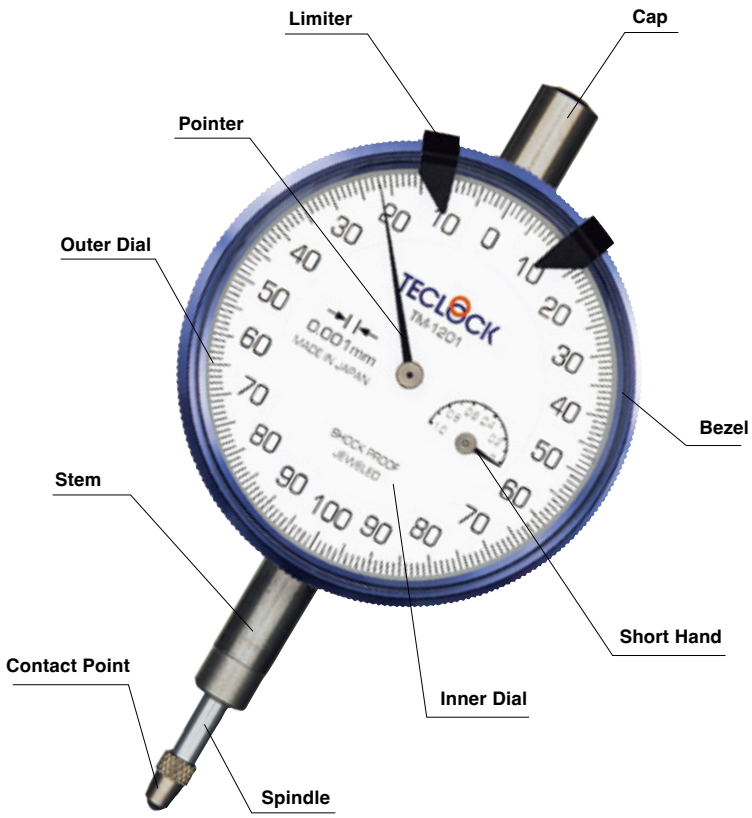
1 Dial Indicator

Product lineups succeeded to “Precision”,”Stability” and “Durability” by clock technology at the time of the founding.

Dial Indicator is surely utilized at manufacturing sites where dimensional high accuracy is needed to be confirmed. The graduation (1- graduation)depends on usage and Teclock offers 6 kinds of graduations, namely 0.0005mm, 0.001mm, 0.005mm, 0.01mm, 0.05mm and 0.1mm. The strokes are available from 0.08mm (the shortest) up to 150mm. Dial Indicator is normally not used independent but its stem or lug back is fixed to a jig and holds work piece with the measuring stand and contact point, and displacement volume is read with short hand and pointer. The dial indicator is applied for direct measurement to measure actual dimension and comparative measurement for measuring displacement volume from a certain standard dimension.

Mounting a dial indicator on a stand or a magnet base stand.



0.001mm Dial Indicator

- Standard type dial indicators of graduation 0.001mm and bezel diameter 56mm.
- Durability is pursued by protecting mechanical parts like gears with shock absorbing mechanism (Teclock unique shock proof mechanism).
- Jeweled bearing is applied for improving durability.
- Stable repeatability accuracy is realized with lever enlargement mechanism built–in.
- Tolerance hand is provided as standard accessory for all models for positive tolerance setting.
- Lifting lever (Option) can be mounted (Refer to page 25).
- Bezel clamp (Option) can be mounted (except for TM-1201PW).
- Measuring ability can be changed .
- In case that flat back is required, add suffix “f” to the end of model number (example =TM-1201f).

TM-1201
Popular type

·Measuring Range 1mm
·Jeweled bearing durability
·Quench hardened stainless steel stem

TM-1201PW
Oil-proof type

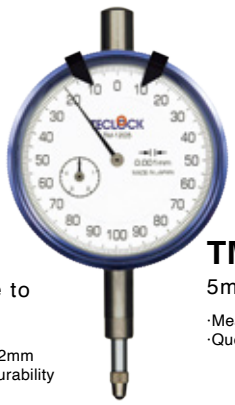
·Measuring Range 1mm
·Jeweled bearing durability
·Quench hardened stainless steel stem

TM-1251
Wide graduation width type

·Measuring Range 1mm
·One Revolution 0.1mm
·Jeweled bearing durability
·Quench hardened stainless steel stem
·Green Dial

TM-1202
Type suitable to Boregauge

·Measuring Range 2mm
·Jeweled bearing durability
·Quench hardened stainless steel stem



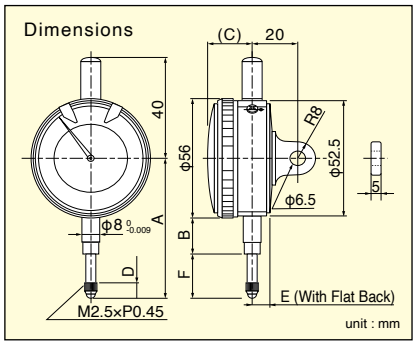
TM-1205
5mm stroke type

·Measuring Range 5mm
·Quench hardened stainless steel stem

Dimensions Table

Model	A	B	C	D	E	F
TM-1201	62	18	15	7.5	8	16
TM-1201PW	65.5	(18)	13.5	11	8.5	(19.5)
TM-1251	62	18	15	7.5	8	16
TM-1202	62	19	15	7.5	8	16
TM-1205	62	19	15.5	7.5	8	16

unit : mm



Specifications

Model	Graduation (mm)	Measuring Range (Free Stroke) (mm)	Repeatability (μm)	Indication Error(μm)				Hysteresis (μm)	Standard Contact Point	Measuring Force (N)	Weight (g)
				1/10 Revolution	1/2 Revolution	1 Revolution	Total Range				
TM-1201	0.001	1(3)	0.5	2	3.5	4	5	2	ZS-017	1.5 or less	170
TM-1201PW	0.001	1(3)	0.5	2	3.5	4	5	2	ZS-028	1.5 or less	180
TM-1251	0.001	1(3)	0.5	2	3.5	4	8	2	ZS-017	1.5 or less	170
TM-1202	0.001	2(2)	0.5	2	4	5	14	2	ZS-017	1.5 or less	170
TM-1205	0.001	5(–)	1	3.5	5	6	15	4	ZS-017	1.5 or less	165

Final inspection is done in the vertical orientation and the accuracy is guaranteed.

0.01mm Dial Indicator

TM-110
Standard type

·Measuring Range 10mm
·Quench hardened stainless steel stem

TM-110R
Reversed dial type

·Measuring Range 10mm

TM-110D
Coaxial revolution pointers type

·Measuring Range 10mm

- This is the most standard type dial indicator of graduation 0.01mm
- The model can be selected out of stainless stem, coaxial revolution pointer, oil discharge function and analog function depending on usage.
- These are standard series with high durability and high accuracy by pursuing parts accuracy.
- Lifting lever (Option) can be mounted (Refer to page 25).
- Bezel clamp (Option) can be mounted (except for TM-110PW).
- Measuring ability can be changed .
- In case that flat back is required, add suffix “f” to the end of model number (example =TM-110f).

SmartSensor™

TM-110-4A
With oil ejection holed bezel type

·Measuring Range 10mm
·Quench hardened stainless steel stem

TM-110PW
Oil-Proof type

·Measuring Range 10mm

TM-110P
Direct reading graduation type

·Measuring Range 10mm
·Graduation spec (0-0.5-1.0)
·Green Dial

TM-105
Type suitable to Boregauge

·Measuring Range 5mm
·Balanced scale

TM-105W
Reversed type

·Measuring Range 5mm

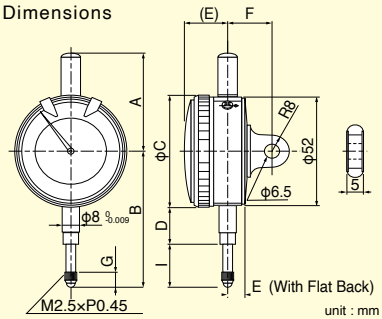
TM-5106
Wide scale width type

·Measuring Range 5mm

0.005mm Dial Indicators

TM-5105
·Measuring Range 5mm

Dimensions



Dimensions Table

Model	A	B	C	D	E	F	G	H	I
TM-110	48.7	65	55	18	15.5	20	7.5	7.8	19.5
TM-110R	48.7	65	55	18	15.5	20	7.5	7.8	19.5
TM-110D	48.7	65	55	18	17.6	20	7.5	7.8	19.5
TM-110-4A	48.7	65	55	18	15.5	20	7.5	7.8	19.5
TM-110PW	44.5	68.5	56	(17.5)	14.5	20	11	8.3	23.0
TM-110P	48.7	65	55	18	15.5	20	7.5	7.8	19.5
* TM-105	48.7	65	55	18	15.5	*	7.5	7.8	19.5
TM-105W	48.7	65	55	18	15.5	20	7.5	7.8	19.5
TM-5106	48	65	55	19	15.5	20	7.5	7.8	19.5
TM-5105	48	65	55	19	15.5	20	7.5	7.8	19.5

*Indicator is supplied with Flat back. unit : mm

Specifications

Model	Graduation (mm)	Measuring Range (mm)	Repeatability (μm)	Indication Error(μm)				Hysteresis (μm)	Standard Contact Point	Measuring Force (N)	Weight (g)
				1/10 Revolution	1/2 Revolution	1 Revolution	Total Range				
TM-110	0.01	10	3	5	9	10	15	3	ZS-017	1.4 or less	110
TM-110R	0.01	10	3	5	9	10	15	3	ZS-017	1.4 or less	110
TM-110D	0.01	10	3	7	9	10	15	4	ZS-017	1.4 or less	115
TM-110-4A	0.01	10	3	5	9	10	15	3	ZS-017	1.4 or less	110
TM-110PW	0.01	10	3	5	9	10	15	3	ZS-028	1.4 or less	150
TM-110P	0.01	10	3	5	9	10	15	3	ZS-017	1.4 or less	110
TM-105	0.01	5	3	5	9	10	12	3	ZS-017	1.4 or less	110
TM-105W	0.01	5	3	5	9	10	12	3	ZS-017	1.4 or less	110
TM-5106	0.01	5	3	5	9	10	12	3	ZS-017	1.4 or less	145
TM-5105	0.005	5	3	5	9	10	12	3	ZS-017	1.4 or less	145

Final inspection is done in the vertical orientation and the accuracy is guaranteed.

Small Dial Indicator

- As bezel diameter is small (minimum diameter=36mm), these are suitable to measure at the narrow setting space of production lines and many measuring points by being mounted to the machine.
- Lifting lever (Option) can be mounted (except for TM-34).
- In case that flat back is required, add suffix “f” to the end of modelnumber (example =TM-35f).
- Measuring range 3.5mm, 4mm, 5mm, and 10mm are available in spite of small size.
- Bezel clamp (Option) can be mounted.
- Measuring ability can be changed (Refer to page 23).

TM-35
Standard type

·Graduation 0.01mm
·Measuring Range 5mm

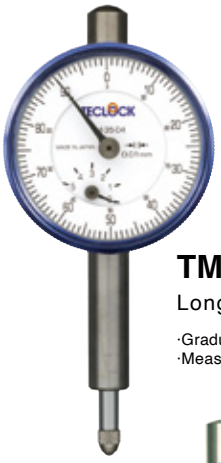
0.1mm

TM-35-01
Long-stroke type

·Graduation 0.1mm
·Measuring Range 10mm

TM-35-03
Stem mounting type

·Graduation 0.01mm
·Measuring Range 5mm



TM-35-04
Long stem type

·Graduation 0.01mm
·Measuring Range 5mm

TM-35-02D
Coaxial revolution pointers type

·Graduation 0.01mm
·Measuring Range 10mm

TM-34
Miniature type

·Graduation 0.01mm
·Measuring Range 4mm

0.005mm

TM-36
Left and right sorting scale

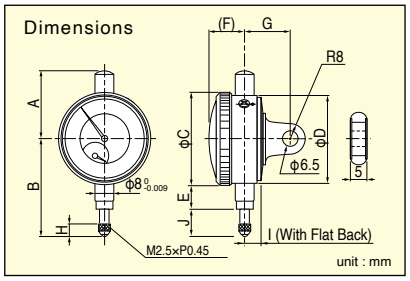
·Graduation 0.005mm
·Measuring Range 3.5mm

TM-37
Wide scale width type

·Graduation 0.01mm
·Measuring Range 3.5mm

TM-37C
Flat back

·Graduation 0.01mm
·Measuring Range 3.5mm



Dimensions Table

Model	A	B	C	D	E	F	G	H	I	J
TM-35	27.4	41.3	39	36.5	10	14.5	19	5	6.2	11.8
TM-35-01	32.5	46	39	36.5	10	14.5	19	5	6.2	16.5
TM-35-03	27.4	46	39	36.5	15	14.5	19	5	6.2	11.5
TM-35-04	27.4	58	39	36.5	26	14.5	19	5	6.2	12.5
TM-35-02D	32.5	46	39	36.5	10	16.5	19	5	6.2	16.5
TM-34	20	39.5	36	32	10	13	19	5	6.5	12
TM-36	33.5	50	47	44	13	15.5	19.7	7.5	7	13.5
TM-37	33.5	50	47	44	13	15.5	19.7	7.5	7	13.5
* TM-37C	33.5	50	47	44	13	15.5	*	7.5	7	13.5

*Indicator is supplied with Flat back.

unit : mm

Specifications

Model	Graduation (mm)	Measuring Range (mm)	Repeatability (μm)	Indication Error(μm)				Hysteresis (μm)	Standard Contact Point	Measuring Force (N)	Weight (g)
				1/10 Revolution	1/2 Revolution	1 Revolution	Total Range				
TM-35	0.01	5	3	8	12	14	18	4	ZS-014	1.3 or less	72
TM-35-01	0.1	10	20	20	–	–	50	15	ZS-014	1.5 or less	72
TM-35-03	0.01	5	3	8	12	14	18	4	ZS-014	1.3 or less	72
TM-35-04	0.01	5	3	8	12	14	18	4	ZS-014	1.3 or less	75
TM-35-02D	0.01	10	3	9	12	14	20	5	ZS-014	1.6 or less	75
TM-34	0.01	4	3	8	12	14	18	4	ZS-014	1.0 or less	60
TM-36	0.005	3.5	3	6	9	10	12	3.5	ZS-017	1.2 or less	85
TM-37	0.01	3.5	3	8	12	14	18	4	ZS-017	1.2 or less	85
TM-37C	0.01	3.5	3	8	12	14	18	4	ZS-017	1.2 or less	85

Final inspection is done in the vertical orientation and the accuracy is guaranteed.

0.01mm Long Stroke Dial Indicator

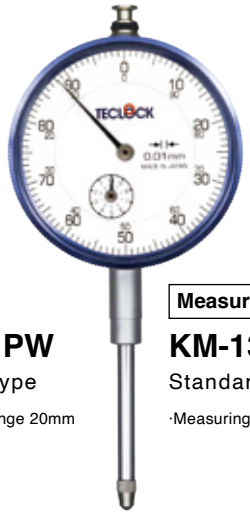
SmartSensor™

- 20mm, 30mm long stroke dial indicators are available.
- Teclock unique shock proof mechanism is built–in to all models.
- Lifting lever (Option) can be mounted (except for KM-121PW).
- Bezel clamp (Option) can be mounted (except for KM-121PW).
- In case that flat back is required, add suffix “f” to the end of model number (example =KM-121f).

KM-121
Standard type
·Measuring Range 20mm

KM-121D
Coaxial revolution pointers type
·Measuring Range 20mm

KM-121PW
Oil-proof type
·Measuring Range 20mm



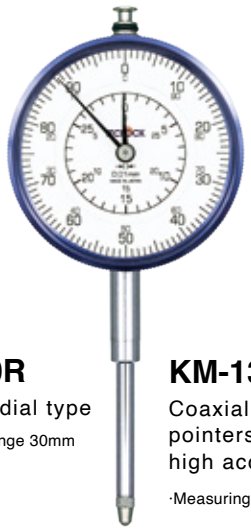
Measuring Range 30mm

KM-131
Standard type
·Measuring Range 30mm

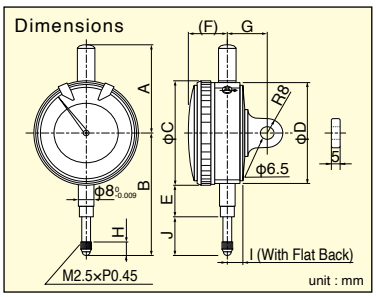
KM-132D
Coaxial revolution pointers type
·Measuring Range 30mm

KM-130
High accurate type
·Measuring Range 30mm

KM-130R
Reversed dial type
·Measuring Range 30mm



KM-130D
Coaxial revolution pointers type in the high accuracy
·Measuring Range 30mm



Dimensions Table

Model	A	B	C	D	E	F	G	H	I	J
KM-121	36	75	55	52	18	15.5	20	7.5	7.8	29.5
KM-121D	36	75	55	52	18	17.6	20	7.5	7.8	29.5
KM-121PW	55	89	56	52	(17.5)	14.5	20	11	8.3	(43.5)
KM-131	36	86	55	52	19	15.5	20	7.5	8	39.5
KM-132D	36	86	55	52	19	17.3	20	7.5	8	39.5
KM-130	38.5	92	59	54.5	22.7	17.5	22	7.5	9.6	39.8
KM-130R	38.5	92	59	54.5	22.7	17.5	22	7.5	9.6	39.8
KM-130D	38.5	92	59	54.5	22.7	19.5	22	7.5	9.6	39.8

unit : mm

Specifications

Model	Graduation (mm)	Measuring Range (mm)	Repeatability (μm)	Indication Error(μm)				Hysteresis (μm)	Standard Contact Point	Measuring Force (N)	Weight (g)
				1/10 Revolution	1/2 Revolution	1 Revolution	Total Range				
KM-121	0.01	20	4	8	10	15	25	5	ZS-017	2.2 or less	110
KM-121D	0.01	20	4	8	10	15	25	5	ZS-017	2.2 or less	115
KM-121PW	0.01	20	4	8	10	15	25	5	ZS-028	2.2 or less	120
KM-131	0.01	30	5	10	12	15	30	7	ZS-017	2.5 or less	150
KM-132D	0.01	30	5	10	12	15	30	7	ZS-017	2.5 or less	155
KM-130	0.01	30	5	10	12	15	30	7	ZS-017	2.2 or less	150
KM-130R	0.01	30	5	10	12	15	30	7	ZS-017	2.2 or less	150
KM-130D	0.01	30	5	10	12	15	30	7	ZS-017	2.2 or less	155

Final inspection is done in the vertical orientation and the accuracy is guaranteed.

Long Stroke Dial Indicator

- 50mm, 100mm, 150mm long stroke dial indicators with a large graduation plates are available.
- Measuring up to 150mm is materialized with highest precision components of high durability and Teclock original and unique enlargement mechanism is built-in.
- Bezel clamp (Option) can be mounted (except for KM-05100 /KM-05150).
- Long stroke dial Indicator is widely used for construction, civil engineering industries etc.
- In case that flat back is required, add suffix “f” to the end of model number (example =KM-155f) (except for KM-05100 /KM-05150).

KM-55
Durability emphasis type

·Graduation 0.05mm
·Measuring Range 50mm
·Shock Proof

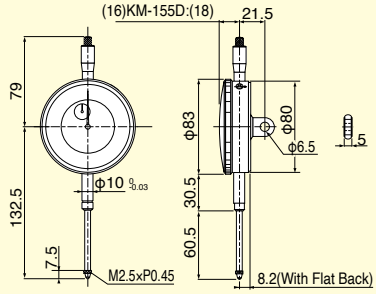
KM-155
Wide graduation width type

·Graduation 0.01mm
·Measuring Range 50mm
·Shock Proof

KM-155D
Coaxial revolution pointers type

·Graduation 0.01mm
·Measuring Range 50mm
·Shock Proof

Dimensions

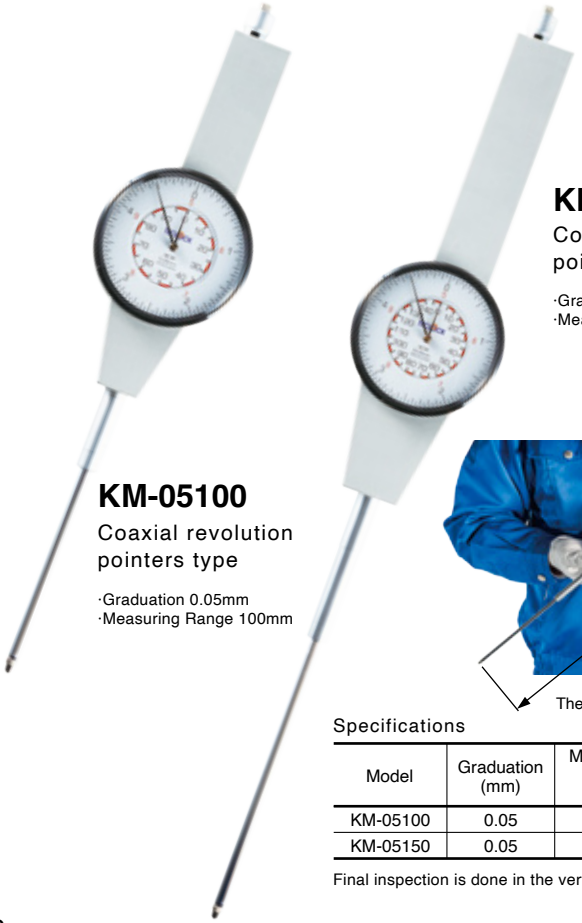


unit : mm

Specifications

Model	Graduation (mm)	Measuring Range (mm)	Repeatability (μm)	Indication Error(μm)				Hysteresis (μm)	Standard Contact Point	Measuring Force (N)	Weight (g)
				1/10 Revolution	1/2 Revolution	1 Revolution	Total Range				
KM-55	0.05	50	20	30	–	50	100	15	ZS-017	2.5 or less	290
KM-155	0.01	50	5	15	12	15	40	8	ZS-017	2.5 or less	290
KM-155D	0.01	50	5	15	12	15	40	8	ZS-017	2.5 or less	295

Final inspection is done in the vertical orientation and the accuracy is guaranteed.

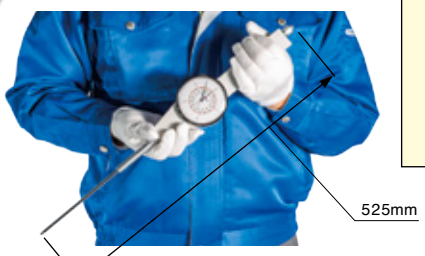


KM-05150
Coaxial revolution pointers type

·Graduation 0.05mm
·Measuring Range 150mm

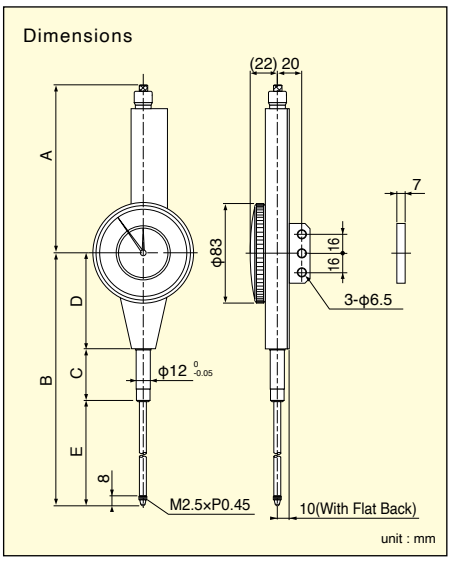
KM-05100
Coaxial revolution pointers type

·Graduation 0.05mm
·Measuring Range 100mm



The longest mechanical type model: KM-05150

Dimensions



unit : mm

Dimensions Table

Model	A	B	C	D	E
KM-05100	140	235	44	80	111
KM-05150	190	335	55	120	160

unit : mm

Specifications

Model	Graduation (mm)	Measuring Range (mm)	Repeatability (μm)	Total Range Indication Error(μm)	Hysteresis (μm)	Standard Contact Point	Measuring Force (N)	Weight (g)
KM-05100	0.05	100	30	100	15	ZS-018	2.5 or less	550
KM-05150	0.05	150	30	150	15	ZS-018	3.0 or less	680

Final inspection is done in the vertical orientation and the accuracy is guaranteed.

One Revolution Dial Indicator

SmartSensor™

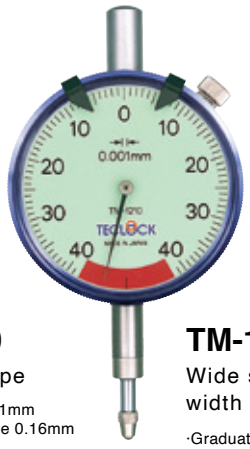
- These are indicators that are effective for comparative measurement with 0.0005mm, 0.001mm, and 0.01mm.
- High durability is realized with Teclock original and unique enlargement mechanism is built-in.
- Limiter is mounted as standard.
- Measuring ranges are subdivided to 0.08mm, 0.16mm, 0.2mm and 1.0mm.
- Clump is attached to 0.001mm model.
- Lifting lever (Option) can be mounted.
- In case that flat back is required, add suffix “f” to the end of model number (example =TM-1200 f).

TM-1200

Standard type

·Graduation 0.001mm
·Measuring Range 0.16mm

·With Bezel clamp



TM-1210

Wide scale width type

·Graduation 0.001mm
·Measuring Range 0.08mm

·With Bezel clamp
·Green Dial
·With Limiter

TM-1211

Full range type

·Graduation 0.001mm
·Measuring Range 0.2mm

·With Bezel clamp
·With Limiter

TM-102

Graduation of 0.01mm type

·Graduation 0.01mm
·Measuring Range 1.0mm

·Bezel clamp (Option)
·Green Dial
·With Limiter

TM-98

Graduation of 0.1mm type

·Graduation 0.1mm
·Measuring Range 3.2mm

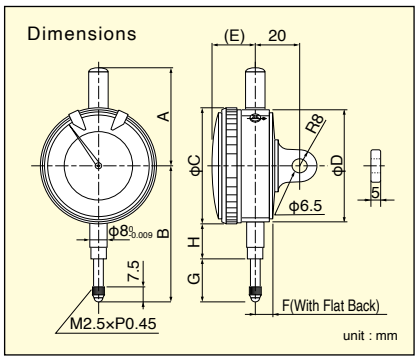
·Bezel clamp (Option)
·Green Dial

TM-5210

Minimum graduation type

·Graduation 0.0005mm
·Measuring Range 0.08mm

·Green Dial



Dimensions Table

Model	A	B	C	D	E	F	G	H
TM-1200	44.5	62	56	52.5	15	8	16	18
TM-1210	44.5	62	56	52.5	15	8	16	18
TM-1211	44.5	62	56	52.5	15	8	16	18
TM-102	48	65	55	52	15.8	8	19	18.5
TM-98	48	65	55	52	15.8	7.8	19	18.5
TM-5210	44.5	62	56	52.5	15	8	16	18

unit : mm

Specifications

Model	Graduation (mm)	Measuring Range (Free Stroke) (mm)	Repeatability (μm)	Indication Error(μm)		Hysteresis (μm)	Standard Contact Point	Measuring Force (N)	Weight (g)
				1/10 Revolution	Total Range				
TM-1200	0.001	0.16(3.5)	0.5	2	5	2	ZS-017	1.5 or less	175
TM-1210	0.001	0.08(3.5)	0.5	2	5	2	ZS-017	1.5 or less	175
TM-1211	0.001	0.2(3.5)	0.5	2	5	2	ZS-017	1.5 or less	175
TM-102	0.01	1(5)	3	5	8	3	ZS-017	1.4 or less	150
TM-98	0.1	3.2(6)	20	10	30	10	ZS-017	1.4 or less	150
TM-5210	0.0005	0.08(3.5)	0.8	0.8	4	2.5	ZS-017	1.5 or less	175

Final inspection is done in the vertical orientation and the accuracy is guaranteed.

0.1mm Dial Indicator

- These are 0.1mm graduation dial indicators.
- 3 types of 10mm, 20mm and 30mm are available depending on measuring ranges.
- Lifting lever (Option) can be mounted.
- This is used to measure approximate dimensional judgment for woodwork and leather goods etc. and also applicable for measurement of judge deviation dimension.
- Lifting lever (Option) can be mounted.
- Measuring ability can be changed. (Refer to page 23)
- In case that flat back is required, add suffix “f” to the end of model number (example =TM-91f).

TM-91
Standard type
·Measuring Range 10mm
·Shock Proof

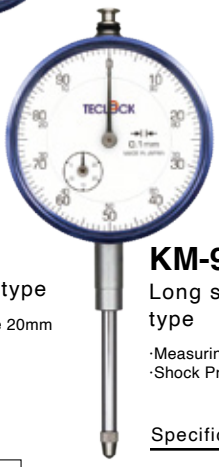
TM-91R
Reversed dial type
·Measuring Range 10mm
·Shock Proof

Dimensions Table

Model	A	B	C	D
TM-91	48	65	7.8	19.5
TM-91R	48	65	7.8	19.5
KM-92	36	75	7.8	29.5
KM-93	36	85	7.8	39.5

unit : mm

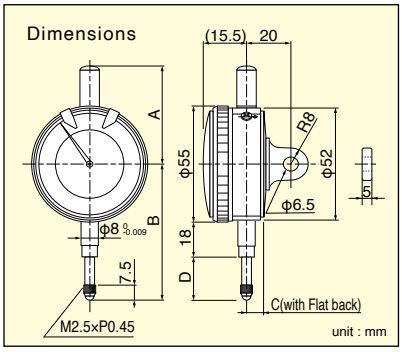
KM-92
Long stroke type
·Measuring Range 20mm
·Shock Proof

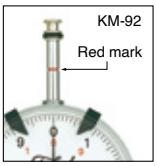


KM-93
Long stroke type
·Measuring Range 30mm
·Shock Proof

TM-35-01
Small type
·Measuring Range 10mm

(See page 40)





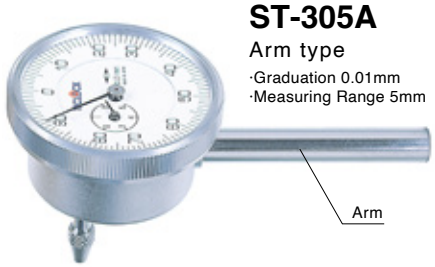
Specifications

Model	Graduation (mm)	Measuring Range (mm)	Repeatability (μm)	Indication Error(μm)		Standard Contact Point	Measuring Force (N)	Weight (g)
				1 Revolution	Total Range			
TM-91	0.1	10	35	–	50	ZS-017	1.4 or less	110
TM-91R	0.1	10	35	–	50	ZS-017	1.4 or less	110
KM-92	0.1	20	35	30	40	ZS-017	2.2 or less	110
KM-93	0.1	30	35	50	60	ZS-017	2.5 or less	120

Final inspection is done in the vertical orientation and the accuracy is guaranteed.

Back Plunger Dial Indicator

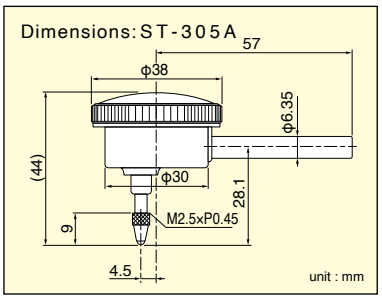
- These are different from general indicators, of which gradation plate can be set in parallel to measuring face. It is suitable for leveling smooth surface and reading from the front of measuring point.

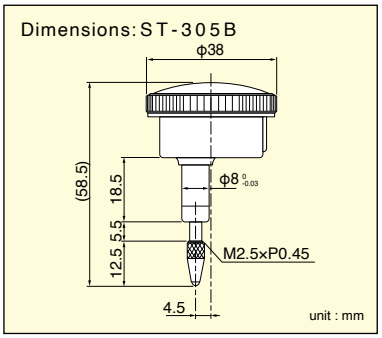


ST-305A
Arm type
·Graduation 0.01mm
·Measuring Range 5mm

ST-305B
Stem type
·Graduation 0.01mm
·Measuring Range 5mm

Displacement of can be read from above.





Specifications

Model	Graduation (mm)	Measuring Range (mm)	Repeatability (μm)	Indication Error(μm)				Hysteresis (μm)	Measuring Force (N)	Weight (g)
				1/10 Revolution	1/2 Revolution	1 Revolution	Total Range			
ST-305A	0.01	5	3	8	12	14	18	4	1.4 or less	80
ST-305B	0.01	5	3	8	12	14	18	4	1.4 or less	80

Final inspection is done downward of probe and the accuracy is guaranteed.

SmartSensor™

MEMO

TECLOCK®

https://teclock.co.jp/en/

Digital Indicator PC Series (0.01/0.0005mm)

- Data output and statistics transaction can be easily made by using digital indicator.
- 0.01mm and 0.0005mm resolution digital indicators are available.
- Standard models are equipped with preset function and conventional models deleting preset functions are available.

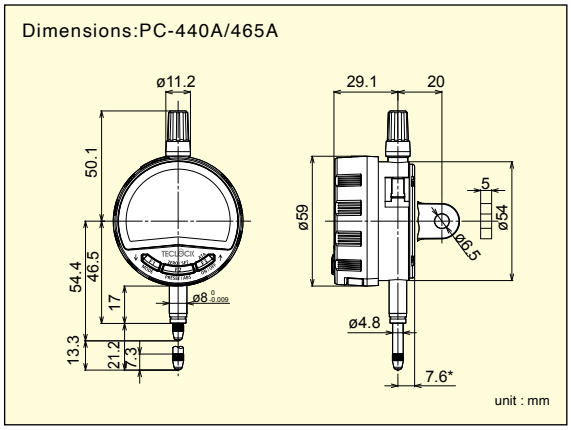
Measuring Range 12.7mm Type / Standard Model

PC-440A

·Resolution 0.01mm
·Measuring Range 12.7mm

PC-465A

·Resolution 0.0005mm
·Measuring Range 12.7mm



Supplied with Lug back as standard models.
Flat back and Lift lever are optional.

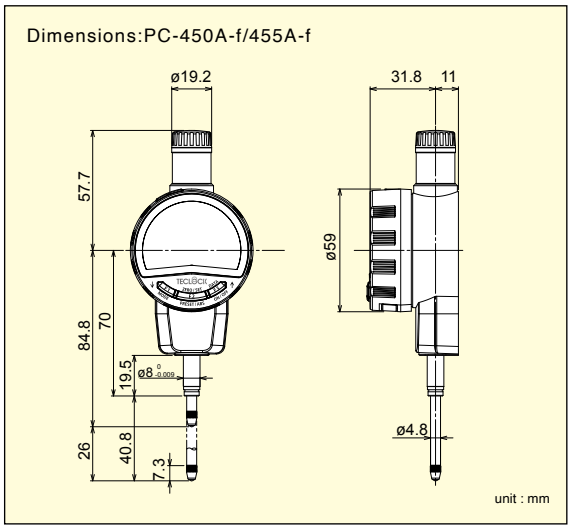
Measuring Range 25.4mm Type / Standard Model

PC-450A-f

·Resolution 0.01mm
·Measuring Range 25.4mm

PC-455A-f

·Resolution 0.0005mm
·Measuring Range 25.4mm



Supplied with Flat back as standard models.
Lug back and Lift lever are optional.

SmartSensor™

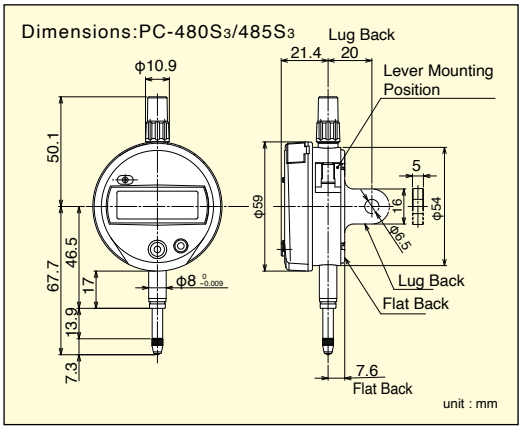
Measuring Range 12.7mm Type / Standard Model

PC-480S3

·Resolution 0.01mm
·Measuring Range 12.7mm

PC-485S3

·Resolution 0.001mm
·Measuring Range 12.7mm



Supplied with Lug back as standard models (ZL-026).
Flat back (ZY-080) and Lift lever (ZY-918) are optional.

Specifications

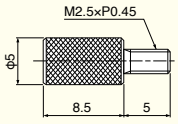
Model	PC-440A	PC-465A	PC-450A-f	PC-455A-f	PC-480S3	PC-485S3
Measuring range	12.7mm		25.4mm		12.7mm	
Resolution	0.01mm	0.0005/0.001/0.01mm	0.01mm	0.0005/0.001/0.01mm	0.01mm	0.001mm
Error of indication for the total measuring range (MPEE)	20μm	3μm	20μm	3μm	20μm	3μm
Hysteresis(MPEH)	20μm	2μm	20μm	2μm	20μm	2μm
Repeatability(MPER)	10μm	2μm	10μm	2μm	10μm	2μm
Measuring force(MPL)	0.9N or less	1.5N or less	1.8N or less	1.8N or less	1.5N or less	1.5N or less
Functions	Zero set, Preset, Peak detection, Counting direction switching, Tolerance judgment, Simple calculation, Key customize, Function lock, Auto OFF, Calibration schedule, warning display, Display rotate(330°),Battery voltage decrease display, Error warning display, Data output(DIGIMATIC)				Zero set, Counting direction switching, Data output(DIGIMATIC)	
Display of analog bar	±20 scale					
Power supply	Lithium metal battery CR2032				Silver oxide cell SR44	
Battery life	Normal use: Approx. 2.5 years				Normal use: Approx.20,000hours	Normal use: Approx.18,000hours
Temperature range	Operation: 0 °C –40 °C, Storage: -10 °C –60 °C					
Contact point	Shape : R1.5mm(carbide), thread : M2.5 × 0.45mm					
Backs	With lug		Flat		With lug	
Mass	170g	175g	190g	195g	120g	150g

Parts & Accessories

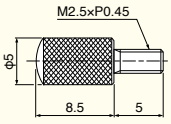
Contact Point Set

ZS-900

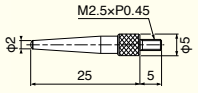
ZS-512
(Material SK4)



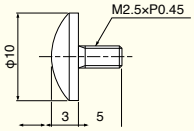
ZS-020
(Material SUM)



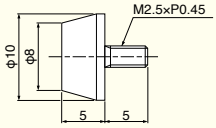
ZS-036
(Material SK4)



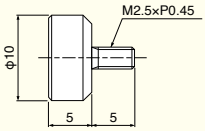
ZS-008
(Material SUM)



ZS-508
(Material SK4)

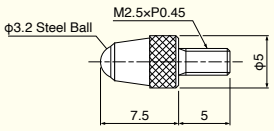


ZS-509
(Material SK4)

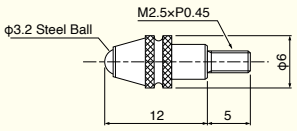


Steel Ball Contact Point

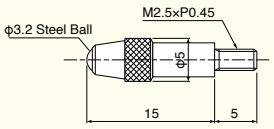
ZS-017



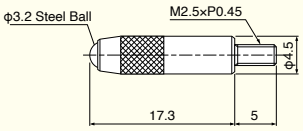
ZS-028



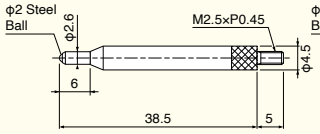
ZS-031



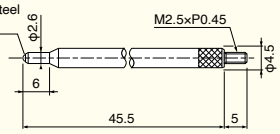
ZS-034



ZS-037 (Extension Rods)

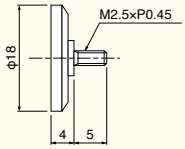


ZS-038 (Extension Rods)

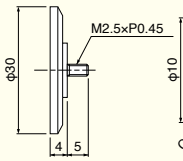


Flat Contact Point

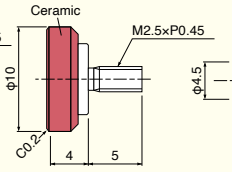
ZS-506
(Material SK4)



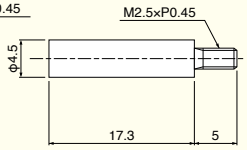
ZS-536
(Material SK4)



ZS-539

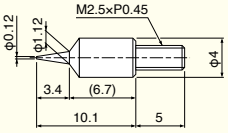


ZS-594
(Material SK4)

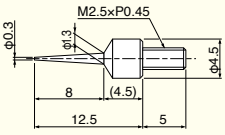


Needle Contact Point

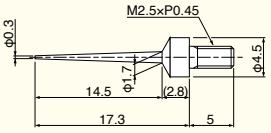
ZS-515
(Material SK4)



ZS-518
(Material SK4)

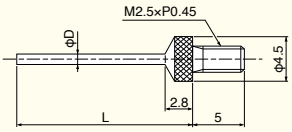


ZS-523
(Material SK4)



Flat Needle Contact Point

ZS-527 ZS-530
ZS-528 ZS-531
ZS-529 (Material SK4)



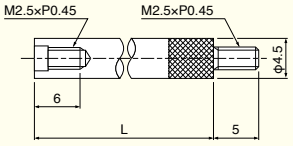
Dimensions Table

Code No.	D	L
ZS-527	1.0	17.3
ZS-528	1.5	17.3
ZS-529	1.5	27.3
ZS-530	2.0	17.3
ZS-531	2.0	27.3

Unit mm

Extension Rods

ZS-663.664.665.666.670
(Material SUS)



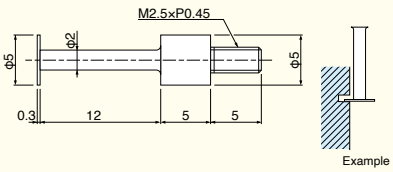
Dimensions Table

Code No.	L
ZS-670	10
ZS-663	20
ZS-664	40
ZS-665	60
ZS-666	80

Unit mm

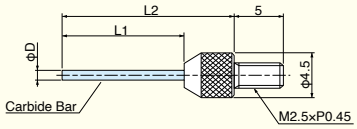
T-shape Contact Point

ZS-526
(Material SK4)



Carbide Flat Needle Contact Point

ZS-577.578.579.580.581.582.583



Dimensions Table

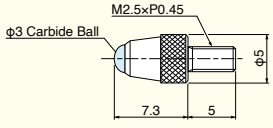
Code No.	D	L1	L2
ZS-577	0.5	12	18.3
ZS-578	0.8	12	18.3
ZS-579	1.0	12	18.3

Code No.	D	L1	L2
ZS-580	1.5	12	18.3
ZS-581	1.5	22	28.3
ZS-582	2.0	12	18.3
ZS-583	2.0	22	28.3

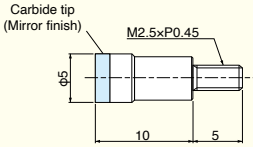
Unit mm

Carbide Contact Point

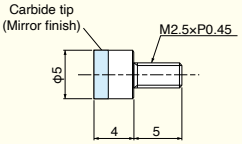
ZS-117



ZS-532



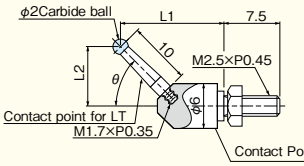
ZS-533

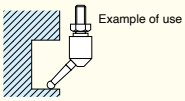


Special Contact Point

ZS-907.908.909

(Offset Contact Point with ZS-713)





Dimensions Table

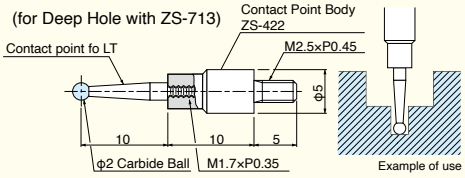
Code No.	Contact point body	θ	L1	L2
ZS-907	ZS-419	30°	17.1	7
ZS-908	ZS-420	45°	15.1	9.1
ZS-909	ZS-421	60°	12.3	10.7

Can also be used in other LT for contact point. unit mm

ZS-910

Can also be used in other LT for contact point.

(for Deep Hole with ZS-713)



Roller Point

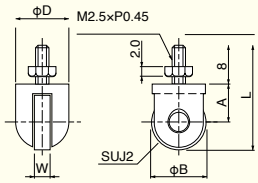
ZS-802.803.804

(Material SUJ2)

Dimensions Table

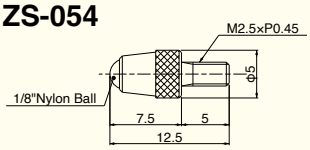
Code No.	A	B	D	L	W
ZS-802	5.5	6	6	16.5	2.6
ZS-803	8	11	11	21.5	4
ZS-804	13.5	22	14	32.5	7

unit mm



Nylon Ball Point

ZS-054



1)A.1 Measurement and performance evaluation

Measurement item		Applicable type	Measuring method (Fixed zero method)	Evaluation method (Transferring zero method)	Example of measurement
Error of indication	Error of indication over the whole measuring range	Dial gauge with multiple revolutions and dial gauge with partial revolution	Fix the dial gauge rigidly in a supporting stand, move the contact element successively in the forward direction at the following measuring points. ·From the starting point to 2nd revolution, at every 1/10 revolution of the pointer ·From 2nd to 5th revolution, at every 1/2 revolution of the pointer ·From 5th to 10th revolution, at every one revolution of the pointer. ·From 10th to 50th revolution, at every 5 revolutions ·From 50th revolution and onward, at every 10 revolutions After pressing in the contact element so that the pointer shifts by three or more scale divisions from the end point of the measuring range,move the conect element in the retrance direction successively and read the errors of indication at the same points as measured in the forward direction.	Obtain the difference between the maximum and minimum errors of indication at al measuring points in both forward and retrace directions.	Mechanical dial gauge Supporting stand Micrometer head or length measuring device
	Error of indication over 1/10 revolution			Obtain the maximum value of difference in error of indication between any two adjacent measuring points at every 1/10 rotation from the starting point to 2nd revolution in both forward and retrace directions.	
	Error of indication over 1/2 revolution	Dial gauge with multiple revolutions		Obtain the maximum value of difference between the largest and smallest errors of indication read at every 1/2 revolution within the measuring range from the starting point to 5th revolution, in both forward and retrace directions.	
	Error of indication over one revolution			Obtain the maximum value of difference between the largest and smallest errors of indication read at every one revolution within the measuring range from the starting point to 10th revolution, in both forward and retrace directions.	
	Hysteresis error	Dial gauge with multiple revolutions and dial gauge with partial revolution		Obtain the maximum value of difference between errors of indication taken in the forward direction and those taken at the corresponding measuring points in the retrace direction.	
Repeatability			Fix the dial gauge in a supporting stand, and after pressing in the contact element to a desired position within the measuring range, allow it to retract quickly at each point.	Determine the maximum difference between the five indications obtained.	Mechanical dial gauge Supporting stand Measuring stand (block gauge)
Measuring force			Fix the dial gauge in a supporting stand, and move the contact element in the forward and retrace directions continuously and gradually and take measurements of the measuring force at the starting point and end point.	Determine the maximum value of the readings (maximum measuring force) amd minimum value of the readings (minimum measuring force) and also determine the differences in the readings between corresponding measuring points in forward and retrace directions.	Mechanical dial gauge Supporting stand Upper dish spring type indicating balance or dynamometer

Notes

a) For reading of erors, either read the input quantity of the measuring device with the pointer of the dial gauge adjusted at a scale graduation, or read the indication of the dial gauge according to the displacement of the measuring device.

b) For dial gauge with partial revolution, read errors at every 10 scale divisions.

c) For dial gauge with partial revolution, obtain the maximum value of difference in errors of indication between any two adjacent measuring pointsat every 10 scale divisions.

2)Performance of vertical (standar type) dial gauges with bezel diamenters not less than 50 mm [maximum permissible error (MPE)]

Scale interval (mm)		0.01								0.005	0.001		
Measuring range (mm)		≦1	1< ≦3	3< ≦5	5< ≦10	10< ≦20	20< ≦30	30< ≦50	50< ≦100	≦5	≦1	1< ≦2	2< ≦5
Error of indication (MPE)	1/10 revolution	5	5	5	5	8	10	10	12	5	2	2	3.5
	1/2 revolution	8	8	9	9	10	12	12	17	9	3.5	4	5
	One revolution	8	9	10	10	15	15	15	20	10	4	5	6
	Whole measuring range	8	10	12	15	25	30	40	50	12	5	7	10
Hysteresis error (MPEH)(μm)		3	3	3	3	5	7	8	9	3	2	2	3
Repeatability (MPER)(μm)		3	3	3	3	4	5	5	5	3	0.5	0.5	1

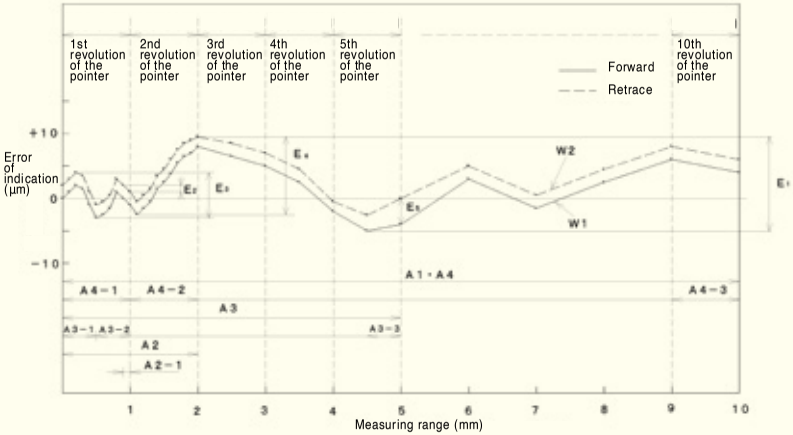
For the MPE of dial gauge with partial revolution, the error of indication over 1/2 revolution or one revolution is not specified.

3)Performance of dial gauges with bezel diameters less than50 mm and horizontal (back plunger type) dial gauges [maximum permissible error (MPE)]

Scale interval (mm)		0.01				0.005	0.002	0.001
Measuring range (mm)		≦1	1< ≦3	3< ≦5	5< ≦10	≦5	≦1	≦1
Error of indication (MPE)	1/10 revolution	8	8	8	9	6	2.5	2.5
	1/2 revolution	11	11	12	12	9	4.5	4
	One revolution	12	12	14	14	10	5	4.5
	Whole measuring range	15	16	18	20	12	6	5
Hysteresis error (MPEH)(μm)		4	4	4	5	3.5	2.5	2
Repeatability (MPER)(μm)		3	3	3	3	3	1	1

For the MPE of dial gauge with partial revolution, the error of indication over 1/2 revolution or one revolution is not specified.

4)A diagram of errors of indication is also called an error diagram.



Applicable instrument
- scale interval 0.01 mm
- Measuring length of one revolution 1 mm

E: error of indication (μm)
W1: error curve (forward direction)
W2: error curve (retrace direction)
A1: evaluation range for error of indication over the whole measuring range
A2: evaluation range for error of indication over 1/10 revolution
A2-1: evaluation range at one particular point
A3: evaluation range for error of indication over 1/2 revolution
A3-1: evaluation range for error of indication at 0.5th revolution
A3-2: evaluation range for error of indication from 0.5th to the first revolution
A3-3: evaluation range for error of indication from 4.5th to the 5th revolution

Applicable instrument
- scale interval 0.01 mm
- Measuring length of one revolution 1 mm

A4: evaluation range for error of indication over one revolution
A4-1: evaluation range for error of indication at the first revolution
A4-2: evaluation range for error of indication at the second revolution
A4-3: evaluation range for error of indication at the 10th revolution
E1: error of indication over the whole measuring range (μm)
E2: error of indication over 1/10 revolution (μm) (point E2 in the diagram shows a hysteresis error at one particular point)
E3: error of indication over 1/2 revolution (point E3 in the diagram shows error at 0.5th revolution)(μm)
E4: error of indication over one revolution (point E4 in the diagram shows error at the second revolution)(μm)
E5: hysteresis error (point E5 in the diagram shows an error at one particular point)(μm)

Precautions on use of Dial Indicator / Test Indicator

1. Confirmation of performance
Please confirm whether prescribed performance is maintained with implementation of receiving inspection based on purchasers' specifications.
Please refer to contents of standard of Dial Indicator JIS B 7503, JMAS2001, and Dial Test Indicator JIS B 7533 on the occasion of their treatment.

2. Operating environments / storage
(1) Temperature : 0°C to 40°C, Relative Humidity : 30% ～ 70%(No condensation)
(2) Please do not use the indicator with little dust, oil mist and where it will beexposed to direct sunlight.
(3) Please keep it in good condition that oil mist and dust will not be adhered

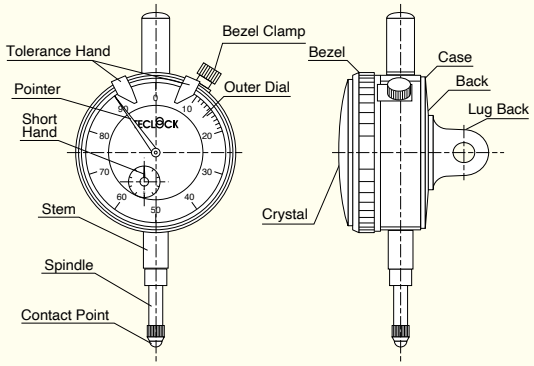
3.Usage condition
(1) Dial Indicator : Please do not suddenly displace spindle and not force perpendicular to the spindle.
(2) Dial Test Indicator : In case of adding more than enough force to contact point from the excepting contact point direction, its performance will get worse or it will be damaged.

4. Precautions on use
(1) Check before using
1 Confirm whether operation is smooth.
2 Confirm whether quiescent point of indicator (pointer / short hand) is stable.
3 Dial Indicator : Confirm whether contact point and lug back (back lid) arenot loose.
4 Dial Test Indicator : Please confirm whether contact point and stem are not loose. Torque for fastening screws of contact point is to be in the range 1.5 ～ 2.0kg・cm. If it is fastened too strong, screw part will be damaged.
(2) Installation method
1 Dial Indicator should be installed with only stem or lug back. (Dial Test Indicator should be with stem or dovetail)
2 Holding tool should be sufficiently stiff.
3 Whether installation is right or wrong can be confirmed by that the pointer will return to the set position even after contact point of Dial indicator (Test Lever) is touched to measured substance and inner frame (case) is pushed from up and down by finger.
4 Angle of Dial Test Indicator contact point Please set contact point to be perpendicular to measuring direction. In case of measuring large angle, please correct it. Otherwise, angle error will occur.
(3) Suppose dial is read from oblique direction of outer dial, error will happen. Please read from front face.
(4) In case of changing contact point and back lid of dial indicator, please use only the parts designated by Teclock.
(5) In case of changing contact point of dial test indicator, please use only the parts designated by Teclock. As to contact point, please use the same length. As to dial test indicator, since expansion mechanism is provided, large error will occur, in case of using contact point of different length.
(6) In case of using it where temperature changes, please frequently confirm the setting point of pointer with master gauge etc.
(7) In case of dropping it down or making impact with it, please use it after inspection.

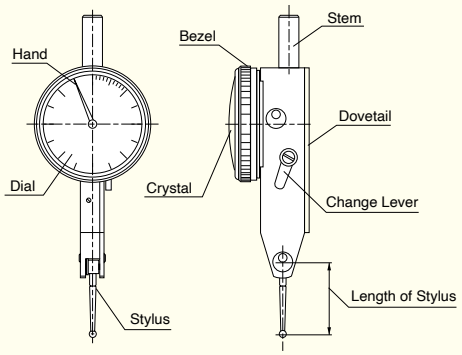
5. Maintenance, inspection and repair
(1) In case of operation is deteriorated due to dirt of sliding part of spindle, please wipe stains from the spindle by using a dry cloth or a cloth dampened with alcohol.
(2) In case that outer dial can not be read due to dirt of crystal, please wipe stains from the crystal by using a dry cloth or a cloth dampened with neutral detergent. Please do not use organic solvent like benzine、thinner and alcohol etc.
(3) The performance of the indicator may deteriorate depending on the operating environment and conditions. Please determine the inspection period according to user's operating frequency, environment, and method and periodically inspect the performance.
(4) Instruments repaired or disassembled by parties not authorized by TECLOCK can not be warranted by us.

Nomenclature

Dial Indicator



Test Indicator



Bluetooth Digital Indicator NEW

1/1000mm Standard Series

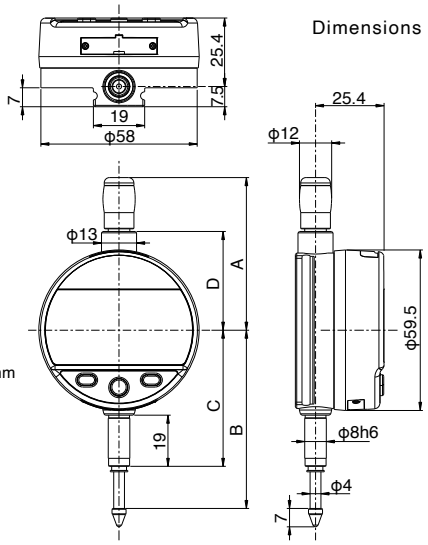
Features

- Line up for measuring range,12.5-100mm.
- IP54.
- One-touch data sending to PC by built-in Bluetooth.
- Data management by SmartMeasure Lite (free).

SSI-550
·Measuring Range:12.5mm

SSI-560
·Measuring Range:25mm

Dimensions



Specifications

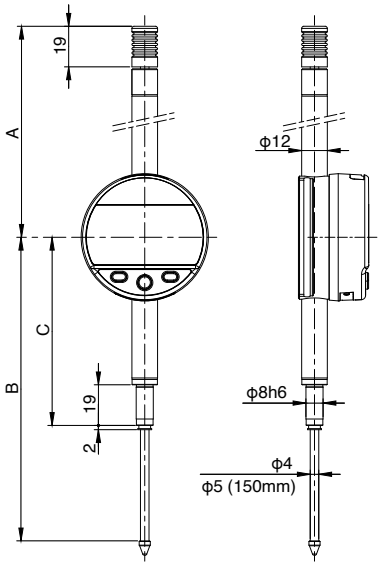
Model	A	B	C	D
SSI-550	56.7	66.1	50.5	36.6
SSI-560	69.4	78.5	50.5	49.4

unit : mm

SSI-570
·Measuring Range:50mm

SSI-580
·Measuring Range:100mm

Dimensions



Specifications

Model	A	B	C
SSI-570	121	142	88
SSI-580	172	244	139

unit : mm

Specifications

Model	Resolution (mm)	Measuring range(mm)	Indication Error(µm)	Repeatability (µm)	Measuring Force(N)	Standard Contact Point (mm)	Clamping (mm)	IP Rating	Battery	Weight (g)
SSI-550	0.001	12.5	3	2	0.65-0.9	ϕ2 Ball	ϕ8/h6	IP54	CR2032	119
SSI-560	0.001	25	4	2	0.65-1.15	ϕ2 Ball	ϕ8/h6	IP54	CR2032	123
SSI-570	0.001	50	5	2	1.1-2.6	ϕ2 Ball	ϕ8/h6	IP54	CR2032	161
SSI-580	0.001	100	6	2	1.8-3.8	ϕ2 Ball	ϕ8/h6	IP54	CR2032	208

SmartSensor™

1/10000mm Standard Type

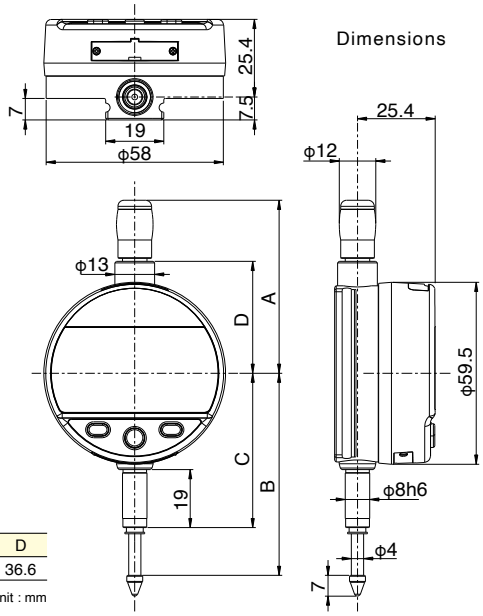
Features

- 1/10000mm Ultra High precision.
- High-difinition Analog Display.
- One-touch data sending to PC by built-in Bluetooth.
- Data management by SmartMeasure Lite (free).

SSI-650

·Measuring Range:12.5mm

Dimensions



Specifications

Model	A	B	C	D
SSI-650	56.7	66.1	50.5	36.6

unit : mm

Specifications

Model	Resolution (mm)	Measuring range(mm)	Indication Error(μm)	Repeatability (μm)	Measuring Force(N)	Standard Contact Point (mm)	Clamping (mm)	IP Rating	Battery	Weight (g)
SSI-650	0.0001	12.5	1.8	0.5	0.65-0.9	ϕ2 Ball	ϕ8/h6	IP54	CR2032	119

1/1000mm Mini Type

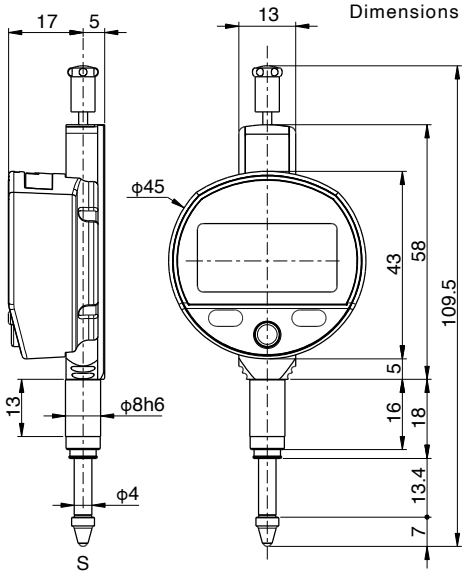
Features

- 1/1000mm Ultra Light Compact 75g ϕ45mm.
- Analog Display.
- One-touch data sending to PC by built-in Bluetooth.
- Data management by SmartMeasure Lite (free).

SSI-250

·Measuring Range:12.5mm
·IP67

Dimensions

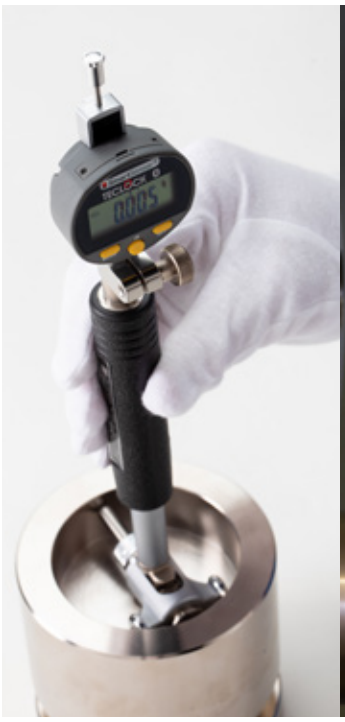


Specifications

Model	Resolution (mm)	Measuring range(mm)	Indication Error(μm)	Repeatability (μm)	Measuring Force(N)	Standard Contact Point (mm)	Clamping (mm)	IP Rating	Battery	Weight (g)
SSI-250	0.001	12.5	4	2	0.5-0.9	ϕ2 Ball	ϕ8/h6	IP67	CR2032	75

“Direct measurement” and “Comparative (Comparison) measurement”

“Direct measurement” and “Comparative (Comparison) measurement” are the two main measurement methods of dial indicator. Direct measurement is defined as “The measurement method to measure actual value of measured object directly” in JIS Z 8103. The numerical indication value of the dial indicator based on the direct measurement method shows actual value of workpiece. For example, thickness gauge SSS-540 is based on the direct measurement method. When the indicated value of SSS-540 is 8.19 mm, that means the actual thickness value of measured workpiece is 8.19 mm. On the other hand, Comparative (Comparison) measurement is defined as “The measurement method to measure comparative value between the measured value of workpiece and the zero point” in JIS Z 8103. First of all, zero-point is need to be set by measuring standard gauge. In general, block gauge is used as the standard gauge. Then measure workpiece. The indicated value shows comparative value, in other words dimensional difference from the zero-point. The indicated value of the dial indicator based on the comparative measurement method is comparative value from the zero-point. In one instance, TM-110 is based on the comparative measurement method. If the zero-point is set by 30 mm block gauge firstly, then measured value of workpiece by TM-110 shows 0.12 mm. The comparative value from the zero-point is 0.12 mm. That means the actual value of the workpiece increments 0.12 mm from the zero-point set by 30 mm block gauge. Therefore, the actual value of the workpiece is 30.12 mm. To minimize indication error, use standard gauge close to the actual value of workpiece and minimize the dimensional difference from the zero-point.



Comparative measurement of inside diameter by Bore Gauge

Comparative measurement by Test Indicator

Direct measurement by Thickness Gauge