with a data output port that enables incorporation into measurement networking and statistical process control systems.

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



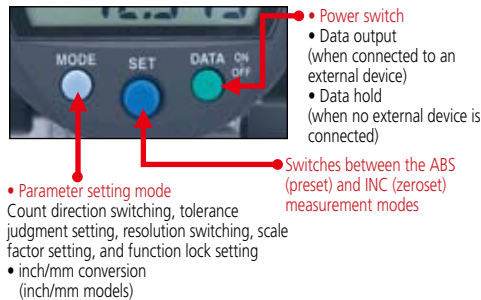
• Large LCD

The large LCD incorporates 11mm characters giving 1.5 times the character area of conventional products (which display 8.5mm 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-NVB, makes buttons easier to press and operations easier to perform.



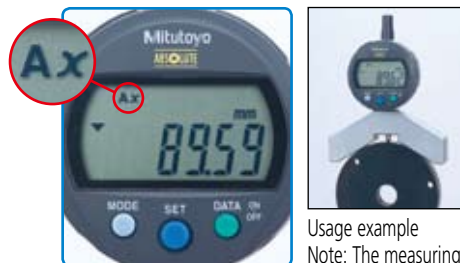
• 330° rotary display

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.



ABSOLUTE™ (Refer to page X for details.)



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

Technical Data

Accuracy: Refer to the list of specifications (excluding quantizing error)

Resolution:	0.01mm type	0.01mm
	0.001mm type	0.01mm/0.001mm
	.0005"/0.01mm type	.0005"/0.01mm
	.00005"/0.001mm type	.0005"/.0001"/.00005"/0.01mm/0.001mm

Display: 6-digit LCD and sign
Scale type: ABSOLUTE electrostatic linear encoder
Max. response speed: Unlimited (Measurement by scanning cannot be performed)

Measuring force: Refer to the list of specifications
Stem dia.: 8mm (ISO/JIS type) or 3/8" (ANSI/AGD type)

Battery: SR44 (1 pc., **938882** for initial operational checks (standard accessory))

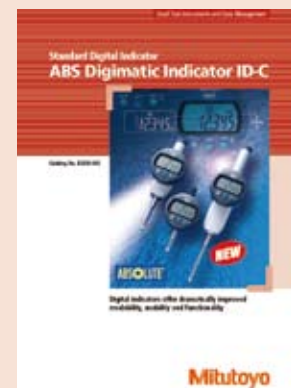
Battery life: Approx. 7,000 hours of continuous use
Dust/Water protection level: IP42

Functions

Preset, Zeroset, GO±NG judgment, Counting direction switching, Power ON/OFF, Simplified calculation, Function lock, Data hold, Data output, inch/mm conversion (inch/mm models)
Alarm: Low voltage, Counting value composition error, Overflow error, Tolerance limit setting error

Optional Accessories

- Lifting
Lifting lever:
No.21EZA198 (12.7mm/.5" ISO/JIS type)
No.21EZA199 (12.7mm/.5" ASME/ANSI/AGD type)
Lifting knob:
No.21EZA105 (12.7mm/.5" ISO/JIS type)*
No.21EZA150 (12.7mm/.5" ASME/ANSI/AGD type)*
No.21EZA197 (25.4mm/1" models)
No.21EZA200 (50.8mm/2" models)
Lifting cable: **No.540774**
Lifting lever: **No.137693** (for measuring range: 25.4 and 50.8mm) (supplied with 25.4mm and 50.8mm models as standard.)
- Auxiliary spindle spring:
No.02ACA571 (25.4mm/1" models)**
No.02ACA773 (50.8mm/2" models)**
- Lug-on-senter back:
No.101040 (25.4mm/1" and 50.8mm/2", ISO/JIS type)
No.101306 (25.4mm/1" and 50.8mm/2", ASME/ANSI/AGD type)
* Not available for low measuring force models.
**Required when orienting the indicator upside down.
- SPC Cable:
No.905338 (1m)
No.905409 (2m)
- USB Input Tool Direct (2m): **06ADV380F**
- Connecting Cables for **U-WAVE-T** (160mm):
No.02AZD790F
For footswitch (**02AZE140F**)
Refer to page F-60 for details.
- Digimatic Mini-Processor **DP-1VR: 264-504**
- Contact points for Mitutoyo's dial indicators (Refer to pages F-46 to F-49 for details.)
Interchangeable backs for 2 series (Refer to page F-50 for details.)
- Measuring stands (Refer to page F-80 for details.)



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

Setting measuring force on low measuring force models

• 543-404/404B/405/405B/406/406B

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

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

• 543-394/394B/395/395B/396/396B

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

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

SPECIFICATIONS

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

* Hysteresis: 0.001mm/0.01mm Resolution Type: 0.002mm
0.01mm Resolution Type: 0.02mm

* Repeatability: 0.001mm/0.01mm Resolution Type: 0.002mm
0.01mm Resolution Type: 0.02mm

Inch/Metric						
Order No. (w/ lug, flat-back)	Order No.	Range	Resolution	Overall accuracy*	Measuring force	Remarks
543-391	543-391B	5"	.0005"/.0001"/.0005"/.001mm / 0.01mm	.0001"	1.5N or less	—
543-392	543-392B				1.5N or less	—
543-395	543-395B				0.4N - 0.7N	Low measuring force
543-396	543-396B				0.4N - 0.7N	Low measuring force
—	543-471B	1"	.0002"	.0002"	1.8N or less**	—
—	543-472B	—			1.8N or less**	—
—	543-491B	2"			2.3N or less**	—
—	543-492B	—			2.3N or less**	—
543-401	543-401B	5"	.0005"/0.01mm	.001"	0.9N or less	—
543-402	543-402B				0.9N or less	—
543-405	543-405B				0.2N - 0.5N	Low measuring force
543-406	543-406B				0.2N - 0.5N	Low measuring force
—	543-475B	1"	.0015"	.0015"	1.8N or less**	—
—	543-476B				1.8N or less**	—
—	543-495B				2.3N or less**	—
—	543-496B				2.3N or less**	—

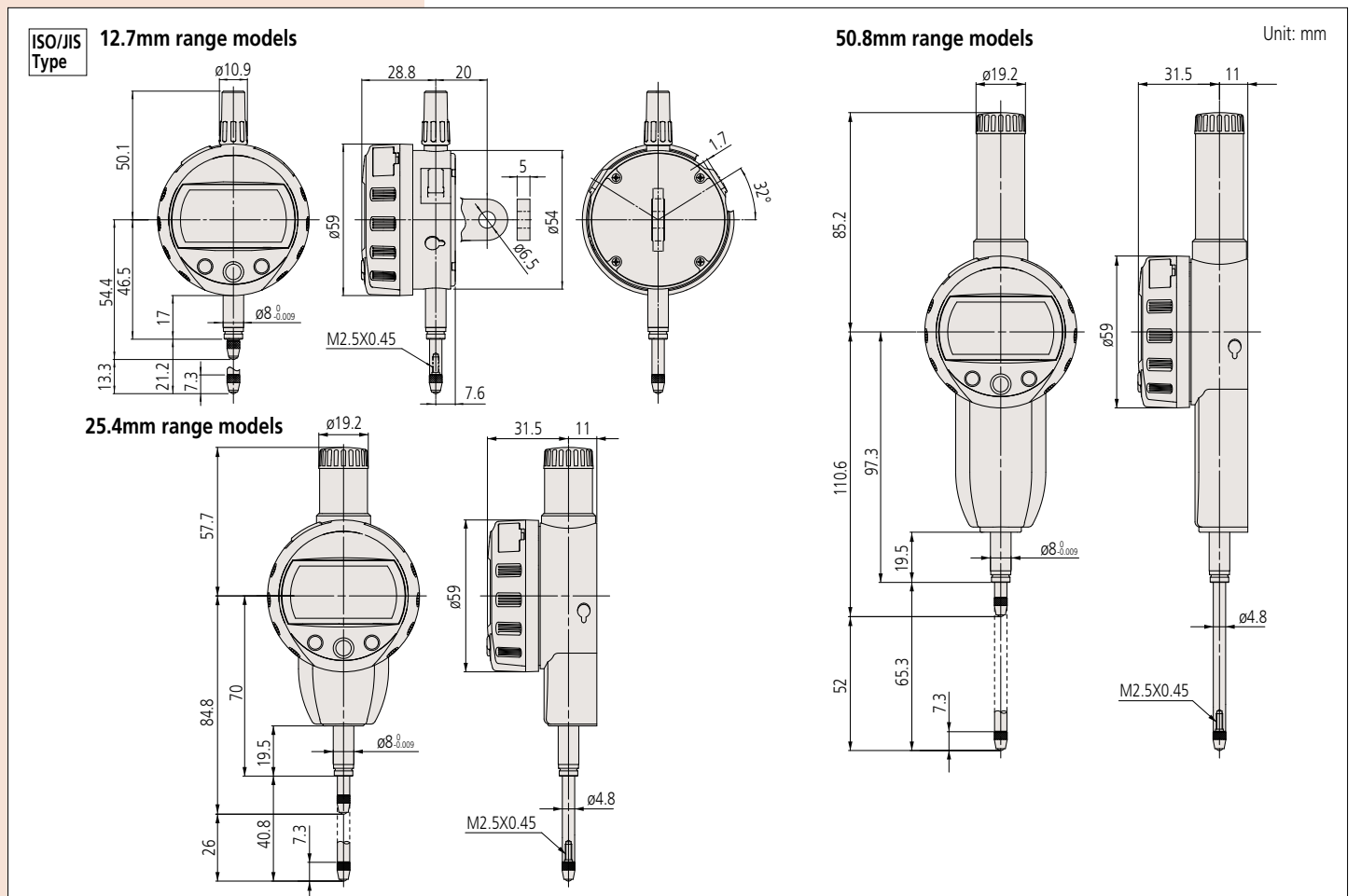
* Hysteresis: .0005"/.0001"/.0005"/0.001mm/0.01mm
Resolution Type: .00010"/0.002mm
.0005"/0.01mm Resolution Type: .0010"/0.02mm

* Repeatability: .0005"/.0001"/.0005"/0.001mm/0.01mm
Resolution Type: .00010"/0.002mm
.0005"/0.01mm Resolution Type: .0005"/0.02mm

* Quantizing error of ±1 count is excluded

** Applies for a spindle orientation between the spindles

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" 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.

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

- Our unique ABS sensor restores the last origin position automatically when the indicator is turned on.
- The chance of overspeed errors has been eliminated thanks to the ABS sensor.
- 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 35mm) 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 5mm-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.
- Equipped with a data output port that enables incorporation into measurement networking and statistical process control systems.
- There is a choice of convenient Interface Input Tools which enable the conversion of measurement data to keyboard signals and directly input them to cells in off-the-shelf spreadsheet software such as Excel.

543-575



IP66



www.tuv.com
ID 0000007161

543-585



IP66



www.tuv.com
ID 0000007162



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



Body width 35mm



LCD readout reversal function

SPECIFICATIONS

Metric		ISO/JIS type		ASME/ANSI/AGD type	
Order No.	Range	Resolution	Accuracy*	Remarks	
543-570	12.7mm	0.01mm	0.02mm	Slim type ID-N	
543-580	5.0mm			Back plunger type ID-B	
543-575	12.7mm	0.01mm / 0.001mm	0.01mm / 0.003mm	Slim type ID-N	
543-585	5.0mm			Back plunger type ID-B	

Inch/Metric		ISO/JIS type		ASME/ANSI/AGD type	
Order No.	Range	Resolution	Accuracy*	Remarks	
543-571	.5"	.0005", 0.01mm	.001"	Slim type ID-N	
543-581	.2"			Back plunger type ID-B	
543-576	.5"	0.01mm / 0.001mm .0005" / .00005"	.00012"	Slim type ID-N	
543-586	.2"			Back plunger type ID-B	

*Quantizing error of ±1 count is excluded

ABSOLUTE™ (Refer to page X for details.)

Technical Data

Display: 6-digit LCD and sign
Scale type: ABSOLUTE electrostatic linear encoder
Max. response speed: Unlimited (Measurement by scanning cannot be performed)
Measuring force: 2.5N or less (ID-N)
2.0N or less (ID-B)
Stem dia: 8mm (ISO/JIS type) or 3/8" (ANSI/AGD type)
Standard contact point: **901312** (ISO/JIS type)
21BZB005 (ANSI/AGD type)
Battery SR44 (1pc.) : **938882** for initial operational checks (standard accessory)
Battery life: Approx. 7,000 hours of continuous use

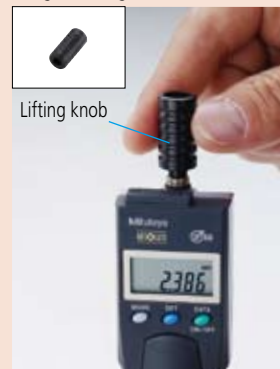
Functions

Zero-setting, Presetting, Direction switching, Tolerance judgment, Display hold, Data output, inch/mm conversion (inch/mm models), LCD readout reversal
Alarm: Low voltage, Counting value composition error, Overflow error, Tolerance limit setting error

Optional accessories

- Lifting knob (only for ID-N)
No.21EZA105 (ISO/JIS type)*
No.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.

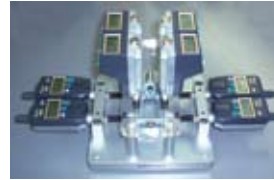
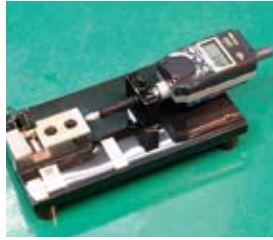
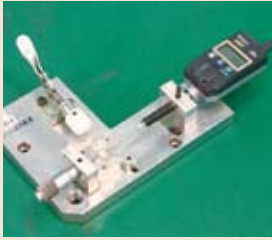
Using the lifting knob



- Lug
No.21EZA145 (ISO/JIS type)
No.21EZA146 (ASME/ANSI/AGD type)
- Arm for ID-B (mode-to-order)
- Rubber boot
For oil resistance (NBR) **No.02ACA376** (for ID-N)
No.125317 (for ID-B)
For durability (silicon) **No.238774** (for ID-N)
No.21EAA212 (for ID-B)

- SPC cable:
No.21EAA194 (1m)
No.21EAA190 (2m)
- USB Input Tool Direct (2m): **No.06ADV380G**
- Connecting Cables for U-WAVE-T (160mm)
: **No.02AZD790G**
For footswitch: **No.02AZE140G**
Refer to page F-60 for details.
- Bifurcated connecting cable with zero-setting terminal:
No.21EAA210 (1m)
No.21EAA211 (2m)
Two of the wires inside the cable are separated for zero setting without touching the SET switch on the main body. Use these cables 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.)

Usage examples



DIMENSIONS



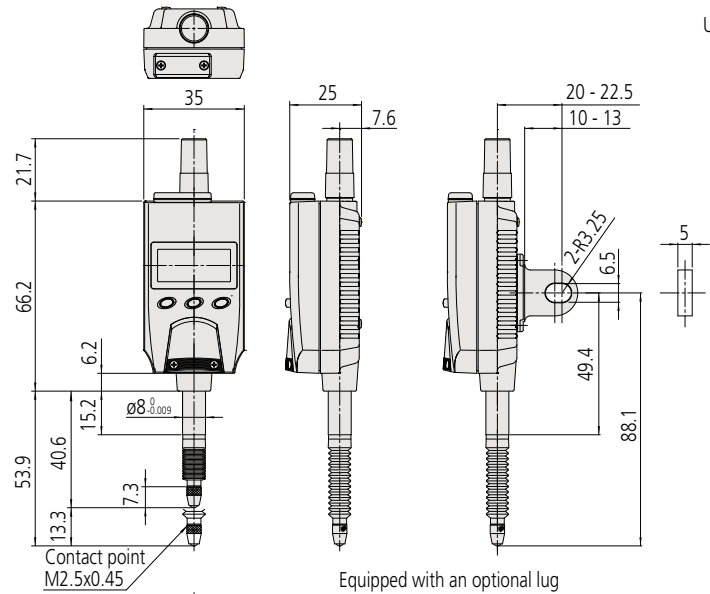
SPC cable



Bifurcated connecting cable with zero-setting terminal

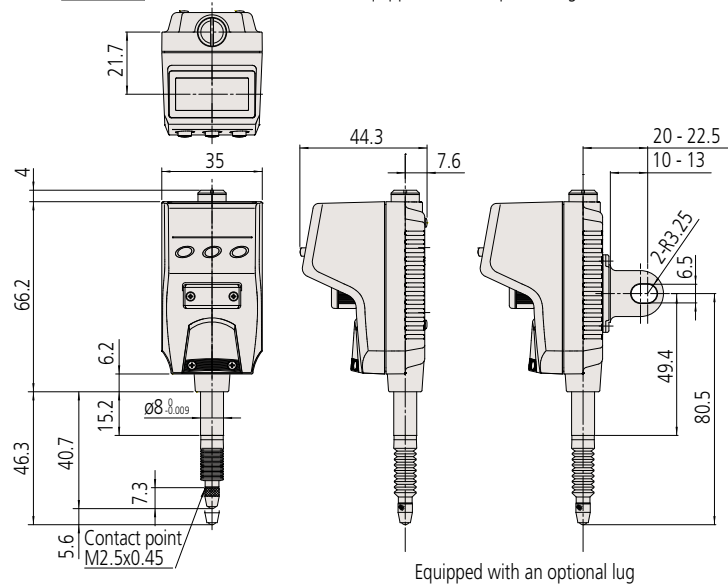
ID-N

Unit: mm



Equipped with an optional lug

ID-B



Equipped with an optional lug



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" dia. and #4-48UNF thread mount for the contact point.

Digimatic Indicators

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 judgement for peak or difference values.
- Simple operation 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.



543-302/543-302B

SPECIFICATIONS

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

Inch/Metric								
Order No. (w/lug, flat-back)	Range	Resolution	Accuracy*1	Hysteresis*1	Repeatability*1	Power supply	Battery life (normal use)*2	Net weight
543-301	.5"/12.7mm	.00005"/.0001"/.0005"/ 0.001/0.01mm	±.00010" / 0.003mm	.00010" / 0.002mm	.00010" / 0.002mm	CR2032 x 1 pc.	Approx. 1 year	180 g
543-301B								170 g
543-302								195 g
543-302B								170 g

□ ISO/JIS type □ ASME/ANSI/AGD type

Notes:

1) GO/±NG judgment result is visual and cannot be output.

2) Max./Min. hold: Sample rate is 50 readings per sec.

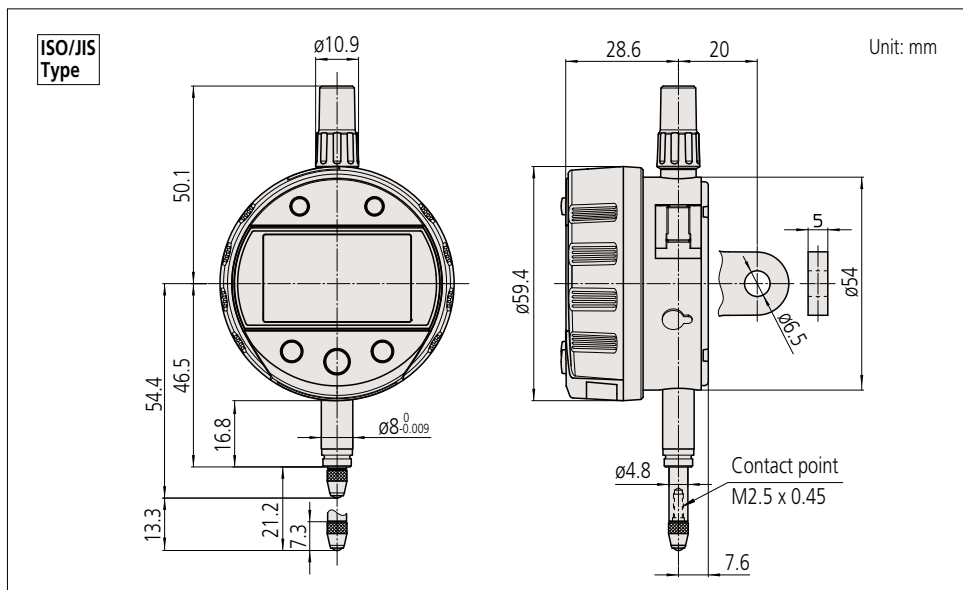
Maximum trackable rate of change is 50µm per sec.

3) Order numbers suffixed "B" have a plain back.

*1 Does not include quantizing error (±1 count). Valid for resolution set to 0.001mm/.00005" and coefficient A=1.

*2 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. (TIP) Battery life with Peak detection mode and FAST mode ON is about 4.5 months.

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" dia. and #4-48UNF thread mount for the contact point.

ABSOLUTE™ (Refer to page X for details.)



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

Functions

- Peak value hold function (maximum and minimum value)
- Runout value Hold function (difference between maximum/minimum values)
- Zeraset function (INC system)
- Preset function (ABS system)
- Counting direction switching function
- Tolerance judgement function (P1, P2, P3, and INC can be stored)
- Resolution selection function
- Simple calculation function $f(x)=Ax$
- Analog bar resolution selection function
- Key lock function
- in/mm conversion (inch/mm models)
- Display hold function (when external device is connected)
- Data output function
- External PC setting input function
- Display rotation function (330°)
- Low battery/voltage alarm display
- Error alarm display

Optional Accessories

- Lifting lever
- Lifting knob
- Lifting cable No. 540774
- SPC Cable: No.905338 (1m) No.905409 (2m)
- USB Input Tool Direct (2m) : No.06ADV380F
- Connecting Cables for U-WAVE-T (160mm): No.02AZD790F
- For footswitch: No.02AZE140F
- Refer to page F-60 for details.
- Digimatic Mini-Processor DP-1VR: 264-504
- Parameter setup kit: 21EZA313
- Note: Parameter setting software (can be downloaded freely from Mitutoyo website) is also required.



Parameter setup kit

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 page F-79 to F-85 for details.)



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

Digimatic Indicators

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 judgement 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.
- Sampling can be performed fifty times per second for accurate detection of maximum, minimum and run-out values.



543-342B

ISO/JIS type ASME/ANSI/AGD type

SPECIFICATIONS

Order No.*	Range	Resolution (selectable)	Accuracy*1	Hysteresis*1	Repeatability*1	Measuring force	Power supply	Battery life (normal use)*2	Net weight
543-340B	12.7mm	12 steps*5	0.003mm	0.002 mm	0.002 mm	1.5N or less	CR2032 x 1 pc.	Approx. 1 year	170 g
543-590B	25.4mm					1.8N or less*3			190 g
543-595B	50.8mm					2.3N or less*3			260 g

* Flat back only

Order No.*	Resolution (selectable)	Range	Accuracy*1	Hysteresis*1	Repeatability*1	Measuring force	Power supply	Battery life (normal use)*2	Net weight
543-341B	12 steps*5	.5"/12.7mm	±.00010" / 0.003 mm	.00010" / 0.002 mm	0.0010" / 0.002 mm	1.5N or less	CR2032 x 1 pc.	Approx. 1 year	170 g
543-342B						1.8N or less*3			190 g
543-591B		1"/25.4mm	±.00025" / 0.006 mm			2.3N or less*3			260 g
543-592B									
543-596B									
543-597B	2"/50.8mm								

* Flat back only

Note: All instruments in this series are of the flat back type.

The back is interchangeable with the standard backs for Series 2.

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

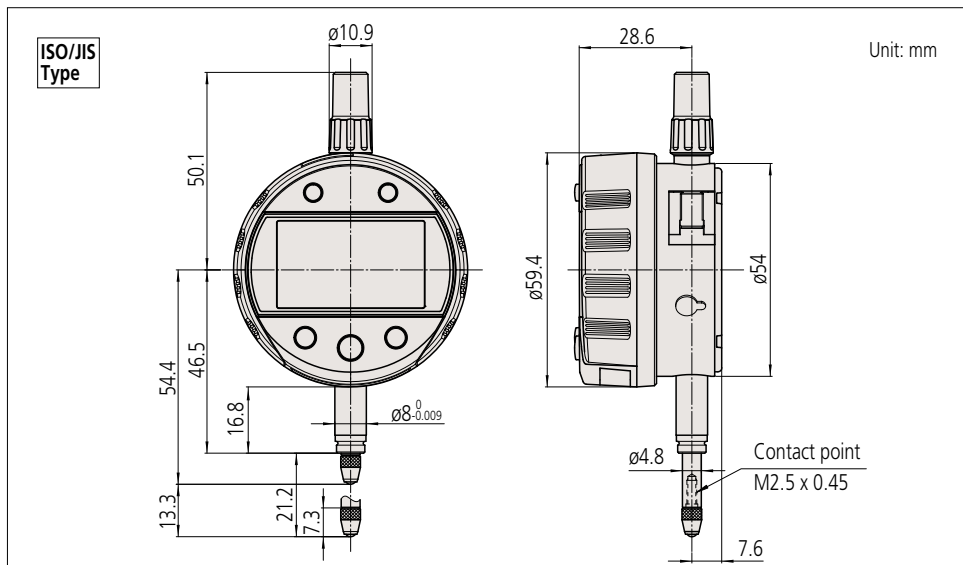
*1 Does not include quantizing error (±1 count). Valid for resolution set to 0.001mm/.00005" and coefficients A=1, B=0 and C=0.

*2 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. (TIP) Battery life with Peak detection mode and FAST mode ON is about 10 months.

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

*4 The resolution can be selected from one of 12 steps (Refer to table right).

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" dia. and #4-48UNF thread mount for the contact point.

Functions

Calculation function $f(x') = Ax' + B + Cx'^{-1}$
($x' = x + \text{offset}$)

Peak detection function (Max/Min)

Runout value Hold function (difference between max. and min. value motion)

Peak detection sampling rate (Switchable)

10 times/sec. (FAST Mode OFF)

50 times/sec. (FAST Mode ON)

Zerose function (INC system)

Preset function (ABS system)

Tolerance judgement function (P1, P2, P3, and INC can be stored)

Analog bar resolution selectable function

Key lock function

Display hold function (when external device is connected)

Data output function

External PC setting input function (330°)

Low battery/voltage alarm display

Error alarm display

Resolution switching function*5

Resolution (mm)			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 (0.001mm), 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:

No.21EZA198 (ISO/JIS/DIN Type),

No.21EZA199 (ASME/ANSI/ AGD Type)

Lifting knob:

No.21EZA105 (ISO/JIS/DIN Type),

No.21EZA150 (ASME/ANSI/ AGD Type)

Lifting cable : **No. 540774**

• SPC Cable:

No.905338 (1m)

No.905409 (2m)

• USB Input Tool Direct (2m) : **No.06ADV380F**

• Connecting Cables for U-WAVE-T (160mm) :

No.02AZD790F

For footswitch : **No.02AZE140F**

Refer to page F-60 for details.

• Digimatic Mini-Processor DP-1VR : **264-504**

• Parameter setup kit : **No.21EZA313**

Note: Parameter setting software (can be downloaded freely from 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 page F-79 to F-85 for details.)

Fixture examples



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*									
Contact point	Cone	Ball	Cone	Flat or radius to suit feature					
x = Spindle displacement from ORIGIN set position (retraction is the positive-going direction)									
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')		
Coefficient values	A	$-2 \tan \frac{\theta}{2}$	$-2 \tan \frac{\theta}{2}$	-1	$-2 \tan \frac{\theta}{2}$	$-\frac{\sin \frac{\theta}{2}}{1 - \sin \frac{\theta}{2}}$	$\frac{1}{2}$	$-\frac{1}{2}$	$\frac{1}{2}$
	B	0	$2r \left(\frac{1}{\cos \frac{\theta}{2}} - \tan \frac{\theta}{2} \right)$	$r \left(\frac{1}{\cos \frac{\theta}{2}} - 1 \right) - \frac{d}{2 \tan \frac{\theta}{2}}$	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	d	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

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



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

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.
- 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 4m cable.
- External power required is 5 - 24VDC.
- Dust-water protection level: Conforms to IP54.

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



543-350



SPECIFICATIONS

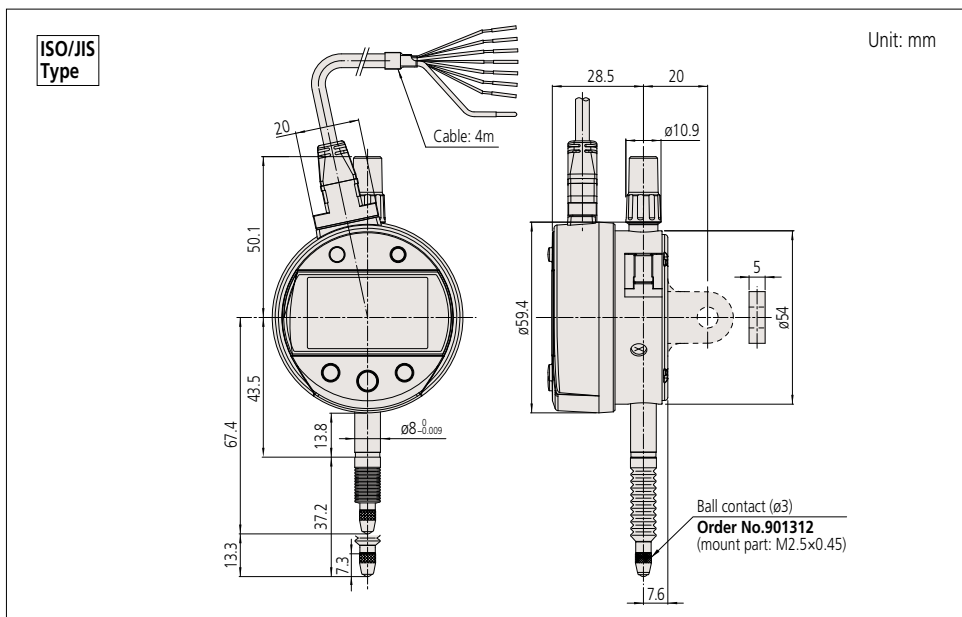
Metric			ISO/JIS type	ASME/ANSI/AGD type	
Order No. (w/ lug, flat-back)	Order No.	Range	Resolution	Accuracy*2	Measuring force
543-350	543-350B	12.7mm	0.001/0.01mm	0.003mm or less	2.5N or less

Inch/Metric			ISO/JIS type	ASME/ANSI/AGD type	
Order No. (w/ lug, flat-back)	Order No.	Range	Resolution	Accuracy*2	Measuring force
543-351	543-351B	.5" / 12.7mm	.00005"/.0001"/.0005" //	±.00010" / 0.003mm or less	2.5N or less
543-352	543-352B		0.001/0.01mm		

Notes:

- 1) LCD readout does not rotate.
 - 2) Max./min. holding: sample rate is 100 readings/sec; max. rate of change of reading is 100µm/sec.
 - 3) Products with an Order No. suffixed "B" have a flat back
 - 4) Standard contact point: **901312** (ISO/JIS type), **21BZB005** (ANSI/AGD type)
- *2 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" dia. and #4-48UNF thread mount for the contact point.

Functions

Signal output (-NG/OK/+NG, N-ch open drain, logical invert is available), Remote control (peak start preset/zero-set), Preset, Zerose, GO±NG judgment (3 pairs of ABS, INC memory function) Max/Min/Runout value holding, Measurement direction switching, Power ON/OFF, inch/mm conversion (inch/mm models), Resolution switching, Scaling function f(x)=Ax, Key lock, Calibration mode (Signal output in Digimatic code format).
 Alarm: Counting value composition error, Overflow error, Tolerance limit setting error

Optional accessories

- Lifting*3
 - Lifting lever **No.21EZA198** (ISO/JIS/DIN Type), **No.21EZA199** (ASME/ANSI/AGD Type)
 - Lifting knob **No.21EZA105** (ISO/JIS/DIN Type), **No.21EZA150** (ASME/ANSI/AGD Type)
 - Lifting cable **No.540774**
 - Digimatic power 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.
 - *3 In such a case, please purchase connecting cable **21EAA194** (1m), or **21EAA190** (2m).
 - 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 page F-75 to F-80 for details).
- *3 Dust-water protection is not guaranteed.
 *4 Refer to pages F-46 to F-49 for details.
 *5 Refer to page F-50 for details.

Output signals and LCD display

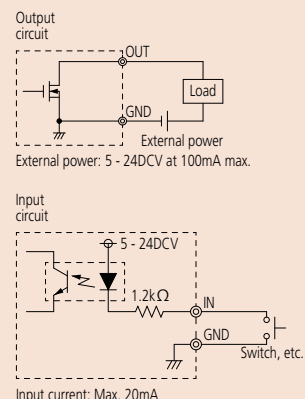
Wire	- NG	OK	+ NG	Composition error
Orange (- NG)	Low	High	High	High
Green (OK)	High	Low	High	High
Brown (+ NG)	High	High	Low	High
LCD	◀	○	▶	"x.xxE" indication

* Logical invert is available.

I/O Specifications

Wire	Signal	I/O	Description
Black	- V (GND)	—	Connected to minus (-) terminal
Red	+ V	—	Power supply (5 - 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.



Technical Data

Accuracy: Refer to the list of specifications (Excluding quantizing error of ±1 count)
 Resolution: 0.01mm, .0005"/0.01mm
 Display: 5-digit and sign
 Scale type: ABSOLUTE electrostatic linear encoder
 Max. response speed: Unlimited (Measurement by scanning cannot be performed)
 Measuring force: Refer to the list of specifications
 Stem dia.: 8mm (ISO/JIS type) or 3/8" (ANSI/AGD type)
 Standard contact point: **901312** (ISO/JIS type)
21BZB005 (ANSI/AGD type)
 Battery: SR44 (1 pc.), **938882** for initial operational checks (standard accessory)
 Battery life: Approx. 20,000 hours of continuous use
 Dust/Water protection level: IP42
 Lifting lever: **137693**

Function

Origin-set (Zerose), Counting direction switching, Power ON/OFF, Data output, inch/mm conversion (inch/mm models)
 Alarm: Low voltage, Counting value composition error

Optional Accessories

- Spindle lifting cable (stroke: 10mm) : **No.540774**
- SPC Cable: **No.905338** (1m)
No.905409 (2m)
- USB Input Tool Direct (2m) : **No.06ADV380F**
- Connecting Cables for U-WAVE-T (160mm): **No.02AZD790F**
For footswitch : **No.02AZE140F**
Refer to page F-60 for details.
- Digimatic Mini-Processor DP-1VR: **264-504**
- Contact points for Mitutoyo's dial indicators (Refer to pages F-46 to F-49 for details.)
- Measuring stands (Refer to page F-79 to F-85 for details.)

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

- General purpose indicator with the measuring range of 25.4mm/ 1"
- Cost-effective and user-friendly type which is equipped with the basic functions necessary.
- The ABS (absolute) sensor 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 the character height of 8mm.
- Equipped with a data output port that enables incorporation into measurement networking and statistical process control systems.



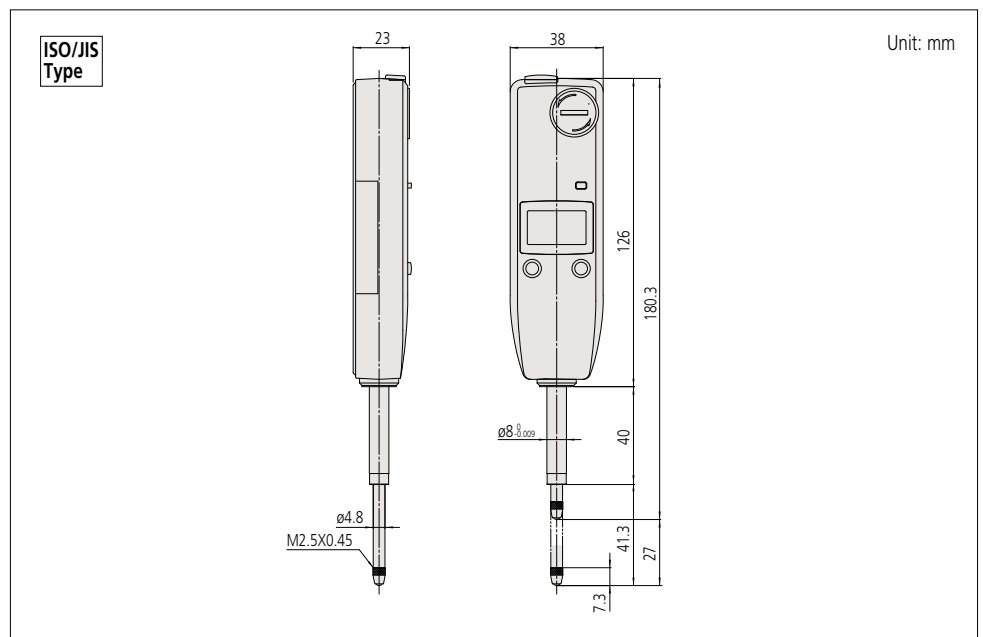
SPECIFICATIONS

Metric		ISO/JIS type □ ASME/ANSI/AGD type			
Order No. (w/ lug, flat-back)	Range	Resolution	Accuracy*	Measuring force	
—	575-121	25.4mm	0.01mm	0.02mm	1.8N or less

Inch/Metric		ISO/JIS type □ ASME/ANSI/AGD type			
Order No. (w/ lug, flat-back)	Range	Resolution	Accuracy*	Measuring force	
—	575-122	1" / 25.4mm	.0005" / 0.01mm	.001" / 0.02mm	
—	575-123				

*Quantizing error of ±1 count is excluded
 *Flat back 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" dia. and #4-48UNF thread mount for the contact point.

Digimatic Indicators

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

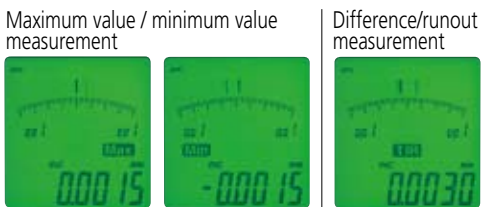
Digimatic Indicator ID-H SERIES 543 — High Accuracy and High Functionality Type

- 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 0.5µm/0.00002" 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.

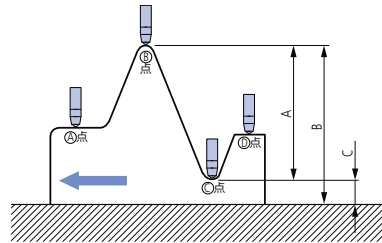
Tolerance judgment



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



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.



Remote controller (optional)



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: 1000mm/sec
 Measuring force: 2.0N or less (30.4mm/1.2" type)
 2.5N or less (60.9mm/2.4" type)
 Spindle orientation: Between the spindle pointing vertically downward to the spindle horizontal
 Standard contact point: **901312** (ISO/JIS type)
21BZB005 (ANSI/AGD type)
 Lifting lever: **No.137693**

Functions

Zero set, Preset, GO/±NG judgement
 Max/Min value hold, Runout measurement
 Resolution switching
 Counting direction switching
 Data output, Data hold, Function lock
 inch/mm conversion (inch/mm models)
 Alarm: Over speed error, Setting error, Overflow error

Optional accessories

- Lifting
 Lifting knob : **No.21EZA101**
 Lifting cable : **No.540774** (stroke 30 mm)
- Lug-on-center back:
No.101040 (ISO/JIS type)
No.101306 (ASME/ANSI/AGD type)
- Remote controller : **No.21EZA099**
- RS-232 Connecting cable (2m) : **No.21EAA131**
- SPC Cable:
No.936937 (1m)
No.965014 (2m)
- USB Input Tool Direct (2m) : **No.06ADV380D**
- Connecting Cables for U-WAVE-T (160mm) :
No.02AZD790D
 For footswitch : **No.02AZE140D**
 Refer to page F-60 for details.
- Digimatic Mini-Processor DP-1VR: **264-504**
- Contact points for Mitutoyo's dial indicators
 (Refer to pages F-46 to F-49 for details.)
- Granite comparator stand: **215-156-10**
- Comparator stand: **215-505-10**

Comparator stand
215-505-10



SPECIFICATIONS

Metric			
Order No.*	Range	Resolution	Accuracy**
543-561	30.4mm	0.0005mm,	0.0015mm
543-563	60.9mm	0.001mm	0.0025mm

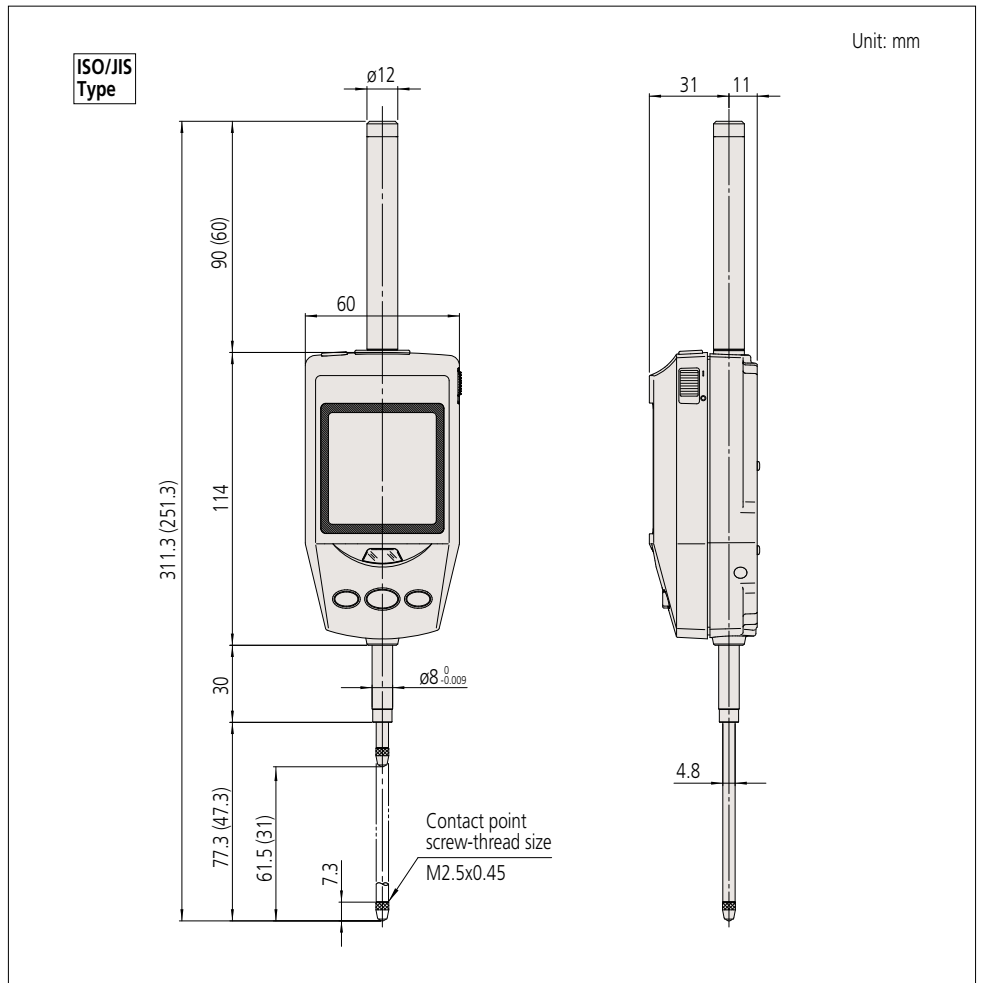
* To denote your AC power cable add the following suffixes to the order No.: **A** for UL/CSA, **D** for CEE, **DC** for CCC, **E** for BS, **K** for KC, **No suffix** is required for JIS/100V

** Quantizing error of ± 1 count is excluded.

Inch/Metric			
Order No.*	Range	Resolution	Accuracy**
543-562	1.2" / 30.4mm	.00002", .00005", .0001",	.00006" / 0.0015mm
543-564	2.4" / 60.9mm	0.0005mm, 0.001mm	.0001" / 0.0025mm

* 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



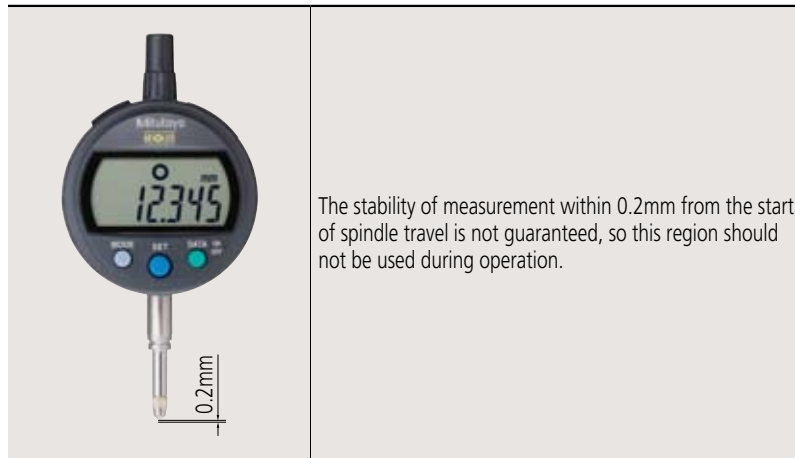
Note 1: Dimensions of the inch (ANSI/AGD Type) dial indicator partly differ from those of the metric (ISO/JIS Type) indicator.

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

() : for 30.4mm model

Supplemental information on Digimatic Indicators

Origin setting of Digimatic Indicators



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



542-007

- 3 steps of limit setting value can be displayed.
- Can be set to produce either tolerance judgment output or Digimatic output.
- Small size (96 x 48mm) which conforms to DIN standards.
- Refer to page G-21 for details.

DIMENSIONS

