Mitutoyo

Mitutoyo Quality

High-performance ABS Digimatic Indicators
ID-C/ID-F

DIGIMATIC S1

ID-C Series

ID-F Series

Mitutoyo

High-performance ABS Digimatic Indicator

ID-C/ID-F

## New-generation ID series making measurement operations smoother and enhancing production quality

Bidirectional serial communication that helps increase work efficiency

Meeting the need for more precise **measurements**

A wide range of support functions for smoother measurement work

ID-C Series

ID-F Series

GOOD DESIGN AWARD

*The ID-C series does not have illuminated backlighting.

When tolerance judgment result indicates failure
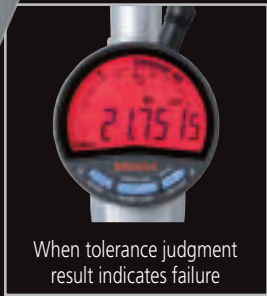
Enabling more precise measurement
20 µinch/0.5 µm resolution

The ID-C and ID-F ranges now include models with 0.0005 mm resolution. The units are also capable of resolution switching.*
*Except for the ID-C 0.01 mm resolution model

Avoid missing a pending calibration
Calibration period notification function

The LCD displays an icon to notify the user when the set calibration time approaches. This facilitates the proper precision management of ID-C/ID-F.

Notification icon

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

The first Mitutoyo measuring tools to support bidirectional serial communication. Dramatically improve work efficiency by connecting and linking with a PC.

The ID-C/ID-F units are Mitutoyo's first measuring tools to support bidirectional serial communication.* They can be easily connected and linked with a PC via a USB input tool, etc., and in addition to conventional measurement data collection, they also enable control and setting of the ID-C/ID-F units, collection of gauge information, and other operations to be performed in batch from the PC. This contributes to drastic improvement in work efficiency.

*Achieved through I/F compatible with an original bidirectional serial communication specification (Digimatic S1). ▶ See P.6 for details.
● An optional cable and measurement data input unit are required for bidirectional serial communication. ● USB-ITPAK V3.0 must be installed on the PC used for communication.
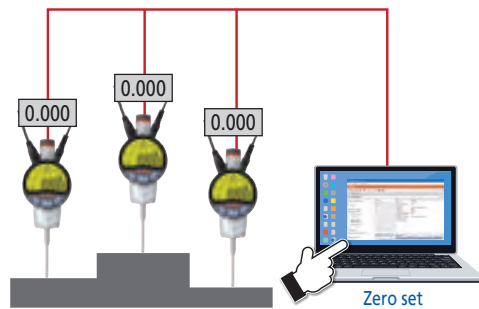
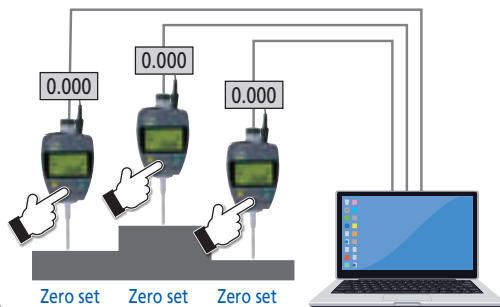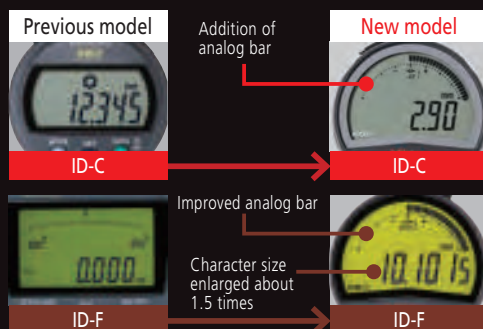| Function example (1) Control of ID-C/ID-F from PC	Function example (2) Measuring instrument setting
New model (ID-C/ID-F + USB-ITPAK V3.0)	**New model** (ID-C/ID-F + USB-ITPAK V3.0)
● Batch zero setting and power ON/OFF operation, etc. of multiple ID-C/ID-F units is made possible by use of the dedicated software "USB-ITPAK."	● Various functions of ID-C/ID-F units can be set from USB-ITPAK. ● The contents of various function settings can be saved on a PC, and the same settings can be copied to other ID-C/ID-F units. ➡ **Reduced work time for setting**
Old model (Old ID-C/ID-F + USB-ITPAK V2.1)	**Old model** (Old ID-C/ID-F + USB-ITPAK V2.1)
● For older ID-C/ID-F units that do not support bidirectional serial communication, zero setting must be performed individually on each unit.	● Since bidirectional serial communication is not supported, function setting from a PC is not possible.

0.000 0.000 0.000 Zero set

0.000 0.000 0.000 Zero set Zero set Zero set

Improved work efficiency thanks to excellent readability
Large screen and analog bar

The units have large screens that can display various information in an easy-to-read manner. They also have an analog bar, convenient for observing subtle movements such as the approach to tolerance.

Previous model	Addition of analog bar	New model
ID-C		**ID-C**
ID-F	Improved analog bar	**ID-F**
	Character size enlarged about 1.5 times	

Setting of frequently used functions for easy operation
Three large buttons

Ease of use is greatly improved by three large buttons. You can freely set any frequently used functions to these buttons.

1 **Parameter setting mode**
• Counting direction switching
• Tolerance judgment function setting • Resolution switching
• Calculation function setting • Function lock setting

2 **Switching between ABS length measurement system (presetting) and INC length measurement system (zero setting)**

3 **Power ON/OFF**
• Data output (when connected to an external device)
• Data hold (when not connected to an external device)

Improved measurement work efficiency
Simple calculation function

The result of the spindle movement value multiplied by the calculation coefficient can be displayed in real time. This reduces the work of measuring with a jig or similar tool.

$$f(x) = Ax$$

f(x): Displayed value
x: Spindle movement value
A: Selected value

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ID-C Series – Battery Operated

543-700	543-702B	543-710B	543-717
ID-C0512NX	**ID-C0512ENXB**	**ID-C1012NXB**	**ID-C1012CENX**

543-720B	543-722B	543-730B	543-737B
ID-C0525NXB	**ID-C0525ENXB**	**ID-C0550NXB**	**ID-C1050ENXB**

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SPECIFICATIONS

Inch/Metric

ISO/JIS type (Ø8 mm stem, M2.5 x 0.45 contact point) ASME/ANSI /AGD type (Ø3/8" stem, 4-48 UNF contact point)

Order No. w/ lug	Order No. Flat back	Range	Resolution	Maximum permissible error MPE[1] MPE_E[3]	Hysteresis MPE_H	Repeatability MPE_R	Measuring force MPL (N)	Interface	Net mass(g) W/lug	Net mass(g) Flat back
543-701	543-701B	0.5 in/ 12.7 mm	0.00002/0.00005/ 0.0001/0.0005 in 0.0005/ 0.001/0.01 mm (selectable)	±0.00012 in/ 0.003 mm	0.00008 in/ 0.002 mm	0.00008 in/ 0.002 mm	1.5 or less	d1/d2/S1	175	165
543-702	543-702B						1.5 or less	d1/d2/S1	195	165
543-706[2]	543-706B[2]						0.4 to 0.7	d1/d2/S1	170	160
543-707[2]	543-707B[2]						0.4 to 0.7	d1/d2/S1	190	160
—	543-721B	1 in/ 25.4 mm					1.8 or less	d1/d2/S1	—	195
—	543-722B						1.8 or less	d1/d2/S1	—	195
—	543-731B	2 in/ 50.8 mm		±0.0002 in/ 0.005 mm			2.3 or less	d1/d2/S1	—	260
—	543-732B						2.3 or less	d1/d2/S1	—	260
543-711	543-711B	0.5 in/ 12.7 mm	0.0005 in/ 0.01 mm	±0.001 in/ 0.02 mm	0.001 in/ 0.02 mm	0.0005 in/ 0.01 mm	0.9 or less	d1/S1	170	160
543-712	543-712B						0.9 or less	d1/S1	190	160
543-716[2]	543-716B[2]						0.2 to 0.5	d1/S1	165	155
543-717[2]	543-717B[2]						0.2 to 0.5	d1/S1	185	155
—	543-726B	1 in/ 25.4 mm					1.8 or less	d1/S1	—	190
—	543-727B						1.8 or less	d1/S1	—	190
—	543-736B	2 in/ 50.8 mm		±0.0015 in/ 0.04 mm			2.3 or less	d1/S1	—	245
—	543-737B						2.3 or less	d1/S1	—	245

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

Metric

Order No. w/ lug	Order No. Flat back	Range (mm)	Resolution (mm)	Maximum permissible error MPE[1] (mm) MPE_E[3]	Hysteresis MPE_H	Repeatability MPE_R	Measuring force MPL (N)	Interface	Net mass(g) W/lug	Net mass(g) Flat back
543-700	543-700B	12.7	0.0005/0.001/0.01(selectable)	0.003	0.002	0.002	1.5 or less	d1/d2/S1	175	165
543-705[2]	543-705B[2]	12.7		0.003			0.4 to 0.7	d1/d2/S1	170	160
—	543-720B	25.4					1.8 or less	d1/d2/S1	—	195
—	543-730B	50.8		0.005			2.3 or less	d1/d2/S1	—	260
543-710	543-710B	12.7	0.01	0.02	0.02	0.01	0.9 or less	d1/S1	170	160
543-715[2]	543-715B[2]	12.7		0.02			0.2 to 0.5	d1/S1	165	155
—	543-725B	25.4					1.8 or less	d1/S1	—	190
—	543-735B	50.8		0.04			2.3 or less	d1/S1	—	245

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

Common Specifications

	12.7 mm/0.5 in models	Low measuring force models[1]	25.4 mm/1 in, 50.8 mm/2 in models
Display	7 segments height: 11.0 mm, Analog bar (±20 scale)		
Display rotation	330 °		
Protection level[2]	Equivalent to IP-42		
Possible plunger direction	All directions	0.0005 mm models: Plunger downward only 0.01 mm models: Up to direction in which plunger is horizontal	Up to direction in which plunger is horizontal
Power supply	Lithium metal battery CR2032 (1pc.)		
Battery life[3]	Approx. 2.5 years (normal use), Approx. 2,700 hours(continuous use)		
Detection method	Electrostatic capacitance type absolute linear encoder		
Response speed	No limit		
Errors, Alarms	Various setting errors, Sensor error, Display overflow, etc.		
Operating temperature	0 to 40 °C		
Storage temperature	-10 to 60 °C		

*1: See the order numbers with an asterisk 2 (*2) in the table above.
*2: Protection level (IP=International Protection) is based on IEC 60529/DIN40050 Part 1/JIS D0207, C0920. The levels shown are valid for factory conditions only.
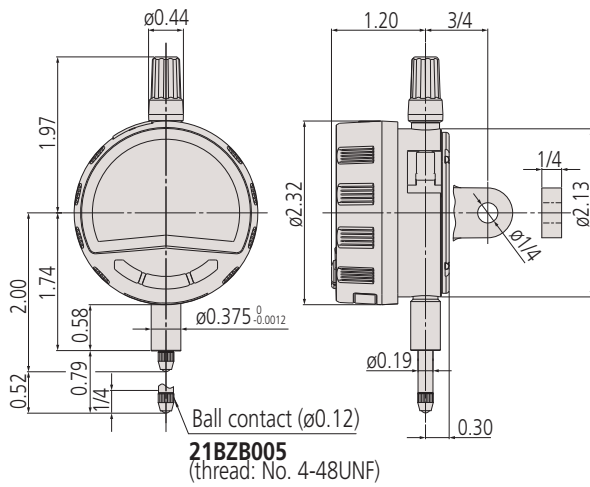*3: When the data processor is not connected. Battery life depends on use of the indicator. Use the above value as a guide.
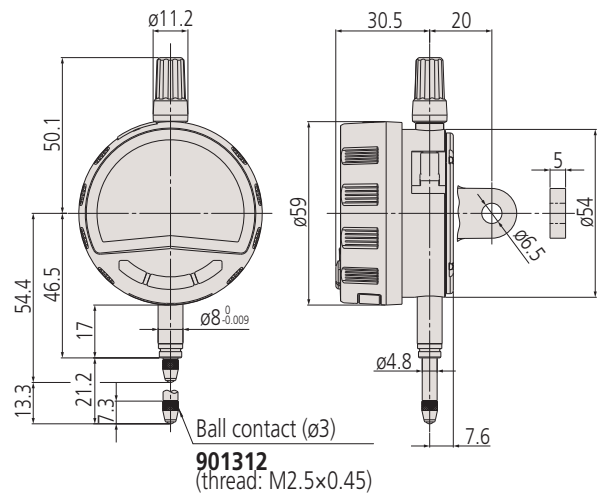
DIMENSIONS

.5"/12.7 mm range models

ASME/ANSI/AGD Type	ISO/JIS Type

Unit: in

ø0.44 · 1.97 · 1.74 · 2.00 · 0.58 · 0.79 · 0.52 · 1/4 · ø0.375 $_{-0.0012}^{0}$ · Ball contact (ø0.12) · **21BZB005** (thread: No. 4-48UNF) · 1.20 · 3/4 · ø2.32 · 1/4 · ø2.13 · ø1/4 · ø0.19 · 0.30

Unit: mm
25.4mm=1"

ø11.2 · 50.1 · 54.4 · 46.5 · 17 · 13.3 · 21.2 · 7.3 · ø59 · ø8 $_{-0.009}^{0}$ · Ball contact (ø3) · **901312** (thread: M2.5×0.45) · 30.5 · 20 · 5 · ø54 · ø6.5 · ø4.8 · 7.6
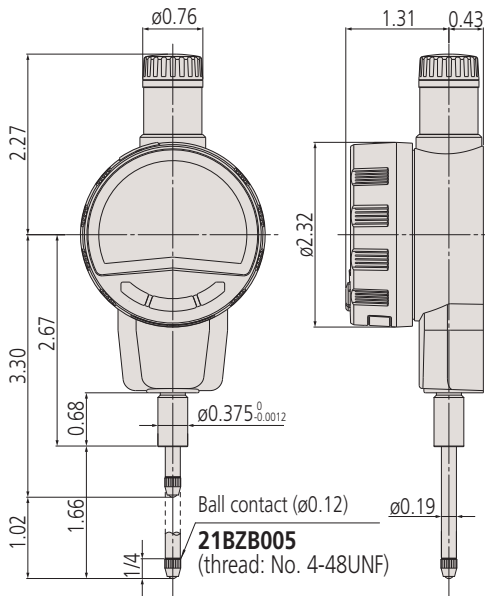
Note: Products with an Order No. suffixed "**B**" have a flat back, and other models have a center-lug back.
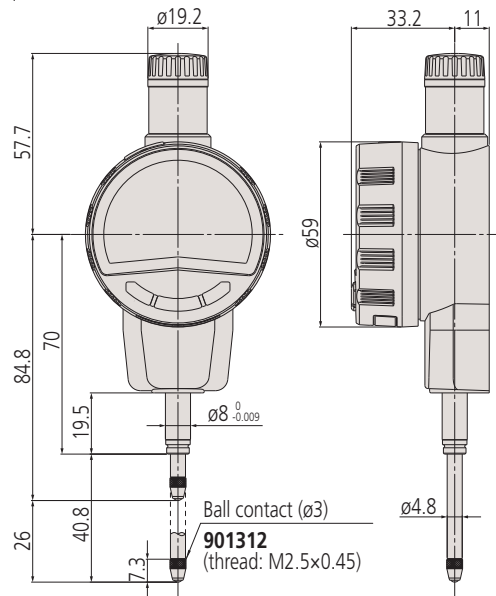
1"/25.4 mm range models
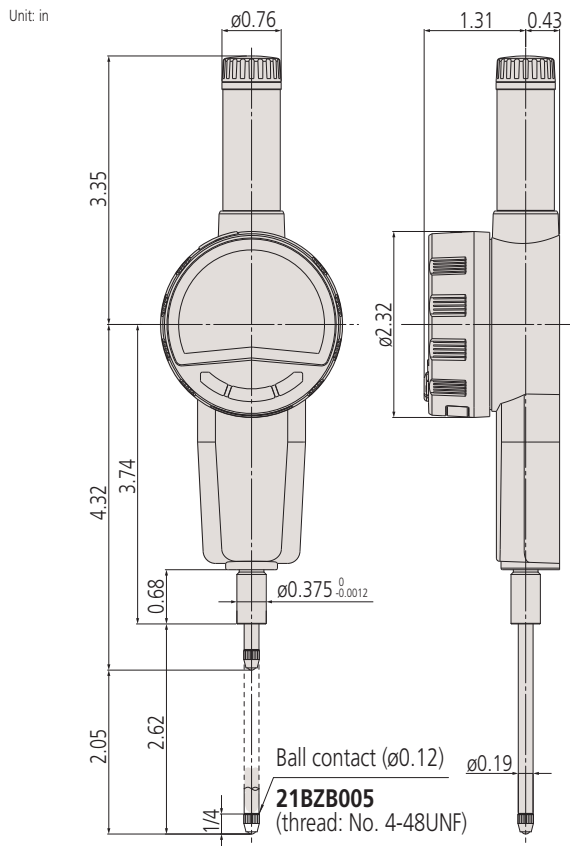
ASME/ANSI/AGD Type	ISO/JIS Type

Unit: in

ø0.76 · 2.27 · 3.30 · 2.67 · 0.68 · 1.66 · 1.02 · 1/4 · ø0.375 $_{-0.0012}^{0}$ · ø2.32 · Ball contact (ø0.12) · **21BZB005** (thread: No. 4-48UNF) · 1.31 · 0.43 · ø0.19

Unit: mm
25.4mm=1"

ø19.2 · 57.7 · 84.8 · 70 · 19.5 · 40.8 · 26 · 7.3 · ø59 · ø8 $_{-0.009}^{0}$ · Ball contact (ø3) · **901312** (thread: M2.5×0.45) · 33.2 · 11 · ø4.8

Note: All products have a flat back.

2"/50.8 mm range models

Unit: in

ø0.76 1.31 0.43

3.35

ø2.32

4.32 3.74

0.68 ø0.375 0/−0.0012

2.05 2.62

Ball contact (ø0.12)
21BZB005
(thread: No. 4-48UNF)

ø0.19

1/4

Note: All products have a flat back.

Unit: mm
25.4mm=1″

ø19.2 33.2 11

85.2

ø59

110.6 97.3

19.5 ø8 0/−0.009

52 65.3

Ball contact (ø3)
901312
(thread: M2.5×0.45)

ø4.8

7.3
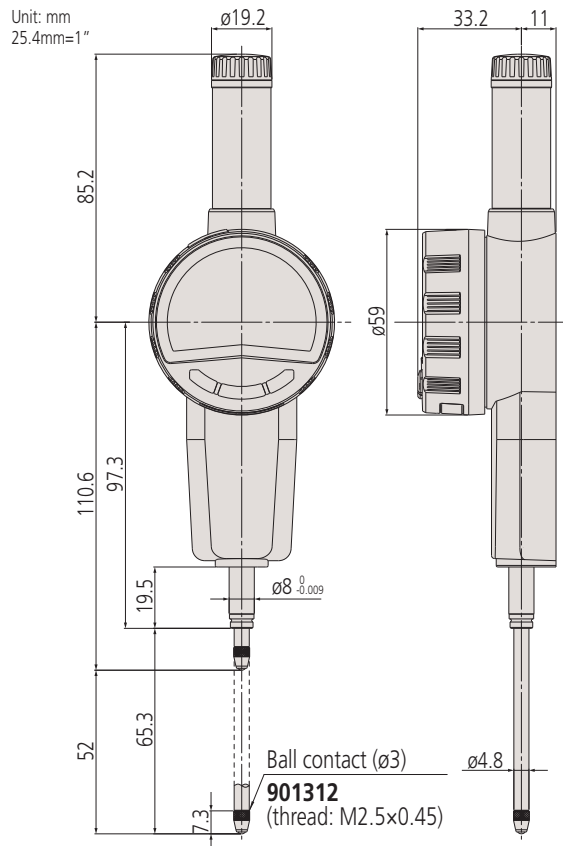
Comparison of functions

	ID-C Series	ID-F Series
Preset	✓	✓
Zero set	✓	✓
Peak detection (Max, Min, TIR)	✓	✓
Unit system switching[*1]	✓	✓
Counting direction switching	✓	✓
Resolution selecting	✓[*2]	✓
Tolerance judgment	✓	✓
Simple calculation	✓	✓
Analog bar display ON/OFF	✓	✓
Analog bar scale selecting	✓	✓
Key customize	✓	✓
Function lock	✓	✓
Calibration schedule warning function	✓	✓
Auto OFF	✓	—
Reset all settings	✓	✓

*1: in/mm models only
*2: Except 0.01 mm/0.0005 in models

ID-F Series – AC Powered

543-851A	543-852A	543-853A	543-854A
ID-F0525NX	**ID-F0525ENX**	**ID-F0550NX**	**ID-F0550ENX**

SPECIFICATIONS

Inch/Metric

▢ ISO/JIS type (Ø8 mm stem, M2.5 x 0.45 contact point)　　▢ ASME/ANSI/AGD type (Ø3/8" stem, 4-48 UNF contact point)

Order No.*1	Range	Resolution	Maximum permissible error MPE*2			Measuring force MPL (N)	Inter-face	Mass (g)
			MPE$_E$*3	Hysteresis MPE$_H$	Repeatability MPE$_R$			
543-852A	1 in/25.4 mm	0.005/0.001/0.01 mm 0.00002/0.00005/0.0001/0.0005/0.001 in (selectable)	±0.0001 in/ 0.0025 mm	0.00008 in/ 0.002 mm	0.00008 in/ 0.002 mm	1.8 or less	d1/d2/S1	240
543-854A	2 in/50.8 mm		±0.00016 in/ 0.004 mm			2.3 or less	d1/d2/S1	330
543-858A			±0.00012 in/ 0.003 mm			2.3 or less	d1/d2/S1	330

*1 To denote your AC power cable add the following suffixes to the order No.: A for UL/CSA, D for CEE, DC for CCC, E for BS, K for KC, No suffix is required for JIS/100 V
*2 These values apply at 20 °C.　*3 Error of indication for the total measuring range

Metric

Order No.*1	Range (mm)	Resolution (mm)	Maximum permissible error MPE*2 (mm)			Measuring force MPL (N)	Inter-face	Mass (g)
			MPE$_E$*3	Hysteresis MPE$_H$	Repeatability MPE$_R$			
543-851A	25.4	0.0005/0.001/0.01 (selectable)	0.0025	0.002	0.002	1.8 or less	d1/d2/S1	240
543-853A	50.8		0.004			2.3 or less	d1/d2/S1	330
543-857A	50.7		0.003				d1/d2/S1	330

Common Specifications

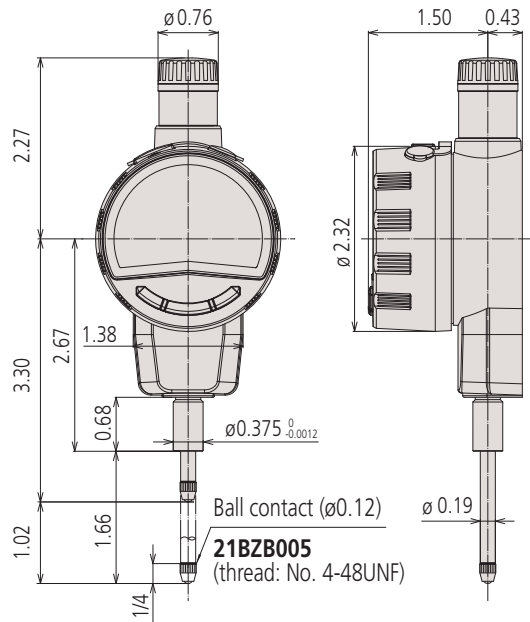|			
Display	7 segments height: 11.0 mm, Analog bar (±20 scale)	Response speed	No limit
Display rotation	330 °	Errors, Alarms	Various setting errors, Sensor error, Display overflow, etc.
Protection level*1	Equivalent to IP-40	Output	d1, d2
Possible plunger direction	Up to direction in which plunger is horizontal	I/O	S1
Power supply	AC adapter (DC 5.9 V)	Operating temperature	0 to 40 °C
Detection method	Electrostatic capacitance type absolute linear encoder	Storage temperature	-10 to 60 °C

*1: Protection level (IP=International Protection) is based on IEC 60529/DIN40050 Part 1/JIS D0207, C0920. The levels shown are valid for factory conditions only.
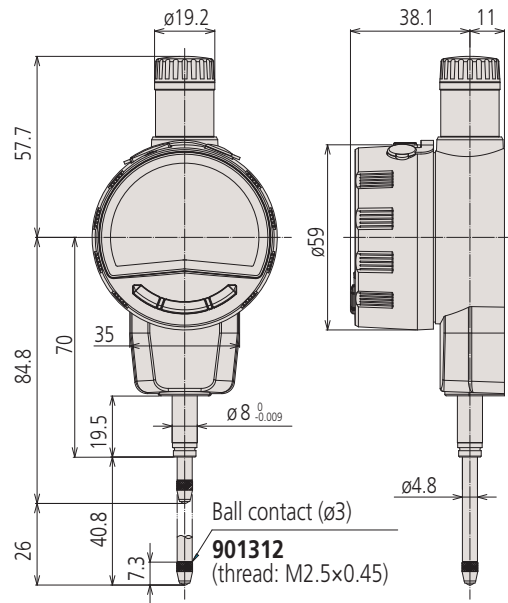
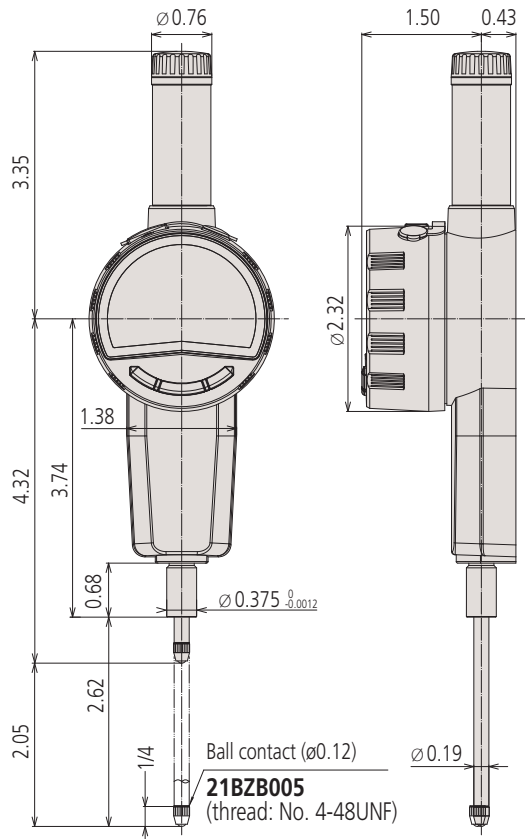# DIMENSIONS
1"/25.4 mm range models

Mitutoyo

Unit: in

ø0.76
1.50 0.43
2.27
ø2.32
3.30
2.67
1.38
0.68
ø0.375 ⁰₋₀.₀₀₁₂
1.02
1.66
Ball contact (ø0.12)
ø0.19
21BZB005
(thread: No. 4-48UNF)
1/4

Unit: mm
25.4mm=1"

ø19.2
38.1 11
57.7
ø59
84.8
70
35
19.5
ø8 ⁰₋₀.₀₀₉
26
40.8
ø4.8
7.3
Ball contact (ø3)
901312
(thread: M2.5×0.45)

2"/50.8 mm range models

Unit: in

ø0.76
1.50 0.43
3.35
ø2.32
4.32
3.74
1.38
0.68
ø0.375 ⁰₋₀.₀₀₁₂
2.05
2.62
1/4
Ball contact (ø0.12)
ø0.19
21BZB005
(thread: No. 4-48UNF)

Unit: mm
25.4mm=1"

ø19.2
38.1 11
85.2
ø59
110.6
97.3
35
19.5
ø8 ⁰₋₀.₀₀₉
52
65.3
ø4.8
7.3
Ball contact (ø3)
901312
(thread: M2.5×0.45)
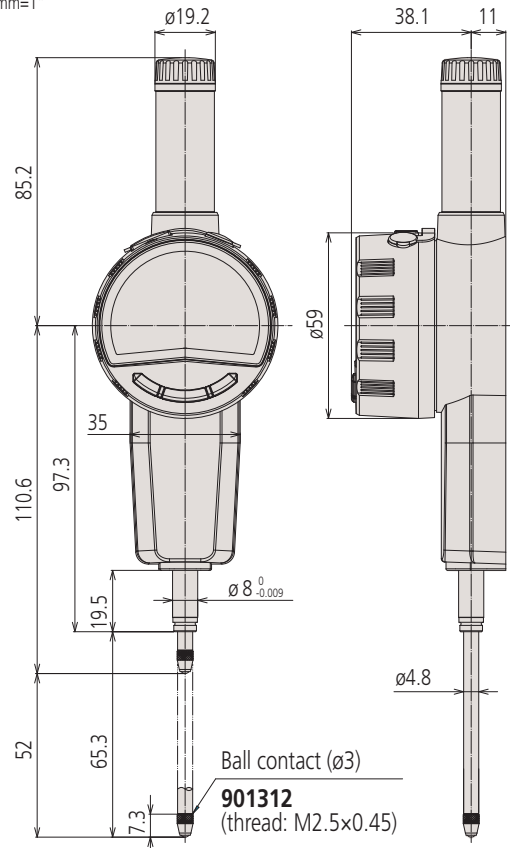
OPTIONS

Measurement data input unit

Can be used for both ID-C/ID-F with SPC cable.

No.264-020

Measurement data input unit

No.06AGQ001F

**Measurement data input unit
USB Input Tool Direct (2 m)**

U-WAVE

If using U-WAVE, please note that it does not support bidirectional serial communication.

No.02AZF700

Attachment example

Optional items such as a lifting lever can be attached while the U-WAVE-TM/TMB is in place.

**Connection unit
(For ID-C series 12.7 mm type only)**

Please note that a conventional ID-C/ID-F cable cannot be used because the shape of the connector is different.

No.02AZG011

Standard U-WAVE-T dedicated connection cable

No.02AZG021

U-WAVE-T dedicated connection cable for foot switch

Buzzer type	**No.264-623**
Waterproof/dustproof type	**No.264-622**

Transmission unit (U-WAVE-TM)

Buzzer type	**No.264-627**
Waterproof/dustproof type	**No.264-626**

U-WAVE-TMB

Cable

SPC Cable for connecting ID-C/ID-F and 264-020. Can be used for both ID-C/ID-F.

No.06AGL011

SPC Connection cable (1 m)

No.06AGL021

SPC Connection cable (2 m)
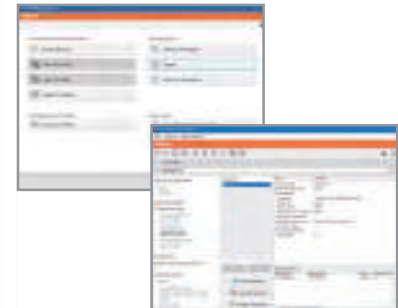
U-WAVE-TM/TMB mounting plate

No.02AZF670

U-WAVE mounting plate

Software

USB-ITPAK V3.0 FULL version dongle

USB dongle

Measurement data collection software USB-ITPAK V3.0 can be downloaded from our website. The above dongle is required to use the full functions.

No.06AGR543

Measurement data collection software USB-ITPAK V3.0

# SOFTWARE Reduces the time and effort needed for inspection work

Measurement data collection software

USB-ITPAK V3.0

USB-ITPAK is useful software to create procedures when inputting measurement data into Excel sheets. The latest version allows the user to perform batch power-on for ID-C/ID-F units, batch power-off at the end of measurement, batch zero setting and presetting, data acquisition instruction from a PC, etc.

Equipped with an automatic sorting function for sorting input measurement data [Easy input mode]

This function can be implemented even if the measuring instrument does not support bidirectional serial communication. After setting, measurement values are automatically sorted into an Excel sheet as needed.
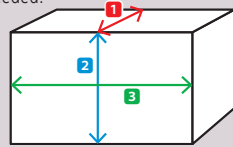
Only the number of measurement items is preset.(Example: number of measurement items = 3)

1 D: 10 mm
2 H: 20 mm
3 W: 30 mm

With normal input
(Entered into column A only.)

With automatic sorting function
(Once entered into column A, similar data is automatically classified.)

Simplifies measuring instrument setting

Batch setting of ID-C/ID-F units can be performed from your PC. Moreover, the settings can be saved on your PC and set to other ID-C/ID-F units. You can perform settings without even touching the ID-C/ID-F units.

Deploy settings to other ID-C/ID-F units

• Presetting
• Resolution
• Tolerance setting
...etc.

Settings

Save

USB-ITPAK V2.1/V3.0 Function comparison table

Symbols: ✓[1] : Can be used only when connected with USB-ITPAK V3.0 and ID-C/ID-F;
✓ : Can be used; — : Cannot be used

Operating environment and functions		Details	ITPAK		
			V2.1	V3.0	
				Basic version (free)	Full version
Supported communication standard	Digimatic d1/d2	d1: 1st generation, unidirectional communication, 6-digit communication / d2: 2nd generation, unidirectional communication, 8-digit communication		✓	
	Digimatic S1	3rd generation, bidirectional serial communication, 8-digit communication	—	✓	
Compatible OS		Windows 2000 SP4, Windows XP SP2 or later, Windows Vista, Windows 7, Windows 8 / 8.1	✓	—	
		Windows 10		✓	
Functions	Sequential measurement	With this method, when using one or several measuring instruments, the measurement data are input into an Excel sheet from the measuring instrument(s) registered in advance.	✓	—	✓
	Batch measurement	With this method, measurement data are acquired in batch from several measuring instruments and input into an Excel sheet.	✓	—	✓
	Individual measurement	The Excel sheets and cells for inputting measurement data are set individually for each measuring instrument. With this method, measurements performed randomly by multiple operators can be input from each instrument into their specified sheets and cells.	✓	—	✓
	Simple measurement function	This function makes it possible to start measuring without prior detailed settings and to sort data into Excel columns according to measurement location.	—	✓	
	Measuring instrument setting	This function is used to change the various settings (zero setting, registration of preset values, setting of unit, counting direction, and tolerance) of connected measuring instruments.	—	✓[1]	
	Measurement history	This function saves information on the measurement operator and the measurement equipment used within the measurement data. (It records in the data who used what to measure the data.)	—	✓[1]	
	Device information	This function reads various information about connected measuring instruments (model, serial No., calibration date) and displays it on the PC.	—	✓[1]	
	Data input into Microsoft Excel	This function is used to input values into user-specified cells in Excel.	✓	—	✓
	Text data input with virtual keyboard	This function is used to input text (characters and values) into specified cells in Excel.	✓	—	✓
Security	USB dongle for V2.1	For USB-ITPAK V2.1 (cannot be used with V3.0)	✓	N/A	—
	USB dongle for V3.0	Can also be used with USB-ITPAK V2.1	✓	N/A	✓