

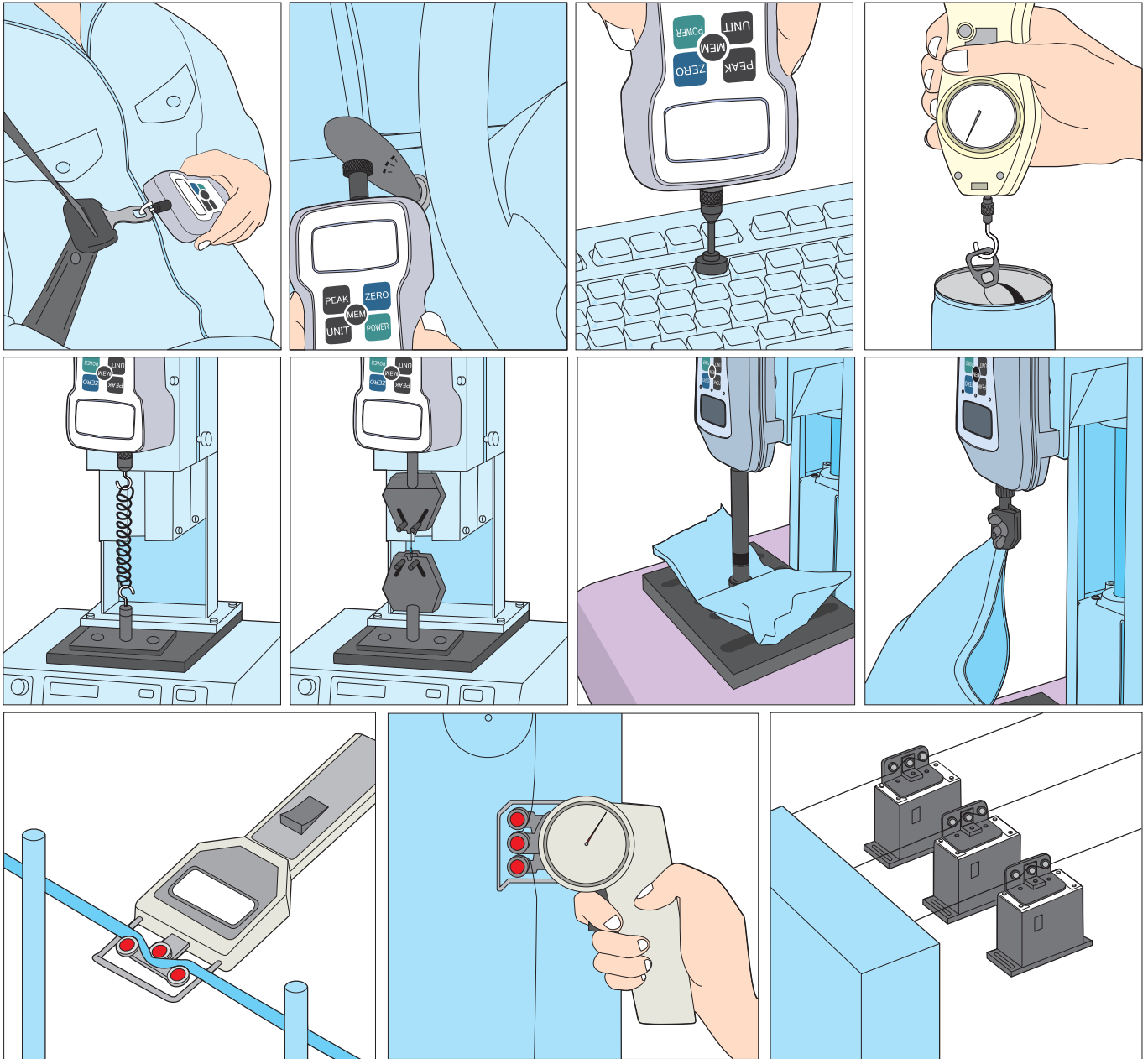
FORCE&TENSION MEASURING INSTRUMENTS



CONTROL THE R&D OR QC BY NUMERIC VALUE THROUGH PERSONAL TOUCH

Nidec-Shimpo responds to the demand of valued customers for their extensive measuring instruments.

● APPLICATION



Load Measuring Instruments : (Digital Force Gauge/All Types of Measuring Stands)

- Seat Belt Pulling Power/Force Opening
- Lever Press Power
- Switch. Key Board Operative Power
- Play-top Can Power
- Spring Characteristic Test
- Crimped terminal insertion-extraction power
- Polyethylene Press Power
- Cap Removing Power
- Seal, food stuffs etc. Peeling Power
- Sewing M/c. Eyelet thread etc. Cutting Power
- Cosmetics Compacts Switching Power
- Spray Work Power/Force

Tensile Strength Measuring Instruments : (Tension Meter)

- Porcelain/Magnetic Tape Tensile Strength Measurement
- Electrical Discharge Processing Tensile Strength Measurement
- Piano-wire, Ele. Wire etc. Tensile Strength Measurement
- Film Tensile Strength Measurement
- Rolled Paper Tensile Strength Control
- Optical Fiber Tensile Strength Measurement
- Roll Mfg. Process Tensile Strength Measurement
- Aluminum Foil Tensile Strength

ECONOMY TYPE (WITHOUT OUTPUT)

FGJN SERIES

MEASUREMENT RESULTS BY DIGITAL INDICATOR

- Rated Capacity 20.00N (2.000kg) ~ 500.00N (50.00kg).
- With One Touch, Numeric Value Display and Unit Display could be inadvertently displayed by Reverse System.
- Switching over of every unit of N, kg(g) is possible with One Touch.
- Peak Value Measurement (Peak Hold) is possible respectively for Plus Side or Minus Side.
- High Speed Peak Measurement of 1000 Revolutions Per Second.
- Measuring Frequency (Display Cycle) could be selected from max. 20 Revolutions Per Second.

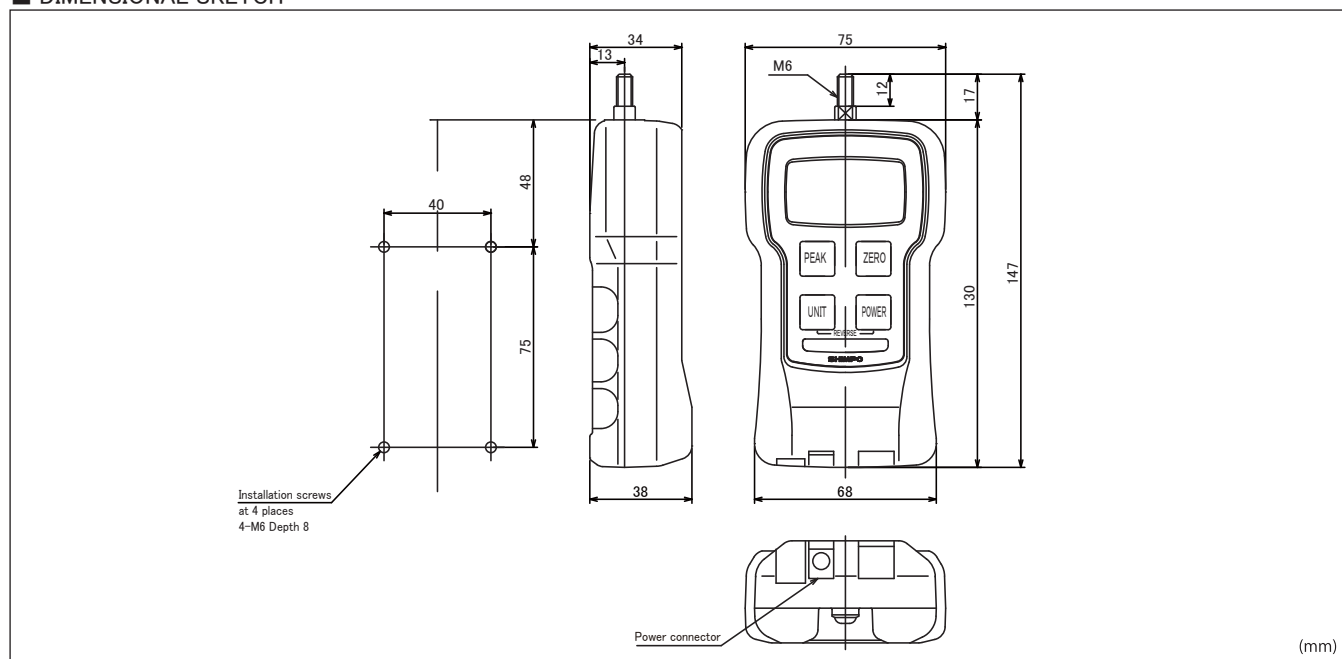


■ SPECIFICATIONS

TYPE	FGJN-2	FGJN-5	FGJN-20	FGJN-50
Rated Capacity(R.C.) *1	± 20.00N (± 2.000kg)	± 50.00N (± 5.000kg)	± 200.0N (± 20.00kg)	± 500.0N (± 50.00kg)
Display Possible Scope	± 20.00N ± 2.000kg	± 50.00N ± 5.000kg	± 200.0N ± 20.00kg	± 500.0N ± 50.00kg
Display Resolution Power	0.01N/0.001kg		0.1N/0.01kg	
Unit	Top-Bottom Reversible Indication is Possible.			
Measuring Method	Normal Measurement, Plus Peak Measurement, Minus Peak Measurement			
Display Period	1, 2, 3, 5, 10, 20 Revolutions/Second			
Sampling Period	1000 Revolutions/Second			
Accuracy	± 0.3%R.C and ± 1/2 (digit) (at 23°C)			
Temperature Effect	Gain : ± 0.03%/LOAD/°C , Zero : ± 0.02%/R.C/°C Zero Point Drift could be canceled by Tracking Function.			
Display Equipment	Numerical Value : Marked 4 Digit Liquid Crystal Indication (Mark could be set optionally, towards Load & Up-Down Reverse Display is possible.) Letter Ht.12mm Unit Display : 3 Digit Liquid Crystal Display. Letter Height 7mm All Types Displays : "LO-BAT" (Battery Voltage Low) "BAT" (During Charging) "OVR" (Over Load) "PEAK" (Peak Hold Mode)			
Overload Endurance Qty.	200% R.C			
Tracking Function	Yes. (ON/OFF Setting Possible)			
Power Supply	A.C. Adaptor (DC9V/200mA) or Inner Stored in build Nickel hydro. Battery (rechargeable), during charging measurements could be taken. Battery Working Duration : After full charge, about 8 Hrs., Charging period max 12 hrs. (After full charge, automatically turns off)			
Auto Power Off Function	10 Minutes (When AC Adaptor is connected, Continuous Usage is possible) or OFF			
Working Temperature Scope	0 ~ 40°C (However, condensation not allowed)			
Working Humidity Scope	35 ~ 85% RH (However, condensation not allowed)			
Outer Dimensions	Width : 75 x Thickness : 38 x Length 147 mm			
Weight	About 450 g			
Accessories	6 types of Adaptors for measurement, Hanger, AC Adaptor, Carrying-Case			

*1 R.C. =RATED CAPACITY

■ DIMENSIONAL SKETCH





Communication Intensifying Type
(With Output)

FGPX- □ Series

Industries Most Light Weight



High Capacity Type
(With Output)

FGPX- □H Series

Capacity 5000N



- 1) Connector for Digimatic Signals.
- 2) Connector for AC Adapter
- 3) Connector Outer Parts Connections.
- 4) USB Connector

USB	memory 1000	1000 Rev./Sec	RS-232C Output
D/A Analog Output	LED Comparator	Over Load	Reverse Indication
Push & Pull Peak	Hanger	Unit	TORIEMON USB
Digimatic	Outer Parts Tare.	Outer Signal	



Intensify Communication Function of Input/Output together.
From the exclusive data collection software via "Toriemon USB*",
the test results could be transferred to P.C.
* From our web Page, Free Download is possible.

- **Decision Results Display through LED. Confirm at that point.**
LED Display for "HI, LO, OK" Signal Output also possible.
- **USB Communication.**
Data Collection is possible by connecting to the USB Port of P.C.
- **Digimatic Signal.**
Could be connected to Mitsutoyo Digimatic Printer.
- **Outer Parts Signal.**
Displayed Value Maintaining Hold Function, Tare Pulling, PEAK Mode Switching Function are built-in.
- **Performing Zero Setting Function by Tare Pulling is added.**

FGPX- □ Series

Type	Max. Load	
FGPX-0.2	± 2.000N	0.2kg
FGPX-0.5	± 5.000N	0.5kg
FGPX-1	± 10.00N	1kg
FGPX-2	± 20.00N	2kg
FGPX-5	± 50.00N	5kg
FGPX-10	± 100.0N	10kg
FGPX-20	± 200.0N	20kg
FGPX-50	± 500.0N	50kg
FGPX-100	± 1000N	100kg

FGPX- □H Series

Type	Max. Load	
FGPX-250H	± 2500N	250kg
FGPX-500H	± 5000N	500kg

Power Supply: AC Adapter or Inbuilt Nickel Hydro. Battery (Rechargeable)
Accessories: Measuring Adapters 6 Types (Ref. Page 5). Hanger, AC Adapter, Carrying Case, USB Cable, Handle (FGPX- □ H Series Only)

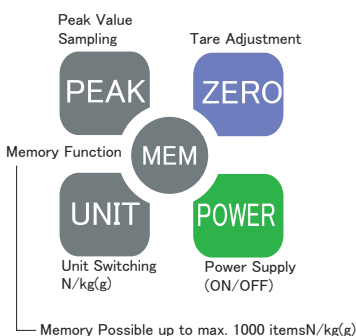
For Details Refer Page 11 ~ 12

For POWERFUL MEASUREMENT

FGP-FGPX Series

Indispensable Power of Measurement for Product Manufacturing, Quality Control or R&D, related to various Powers such as Pressing, Tensile, Destruction, Unsealing, Adhesion, Welding, Peeling Off, Sucking, Repellent Force, Extraction, Compression. There are various Industries adaption results for Force Gauge e.g. Medicinal Products, Cosmetics, Food Stuffs, Packing, Automobile, Electrical Machines, Electrons, Machines etc.

Function



USB Communication

Data collection is possible by connecting to USB port of P.C.

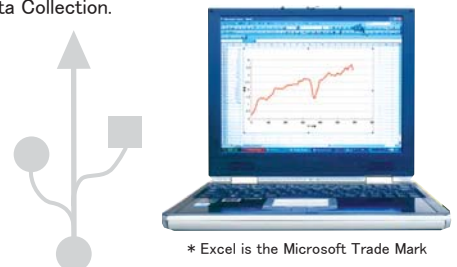
Communication Function Enrichment

Exclusive Data Collection Software

TORIEMON USB
Through connecting the USB Cable to PC, from the exclusive data collection software "Toriemon USB" (From our Co.'s Home Page, Free Download possible) Test Results could be collected to PC.

Toriemon USB Function

Trigger (After attaining the set load, Data collection starts)
Independent Data Collection (Measurement Data, ± Peak Data)
Continuous Data Collection.
Collection Frequency: Setting up to 65,000 items is possible.
Collection Interval: 10, 20, 50, 100 Revolutions/Second.
Memory Data Collection.



* Excel is the Microsoft Trade Mark

High Function Type (with Output)
FGP- □ Series

Rich Measurement Function



Wide Variation with Motor Testing Stand and Set.
 From "Toriemon USB*" Test Results could be collected in P.C.

* From our web Page, Free Download is possible.

- **USB Communication:**
Through Interface, the USB employed Data collection could be easily passed with PC Link.
- **Memory Function:**
Three types of Memory Modes viz. Continuous Memory, Independent Memory, Standard Memory could be prepared.
- **Wide Variation through Motor Testing Stand and Set.**
- **Comparator Function In-built.**
With the Upper Limit & Lower Limit Value Settings, Yes/No Judgment could be made.

USB	memory 1000	1000 Rev./Sec	RS-232C Output
D/A Analog Output	Comparator	Over Load	Reverse Indication
Push & Pull Peak	Hanger	Unit	TORIEMON USB

Free Download

Type	Max. Load	
FGP-0.2	± 2.000N	0.2kg
FGP-0.5	± 5.000N	0.5kg
FGP-1	± 10.00N	1kg
FGP-2	± 20.00N	2kg
FGP-5	± 50.00N	5kg
FGP-10	± 100.0N	10kg
FGP-20	± 200.0N	20kg
FGP-50	± 500.0N	50kg
FGP-100	± 1000N	100kg

Power Supply : AC Adapter or In-built Nickel Hydro. Battery (Rechargeable)
Accessories : Measuring Adapters 6 Types (Ref. Page 5). Exclusive USB Cable,

For Details Refer Page11 ~ 12

Economy Type (without Output)
FGN- □ B Series

Corresponds to Simple Testing



- With One Touch the Numeric Value Display & Unit Display could be in versed by Reverse System employment.
- With One Touch, N, kg. All Units could be switched.

1000 Rev./Sec	Reverse Indication	Push & Pull Peak	Hanger	Unit
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Type	Max. Load	
FGN-2B	20.00N	2kg
FGN-5B	50.00N	5kg
FGN-20B	200.0N	20kg
FGN-50B	500.0N	50kg

Power Supply: AC Adapter or In-built Nickel Hydro. Battery (Rechargeable)
Accessories: Measuring Adapters 6 Types (Ref. Page 5).

For Details Refer Page11 ~ 12

USB USB Communication Function Furnished.	1000 Rev./Sec High Speed Peak Measurement of 1000 Rev./Sec. is possible.	Motor Automatic Measurement is possible through the Motor.	Digimatic Could be connected to Mitsutoyo Digimatic Printer.
RS-232C Output Could be connected to P.C. or Printer.	D/A Analog Output Connecting to Pen Recorder, Data Registration is possible.	Manualr Manually Speedy Measurement is possible.	LED Comparator Upper/Lower Limit Setting, Judgment Output is possible. (LED Display)
Hanger For Storage or Suspension Hanger is attached.	Unit N.kg(g) Unit Switching is possible.	Digital Indication Forwarding Speed and Shifting Distance Digital Display.	Outer Parts Tare Tare Pulling is possible through Outer Parts Signal.
Comparator Upper/Lower Limit Setting, Judgment, Output is possible.	Over Load At the time of Over Load, Signal is displayed and could be used for Machine Protection.	Analog Output Connecting Pen Recorder, Shifting Distance Recording is possible.	Outer Parts Signal Display Value Preservation Hold Function, Tare Adjustment, PEAK Mode Switching is possible.
Reverse Indication LED Display Numeric Values and Unit could be Top-Bottom inversible is possible.	Push & Pull Peak Recording of Press, Pull respective Values is possible.	Program Setting Movement Program Setting is possible.	
memory 1000 Up to 1000 Items, Continuous Memory Measuring Data is possible. Max., Min. etc. Corresponds to Statistics Processing.	Corresponding Measuring Meter Mitsutoyo made Measuring Meter (Optional) could be installed.	TORIEMON USB *1 TORIEMON *2 RHEOEMON *3 FGT-TV	

Through the Exclusive Free Software. Data Collection is possible.

*1. Toriemon USB is exclusively for FGP/FGPX Series.

USB Communication Function could be furnished with easy connection to P.C. Working Environment: DOS/V Substitution Windows XP, Excel 2003/2007

*2. Toriemon is exclusively for FGC-250HB Series. Working Environment: DOS/V Substitution Windows XP, Excel 2003.

*3. Rheoemon is exclusively for FGR- □ Series. Working Environment: DOS/V Substitution Windows XP, Excel 2003.

Analog Force Gauge MF- □ N Series

Rich Measurement Function



No Power Supply Necessary and Excellent Visibility Analog Force Gauge

- Tension . Compression Both Directions Measurement is possible.
- Due to Aluminum Die-Cast, Firm and Solid Structure.
- Peak Value displayed by Dial-Gauge System.



Carrying Case

Type	Max. Load	
MF-10N	10N	1.020kg
MF-20N	20N	2.039kg
MF-30N	30N	3.059kg
MF-50N	40N	5.099kg
MF-100N	100N	10.20kg
MF-200N	200N	20.39kg
MF-300N	300N	30.59kg
MF-500N	500N	50.99kg

Accessories : Measurement Adapters 8 Types (Refer below)

Sensor Isolated Type Digital Force Gauge FGPX-RT Series

**Measurement is possible, even at
Narrow Space also**

* Regarding Corresponding Sensor Parts, Inquire Separately.



Measurement Part

Displayed

- Due to Exchangeable Sensor Parts, it corresponds to wide range load ($\pm 2.000N \sim \pm 1000N$).
- Till Date no Equipment ever entered such a narrow place, Even at isolated place also, measurement is possible.
- Load Cell Calibrated Data could be memorized in 5 types, in this machine.
- With the exclusive data collection "Toriemon USB" the measured values could easily be downloaded in P.C.

* For Details, please refer Page 3.

USB	memory 1000	1000 Rev./Sec	RS-232C Output
D/A Analog Output	Comparator	Over Load	Reverse Indication
Push & Pull Peak	Hanger	Unit	TORIEMON USB



Power Supply : AC Adapter or In-built Nickel Hydro. Battery (Rechargeable)

Accessories : Measuring Adapters 8 Types (Ref. Below). Carrying Case

For Details Refer Page 11 ~ 12

Attached Measurement Adapter (As set of Accessories to the Machine)

FGPX FGP FGN (M6 用)	Round Drill 70°	Mountain Shape 70°	V Groove 70°	φ 12mm	Hook	L : 92mm
If less than 0.5N is selected, then Measuring Adapter for M4 is offered as accessories.						
MF (M6 用)	Round Drill 90°	Mountain Shape 90°	V Groove 90°	φ 15mm	Hook	L : 90mm
The above mentioned + Big Hook, or Hook Meter thus would be totally 8. Related to 200N~500N Accessories, Inquire Separately.						

The Shapes would somewhat be different according to the size. For details, please inquire.

HARDNESS MEASURING
EQUIPMENT – RHEO TESTER
FGRT- □ Series

Stress Measuring



A from the exclusive data collection
Software "Rheomon" USB function*
Measuring Values could be easily fed to P.C.

* From our web Page, Free Download is possible.

- Not Load, but corresponding to the Object receiving Outer Force, the resistance expressed by Inner Parts is measured.
- By Comparator Judgment Display, suitability is decided.
- With Memory Function, 1000 Items Measured Data is memorized.

RHEOMON

Trigger (After attaining the set load, Data collection starts)
Independent Data Collection (Measurement Data, ± Peak Data)
Continuous Data Collection.
Collection Frequency: Setting up to 65,000 items is possible.
Collection Interval: 10, 20, 50, 100 Revolutions/Second.
Memory Data Collection.

USB	memory 1000	1000 Rev./Sec	RS-232C Output
Comparator	Over Load	Reverse Indication	Push & Pull Peak
RHEOMON			

Free Download

Type	Max. Load
FGRT-1	± 10N
FGRT-20	± 20N
FGRT-50	± 50N
FGRT-100	± 100N

Power Supply: AC Adapter or In-built Nickel Hydro. Battery (Rechargeable)

Accessories: Measuring Adapters 6 Types (Ref. Page 5).

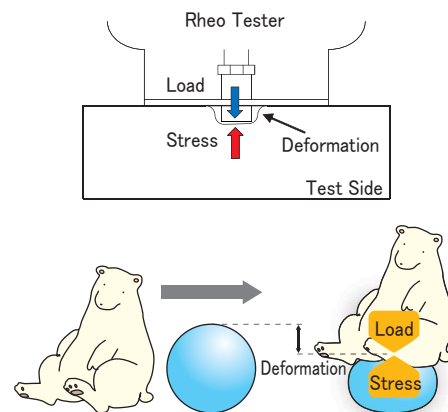
For Details Refer Page 11 ~ 12

Measure the respective Hardness by Digital

The "Texture" of Bread or Cake, Flesh or Fish, Variety of Noodles, as also Sitting Comfort of Chair or hardness of Cosmetics, Stiff Shoulders condition, "Sense of Touch" etc., the most suitable "Feelings" could be indicated by Numeric Values.

How the Hardness is Measured?

If the pressed load is cracked at the pressed unit area, then the stress could be measured.
The stress shown by the targeted object becomes the index of hardness.
The Unit considered is Pa(Pascal)[N/m²]
Fitting the Press Jig to the Digital Force Gauge, pressing the targeted object, measurements could be taken.
Of-course, the measurements could be taken by attaching stress exclusive function to the Force Gauge.



**Data Measurement
Wireless Transceiver Equipment.**

BETRIX CO. LTD.
TELEMEASURE

Instantly, as soon as measured, Automatic Input

Telemeasure is the Equipment, if fitted with the Ultra small type wireless transmitter to the Measurement Equipment, through the Data Receiver connected to the P.C., then automatically the measured data is fed into the P.C. without wire.

The Inspection Result Table or Histogram etc., all varieties of Q.C. Control Sketches etc., could be prepared immediately.

- Data Recording Notebook not necessary.
- Cable-less Operations are widely improved.
- All types of measurement data is fed to a P.C.
- Real Time Cancel Function.



Through the ID Number set switch, maximum 100 transmissions of measurement equipment numbers could be assigned.

Measured Data is received and automatically fed in PC. !
Without Wire/With Wire – 2 methods are available.

QC PRO

The measured data automatically recording, calculating, analyzing Software. Easy Operation with High Level Business-like.

QC PRO EX

The measured data transmitted through Telemeasure Transmitter etc., automatically gets entered into the Excel Work Sheet. through this Add-In-Software.

Transmitter Specifications	
Wireless Frequency	VHF 273MHz Weak Waves
Transmission Distance	10 m visibility
Input Signal	Digimatic / RS-232C
Power Supply	Coin Battery CR2032
Outer Dimensions/Wt.	32W x 52D x 13H/23g.

Data Receiver DR30 Specifications	
Wireless Specifications	Receiving Distance 10 m. Wireless Frequency VHF273MHz
With wire input	Digimatic Signal Flat 10 Pin x 2
P.C. Output	RS-232 D-sub 9 Pin
Mini Printer Output	Digimatic Signal Flat 10 Pin
ID Passing Limit Function	Setting as per Dip Switch
Buzzer Sound Setting	Setting as per Dip Switch
Working Environment	Temp.0 ~ 40°C / Humidity 20 ~ 40% RH
Power Supply	AC 100V (Adapter DC 9V)
Outer Dimensions	165 W x 86 D x 30 H Excluding Rubber Shoes, Antenna Parts

LOAD SIMPLE TEST STAND
 FGS-50E-L (Low Speed Specifications)
 FGS-50E-H (High Speed Specifications)

LONG STROKE MOTOR STAND



Stroke is 400mm.
 Operation is simple and it corresponds to various works.

- It corresponds to 4 action modes.
 Manual/Short movement/1 Cycle/Return Repetition
- Safety front face cover.
- Forwarding Speed - 2 Types.
 Low Speed Specifications 6 ~ 180mm/min
 High Speed Specifications 20 ~ 600mm/min
- Due to (LED) Indication, for all types of settings, easy to see, operatically is upgraded.
- Free Current -
 Wide range of input current from AC100V ~ 240V.

Motor	Over Load	Digital Indication	Program Setting
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Type	Max. Load
FGS-100VC	500N
FGS-250VC	

Possible Installation to Machines	
FGS-50E-L	FGS-50E-H
FGN-2B ~ 50B	
FGP-0.2 ~ 50	
FGPX-0.2 ~ 50	

For details refer to pages 13 ~ 14

VERTICLE TYPE - FORCE GAUGE EXCLUSIVE MOTOR STAND
 FGS-100VC/250VC
 VERTICLE TYPE - HANDLE STYLE FORCE GAUGE STAND
 FGS-100HB/250HB

Wide range measuring

To the Vertical Model Stand - Motor type, handle type, line up is added.
 With considerable wide spread scope, high accuracy measurements are realized. All types of force gauges could be installed.

FGS-□VC			
Motor	USB	Analog Output	Over Load
Digital Indication	Corresponding Measuring Meter	Program Setting	FGT-VC



Type	Max. Load
FGS-100VC	1000N
FGS-250VC	2500N

FGS-□HB		
Manual	Type	Max. Load
	FGS-100HB	1000N
	FGS-250HB	2500N

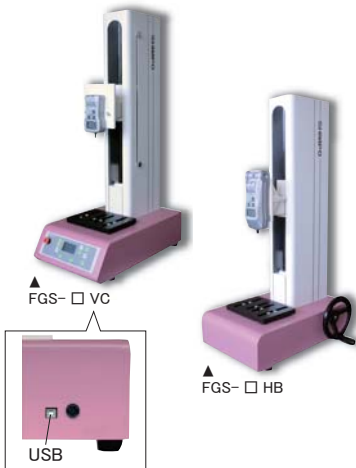
Possible Installation to Machines	
FGS-100VC/FGS-100HB	FGS-250VC/FGS-250HB
FGN-2B ~ 50B	FGN-2B ~ 50B
FGP-0.2 ~ 100	FGP-0.2 ~ 100
FGPX-0.2 ~ 100	FGPX-0.2 ~ 100
-	FGPX-250H,500H

For details refer to pages 13 ~ 14

- COMMON**
- Corresponds up to 2N ~ 2500N(0.2kg ~ 250Kg).
 - Stroke : Max. up to 400mm.
 - Measuring Table : 150 × 200mm.

- FGS-□VC**
- Exclusive Data Collection Software "FGT-VC*". Simultaneously collects the force gauge load data and stand movement distance.
 - Corresponds up to 2N ~ 2500N (0.2kg ~ 250kg). LED Indication is applied to display panel.
- * From our web Page, Free Download is possible.

- FGS-□HB**
- With the handle operation, ultra small movement is possible.
 FGS-100HB : Handle - 1 Rotation about 1.33mm
 FGS-250HB : Handle - 1 Rotation about 0.55mm



Small Type Table Top Testing Machine
 FGS-TV

As a Test Machine, Rich Results

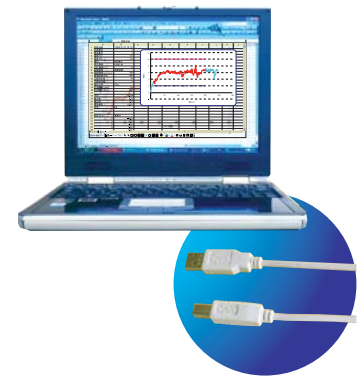
With Digital Force Gauge and Motor Stand, Exclusive Add-In Software "FGT-TV" attached to a machine set for High Ability, High Function Small Type Table Top Testing Machine.

* For Digital Force Gauge (FGP) other than given in theSet, please enquire separately.



- Stand Equipment for all types of Measurement Modes
 Compression.
 Tensile Test
 Peel Off Test
 Destruction Test
 Leak Test
- USB Communication
 Built-in USB Port. Connecting to the P.C. USB Port, Data Collection and Operations from the P.C., viz. Start, End, Action Selection etc. could be possible.
- Attaching exclusive software, Inserting Load and Deformation Data, Graph Display is possible. Data is directly inserted to Excel.
 * Working Environment: DOS/V Interaction Windows XP-7, Excel 2003, 2007
- FGS-5000TV (5000N) is serialized.
 * For details, inquire separately

With the exclusive software Peeling Off Power variations are Displayed on P.C. (Image Sketch)



USB CABLE ATTACHED.



Width 468 x Depth 234 x Height 206mm

Motor Type Horizontal Model
FGS-50XB-L (Low Speed Specifications)
FGS-50XB-H (High Speed Specifications)

Select as per Measuring Environment - Horizontal Model Specifications

According to Measuring Objective, Utility, Small Movement Action or Retrospective Repetition, Return Action etc. freely select the Force Gauge Movement.

Stroke : 140mm
 Measuring Table : 100 x 125mm

Motor	Analog Output	Over Load	Digital Indication
Program Setting	Corresponding Measuring Meter		

Type	Max. Load
FGS-50XB-L,H	500.0N(50kg)
Possible Installation to Machines	
FGS-50XB-L	FGS-50XB-H
FGN-2B ~ 50B	
FGP-0.2 ~ 100	
FGPX-0.2 ~ 100	



Width 160 x Depth 240 x Height 320mm

Manual Lever Type
FGS-5S

Handy No.1 Press Power Testing Machine

Could be used even as a Horizontal Model. Up to 200.0N Load Measuring is possible.

Stroke : 50mm
 Measuring Table : 150 x 160mm

Manualr	Corresponding Measuring Meter
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Type	Max. Load
FGS-5S	200.0N(20kg)
Possible Installation to Machines	
FGN-2B ~ 50B	
FGP-0.2 ~ 100	
FGPX-0.2 ~ 100	



Width 230 x Depth 290 x Height 562mm

Manual Lever Type
FGS-50L

Most suitable Lever Type for Speedy Measurements

Load Measurements Up to 500.0N is possible.

Stroke : 50mm
 Measuring Table : 150 x 145mm

Manualr	Corresponding Measuring Meter
---------	-------------------------------

Type	Max. Load
FGS-50L	500.0N(50kg)
Possible Installation to Machines	
FGN-2B ~ 50B	
FGP-0.2 ~ 100	
FGPX-0.2 ~ 100	



Width 160 x Depth 240 x Height 320mm

Manual Handle Type
FGS-50H

With the Handle Operation, ultra small movement is possible

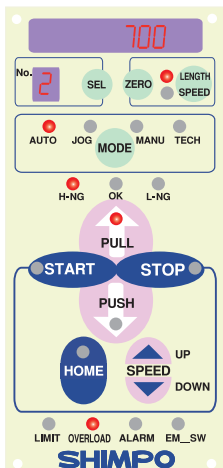
Load Measurements Up to 500.0N is possible. Height Control with each 30mm at 6 steps.

Stroke : 150mm
 Measuring Table : 150 x 145mm
 Handle 1 Rotation : about 3mm

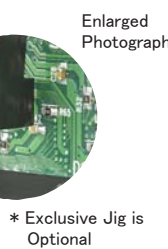
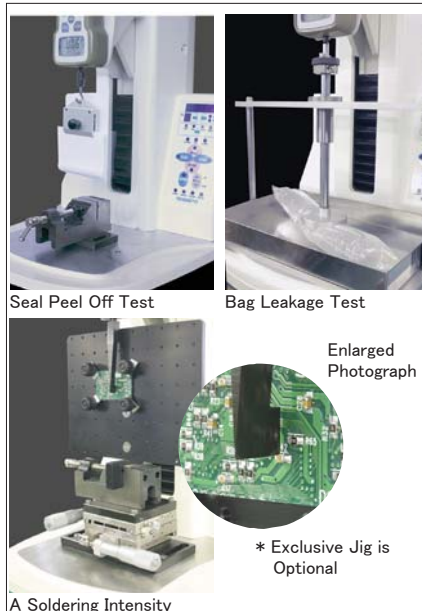
Manualr	Corresponding Measuring Meter
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Type	Max. Load
FGS-5H	500.0N(50kg)
Possible Installation to Machines	
FGN-2B ~ 50B	
FGP-0.2 ~ 100	
FGPX-0.2 ~ 100	

● Convenient Functions for Testing are fully loaded. Excellent Operatically Key-Panel.



- Distance and Speed
- Change Programmed and Manual
- Light Switch turns on at Up-Down Limit Value Judgment
- Programmed Start and Manual Operation
- Alarm Indication



* Exclusive Jig is Optional

Motor	USB	Analog Output	Over Load
Digital Indication	Program Setting	FGT-TV	

Type	Max. Load
FGS-2TV	2N(0.2kg)
FGS-5TV	5N(0.5kg)
FGS-10TV	10N(1kg)
FGS-20TV	20N(2kg)
FGS-50TV	50N(5kg)
FGS-100TV	100N(10kg)
FGS-200TV	200N(20kg)
FGS-500TV	500N(50kg)
FGS-1000TV	1000N(100kg)
Possible Installation to Machines	
FGP-0.2 ~ 100	

Stroke : 400mm
 Forwarding Speed : 1 ~ 700/min
 Measurement Table : 200 x 190mm
 Sampling : 100 Samples/sec
 Accessories : USB Cable (1.8m)

Exclu-sive Jig (Optional)

One Touch Film Chuck		Wedge Chuck		Pantograph Chuck		Flat Chuck		Fine Point Chuck					
													
Model	FGTT-20-20	Model	FGTT-532	Model	FGTT-21	Model	FGTT-533	Model	FGTT-22-M6				
Width	20mm	Open Width	0 ~ 5mm	Open Width	15mm	Width	35mm	Open Width	0.5mm				
Open Width	0 ~ 2mm												
Weight	100g	Weight	1.5kg	Weight	200g	Weight	1.5kg	Weight	30g				
Allowable Load	200N	Allowable Load	5000N	Allowable Load	500N	Allowable Load	5000N	Allowable Load	100N				
Cam Chuck			Oblique Chuck			Roulette Cam Type Attachment							
													
Model	FGTT-23	Model	FGTT-523	Model	FGTT-24	Model	FGTT-27	Model	FGTT-26				
Sample Width	30mm	Sample Width	50mm	Open Width	1mm	Open Width	10mm	Open Width	4.0mm				
Sample Thickness	2mm	Sample Thickness	4mm										
Weight	200g	Weight	1.0kg	Weight	100g	Weight	1.0kg	Weight	150g				
Allowable Load	500N	Allowable Load	2000N	Allowable Load	100N	Allowable Load	1000N	Allowable Load	250N				
Rotation Type Crimped Terminal Catching Attachment		For Corrugated Paper Seal Can Intensity Hook		Wire Clamp Jig		Both Vice Jig		T Groove Surface Plate					
													
Model	FGTT-28	Model	FGTT-29	Model	FGTT-25	Model	FGTT-30	Model	FGTT-31				
Slit	12	Hook Width	60mm	Open Width	5mm	口幅	70mm	Open Width	150mm				
Weight	500g	Weight	150g	Weight	500g	Weight	4.0kg	Weight	6.0kg				
Allowable Load	1000N	Allowable Load	250N	Allowable Load	500N	Allowable Load	1000N	Allowable Load	5000N				
Vice Jig		Leak Test Jig		Solder Test Jig		Bending Jig							
													
Model	GT-30-1	Stroke	110mm	Installation Board Dimensions	200 × 150mm	Model	FGTT-32	Model	FGTT-531				
Width	38mm	Tray Inner	266 × 172mm	XY Table Movement Quantit	12.5mm	Width	50mm	Width	100mm				
Opening	39mm					Sample Width	0 ~ 50mm	Sample Width	5 ~ 70mm				
		Weight		Weight		Weight	150g 6.4kg	Weight	220g 6.2kg				
		Allowable Load		Allowable Load		Allowable Load	500N	Allowable Load	5000N				
Pin Chuck		Film Chuck		Small Chuck		Film Chuck		Wedge Chuck					
													
Model	(4PC-15) 6PC-15	(4PC-2B) 6PC-2B	Model	(4FC-20) 6FC-20	Model	(4SC-3) 6SC-3	(4SC-8) 6SC-8	Model	GC-2-5	Model	GC-50		
Diameter	φ1 ~ 1.5mm	φ1 ~ 2mm	Width	20mm	Width	3mm	8mm	Width	50mm	Width	8mm		
			Opening	2mm	Opening	2mm	3mm	Opening	2mm	Opening	4mm		
Weight	about 14g		Weight	about 75g	Weight	about 25g	about 26g	Weight	about 150g	about 420g	Weight	about 200g	about 470g
Flat Model Chuck		Winding Chuck		Round Bar Chuck		One Sided Roller Chuck		X-Y Table					
													
Model	GC-10-2	Model	GC-40	Model	GC-20	Model	GC-60	Model	GT-20-3				
Width	19mm	Width	φ 10mm	Grip Dia	φ 0.5 ~ 5mm	Width	32mm	Shift Qnty	± 30mm				
Diameter	20mm	Opening	φ 0.5mm					Upper Surface Plate Dimensions	90 × 90mm				
Weight	about 150g	about 450g	Weight	about 90g	about 370g	Weight	about 170g	about 440g					

Force Gauge Installation Stand Installation Side

■ Corresponding Machine Types.

FGPX-1 ~ FGPX-100

FGP-1 ~ FGP-100

FGN-2B ~ 50B

(Bracket) Inside is for the models which is less Than FGPX-0.5, and FGP-0.5.

■ Less than 5N, Digital Force Gauge Measurement Adapter Installation Bolts are M4.

● In case of M4, Please Select the (Bracket) Model Type Measurement Adapter.

● Others would be of M6.

■ In case of High Load, for (M10), Please Inquire

Special Jigs other than these (Exclusive for Peel Off Chuck etc.) Test Machines could be Manufactured. Please Consult without fail.

APPLICATION



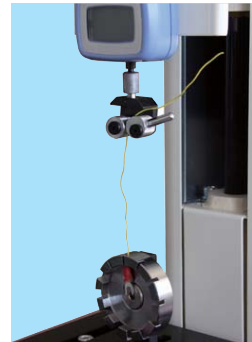
Bag Seal Opening Power Check



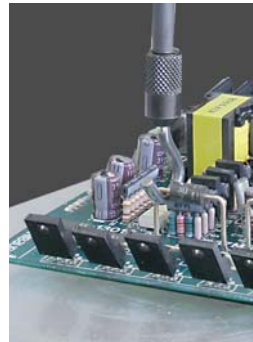
Straw Pulling Power



Solder Intensity



Crimping Power Check of Crimped Terminal.



Rubber Pulling Power



Synthetic Fibre Pulling Power



Plastic Bag Press Power



Food Stuff Hardness

Indispensable for Quality Control.
For All Varieties "POWER" Measurements.



Sealed (Lid) Peeling Off Power



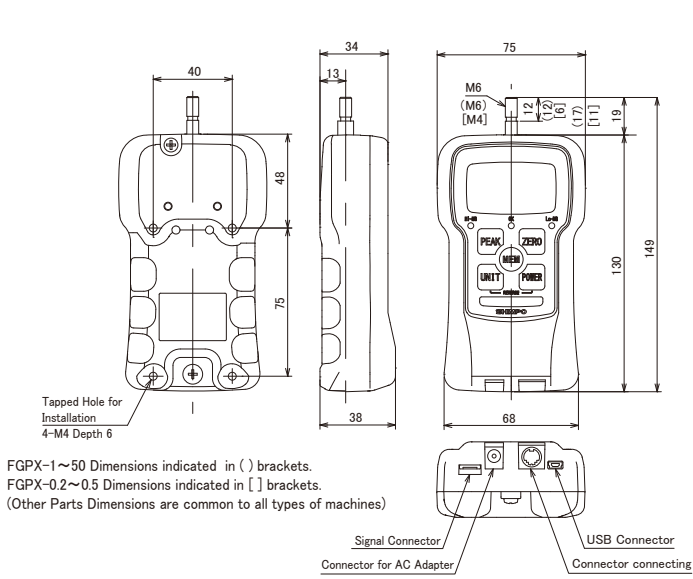
Wrapping Adhesion Peel Off Power



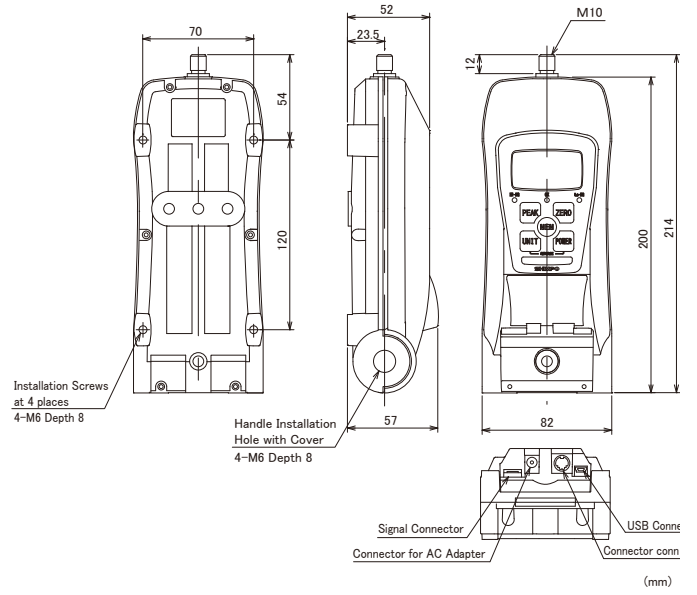
Card Sheet Bonding Peel Off Power

Dimensional Drawing

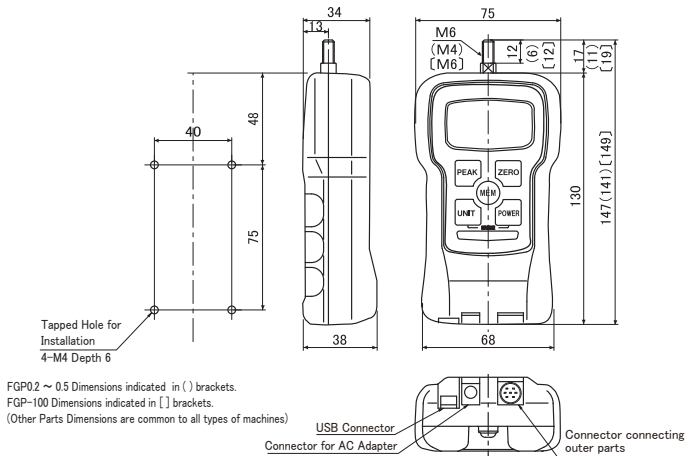
FGPX- □



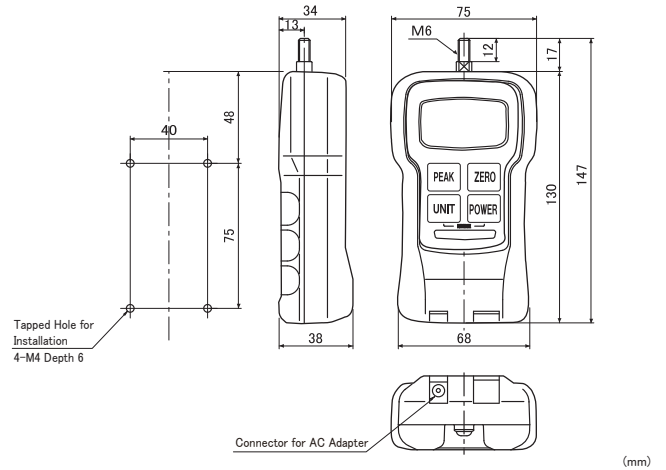
FGPX-250H/500H



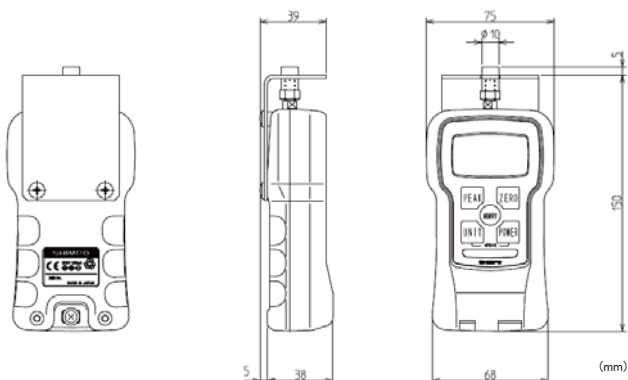
FGP- □



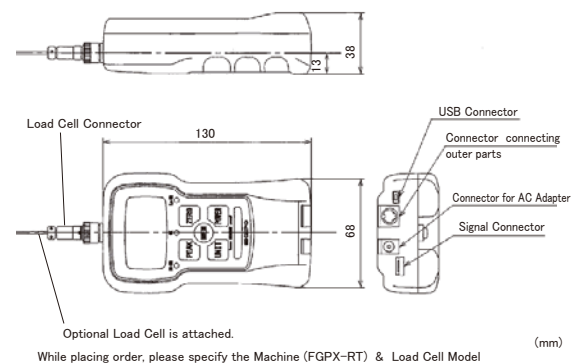
FGN- □ B



FGRT- □



FGPX-RT



FGPX Series/FGPX- □ Series

Model	FGPX-0.2	FGPX-0.5	FGPX-1	FGPX-2	FGPX-5	FGPX-10	FGPX-20	FGPX-50	FGPX-100	FGPX-250H	FGPX-500H
Rated Capacity (RC) ^{Note 1}	± 2.000N (± 200.0g)	± 5.000N (± 500.0g)	± 10.00N (± 1000g)	± 20.00N (± 2.000kg)	± 50.00N (± 5.000kg)	± 100.0N (± 10.00kg)	± 200.0N (± 20.00kg)	± 500.0N (± 50.00kg)	± 1000N (± 100.0kg)	± 2500N (± 250.0kg)	± 5000N (± 500.0kg)
Display Possible Scope	± 2.000N (± 200.0g)	± 5.000N (± 500.0g)	± 10.00N (± 1000g)	± 20.00N (± 2.000kg)	± 50.00N (± 5.000kg)	± 100.0N (± 10.00kg)	± 200.0N (± 20.00kg)	± 500.0N (± 50.00kg)	± 1000N (± 100.0kg)	± 2500N (± 250.0kg)	± 5000N (± 500.0kg)
Display Resolution Power	0.001N/0.1g		0.01N/1g	0.01N/0.001kg		0.1N/0.01kg			1N/0.1kg		
Unit	N, kg Unit Switchover (Reverse Indication possible)										
Measuring Method	Normal Measurement, Plus Peak, Minus Peak										
Display Interval	1 Rotation/Second, 2 Rotations/Second, 3 Rotations/Second, 5 Rotations/Second, 10 Rotations/Second, 20 Rotations/Second										
Sampling Interval	1000 Rotations/Second										
Accuracy	± 0.2% R.C. or ± 1/2 Digit (at 23°C) ^{Note 2}										
Display Equipment	● With LCD Tag 4 digit indication (Letter Height 12mm) ● Output dependent on Decided LED and Output Signal										
Overload Weight Resistant	200% R.C.					150% R.C.					
Comparator Function	Hi,NG, OK, Lo NG Decision, Output according to decided LED and Output Signal										
Communication	With USB (with exclusive communication software, communication with P.C. is possible. Connecting Cable is Standard Accessory). With RS-232C, (with exclusive communication command, communication with P.C. is possible. Connecting Cable is Optional) Digimatic : could be connected with Mitsutoyo Digimatic Printer DP-1VR .										
Analogue	● ± 1V. (As against the Output ± Indication Possible Scope), Accuracy ± 50mV, 12 bit/D/A Converter Method ● Output Update 1000Revolutions/Second, Zero Setting is possible, Load Resistance More than 10k Ω										
Output	Overload PUSH, PULL Open Corrector Output (Max. DC30V/5mA) Comparator Hi,OK,LO Open Corrector Output (Max. DC30V/5mA)										
Input Signal	ZERO (Outer Parts Zero Setting), HOLD (Outer Parts Hold)										
Current	● AC Adapter (DC9V/200mA) or Inner Stored Nickel Hydrogen Battery (Rechargeable) ● During Recharging Measurements possible ● Battery Working possible time : After Full charged battery about 8 hrs. ● Charging period : max. 16 hrs. (Automatically gets off when fully charged)										
Auto Power Off Function	10 Minutes (when AC Adapter is connected, continuous usage is possible), Invalidate/Cancel function is also possible.										
Memory Function	● Continuous Memory 1000 items/Independent Memory 100 items/ Standard Memory 50 items (3 types of Memory Mode switching over possible) ● Statistics function exists (Maximum, Minimum, Peak, Average, Standard deviation)										
Working Temperature (Temp.) Scope	Temperature : 0 ~ 40°C (However, no condensation allowed) Humidity : 35 ~ 85% RH (However, condensation not allowed)										
Outer Dimensions	W 75 × Thick 38 × L141mm		Width 75 × Thickness 38 × Length 147mm					L Only 149mm		W82 × T 57 × L 214mm	
Weight	About 450g					About 500g			About 900g		About 1000g
Accessories	Measuring Adapter (6types), Hanger, AC Adapter, Carrying Case, USB Cable, Handle (FGPX- □ H Only)										
Communication Software	Exclusive Communication Software (Corresponding to USB) could be download free of cost from our Co.'s Home Page.										

Note : 1) R.C. = RATED CAPACITY Note : 2) digit = Digital Indication means 1 count part. ± 1 digit means that to the last digit the Digital Counter tolerance is 1 counter.

FGP Series

Model	FGP-0.2	FGP-0.5	FGP-1	FGP-2	FGP-5	FGP-10	FGP-20	FGP-50	FGP-100
Rated Capacity (RC)	± 2.000N(± 200.0g)	± 5.000N(± 500.0g)	± 10.00N(± 1000g)	± 20.00N(± 2.000kg)	± 50.00N(± 5.000kg)	± 100.0N(± 10.00kg)	± 200.0N(± 20.00kg)	± 500.0N(± 50.00kg)	± 1000N(± 100.0kg)
Display Possible Scope	± 2.000N(± 200.0g)	± 5.000N(± 500.0g)	± 10.00N(± 1000g)	± 20.00N(± 2.000kg)	± 50.00N(± 5.000kg)	± 100.0N(± 10.00kg)	± 200.0N(± 20.00kg)	± 500.0N(± 50.00kg)	± 1000N(± 100.0kg)
Display Resolution Power	0.001N/0.1g		0.01N/1g	0.01N/0.001kg		0.1N/0.01kg		1N/0.1kg	
Unit	N, kg Unit Switchover (Reverse Indication possible)								
Measuring Method	Normal Measurement, Plus Peak, Minus Peak								
Display Interval	1 Rotation/Second, 2 Rotations/Second, 3 Rotations/Second, 5 Rotations/Second, 10 Rotations/Second, 20 Rotations/Second								
Sampling Interval	1000 Rotations/Second								
Accuracy	± 0.2% R.C. or ± 1/2 Digit (at 23°C)								
Display Numeric	Tag Attached 4 Digit Liquid Crystallized Display (Letter Height 12mm). The Tag is as against the Load Orientation and setting option is possible. Reverse Indication possible / 3 digit Liquid Crystallized Display (Letter Ht. 7mm)								
All Types Displays	(1) "LO BAT" (Battery Voltage Low) (2) "BAT" (while Recharging) (3) "OVR" (Over Load) (4) "PEAK" (Peak Hold Mode)								
Overload Weight Resistant	200% R.C.							150% R.C.	
Tracking Function	Exists (ON/OFF Switching Possible)								
Output Signal	(with exclusive communication software, communication with P.C. is possible. Connecting Cable is Standard Accessory). Continuous Transmitting Max. 100 Rev.s/Sec.								
USB	Other Outputs RS-232C, Analogue, Over Load, Comparator (FGP- □ Series Only), Analog Cable etc., Other Cables are Optional.								
Current	● AC Adapter (DC9V/200mA) or Inner Stored Nickel Hydrogen Battery (Rechargeable) ● During Recharging Measurements possible ● Battery Working possible time : After Full charged battery about 8 hrs. ● Charging period : max. 16 hrs. (Automatically gets off when fully charged)								
Auto Power Off Function	10 Minutes (when AC Adapter is connected, continuous usage is possible), Invalidate/Cancel function is also possible.								
Memory Function	● Continuous Memory 1000 items/Independent Memory 100 items/ Standard Memory 50 items (3 types of Memory Mode switching over possible) ● Statistics function exists (Maximum, Minimum, Peak, Average, Standard deviation)								
Comparator Function	Exists (Upper Limit and Lower Limit)								
Working Temperature (Temp.) Scope	Temperature : 0 ~ 40°C (However, no condensation allowed) Humidity : 35 ~ 85% RH (However, condensation not allowed)								
Outer Dimensions	W 75 × Thick 38 × L141mm		Width 75 × Thickness 38 × Length 147mm					L Only 149mm	
Weight	About 450g					About 500 g			
Accessories	Measuring Adapter (6types) ^{Note 3} , Hanger, AC Adapter, Carrying Case, USB Cable,								
Communication Software	Torionem USB - Exclusive Communication Software (Corresponding to USB) could be download free of cost from our Co.'s Home Page.								

Note : 3) Measuring Adapter up to 0.5 - M4, Above 1 is M6 as accessories (Refer Page No.5)

FGN- □ B Series

Model	FGN-2B	FGN-5B	FGN-20B	FGN-50B
Rated Capacity (RC)	± 20.00N(± 2.000kg)	± 50.00N(± 5.000kg)	± 200.0N(± 20.00kg)	± 500.0N(± 50.00kg)
Display Possible Scope	± 20.00N(± 2.000kg)	± 50.00N(± 5.000kg)	± 200.0N(± 20.00kg)	± 500.0N(± 50.00kg)
Display Resolution Power	0.01N/0.001g		0.1N/0.01kg	
Unit	N, kg Unit Switchover (Reverse Indication possible)			
Measuring Method	Normal Measurement, Plus Peak, Minus Peak			
Display Interval	1 Rotation/Second, 2 Rotations/Second, 3 Rotations/Second, 5 Rotations/Second, 10 Rotations/Second, 20 Rotations/Second			
Sampling Interval	1000 Rotations/Second			
Accuracy	± 0.2% R.C. or ± 1/2 Digit (at 23°C)			
Display Numeric	Tag Attached 4 Digit Liquid Crystallized Indicator (Letter Height 12mm). Pull Load is "Minus" Indication (Reverse Indication possible)			
All Types Displays	(1) "LO BAT" (Battery Voltage Low) (2) "BAT" (while Recharging) (3) "OVR" (Over Load) (4) "PEAK" (Peak Hold Mode)			
Overload Weight Resistant	200% R.C.			
Current	● AC Adapter (DC9V/200mA) or Inner Stored Nickel Hydrogen Battery (Rechargeable) ● During Recharging Measurements possible ● Battery Working possible time : After Full charged battery about 8 hrs. ● Charging period : max. 16 hrs. (Automatically gets off when fully charged)			
Auto Power Off Function	"10 Minutes or Continuous" could be selected. (when AC Adapter is connected, continuous usage is possible)			
Working Temperature Scope	0 ~ 40°C (However, no condensation allowed)			
Outer Dimensions, Weight, Accessories	Width 75 × Thickness 38 × Length 147mm, About 450g (Including Battery) / Measuring Adapter (6 Types) Note-4, Hanger, AC Adapter, Carrying Case.			

Note : 4) For Measuring Adapter up to 50B - M6, For FGN-100HB/250HB - M10, provided as accessories

FGRT Series

Model	FGRT-1/2/5/10
Rated Load Capacity (N)	± 10N/20/50/ ± 100N
Unit	kPa(KiloPascal)
Measurement Method	Normal Measurement, Peak Measurement
Display Intervals	could be selected from 1,2,3,5,10,20 Revolutions/Sec.
Sampling Interval	1000 Rotations/Sec
Accuracy	± 0.2% ± 1/2digit
Comparator Function	Upper Limit, Lower Limit NG Pass/Acceptance Decision could be possible
Memory Function	Max. 1000 items could be memorized
Communication	USB/RS-232C Exists, through exclusive software, communication with P.C. Digimatic Connection possible to Mitsutoyo Digimatic Printer
Output	Analogue ± 1V Accuracy ± 50mV Over Load Plus . Minus Over Load Comparator Upper Limit, Lower Limit, NG Pass/Success
Input	● ZERO Tare Pulling, Peak Rest ● HOLD Display preservation ● PEAK Set Measurement Mode
Current	Inner Stored Nickel Hydrogen Battery, AC Adapter (DC9V/200mA)

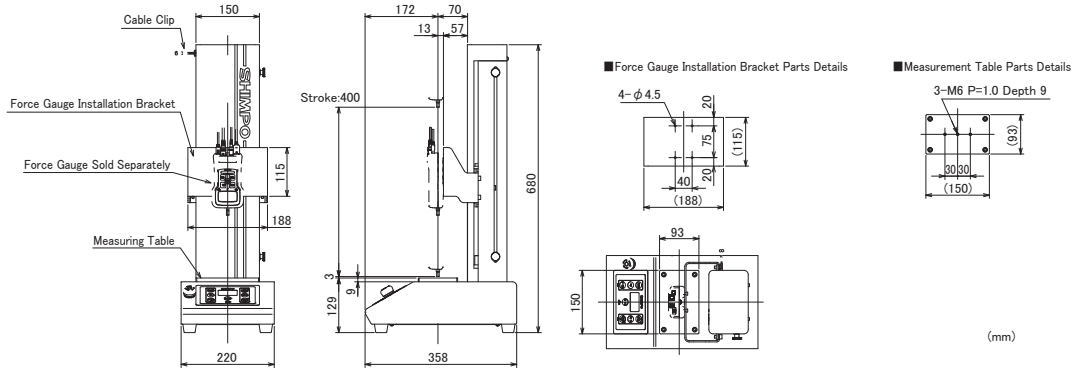
FGPX-RT

Model	FGPX-RT- □
Load Cell	● Isolation Model Load Cell Max 5 ● Max. 5 types of calibrated data storage memory
Measurement Unit	N Unit or kg Unit (Reverse Display possible)
Measurement Method	Normal Measurement . Plus Peak, Minus Peak
Sampling Interval	1000 Rotations/Sec
Display Intervals	could be selected from 1, 2, 3, 5, 10, 20 Revolutions/Sec
Display Part	LCD
Current	● Inner Stored Nickel Hydrogen Battery ● AC Adapter (DC9V/200mA)
Battery Working Period	About 8 Hrs
Comparator Function	Hi,NG, OK, Lo NG Decision, Output asper Decided LED and Output Signal
Analogue	± 1V
Communication	USB, RS-232C, Digimatic
Output	● Over Load/ PUSH, PULL ● Comparator/ HI,OK,LO
Input Signal	ZERO, HOLD
Memory	1000 Items
Outer Dimensions, Mass	Width 75 × Thickness 38 × Length 140mm, 300g
Accessories	USB Cable, AC Adapter, Carrying Case

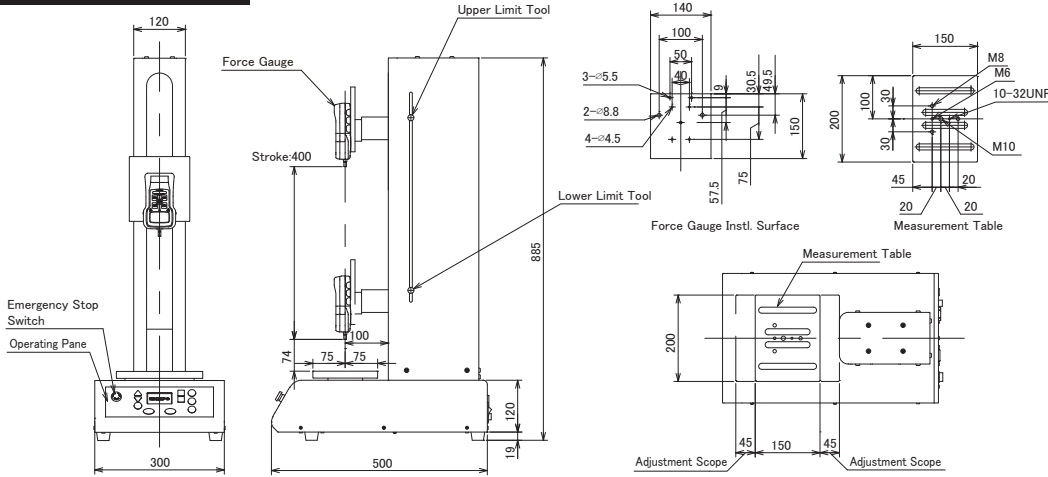
Regarding Corresponding Sensors, please enquire separately.

Dimensional Drawing

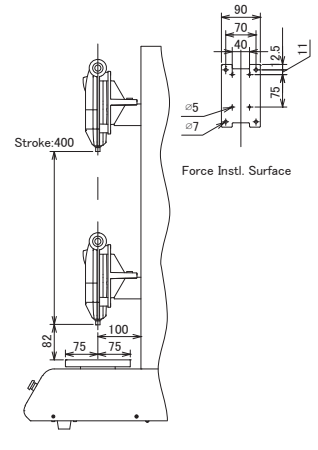
FGS-50E



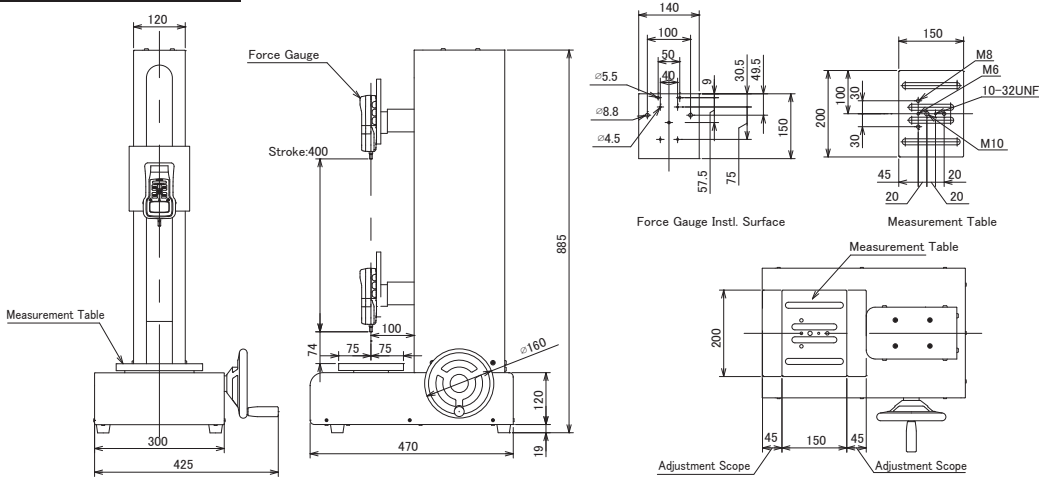
FGS-100VC



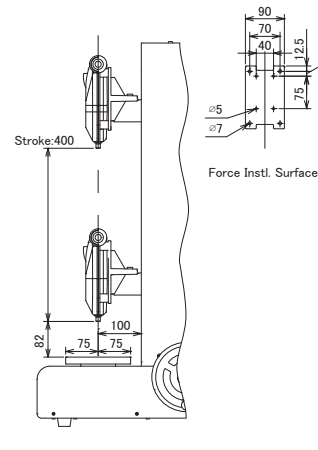
FGS-250VC



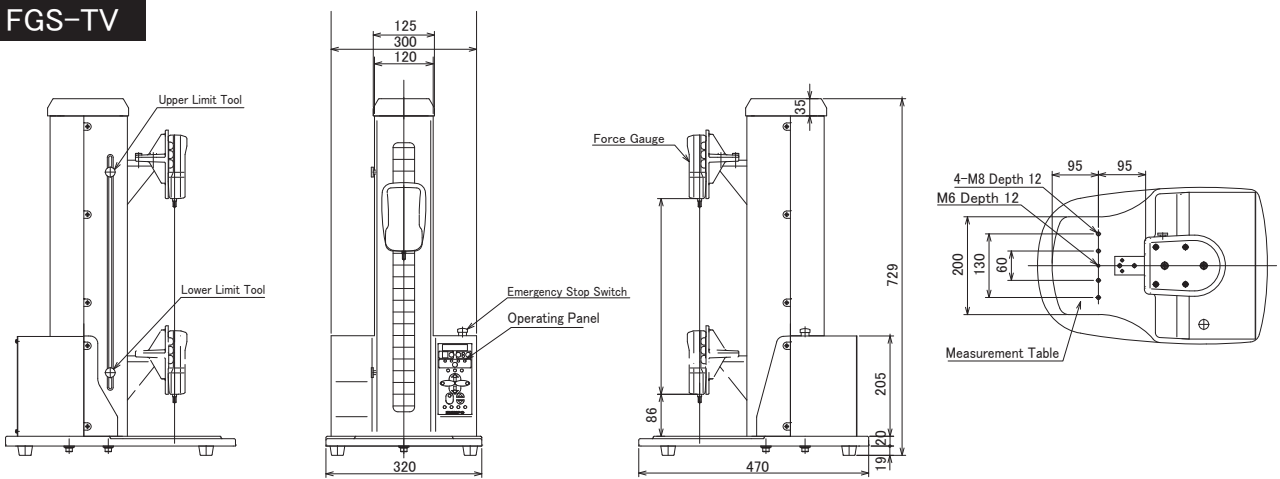
FGS-100HB



FGS-250HB



FGS-TV



■ FGS-50E Series

Model	FGS-50E-L		FGS-50E-H	
	Low Speed Specifications		High Speed Specifications	
Measurement Load	500N			
Endurance Load	500N			
Forwarding Speed	6 ~ 180mm/min		20 ~ 600mm/min	
Speed Setting	As per the Operation Panel, Speed to be set			
Stroke	400mm			
Display Parts	LCD 3 Digit Movement Speed, Action Mode Displayed			
Display	Movement Speed	6 ~ 180mm/min		20 ~ 600mm/min
	Action Mode	Manual (MANU), Small Movement (JOG), 1 Cycle (SIG), Both way Repetition (CON)		
Input	Over Load Input			
	Stop by FGXP(FGP) Over Load Signal			
Measurement Table	93 x 150mm			
Working Temperature Scope	0 ~ 45°C (No condensation is allowed)			
Current	AC100V ~ AC230V ± 10%			
Weight	About 20kg			
Outer Dimensions	220 x 680 x 358mm			
Accessories	● Connecting Cable 1 No. ● Power Supply Cable 1 No. ● Cable Clip 1 No. ● Socket Bolts (M4 x 8 for Force Gauge Installation 4 Nos., M6 x 12 for Jig Installation 2 Nos) ● Allen Key Spanner For M6 1 No., for M4 1 No.			

■ FGS- □ VC Series

Model		FGS-100VC	FGS-250VC
Measurement Load		1000N	2500N
Endurance Load		1000N	2500N
Forwarding Speed		10 ~ 400mm/min	
Stroke		As per the Operation Panel, Speed to be set	
Display Parts		400mm	
Display	Movement Speed Display	Dot Matrix LCD Tag Attached 4 Digit	
	Movement Distance Display	10 ~ 400mm/min	
	Repeating Revolutions Display	Movement Speed Display	
Action Mode	MANU Mode : Movement towards Dog. / JOG Mode : Minor Operation. / Sing Mode : 1 Rotational Movement between Dog. CONT Mode : Repeating Movement between Dog., / PROG Mode : 5 Point Position Movement		
Communication	USB	USB for P.C.	
Input	Over Load Input	Stop by FGXP(FGP) Over Load Signal	
Measurement Table		150 x 200mm	
Working Temperature Scope		0 ~ 45°C (No condensation is allowed)	
Current		AC100V ± 10%	
Weight		About 63 kg.	About 65 kg.
Accessories		For Force Gauge Power Supply AC Socket attached, For FGXP (FGP) Connecting Cable, USB Cable.	
P.C. Software		FGT-VC : Exclusive Communication Software (Corresponding USB) Free Download from our Co.'s Home Page. When transmitting the data of load and distance, graph is displayed. (trigger function attached : after load set attaining, data feeding starts.) Continuous data feeding frequency setting is possible / upper-lower limit decision function attached.	
Other		Emergency Stop Switch	
Corresponding Force Gauge		FGP-0.2 ~ 50,100 / FGXP-0.2 ~ 50,100	FGP-0.2 ~ 50,100 / FGXP-0.2 ~ 50,100 / FGXP-250H

■ FGS- □ HB Series

Model		FGS-100HB	FGS-250HB
Measurement Load		1000N	2500N
Endurance Load		1000N	2500N
Stroke		400mm	400mm
Handle 1 Rotation		About 1.33mm	About 0.55mm
Measurement Table		150 x 200mm	150 x 200mm
Weight		About 56kg	About 56kg
Corresponding Force Gauge		FGN-0.2 ~ 50 / FGP-0.2 ~ 50,100 / FGXP-0.2 ~ 50,100	FGN-0.2 ~ 50 / FGP-0.2 ~ 50,100 / FGXP-0.2 ~ 50,100 / FGXP-250HB

■ FGS- □ TV Series

Model	FGS-2TV	FGS-5TV	FGS-10TV	FGS-20TV	FGS-50TV	FGS-100TV	FGS-200TV	FGS-500TV	FGS-1000TV
Measurement Load	2N	5N	10N	20N	50N	100N	200N	500N	1000N
Endurance Load	1000N								
Forwarding Speed	1 ~ 700mm/min								
Stroke	400mm								
Operation	Machine Operation Parts	Through front face panel, setting, operation is possible							
	P.C. Software	According to exclusive software "FGT-TV", setting . operation is possible							
Display	Movement Speed Displays	1 ~ 700mm/min							
	Movement Distance Display	0.0 ~ 400.0mm							
Data Feeding Intervals	Max. within 1 second, 100 items load and distance data feeding is possible								
Over Load Input	Stops with the FGP over-load signal.								
Analogue Voltage Output	Stand Movement Quantity - output - 5mV/mm max.±2V								
Communication	USB1.0								
Movement/Action	● AUTO MODE : Through P.C. Software already set all types of test action is performed. ● JOG MODE : Minor movement is possible. ● MANUAL MODE : Up to Limit dog position, movement is possible.								
Measurement Table	200 x 190mm								
Working Temperature Scope	0 ~ 45°C (No condensation is allowed)								
Current	AC100V ± 10% 2.5A								
Weight	35kg								
Accessories	USB Cable 1.8m								

* FGS- □ TV is the set of Digital Force Gauge (FGP) and Motor Stand, Measurement Software. Exclusive Jig is optional.

Hand Held Type Digital Tension Meter
High Function Type (with output)

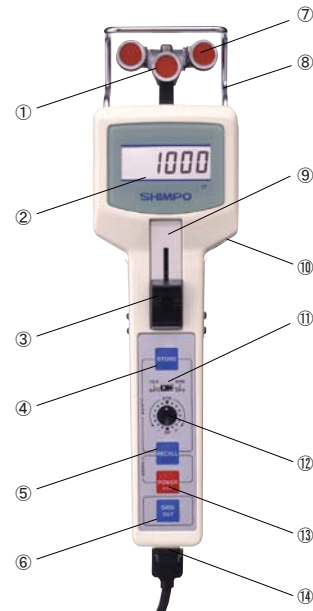
DTMX- □ C Series

General Purpose Type (without Output)

DTMB- □ C Series

Corresponds to High Level Measurement Environment

- | | |
|--|---|
| (1) SENSING ROLLER | (8) WIRE GUIDE |
| (2) LCD DISPLAY EQUIPMENT
Maximum. Minimum Value, PEAK Value,
Lights up whenever all indications battery
low. | (9) DIP SWITCH COVER (DIP SWITCH)
Memory Mode, Display Time,
Data Output, Wire Type Set. |
| (3) SLIDE-KNOB FOR GUIDE ROLLER
Use when the measuring wire is
pinched. (In place of Slido-knob for
guide roller, supporting lever can be
installed. | (10) CONNECTOR FOR AC ADAPTER
Connect the optional adapter. |
| (4) STORE SWITCH
Use at data memory. | (11) WIRE TYPE SWITCHING SWITCH
Matching with the Wire Type, Select
TEX (Thread), or WIRE (Steal,Copper). |
| (5) RECALL SWITCH
Used when Maximum. Minimum Value
Memory Data is to be recalled. | (12) FIELD ADJUSTMENT SWITCH
When indication value is increased
it executes correction. |
| (6) MEMORY DATA OUTPUT SWITCH
Data Output - when PC or Printer
is connected. | (13) POWER SUPPLY SWITCH
Performs power supply ON/OFF. |
| (7) GUIDE ROLLER | (14) CONNECTOR FOR OUTPUT |



Width 76 x Thick 48 x Length 275mm
The photograph is of DTMX- □ C Series

* Note : 1cN=1.0197 gf=0.01N
1daN=10N1.02kgf(1kgf9.8N=0.98daN)

Model	Maximum Load	
	Force	Weight
DTMX-0.2C	196.1cN	200.0g
DTMB-0.2C		
DTMX-0.5C	490.3cN	500.0g
DTMB-0.5C		
DTMX-1C	981cN	1000g
DTMB-1C		
DTMX-2C	1961cN	2000g
DTMB-2C		
DTMX-2.5C	2452cN	2500g
DTMB-2.5C		
DTMX-5C	4903cN	5000g
DTMB-5C		
DTMX-10C	9.81daN	10.00kg
DTMB-10C		
DTMX-20C	19.61daN	20.00kg
DTMB-20C		

Measurement Items : Optical Fiber, Carbon Fiber, Magnetic Tape, Food Stuffs Film, Steal Wire etc.
Wire Speed (Max.) : 1000m/min.

Corresponding with recording or statistical process, high level measurement environment hand belt model controlled through the PC control – the Digital Tension Meter.

- Through RS-232C, digimatic output, analog output, controlling is possible for PC printer measurement values. (DTMX- □ C Series)
- Up to 100 items measured data could be memorized. Further, proper printer connection, Max. Min. Value. Average Values etc. – automatic statistical processing is possible.
- At 1 machine, max. 5 types of wire varieties could be measured. (Thread steal wire and copper wire. Other than this, 2 types sample wires)
- Realization of ± 1% R.C. High Accuracy. (DTMX-0.2C, 0.5C/DTMB-0.2C, 0.5C)
- Application of strong aluminum case against shock or static electricity.

Calibration as per customer's specified special wire calibration could also be coped-up.

Hand held Model
– for Low Tension Measurement.
Analog Tension Meter

ZF2 Series



Low Tension Measurements made possible on Analog Tension Meter.

- Series of 6 types for Max. 1 ~ 5 cN ultra low tension to 100 cN.
- Pressing the trigger, easy measurement by pinching between the measurement wire measuring roller and guide roller.
- Operatically considered slim measuring (230g) and compact design.

Width 125 x Height 155 x Thickness 30mm

Model	Maximum Load	
ZF2-5	1 ~ 5cN	1.020 ~ 5.099g
ZF2-10	1 ~ 10cN	1.020 ~ 10.20g
ZF2-20	2 ~ 20cN	2.039 ~ 20.39g
ZF2-30	3 ~ 30cN	3.059 ~ 30.59g
ZF2-50	5 ~ 50cN	5.099 ~ 50.99g
ZF2-100	10 ~ 100cN	10.20 ~ 102.0g

Roller Span : 22mm
Accuracy : ± 1%/R.C. or ±1 Scale

*For 20K, 50K, 100K please enquire.

For details refer to pages 17 ~ 18

Differed Model General Use Tension PLS- □ K - □ - □ B Series

**Suitable for Controlling High Accuracy
Tension Inspection Equipment**



- Suitable Measuring Items :
 - Nylon Wire ▪ Piano Wire ▪ Copper Wire
 - Steel Wire ▪ Electrical Wire ▪ Thread
 - Stainless Wire ▪ Plastic Wire ▪ Flexible Wire
 - Communication Wire ▪ Metal, Needle Thread
- With +10V Rated Output, direct connection to controlling equipment is possible.
- Easy Installation for all types of equipments and machines.

PLS- □ K-2-12B : Width 124 x Height 120 x Thickness 47mm
 PLS- □ K-3-22B : Width 130 x Height 130 x Thickness 47mm

Model	Maximum Load	
	Force	Weight
PLS-0.2K-	1.961N	0.2kg
PLS-0.5K-	4.903N	0.5kg
PLS-1K-	9.807N	1kg
PLS-2K-	19.61N	2kg
PLS-5K-	49.03N	5kg
PLS-10K-	98.07N	10kg

Wire Speed (Max) *1 : 1000m/min
Input Current : DC12V(10.5 ~ 15.5V)0.45A
 As per specifications DC15V, DC24V is possible.

While calibrating, Sample Wire is necessary

Differed Model - For Tape, Film, Belt - Tension Meter PLS- □ K- □ - □ C Series

**Appropriate for Controlling High
Accuracy Tension Inspection**



- Appropriate Measuring Items :
 - Tape (paper, cloth, plastic wrap, magnetic)
 - Film (For VTR, condenser)
 - Non-threaded items
 - Metal Foils
- Roller Width Less than (10, 15, 20, 30mm),
 Thickness less than 0.2mm
- With +10V Rated Output, direct connection to controlling equipment is possible.

PLS- □ K-2- □ C : Width 124 x Height 120 x Thickness 47mm
 PLS- □ K-3- □ C : Width 130 x Height 130 x Thickness 47mm

Model	Maximum Load	
	Force	Weight
PLS-0.2K-	1.961N	0.2kg
PLS-0.5K-	4.903N	0.5kg
PLS-1K-	9.807N	1kg
PLS-2K-	19.61N	2kg
PLS-5K-	49.03N	5kg
PLS-10K-	98.07N	10kg

Wire Speed (Max) *1 : 300m/min
Input Current : DC12V(10.5 ~ 15.5V)0.45A
 As per specifications DC15V, DC24V is possible.

While calibrating, Sample Wire is necessary

Differed Model - For Ultra Low Measurement - Tension Meter PLS- □ G Series

**For MAX.9.81cN(10g) ~ MAX.49.03cN(50g)
For Ultra Low Tension Measurement Digital
Tension Meter**



Width 67 x Height 33 x Thickness 101mm

- Appropriate Measuring Items :
 - Metal Wires having less than $\varnothing 0.06\text{mm}$ *
 - Fiber of Textile etc.
- Low Tension measured with $\pm 2\%$ High Accuracy of Specified Tension.
- Measuring (150g), Compact Design.

* Textile Fiber, Metal Wire More than 0.06mm could be measured.
 However, results will be based on test Sample offered.

Model	Maximum Load	
	Force	Weight
PLS-10G	9.81cN	10g
PLS-20G	19.61cN	20kg
PLS-50G	49.03cN	50kg

Wire Speed (Max) *1 : 500m/min



◀ Display CSD-819C Attached.
 (Analog, Comparator Attached)

While calibrating, Sample Wire is necessary

For details refer to pages 17 ~ 18

Amp. Built-in Model Load Cell PLC Series



Width 97 x Height 99 x Thickness 42mm

- With +10V Rated Output, direct connection to Indicator or Program Groove Controller.
- Through Over Load Protection Equipment, over load endurance is double the specified load. (PLC-100K has triple the endurance load)
- Span, Zero, Tare adjustment attached.

Model	Maximum Load	
	Force	Weight
PLC-0.2K	$\pm 1.961\text{N}$	$\pm 200\text{g}$
PLC-0.5K	$\pm 4.903\text{N}$	$\pm 500\text{g}$
PLC-1K	$\pm 9.807\text{N}$	$\pm 1\text{kg}$
PLC-2K	$\pm 19.61\text{N}$	$\pm 2\text{kg}$
PLC-5K	$\pm 49.03\text{N}$	$\pm 5\text{kg}$
PLC-10K	$\pm 98.07\text{N}$	$\pm 10\text{kg}$
PLC-20K	$\pm 196.1\text{N}$	$\pm 20\text{kg}$
PLC-50K	$\pm 490.3\text{N}$	$\pm 50\text{kg}$
PLS-100K	$\pm 980.7\text{N}$	$\pm 100\text{kg}$

Amp. Inner Stored Model Load Cell VLC Series



Width 95 x Height 70 x Thickness 40mm

- With +10V Rated Output, direct connection to Display Equipment or Program Groove Controller.
- Corresponding to very small space, Assembly or differed, Hanging etc. - Compact Design.
- Span, Zero, Tare adjustment attached.
- Easy Connection.

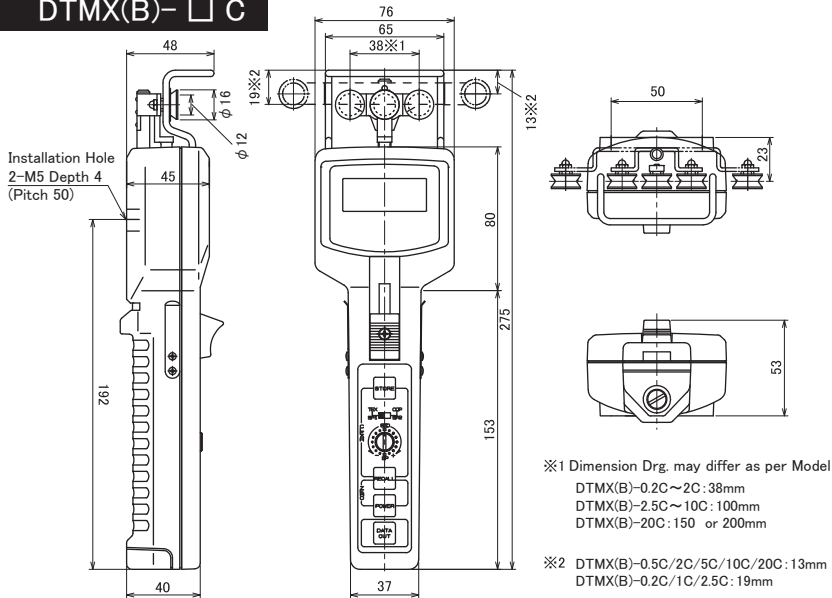
Model	Maximum Load	
	Force	Weight
VLC-200K	$\pm 2\text{kN}$	$\pm 203.9\text{kg}$
VLC-500K	$\pm 5\text{kN}$	$\pm 509.9\text{kg}$
VLC-1000K	$\pm 10\text{kN}$	$\pm 1020\text{kg}$

Wire Speed (Max) *1 : 300m/min
Input Current : DC12V(10.5 ~ 15.5V)0.15A
 As per specifications DC5V, DC24V is possible.

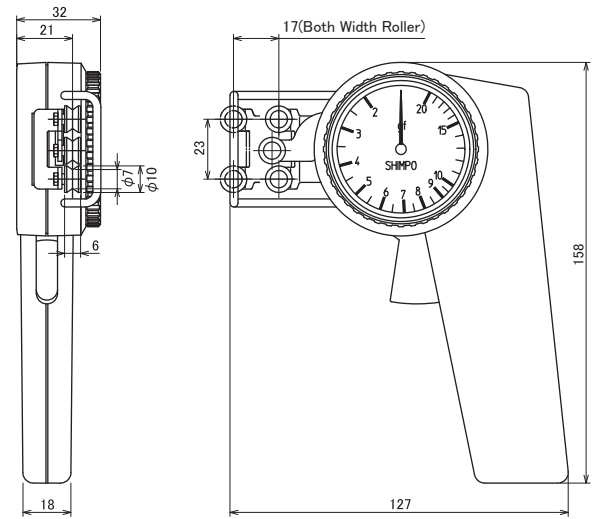
*1 Roller Wearing or measuring wire effect (winding etc.), no guarantee for accuracy.

Dimensional Drawing

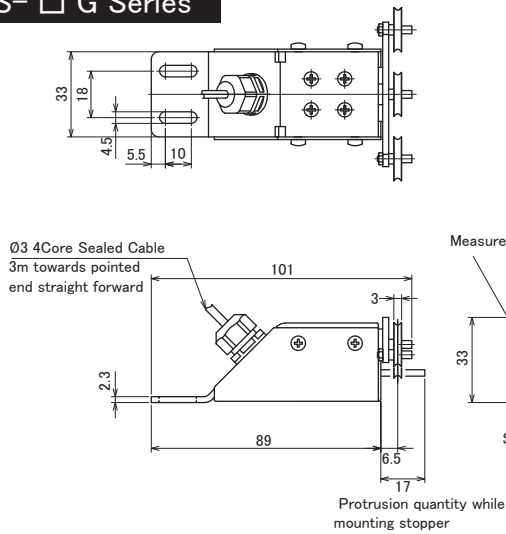
DTMX(B)-□ C



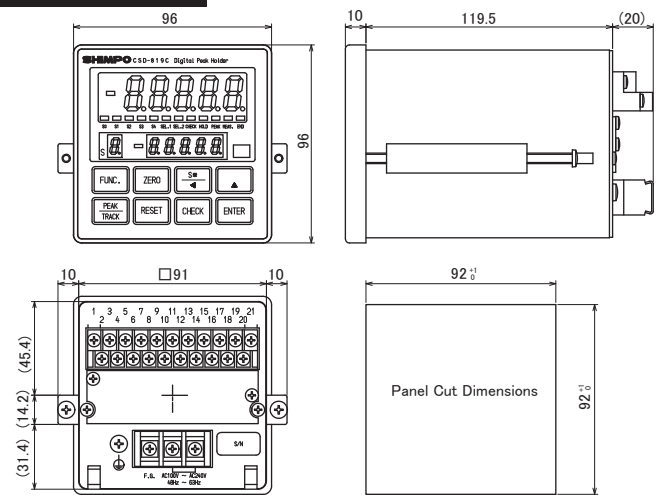
ZF2 Series



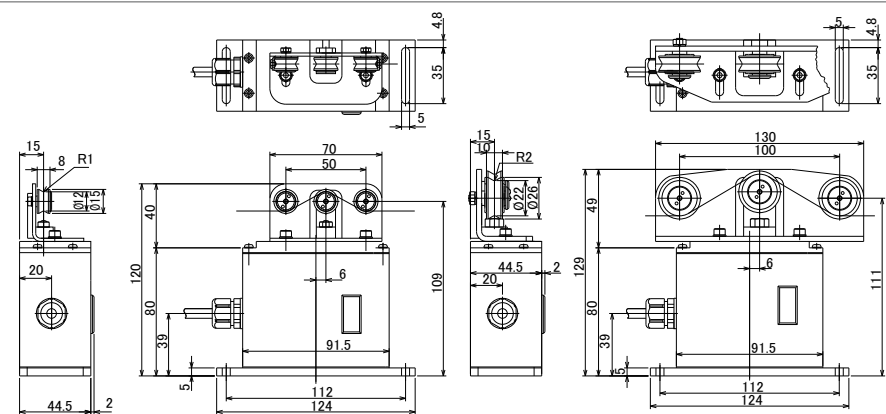
PLS-□ G Series



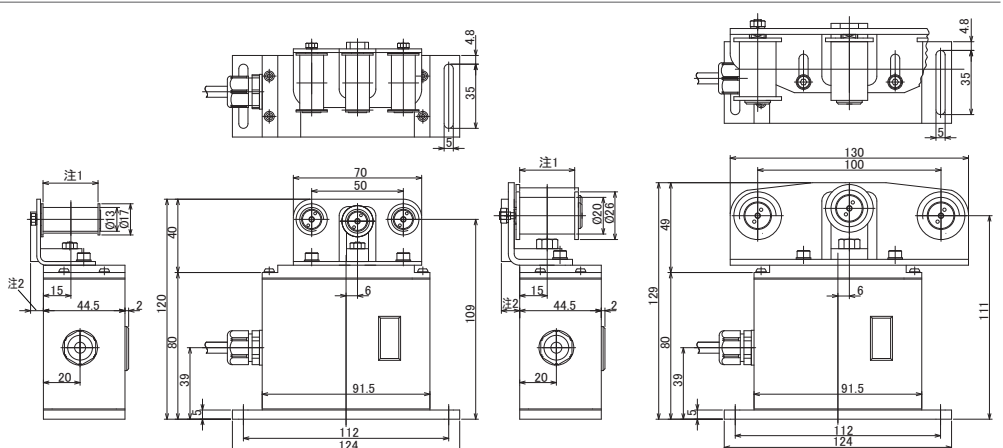
CSD-819C



PLS-□ K-□ -□ B Series



PLS-□ K-□ -□ C Series



■ DTMX- □ C Series/DTMB- □ C Series

Model	High Function Model (with Output)	DTMX-0.2C	DTMX-0.5C	DTMX-1C	DTMX-2C	DTMX-2.5C	DTMX-5C	DTMX-10C	DTMX-20C
	Common Use Model (without Output)	DTMB-0.2C	DTMB-0.5C	DTMB-1C	DTMB-2C	DTMB-2.5C	DTMB-5C	DTMB-10C	DTMB-20C
Rated Capacity (R.C.) ^{Note1}		196.1cN(200.0g)	490.3cN(500.0g)	981cN(1000g)	1961cN(2000g)	2452cN(2500g)	4903cN(5000g)	9.81daN(10.00kg)	19.61daN(20.00kg)
Display Possible Scope		0.0 ~ 200.0cN	4.0 ~ 500.0cN	100 ~ 1000cN	200 ~ 2000cN	250 ~ 2500cN	500 ~ 5000cN	1.00 ~ 10.00daN	2.00 ~ 20.00daN
Measurement Wire	Thread	<1000 Denier or <0.15	φ 0.05 ~ φ 0.25	φ 0.1 ~ φ 0.4	φ 0.3 ~ φ 0.7	φ 0.3 ~ φ 0.7	φ 0.5 ~ φ 1.2	φ 0.7 ~ φ 1.4	As per sample Customer's special calibration will be performed.
	Steel Wire	Less than φ 0.08	φ 0.01 ~ φ 0.15	φ 0.05 ~ φ 0.25	φ 0.15 ~ φ 0.4	φ 0.15 ~ φ 0.4	φ 0.3 ~ φ 0.7	φ 0.4 ~ φ 0.8	
	Copper Wire	Less than φ 0.15	φ 0.05 ~ φ 0.25	φ 0.1 ~ φ 0.4	φ 0.3 ~ φ 0.6	φ 0.3 ~ φ 0.6	φ 0.4 ~ φ 1.0	φ 0.7 ~ φ 1.2	
Roller Span		38mm			100mm			150mm·200mm	
Roller		Ø12 Hard Coat Aluminum							
Accuracy (when Wire is static)		± 1% R.C.			± 1.5% R.C.				
Measurement Period		0.5, 1, 2, 4 Switching Over Type							
Memory	DTMX- □ C	Final Measurement Value, Max. Value, Min. Value, PEAK Value, Measurement Data 100 items, (Memory Back-up through Battery), Statistical Data ^{Note5}							
	DTMB- □ C	Final Measurement Value, Max. Value, Min. Value, PEAK Value							
Maximum Speed ^{Note4}		1000m/min							
Field Adjustment		Max. ± 10.5% of reading, per 1 notch ±1.5%							
Display Equipment		4 Digit LCD. Letter Height 11.5mm							
Output Signal	Analog Output	0 ~ 1 VDC(Towards Display Possible Scope), (D/A Output Transmission Time about 16msec, Resolution capacity 3000), Load Resistance more than 2kΩ							
	DTMX- □ C Digital Output	RS-232C or Digimatic (Selectable)							
Working Temperature/Working Humidity		0 ~ 45°C / Below 90% R.H.							
Current		AA Size Dry Cell x 4 Nos. (with Alkali Battery, continuous running of about 20 hours) or A.C. Adapter (Optional)							
Dimensions	Outer Shape	Width 76 × Thickness 48 × Length 257mm							
	Wire Guide	Width 65mm							
Weight		About 650g				About 700g			
Accessories		AA Alkali Dry Battery 4 Nos., Carrying Case							
Utility Examples (Excluding Standard Measurement Wire)		Flexible Thread Less than 0.15 Metal Thread, Silver Thread Coated format, Optical Fiber Synthetic Fiber Winder	Optical Fiber Opt. Fiber gathering M/c. Carbon Fiber Copper Winder Steel Wire gathering M/c	Aramid Fiber Film for condenser Food stuffs film Up to 0.3 Brass Wire Copper Winder Magnetic Tape	Carbon Fiber Steel wire up to 0.1 Copper Foil for Electrical wire. (width 20 x 0.1) Tire Code	Specialty, bending angle small things, material demand. Steel Wire for OA. (Copy machine, printer for OA)	Carbon Fiber Measuring Tape (10mm Wide × 0.05t)	Tungsten Wire up to 0.8 Flat or Timing Belt up to width 15mm	Customer's Sample Wire.

■ ZF2 Series

Model	ZF2-5	ZF2-10	ZF2-20	ZF2-30	ZF2-50	ZF2-100
Rated Capacity (R.C.)	1 ~ 5cN (1.020 ~ 5.099g)	1 ~ 10cN (1.020 ~ 10.20g)	2 ~ 20cN (2.039 ~ 20.39g)	3 ~ 30cN (3.059 ~ 30.59g)	5 ~ 50cN (5.099 ~ 50.99g)	10 ~ 100cN (10.20 ~ 102.0g)
Measurement Wire	Thread : Less than φ 0.15mm					
Roller Span	22mm					
Roller	Hard Coat Aluminum					
Accuracy	± 1% R.C./R.C. or ± 1 Scale					
Speed ^{Note5}	MAX.900m/min					
Working Temperature	8 ~ 45°C					
Working Humidity	85%以下					
Case Material	Delrin					
Outer Dimensions	Width 125 × Thickness 30 × Length 155mm					
Weight	About 230kg					
Accessories	Carrying Case					

* Roller Wearing or measuring wire effect (winding etc.), no guarantee for accuracy.

Note 1 : R.C. = Rated Capacity
 Note 2 : Our Company Standard Wire Calibration is as under :
 Thread : For Hanging - Nylon Thread.
 Steel Wire : SUS304(Hardness Hv531 ~ 541)
 Copper Wire : Tinning Soft Copper Wire (Hardness Hv69 ~ 82)

Further if the measurement items apt to vibrate, or if they are like rubber inflection etc., then there would be no accuracy guarantee and hence inquire beforehand. Further, for out of specification items, measurement error may arise and hence take caution.

Note 3 : Depending upon the wire material, it may not cope-up and hence please inquire
 Note 4 : For Roller Wearing or measuring wire effect (winding etc.), no guarantee for accuracy

Note 5 : Statistic Data

Sample Frequency(DATA) : in
 Maximum Value(MAX) : Xmax
 Minimum Value(MIN) : Xmin
 Average Value(AVG) : $\sum Xi/n = \bar{x}$
 Standard Deviation(DEV) : $\sqrt{\sum (Xi-\bar{x})^2/n}$

■ PLS- □ G Series

Model	PLS-10G	PLS-20G	PLS-50G
Rated Capacity (R.C.)	9.81cN (10g)	19.61cN (20g)	49.03cN (50g)
Measurement Item (Measurement Wire)	Metal Wire of Less Than Ø0.06mm ^{Note1}		
Allowable Over Load	± 200% /R.C. ± 2% /R.O ^{Note2}		
Wire Speed (Max.) ^{Note3}	500m/min		
Roller Shape	φ 15mm "V" Groove Ceramic Roller		
Environment Endurance	Liberation Model (Sensor Parts, Bearing Parts) ^{Note 4}		
Working Temperature	10 ~ 40°C		
Connected Cables	φ 3mm Sealed Cable Length 3mIndicator		
Indicator	CSD-819 Attached. (with Analogue, comparator output)		
Dimensions	Width 67 × Thickness 33 × Length 101mm		
Weight	About 150kg.		

Note 1 : Measurement is possible for Textile Fiber, Metal Wire about Ø0.06mm. However, the test results depend on the sample supplied.

Note 2 : The Value is for Static Condition : (wire speed 0, wire not moving)

Note 3 : * Roller Wearing or measuring wire effect (winding etc.), no guarantee for accuracy.

Note 4 : This is not the Preserving Structure as against Very small particles, liquid etc.

■ PLS- □ K- □ - □ B Series

Model	PLS-0.2K-	PLS-0.5K-	PLS-1K-	PLS-2K-	PLS-5K-	PLS-10K-
Rated Capacity (R.C.)	1.961N (0.2kg)	4.903N (0.5kg)	9.807N (1kg)	19.61N (2kg)	49.03N (5kg)	98.07N (10kg)
Measurement Items ^{Note1}	Thread	φ < 0.15	φ < 0.25	φ < 0.4	φ < 0.7	φ < 1.2
	Steel Wire	φ < 0.08	φ < 0.15	φ < 0.25	φ < 0.4	φ < 0.7
	Copper Wire	φ < 0.15	φ < 0.25	φ < 0.4	φ < 0.6	φ < 1.0
Wire Speed (MAX) ^{Note 2}	1000m/min					
Detection Roller Displacement	Max. 0.3mm/ at Rated Pulling Power					
Roller Shape	φ 12mm "V" Groove Roller			φ 22mm "V" Groove Roller		
Roller Span	50mm			100mm		
Allowable Over Load	± 200% /R.C.					
Measurement Accuracy (when measurement wire is static) ^{Note 3}	± 1% /R.O.					
Rated Output ^{Note 4}	DC10V					
Input Current	DC12V(10.5 ~ 15.5V)0.15A, as per specification DC-5V, DC-24V is possible					
Cable Length	2m					
Weight	About 630g			1kg		
Preservative Structure	IP52					

■ PLS- □ K- □ - □ C Series

Model	PLS-0.2K-	PLS-0.5K-	PLS-1K-	PLS-2K-	PLS-5K-	PLS-10K-
Rated Capacity (R.C.)	1.961N (0.2kg)	4.903N (0.5kg)	9.807N (1kg)	19.61N (2kg)	49.03N (5kg)	98.07N (10kg)
Measurement Item	< 10, 15, 20, 30mm, Thickness < 0.2mm					
Wire Speed (MAX) ^{Note 2}	300m/min ^{Note 1}					
Detection Roller Displacement	Max. 0.3mm/ at Rated Pulling Power					
Roller Shape	φ 13mm Cylindrical Roller width 10,15,20,30mm			φ 20mm Cyl. Roller		
Roller Span	50mm			100mm		
Allowable Over Load	± 200% /R.C.					
Measurement Accuracy (when measurement wire is static) ^{Note 3}	± 1% /R.O.					
Rated Output ^{Note 4}	DC10V					
Input Current	DC12V(10.5 ~ 15.5V)0.15A, as per specification DC-5V, DC-24V is possible					
Cable Length	2m					
Weight	About 630g			1kg		
Preservative Structure	IP52					

Note 1 : Our company standard wire calibration is as follows :

Thread : For Hanging - Nylon Thread. Steel Wire : SUS304(Hardness Hv531 ~ 541) Copper Wire : Tinning Soft Copper Wire (Hardness Hv69 ~ 82)

Note 2 : For Roller Wearing or measuring wire effect (winding etc.), no guarantee for accuracy

Note 3 : Depending upon material quality sometimes, accuracy guarantee cannot be given so please inquire.

Note 4 : Depending upon material quality, there may be some variations.

■ Indicator CSD-819C

Model	CSD-819C		
Detector Corresponding Model	PLS-10G	PLS-20G	PLS-50G
Non-Straight Line	within 0.196/FS		
Analog Film	100Hz ^{Note} (Switch Over possible for 10, 100, 1000Hz)		
A/D Sampling	2000 Rev./Sec. ^{Note}		
Display Scope	0.00 ~ 10.00cN	0.00 ~ 20.00cN	0.00 ~ 50.00cN
Indicator Resolution Capacity	0.10cN	0.20cN	0.50cN
Display Equip. Frequency	(0.01, 0.02, 0.05, 0.10, 0.20, 0.50 Selectable)		
Display Equipment	20Rev./Sec. (Switch Over possible at 4,20,50,100R/S)		
Mode Display	Red Color 7 Segment LED Letter Height 17.0mm		
Decision Display	PEAK, BOTTOM, ZONE (LED Display)		
Measurement Mode	S0, S1, S2, S3, S4		
Measurement Mode	Track, Peak Hold, Bottom Hold, Peak Bottom Hold, Segment Peak Hold, Segment Bottom Hold		
Analog Output	DC 10V(At Rated Pulling Power)		
Comparator	Setting at 5 Points, Open Corrector Output		
Outer Parts Control	ZERO, PEAK/TRACK, HOLD etc.		
Working Temp & Humidity Scope	0 ~ 50cC, <85%RH(However, condensation not allowed)		
Current	AC100V ~ 240V 50/60Hz, About 15VA (Permissible Scope AC-85 ~ 264V)		
Outer Dimensions	Width 96 x Height 96 x Depth 129.5mm		
Weight	About 600 kg		

Settings at Shipping. If disturbed, it may affect the Noise, Response etc.

● R.C. = RATED CAPACITY
 ● 1cN = 1.0197g = 0.01N
 ● 1daN = 10N ≅ 1.02kg (1kg ≅ 9.8N = 0.98daN)

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All for dreams



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