

# Control Quality by FORCE MEASUREMENT.

How can you measure the mechanical strength for the breaking test and the transforming, and the functional strength for the operability? IMADA force gauges realize the digitizing various forces and the quality control.

FORCE MEASUREMENT  
**IMADA**  
Product Catalogue  
2014/2015-1



FORCE MEASUREMENT  
**IMADA**

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## DIGITAL FORCE GAUGE

The electric gauge for force measurements of Tensile/ Compression/ Peeling strength. The digital data management and the link with equipment are possible by connecting external devices such as a PC.

## MECHANICAL FORCE GAUGE

The spring type force gauge for measuring Tensile/Compression strength. The feature is few malfunctions and breakdowns from external circumstances such as electric noise and static electricity.



# Force measurement solutions with IMADA

## We are a specialty of force measurements.

IMADA's force gauges are used for Quality Control and Research and Development departments in many industries to measure various force Compression/Tension/Peeling and so on.

We can help to measure ambiguous feeling such as "Cheese stickiness" and "Switch pushing force" with wide range of products and measurement know-how.

Our measurement technology develops possibilities of accurate force measurements unlimitedly.

### The industries using our force gauges.



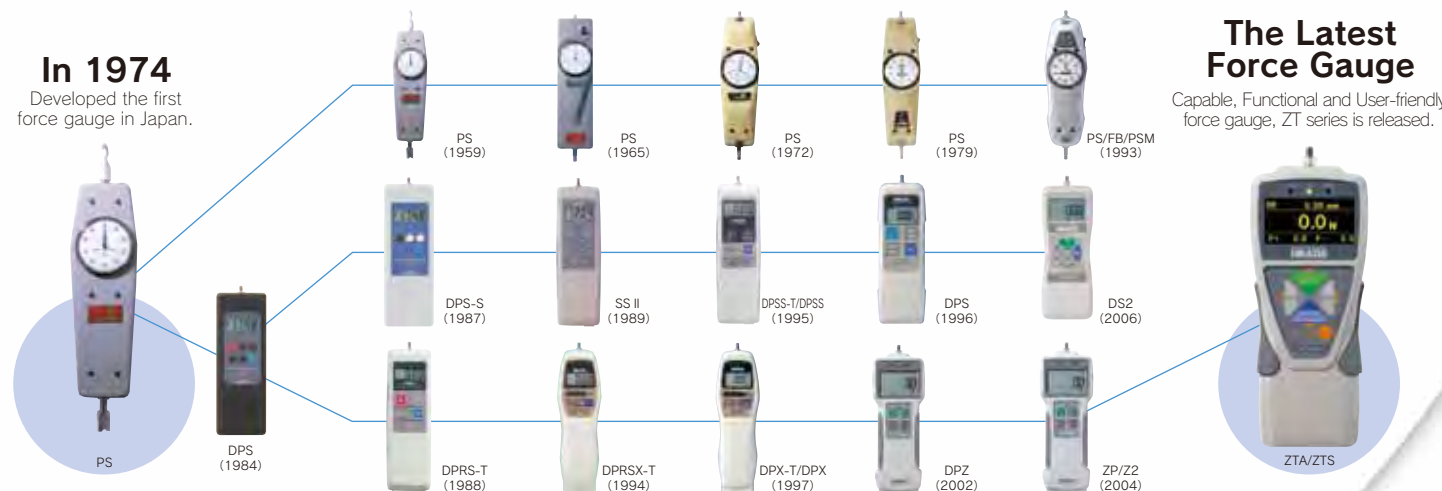
## IMADA offers the best force measurement solution.

Force changes shape and speed of objects. Force is defined as  $\text{Mass} \times \text{Acceleration} = \text{Force}$ . There are many types of forces such as Tension/ Compression/Shearing/ Bending. Below measuring instruments are called "Force Gauge" digitizing the force in units of "Newton". The force gauge helps many types of force measurements by combining suitable fixtures for force types and measurement samples.

### 65 Years History of IMADA Force Gauge

#### In 1974

Developed the first force gauge in Japan.



#### The Latest Force Gauge

Capable, Functional and User-friendly force gauge, ZT series is released.

### Before-sales services

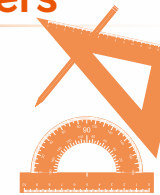
#### Test Method Consulting

We provide the best measurement solution based on our 65 years knowledge and experience. Please feel free to contact us for any measurement concerns. For example, measurement in accordance with standards, effective measurement ways, improvement of measurement repeatability and so on.



### Custom-made Orders

We also provide custom-made orders which are based on your measurement conditions and samples. Please let us know your requests such as installing a force gauge in equipment, looking for a fixture which can grip a unique shape sample.



### After-sales services

#### Repair

We and some of our sales partner provide short repairing term as much as possible.



#### Calibration

We and some of our sales partners also provide calibration to keep the accuracy. Some our products can be provided calibration services which is accordance with ISO/IEC 17025:2005.



### Publishing Various Certifications

Many types of certifications can be published in short terms such as Calibration Certification, Traceability System Diagram and so on.



● Pull force



● Insertion force



● Pushing force



● Extraction force



● Peeling/adhesive force



● Shearing force/Tension force



● Rotating/Twisting force



● Crashing force



● Opening force



● Bending force



● Closing force



● Frictional force



# Handy, Simple, Accurate. All Measurements Are Possible Anytime, Anywhere.

There is a variety of force such as tension, compression, shearing, bending, peeling, torque.  
The purpose of force measurement is also a lot such as safety, durability, functionality, operability and more.  
We prepare wide-spread range force gauges and the accessories to fulfill your force measurement requests.

## Hand-use measurement

Easy and simple measurements for compression and tension.



## Using as a part of simple test unit

High-repeatability  
measurements are possible  
by combining our test stand.



## A Force Gauge(Push Pull Scale)

Measuring instrument for various force such as compression/tension/peeling.  
Easy measuring by handheld or using as a testing machine with a test stand.

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## B Attachment

Necessary fixtures for force measurements.  
Help compression/tension/peeling and other tests by mounting on a force gauge thread or a table of test stand. We prepare variety of attachments and fixtures.

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## C Software

Draw graphs of the relationships between Force and Time or Force and Displacement.  
Efficient for analysis.

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## D Test Stand

Test stand for mounting a force gauge. It enable the vertical or horizontal force gauge traveling.  
It helps High-repeatability measurements by keeping the speeds and the angles.

To page 24

## E Connecting Cable

The cable connection between a force gauge and a test stand activates the force controlling function and the preventing overload function.  
Besides, cables are also used to connect external equipment like PC.

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## Other Product Line-up

### Crimp Tester LH

Test stand for crimp pull test.  
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### FSA Force-Displacement Measurement Unit

Easy graph drawing of  
force and displacement  
relationships  
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### Food Rheology Tester FRT

Digitizing food texture  
such as stickiness,  
hardness and more.  
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### 180 Degree Peel Tester IPT200

Specialized tester for  
peeling test such as tapes  
and films.  
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### Torque Gauges

Measurements for rotating  
and twisting force.  
To page 44



## Measurement Examples

### Compression Test

Durability Test, Bending Test, Sticking Test



### Tension Test

Tearing Test, Extracting Test, Pull off Test



### Peeling Test

Peeling Test for adhesive tape and Film of cup  
containers



### Coefficient of Friction Test

Enable to calculate Coefficient of Static Friction and  
Average of Coefficient of Kinetic Friction automatically.

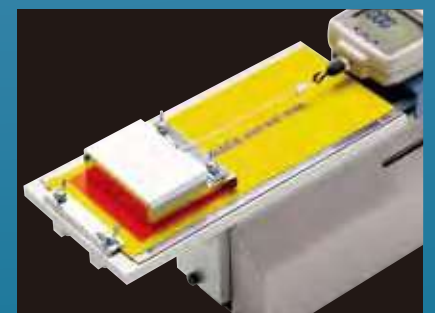




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# Force Gauge(Push Pull Scale)

## Measuring Instrument for Compression/Tension/Peeling Force

It is available to use with a hand and combining a test stand as a simple test unit.

It is also called "Push Pull Scale" or "Push Pull Gauge".



## Digital Force Gauge

### Strong Points

- Easy to read force values.
- Detailed analysis is possible by connecting PC. It helps easy data managements.
- Digital functions are available such as OK/NG judgment
- Suitable for shock tests and breaking tests.

### Weak Points

- Battery charging time is necessary.
- It is difficult to read force changing without the graphing software.

### DS2

To page 13

- Capacity: 2N~1000N
- Sampling speed: 1000Hz
- Accuracy:  $\pm 0.2\%F.S. \pm 1$  digit



- ◎ It is ideal for simple measurements with a hand.
- ◎ Peak value measurements are easy with the peak hold function.

### ZTS

To page 09 to 10

- Capacity: 2N~5000N
- Sampling speed: 2000Hz
- Accuracy:  $\pm 0.2\%F.S. \pm 1$  digit



- ◎ Capture peak value with high speed sampling
- ◎ Clear display.
- ◎ Easy and certain data management with included software.

### ZTA

To page 11 to 12

- Capacity: 2N~5000N
- Sampling speed: 2000Hz
- Accuracy:  $\pm 0.2\%F.S. \pm 1$  digit



- Advanced functions are equipped
- ◎ Enable to output and input displacement. (a linear scale is required)
- ◎ Enable to save data to a USB flash drive.

Simple

Functional  
Accurate

## Mechanical Force Gauge

### Strong Points

- Possible to use without battery charge.
- Durable body
- Easy to read for force changing.

### Weak Points

- Not suitable for shock tests and breaking tests.
- It may cause human reading error.

### FB

To Page 21

- Capacity: 10N~500N
- Accuracy:  $\pm 0.3\%F.S$  or less



- ◎ The most economical model

### PS

To Page 22

- Capacity: 5N~500N
- Accuracy:  $\pm 0.1\%F.S$  or less



- ◎ High accuracy model.
- When measuring high capacity more than 500N: PSH→To Page 22

### PSM

To Page 22

- Capacity: 20N~500N
- Accuracy:  $\pm 0.1\%F.S$  or less



- ◎ The most accurate measurement is possible with the high resolutional dial.

## Digital Force Gauge

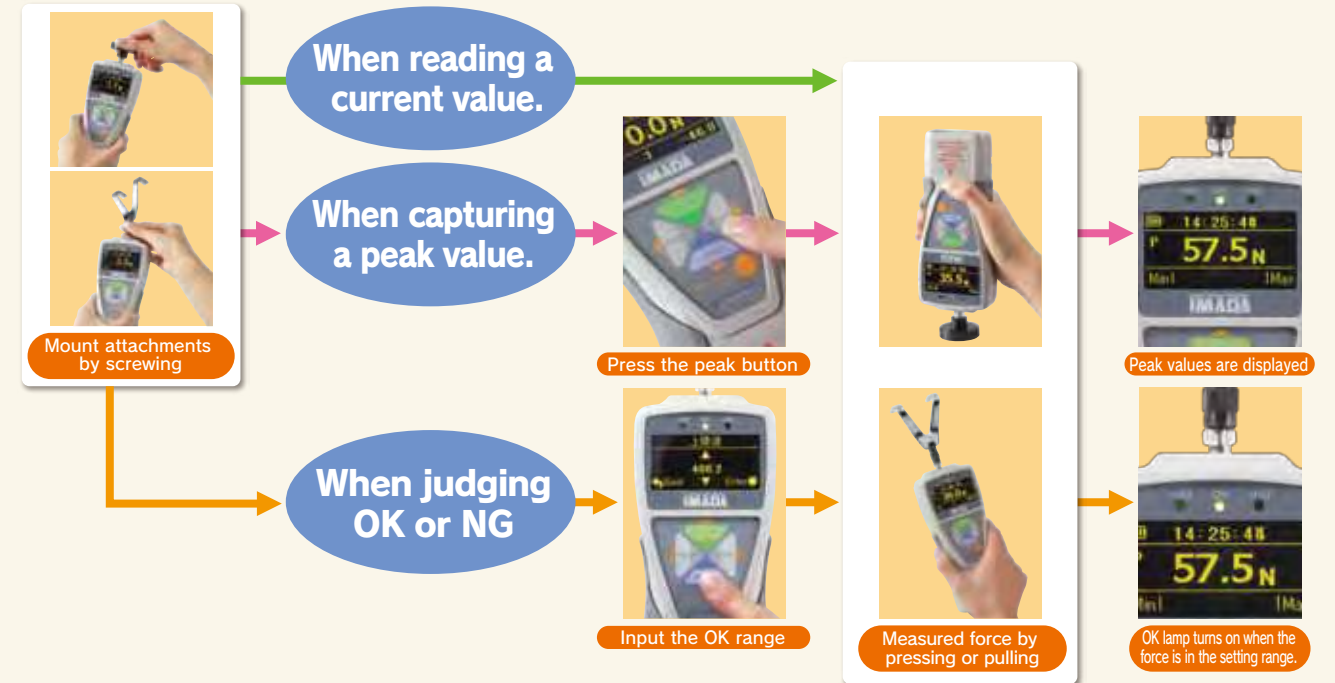
The force gauge with the internal sensor. The remarkable points are preventions of human reading errors by the digital display, easy data managements and analyses by connecting PC.



## How to Use Digital Force Gauges (Using Example Model: ZT series)

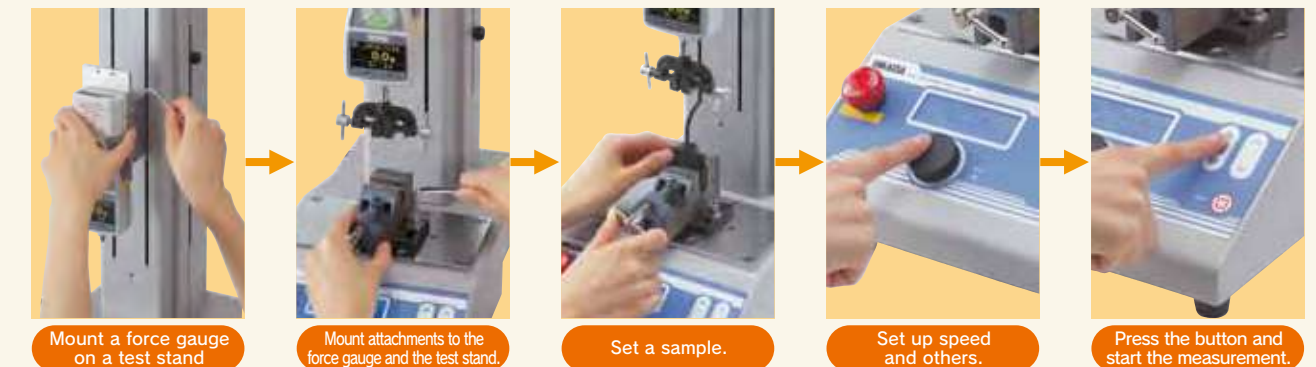
### When Measuring Simply

It is possible to use with a hand



### When Measuring with High Repeatability

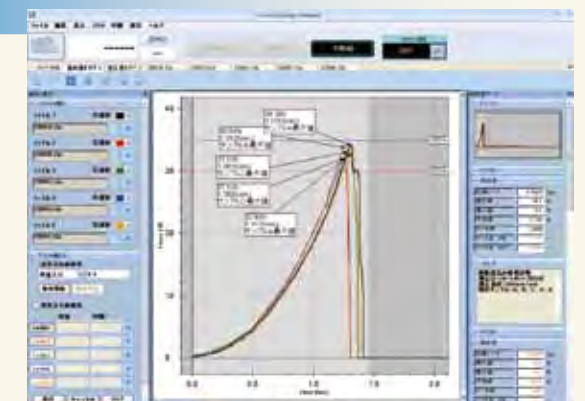
Measurements with high repeatability is possible by combining a test stand which keeps the measuring angles and speeds.



### When Checking Force Change Visually.

Data graphing is possible with the software by connecting a PC (Page17).

The force change can be seen visually. Detailed analyses are possible.





High Repeatability Standard Model

ZTS series

User-friendly and functional model force gauge. It is approved wide-spread measuring purpose from peak measurement to high repeatability measurement.

Accurately/ Precisely

- High Speed Sampling 2000Hz  
It follows rapid force change. Capture more accurate peak values.
- High Accuracy: ±0.2%F.S±1digit

User-friendly

- High Luminance Organic EL Display  
Clear contrast display.
- Approved for 8 Languages.  
Easy setting and using with the 8 languages.

Measurement Efficiency

- OK-NG Judgment Function  
Easy force checking  
(The light function +NG or - NG lamp lights when the force is under or over the setting limit)
- 3 Line Indicator  
Force values are appeared in the middle tier and selectable necessary information are appeared in the upper and lower tiers.
- Connect and Link to Various External Equipment.

Compression and Tension Compatible

Size: Approx. W75×D34×H191mm  
Weight: Approx.490g

Check Force Changing on Graphs  
Software Force Recorder To Page 17

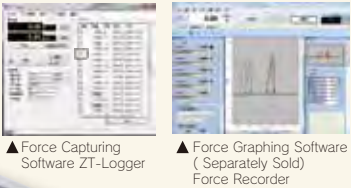
Print The Results  
Printer DP-1VR To Page 20  
+Cable CB-308 To Page 19

Connect with External Devices  
Cable Using Applications To Page 20

Easy Data Management by PC

- Included Data Capturing Software ZT-Logger  
- Send 10 data/sec  
- Automatically detect maximum and minimum value.  
- Save data as CSV file

- Graphing by Optional Force Capturing Software  
Graph on PC in real time  
(Maximum speed is 2000Hz)  
The detail is to Page 17



Standard Type Model List

Model	Capacity	Display	Thread
ZTS-2N	2N(200gf)	2.000N/2000mN(200.0gf)	M6
ZTS-5N	5N(500gf)	5.000N/5000mN(500.0gf)	
ZTS-20N	20N(2kgf)	20.00N(2.000kgf)	
ZTS-50N	50N(5kgf)	50.00N(5.000kgf)	
ZTS-100N	100N(10kgf)	100.0N(10kgf)	
ZTS-200N	200N(20kgf)	200.0N(20kgf)	
ZTS-500N	500N(50kgf)	500.0N(50kgf)	
ZTS-1000N	1000N(100.0kgf)	1000N/1.000kN(100.0kgf)	

ZTS series specifications

Accuracy	+/-0.2%F.S. +/-1 digit(Excepted sensor separated model)
Unit of measurement(※1)	N, kgf, lbf (※1)
Display	4-digit Organic EL
Sampling rate	2000 data / sec at maximum
Function	Customized display (header and footer), Peak hold (tension and compression), Internal 1000 points data memory, Comparator (judgment of OK or NG), Reversible display, Sign inversion, Zero clear timer, +NG alarm, Off timer (auto power off), Dumping, Time display
Output	Temperature: 0 to +40 degree Celsius, Humidity: 20 to 80%RH
Operating environment	USB, RS232C, Mitutoyo digimatic (※2), ±2 VDC analog output (D/A), Comparator 3 steps (-NG/OK/+NG), Overload alarm
Battery	8 hours (8 hours full charge)
Accessory	Attachments(※3), AC adapter, Inspection certificate, Data capturing software ZT-Logger, USB cable, Carrying case.

- ※1 The model less than 5N can be displayed mN, the model more than 1000N can be displayed kN. Japanese domestic model does not indicate kgf and lbf units.
- ※2 Not always available for Mitutoyo digimatic products.
- ※3 Please refer to Page 31 for the detail of included attachments.
- ◎The weights are slightly different by the ranges

A lot of force measurements are introduced on our website by types of force or industries. Each product specification is possible to download from the website. Please feel free to contact us.

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IMADA Search <http://www.forcegauge.net/en/>

ZTS series (High Capacity Model)



Compression and Tension Compatible

Size: Approx. W83×D44.5×H221mm  
Weight: Approx. 1100g

- It is available for 2500N to 5000N
- Same functions and performance as ZTS series standard model.

Check Force Changing on Graphs  
Software Force Recorder To Page 17

Print The Results  
Printer DP-1VR To Page 20  
+Cable CB-308 To Page 19

Improve Measuring Repeatability  
Test Stands To Page 24

Connect with External Devices  
Cable Using Applications To Page 20

High Capacity Model List

Model	Capacity	Display	Thread
ZTS-2500N	2500N (250kgf)	2500N/2.500kN (250.0kgf)	M10
ZTS-5000N	5000N (500kgf)	5000N/5.000kN (500.0kgf)	

ZTS series (Sensor Separate Model)



Size (the indicator only): Approx. W75×D34×H188mm  
Weight (the indicator only): Approx. 490g

- Ideal for installing into facilities or measuring under special circumstance due to an external sensor.
- Users can choose from various types of sensors such as waterproof, allowable wide-range temperature, pen shape. The sensor will fulfill the users required measuring conditions or circumstances. (Details are on Page 14)  
※Accuracy adjustments and calibrations are necessary when exchanging a load cell.



- It has same functions and performance as ZTS series general type.  
Check changing value on graphs

Check Force Changing on Graphs  
Software Force Recorder To Page 17

Print The Results  
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+Cable CB-308 To Page 19

Connect with External Devices  
Cable Using Applications To Page 20

Sensor separate type Model List  
(When select load cell DPU series)

Model	Capacity	Display	Thread
ZTS-DPU-2N	2N(200gf)	2.000N/2000mN(200.0gf)	M6
ZTS-DPU-5N	5N(500gf)	5.000N/5000mN(500.0gf)	
ZTS-DPU-10N	10N(1kgf)	10.00N(1.000kgf)	
ZTS-DPU-20N	20N(2kgf)	20.00N(2.000kgf)	
ZTS-DPU-50N	50N(5kgf)	50.00N(5.000kgf)	
ZTS-DPU-100N	100N(10kgf)	100.0N(10kgf)	
ZTS-DPU-200N	200N(20kgf)	200.0N(20kgf)	
ZTS-DPU-500N	500N(50kgf)	500.0N(50kgf)	
ZTS-DPU-1000N	1000N(100kgf)	1000N/1.000kN(100.0kgf)	
ZTS-DPU-2000N	2000N(200kgf)	2000N/2.000kN(200.0kgf)	
ZTS-DPU-5000N	5000N(500kgf)	5000N/5.000kN(500.0kgf)	
ZTS-DPU-10kN	10kN(1000kgf)	10.00kN(1000kgf)	M18P1.5 Depth22 female screw
ZTS-DPU-20kN	20kN(2000kgf)	20.00kN(2000kgf)	

(When select load cell DPU series[High Capacity Model])

Model	Capacity	Display	Thread
ZTS-DPU-1000N	1000N(100kgf)	1000N/1.000kN(100.0kgf)	M10
ZTS-DPU-2000N	2000N(200kgf)	2000N/2.000kN(200.0kgf)	
ZTS-DPU-5000N	5000N(500kgf)	5000N/5.000kN(500.0kgf)	M18P1.5 Depth22 female screw
ZTS-DPU-10kN	10kN(1000kgf)	10.00kN(1000kgf)	
ZTS-DPU-20kN	20kN(2000kgf)	20.00kN(2000kgf)	

◎Please refer to Page 14 for the detail of load cell DPU series



High-functional Type with Various Functions

ZTA series

High functional high-end model. The remarkable points are inputting and outputting for displacement, connecting a USB flash drive and saving the original graph data.

The Highest Functional Model. ZTS Performances (Page 09) and More Additional Functions.

ZTA series features

Input and Output Displacement

Data Management on PC

Force-Displacement Measurement Unit FSA series To Page 39

Display Displacement with a Test Stand and a Force Gauge Combination.

Use together an optional function FA version test stand. To Page 25 and 26

※Separate selling optional cable which matches the test stand is required. To Page 19

Measure Force-Displacement by Combining External Facilities.

Connect built-in linear scale To Page 20

Data Saving to a USB Flash Drive

Data Saving Is Possible at 100Hz Sampling Speed into a USB Flash Drive.

Series of data can be saved without PC.

Compression and Tension Compatible

Size: Approx. W75×D34×H191mm  
Weight: Approx. 490g

Check Force Changing on Graphs

Software Force Recorder To Page 17

Print The Results

Printer DP-1VR To Page 20  
+Cable CB-308 To Page 19

Connect with External Devices

Cable Using Applications To Page 20



Force-displacement measurement unit FSA series



ZTA set

ZTA series model list

Model	Capacity	Display	Thread
ZTA-2N	2N(200gf)	2.000N/2000mN(200.0gf)	M6
ZTA-5N	5N(500gf)	5.000N/5000mN(500.0gf)	
ZTA-20N	20N(2kgf)	20.00N(2.000kgf)	
ZTA-50N	50N(5kgf)	50.00N(5.000kgf)	
ZTA-100N	100N(10kgf)	100.0N(10.0kgf)	
ZTA-200N	200N(20kgf)	200.0N(20.0kgf)	
ZTA-500N	500N(50kgf)	500.0N(50.0kgf)	M10
ZTA-1000N	1000N(100.0kgf)	1000N/1.000kN(100.0kgf)	

※1 The model less than 5N can be displayed mN, the model more than 1000N can be displayed kN. Japanese domestic model does not indicate kgf and lbf units.

※2 Not always available for Mitutoyo digimatic products.

※3 Maximum 100 data/sec capturing series of data with a USB flash drive.

※4 Electricity consumption of battery increase when using USB flash drive or connecting a linear scale.

※5 A USB flash drive is not included.

※6 Please refer to Page 31 for the detail of included attachments.

©The weights are slightly different by the ranges

ZTA series specifications

Accuracy	+/-0.2%F.S. +/- 1 digit
Unit of measurement(※1)	N, kgf, lbf(※1)
Display	4-digit Organic EL
Sampling rate	2000 data / sec at maximum
Function	Customized display (header and footer), Peak hold (tension and compression), Internal 1000 points data memory, Comparator (judgment of OK or NG), Reversible display, Sign inversion, Zero clear timer, +NG alarm, Off timer (auto power off), Dumping, Time display, 1st/2nd peak, Displacement detection at force peak value, Displacement zero reset at selected force
Output	USB, RS232C, Mitutoyo digimatic (※2), 2 VDC analog output (D/A), Comparator 3 steps (-NG/OK/+NG), Overload alarm, Sub comparator 2 steps (output of large or small judgment), USB flash drive(※3), Displacement(※4)
Operating environment	Temperature: 0 to +40 degree Celsius, Humidity: 20 to 80%RH
Battery	8 hours (8 hours charge)
Accessory(※5)	Attachments (※6), AC adapter, Inspection certificate, CD driver (including simple software for data logging), (The set of attachments varies according to range.), USB cable, Carrying case, Adaptor for USB flash drive.

ZTA series (High Capacity Model)



ZTA (High capacity model) set

Compression and Tension Compatible

Size: Approx. W83×D44.5×H221mm  
Weight: Approx. 1100g

- It is available for 2500N to 5000N
- Same functions and performance as ZTA series standard model.

Check Force Changing on Graphs

Software Force Recorder To Page 17

Print The Results

Printer DP-1VR To Page 20  
+Cable CB-308 To Page 19

Improve Measuring Repeatability

Test Stands To Page 24

Connect with External Devices

Cable Using Applications To Page 20

High Capacity Model List

Model	Capacity	Display	Thread
ZTA-2500N	2500N (250kgf)	2500N/2.500kN (250.0kgf)	M10
ZTA-5000N	5000N (500kgf)	5000N/5.000kN (500.0kgf)	

ZTA series (Sensor Separate Model)



ZTA (Sensor separate model) set

Size (the indicator only): Approx. W75×D34×H188mm  
Weight (the indicator only): Approx. 490g

- Ideal for installing into facilities or measuring under special circumstance due to an external sensor.

- Users can choose from various types of sensors such as waterproof, allowable wide-range temperature, pen shape. The sensor will fulfill the users required measuring conditions or circumstances. (Details are on Page 14)  
※Accuracy adjustments and calibrations are necessary when exchanging a load cell.



- It has same functions and performance as ZTA series general type. Check changing value on graphs

Check Force Changing on Graphs

Software Force Recorder To Page 17

Print The Results

Printer DP-1VR To Page 20  
+Cable CB-308 To Page 19

Connect with External Devices

Cable Using Applications To Page 20

Sensor separate type Model List  
(When select load cell DPU series)

Model	Capacity	Display	Thread
ZTA-DPU-2N	2N(200gf)	2.000N/2000mN(200.0gf)	M6
ZTA-DPU-5N	5N(500gf)	5.000N/5000mN(500.0gf)	
ZTA-DPU-10N	10N(1kgf)	10.00N(1.000kgf)	
ZTA-DPU-20N	20N(2kgf)	20.00N(2.000kgf)	
ZTA-DPU-50N	50N(5kgf)	50.00N(5.000kgf)	
ZTA-DPU-100N	100N(10kgf)	100.0N(10.0kgf)	
ZTA-DPU-200N	200N(20kgf)	200.0N(20.0kgf)	
ZTA-DPU-500N	500N(50kgf)	500.0N(50.0kgf)	

(When select load cell DPU series[High Capacity Model])

Model	Capacity	Display	Thread
ZTA-DPU-1000N	1000N	1000N (1.000kN)	M10
ZTA-DPU-2000N	2000N	2000N (2.000kN)	
ZTA-DPU-5000N	5000N	5000N (5.000kN)	
ZTA-DPU-10kN	10kN	10.00kN	
ZTA-DPU-20kN	20kN	20.00kN	

©Please refer to Page 14 for the detail of load cell DPU series





## Easy Operating and Simple Type

## DS2 series

The digital force gauge helps low and middle force range measurement between 2N and 1000N. The remarkable points are easy handling with the simple functions, the lightweight and the compact shape.

## Ideal for Hand Use.

## ◎Fitting Hand Design

Easy gripping shape

## ◎The Lightweight

Approx. 420g weight is suitable for holding with a hand.

## Easy Measurement

## ◎The Peak Hold Mode Is Turned on with a Single Button.

The mode is activated by just PEAK button.

## ◎Top-bottom Inversion Display

The force display can be reverse the top and the bottom.

CE

## Compression and Tension Compatible

- Size: Approx. W66×D33×H189mm  
□Weight: Approx. 420g



## Check Force Changing on Graphs

Software ZLINK3 To Page 18  
Cable CB-208 To Page 19



## Print The Results

Printer DP-1VR To Page 20  
+Cable CB-308 To Page 19



## Improve Measuring Repeatability

Test Stands To Page 24



## Apply Stable Force by Handheld

Handle FOH-1 To Page 37

## ■DS2 series Model List

Model	Capacity	Display	Thread
DS2-2N	2N	2.000N/2000mN(200.0gf)	M6
DS2-5N	5N	5.000N/5000mN(500.0gf)	
DS2-20N	20N	20.00N(2.000kgf)	
DS2-50N	50N	50.00N(5.000kgf)	
DS2-200N	200N	200.0N(20kgf)	
DS2-500N	500N	500.0N(50kgf)	
DS2-1000N	1000N	1000N/1.000kN(100.0kgf)	

## ■DS2 series Specifications

Accuracy	±0.2%F.S. ±1 digit
Unit of measurement	N, kgF, lbF
Display update	4-digit LCD
Sampling rate	1000 data/sec. (Max.)
Functions	Peak hold (tension and compression)/ Comparator(judgment of acceptance or rejection)/ Reversible display / Dumping (2 Levels)
Output	RS232C/Analog(±1V F.S.) /Mitutoyo digimatic(※1)
Operating environment	Temperature : 0 to +40 degree Celsius Humidity : 20 ~80%RH
Battery	10 hours (Full charge for 10 hours)
Accessory	Attachments (※2)/AC adapter/Manual/Inspection certificate (Included attachments depend on the force gauge range)

※1 Not always available for Mitutoyo digimatic products.

※2 Please refer to Page 31 for the detail of included attachments.

◎The weights are slightly different by the ranges

## Load Cell and Amplifier

Load Cell which converts sensing force to electric signal. It displays measuring force value by connecting an amplifier. Load cells are ideal for using under unique circumstances such as mounting into equipment, measurements at dangerous place.



## Load Cell

## for Compression and Tension

Standard Type  
DPU

Easy built-in shape to external equipment.



Measure force by mounting an attachment on the thread (the male screw part)

Capacity	2N~500N
Accuracy	±0.2%F.S. or less
Size	Approx. W58×D21×H71~W72×D21×H73mm
Cable Length	Approx. 2m

Model	Capacity	Thread
DPU-2N	2N	Male Screw M6P1.0
DPU-5N	5N	
DPU-10N	10N	
DPU-20N	20N	
DPU-50N	50N	
DPU-100N	100N	
DPU-200N	200N	
DPU-500N	500N	

## for Compression and Tension

High Capacity Type  
DPU

Easy built-in shape to external equipment.



Measure force by mounting an attachment on the thread (the male screw part)

Capacity	1000N~20kN
Accuracy	±0.2%F.S. or less
Size	Approx. W58×D26×H130~W88×D42×H155mm
Cable Length	Approx. 3m

Model	Capacity	Thread
DPU-1000N	1000N	Male Screw M10P1.5
DPU-2000N	2000N	
DPU-5000N	5000N	N/A※
DPU-10kN	10kN	
DPU-20kN	20kN	

※There is no thread on the load cell head while it equips a female screw M18 P1.5 Depth 22. The thread is able to attach on the head optionally.

## for Compression and Tension

Small Type  
SW1

It is possible to connect samples to the two sides of the sensor.



Measure force by fixation or connection with the female screw or eye bolts.

Capacity	100~5000N
Accuracy	±0.5%F.S. or less
Size	Approx. W40XD20XH40mm
Cable Length	Approx. 0.5~4m (Curl cable)

Model	Capacity	Thread
SW1-100N	100N	Female Screw M6P1.0
SW1-200N	200N	
SW1-500N	500N	Female Screw M8P1.25
SW1-1000N	1000N	
SW1-2000N	2000N	Female Screw M10P1.5
SW1-5000N	5000N	

※Please contact us if the users need the thread.

## for Compression and Tension

High Capacity Type  
SW3

It is possible to connect samples to the two sides of the sensor.



Measure force by fixation or connection with the female screw or eye bolts.

Capacity	10kN~20kN
Accuracy	±0.5%F.S. or less
Size	Approx. W80XD25XH80mm
Cable Length	Approx. 5m

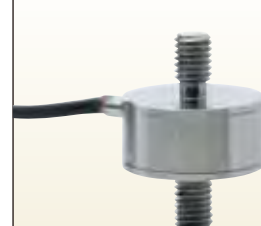
Model	Capacity	Thread
SW3-10kN	10kN	Female Screw M16P2.0
SW3-20kN	20kN	

※Please contact us if the users need the thread.

## for Compression and Tension

Extra Small Type  
LMU

Sensor part diameter is Approx. φ18mm



Measure force by mounting an attachment on the thread (the male screw part)

Capacity	50~500N
Accuracy	±1.0%F.S. or less
Size	Approx. φ18XH25mm
Cable Length	Approx. 2m

Model	Capacity	Thread
LMU-50N	50N	Male Screw M5P0.8
LMU-100N	100N	
LMU-200N	200N	
LMU-500N	500N	

※1 Conversion adaptor CA-F5T6 (Page 37) is required when M6 screw attachments mounting on the load cell.

## for Compression and Tension

Small Type  
LU

It is possible to connect samples to the two sides of the sensor.



Measure force by fixation or connection with the female screw or eye bolts.

Capacity	50~2000N
Accuracy	±1.0%F.S. or less
Size	Approx. φ28XH35mm
Cable Length	Approx. 3m

Model	Capacity	Thread
LU-50N	50N	Female Screw M8P1.25
LU-100N	100N	
LU-200N	200N	
LU-500N	500N	
LU-1000N	1000N	
LU-2000N	2000N	

Conversion adaptor CA-8T6 (for M6 screw)/CA-8T10 (for M10 screw) (Page 37) is required when M6/M10 screw attachments mounting on the load cell.

## for Compression and Tension

Pen Type  
PN-50N

Ideal for touching force measurements such as small manipulation force.



Measure force by mounting each attachment on the thread (the male screw part)

Capacity	50N
Accuracy	±2.0%F.S. or less
Size	Approx. φ20XH90mm
Cable Length	Approx. 2m

Model	Capacity	Thread
PN-50N	50N	M6P1.0

## for Compression or Tension

High Accuracy Type  
SK

Cuboid shape and durable load cell



It is able to utilize the 3 holes and mount metal fittings if necessary.

Capacity	2000N~20kN
Accuracy	±0.25%F.S. or less
Size	Approx. W130XD30XH30mm
Cable Length	Approx. 5m

Model	Capacity
SK-2000N	2000N
SK-5000N	5000N
SK-10kN	10kN
SK-20kN	20kN




Load Cell

for Compression or Tension

**Small Type ZD**

Small type load cell which is approved for high capacity measurement.

IP67



Measure force by mounting an attachment on the thread (the male screw part)

Capacity	1000N~20kN
Accuracy	±0.5%F.S. or less
Size	Approx.W78XD30XH44~W116XH46XD32mm
Cable Length	Approx.3m


Model	Capacity	Thread
ZD1-1000N	1000N	Male Screw M12P1.75
ZD1-2000N	2000N	
ZD1-5000N	5000N	
ZD1-10kN	10kN	
ZD2-20kN	20kN	

※Please choose tension or compression

for Compression

**General Type LC**

Coin type load cell.



Measure force by applying compression on the top of projection.

Capacity	500N~20kN
Accuracy	±0.5%F.S. or less
Size	Approx. φ50XH25mm
Cable Length	Approx.3m


Model	Capacity
LC-500N	500N
LC-1000N	1000N
LC-2000N	2000N
LC-5000N	5000N
LC-10kN	10kN
LC-20kN	20kN

for Compression

**High Accuracy Type DD2**

It is approved for high capacity and high accuracy.

IP67



Measure force by applying compression on the top of projection.

Capacity	5000N~20kN
Accuracy	±0.5%F.S. or less
Size	Approx. φ94XH48mm
Cable Length	Approx.5m

Model	Capacity
DD2-5000N	5000N
DD2-10kN	10kN
DD2-20kN	20kN

for Compression

**Small Type LM**

It can be inserted in narrow spaces with the coin shape.



Measure force by applying compression on the top of projection.


Capacity	10N~20kN
Accuracy	10N~10kN:±2.0%F.S. or less 20kN:±3.5%F.S. or less
Size	Approx. φ12XH4~φ21XH10mm
Cable Length	Approx.2m

Model	Capacity
LM-10N	10N
LM-20N	20N
LM-50N	50N
LM-100N	100N
LM-200N	200N
LM-500N	500N
LM-1000N	1000N
LM-2000N	2000N
LM-5000N	5000N
LM-10kN	10kN
LM-20kN	20kN

for Compression

**Wide Temperature Type LMT-1000N**

It can be used wide spread temperature between -40 degrees Celsius and +130 degrees Celsius.



Measure force by applying compression on the top of projection.

Capacity	1000N
Accuracy	±1.0%F.S. or less
Size	Approx. φ14XH4.3mm
Cable Length	Approx.2m


Model	Capacity
LMT-1000N	1000N

for Tension

**High Capacity Type ZU**

Two rod ends are included. Small type load cell which is approved high capacity force measurements.

IP67



Force is measured by attaching a sample on the rod end.

Capacity	5000N~20kN
Accuracy	±1.0%F.S. or less
Size	Approx. φ22XH70~φ35XH105mm (Except the rod ends.)
Cable Length	ZU-5000N:Approx.0.5~4m(Curl cable) ZU-10/20kN:Approx.5m


Model	Capacity
ZU-5000N	5000N
ZU-10kN	10kN
ZU-20kN	20kN

for Tension

**Crane Scale Type ZW1-10kN**

A hook is included. Light weight and user-friendly.

IP67



It can be used as a crane scale.


Capacity	10kN
Accuracy	±1.0%F.S. or less
Size	Approx. φ22XH70mm (Except the fittings and the hook)
Cable Length	Approx.0.5~4m(Curl cable)

Model	Capacity
ZW1-10kN	10kN

Special Use Load Cell

**Door Tester DM-2000N**

Special use load cell for measuring closing force of automatic doors and revolving doors.



Measure force by touching door on the blue sensor parts.

Capacity	2000N
Accuracy	±2.0%F.S. or less
Size	Approx.W94XD66XH380mm
Cable Length	Approx.2m

Model	Capacity
DM-2000N	2000N

Special Use Load Cell

**Closing Force for Car Windows SKM-1000N**

Special use load cell for automatic closing force of car windows.

IP65



Measuring closing force by put between doors and windows.

Capacity	1000N
Accuracy	±1.0%F.S. or less
Size	Approx.W70XD50XH30mm
Cable Length	Approx.200mm(Flexible arm)

This product is united to the indicator.  
The united model: ZTS-SKM-1000N/ZTA-SKM-1000N

Model	Capacity
SKM-1000N	1000N



Special Use Load Cell

**Hand Brakes Force or Two-wheelers PK1-500N**

Special use load cell for gripping hand brakes force for two-wheelers.

IP65



Measure hand brakes manipulating force by putting the load cell on hand breaks and gripping them together.

Capacity	500N
Accuracy	±1.0%F.S. or less
Size	Approx.W102XD35XH40mm
Cable Length	Approx.1.5m

Model	Capacity
PK1-500N	500N



Special Use Load Cell

**Foot Brakes Force for Cars PK2-1500N**

Special use load cell for stepping foot brakes for cars.

IP65



Measuring foot brakes manipulating force by putting the load cell on foot breaks and stepping them together.

Capacity	1500N
Accuracy	±1.0%F.S. or less
Size	Approx.W50XD70XH27mm
Cable Length	Approx.1.5m

Model	Capacity
PK2-1500N	1500N



**What is IP?**

IP (International Protection) is a standard which is based on IEC Standard 529 for solid foreign materials, electric devices for water and cabinet.

(Explanation of the IP code) \_\_\_\_\_

**IP × ×**

— The second code (IP 0 to 8 for water penetration)

— The first code (IP 0 to 8 for human body and solid foreign materials)

(IMADA LOAD CELL is IP67 or IP65.)

**IP 6 7**

— Ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time (up to 1 m of submersion for 30 minutes.).

— No ingress of dust; complete protection against contact (dust tight)

**IP 6 5**

— Water projected in powerful jets (12.5 mm nozzle) against the enclosure from any direction shall have no harmful effects at least for 3 minutes 100 liter per minute.

The load cell body is only approved for IP. Please note, amplifier (indicator), connecting parts and connector parts are not approved.

**Custom-made order for matching equipment or measurement spaces.**

**[Example: Cable extension]**

It is possible to extend connecting cable for PC, force gauges and load cells.

**Amplifier**

**ZTA/ZTS**

●Sensor Separate Type

Measured value by high speed sampling (Maximum 2000Hz) is displayed. The value is clear to see by an organic EL display.

※It is not possible to connect an amplifier to plural load cells.



To page 10 and Page 12

**Example of combining an amplifier and a load cell.**

**ZTA-LM-500N**


— Load cell model

— Amplifier model (Please choose from ZTA or ZTS)

※When connecting an amplifier ZTA and LM series

**FA Plus**

●Desktop Type Load Cell Amplifier



□Size:W210×D160×H99mm  
□Weight:Approx. 1.5kg  
※It is not possible to connect an amplifier to plural load cells.

**Accuracy**

●High speed sampling :2000Hz  
Follow rapid force change and

**Measurement Efficiency**

●It is able to use as a part of factory automation equipment by using input and output signals.

Measurement unit	N(kN), kgf(gf), lbf(ozf)
Display	4 digit LTD
Sampling rate	2000Hz (2000 data/ sec)
Functions	Peak hold, Comparator (OK/NG judgment), Setting sensitiveness and so on.
Output function	USB/ Serial (RS232C)/ Analog (Approx. ±2V), Each comparator/ Overload caution.
Accessory	Power cable, Spare fuse, USB cable, Driver CD-ROM, Load Capturing software FAP logger



# Measurement Data Analyzing Software

Connect a PC and a digital force gauge with a USB cable or a RS232C cable. Draw graphs of measuring force values on real time. Easy data management and analysis are possible.

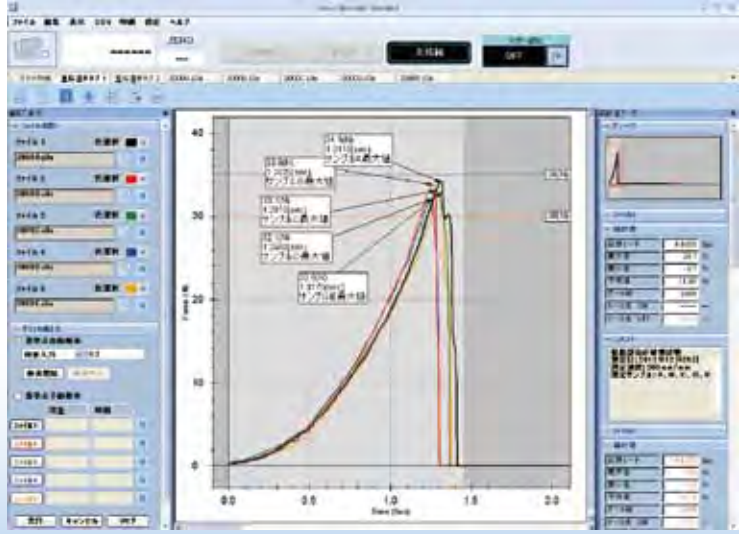
## Advantage of Using The Software

Digital force gauge captured data can be drawn into a graph on real time by the software.





The graphing data is possible to see the force change visually.

Besides, data managements are easy due to the auto calculation of the statistics and the data saving.

※All software is available in English or Japanese.

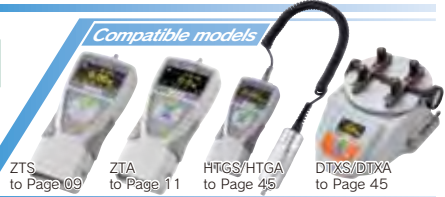


### Software Lists

CD	Name of software	Purpose	Compatible model	Connecting port	Maximum data capturing rate
	<b>Force Recorder Standard</b>	for Drawing Force-Time Graph	ZTS To Page 09, ZTA To Page 11, HTGS/HTGA To Page 45, DTXS/DTXA To Page 45	USB	Max. 2000Hz
	<b>Force Recorder Light</b>	for Drawing Force-Time Graph The software is moderate-priced edition.	ZTS To Page 09, ZTA To Page 11, HTGS/HTGA To Page 45, DTXS/DTXA To Page 45	USB	Max. 2000Hz
	<b>Force Recorder Professional</b>	for Drawing Force-Displacement Graph	ZTA To Page 11, HTGA To Page 45, DTXA To Page 45	USB	Max. 2000Hz
	<b>ZLINK3</b>	for Drawing Force-Time Graph	DS2 To Page 13	RS232C	Max. 50Hz



## Force Recorder Standard Force-Time Graphing Software



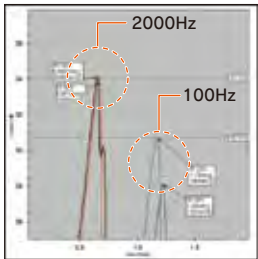
### Easy and Accurate Analysis of Measuring Data. Easy Report Creating.

#### Make efficiency by simple manipulations and useful functions.



- Easy steps for saving. Connect a force gauge and PC with a USB cable and click START.
- The plural tabs make the graph comparison easy.
- Auto-calculation of Maximum value/Minimum value/ Average value.
- Comment insertions are possible.
- Maximum 5 graphs are displayed on same display. Easy comparison and Accurate analysis are possible.

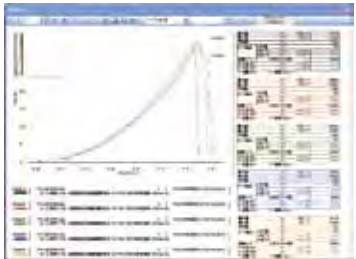
#### Capture measuring data accurately.



- Accurate graphing for measuring value with data sampling rate Maximum 2000Hz
- The sampling speed captures peak values properly. The rapider sampling rate, the more accurate results.
- Comparison of 2000Hz and 100Hz  
2000Hz is more to capture peak value than 100 Hz.  
Please refer to right [Operating environment 1] for the details of operating environments

•Please refer to the right [Operating Environment 1] for the details.

#### Speedy report creating



- Easy to copy graphs and static data to Word/ Excel/ PDF files.
- It is possible to input graphs/ date and time/ statistics automatically. Besides, comments can be input as well if necessary.



## Force Recorder Light Force-Time Graphing Software

Moderated Price Model



### Moderated Price Edition. Especially, It Focus on Drawing Graphs.

•Please refer to the right [Operating Environment 1] for the details.



## Force Recorder Professional Force-Displacement Graphing Software



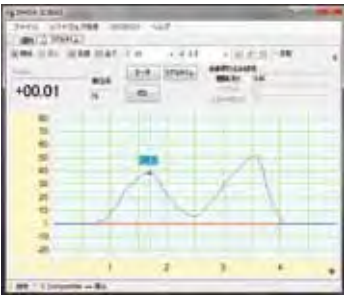
### Drawing and Analyzing Force-Displacement Graphs (FS curves).

#### It is as high performance as Force Recorder Standard. In addition, it can create force-displacement graphs.

- A displacement scale for ZTA /HTGA/ DTXA is required to capture displacement data.
- FSA series (Page 39) is including this software.
- Please refer to below [Operating Environment 1] for the details of operating environments



## ZLINK3 Force-Time Graphing Software



- Graphing by Max. 50Hz data sampling rate
- Automatic calculating Maximum value/Minimum value/ Average value.
- Saving data as CSV file
- English model is ZLINK 3-E
- Please refer to below [Operating Environment 2] for the details of operating environments

#### Force Recorder Standard/Light/Professional [Operating Environment 1]

Operating environment	OS: Windows XP/Vista(32bit) 7/8/8.1(32bit/64bit)
Hardware	CPU: Pentium4 (1GHz more) more recommended Memory: 2GB more recommended Hard disk: 10GB(Data storage area) more
Plat form	.NET Framework4 more
Execute environment	Microsoft Internet Explorer6.0 later Windows Installer 3.1 later
Image size	Resolution 1024×768 pixel more
Compatible force gauge	Standard/Light: ZTA/ZTS series, HTGS/HTGA series, DTXA/DTXS series Professional: ZTA series
Connection port	USB1.1, USB2.0 connector * We do not guarantee operation in USB 3.0.

#### ZLINK3 [Operating Environment 2]

OS	Windows2000 (SP3 or later) / XP (SP2 or later) / Vista / 7 You cannot use this software in 64 bit version of Windows Vista.
Operating environment	Microsoft .NET Framework 2.0 Microsoft Internet Explorer 5.01 or later
Compatible force gauge	DS2 series (necessary cable: CB-203)



Cable/Printer

Related cables of digital force gauges. For more useful measurements.



	<b>ZTA</b>  To Page 11	<b>ZTS</b>  To Page 09	<b>DS2</b>  To Page 13	<b>HTGS/HTGA</b>  To Page 45	<b>DTXS/DTXA</b>  To Page 45	<b>FA Plus</b>  To Page 16
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The Cables for Connecting External Devices and Force/Torque Gauges.

<b>RS232C cable</b> Connect PC and Enable to save force values and to operate force gauge setting from PC.	<b>CB-208</b>  Length: Approx. 3m	<b>CB-208</b>  Length: Approx. 3m	<b>CB-203 (GP)*1</b>  Length: Approx. 3m	<b>CB-208</b>  Length: Approx. 3m	<b>CB-208</b>  Length: Approx. 3m	Special orders are acceptable.
<b>Digimatic cable</b> Connect Mitutoyo Digimatic Mini Processor and Enable to save measuring values on paper.	<b>CB-308</b>  Length: Approx. 3m	<b>CB-308</b>  Length: Approx. 3m	<b>CB-301</b>  Length: Approx. 3m	<b>CB-308</b>  Length: Approx. 3m	<b>CB-308</b>  Length: Approx. 3m	Special orders are acceptable.
<b>Analog cable</b> Connect analog devices such as a pen recorder, and Enable to save measurement force changes.	<b>CB-108</b>  Length: Approx. 3m	<b>CB-108</b>  Length: Approx. 3m	<b>CB-101</b>  Length: Approx. 3m	<b>CB-108</b>  Length: Approx. 3m	<b>CB-108</b>  Length: Approx. 3m	Special orders are acceptable.
<b>Open End cable</b> The necessary cable for connecting special devices when the users attaching connectors.	<b>CB-908</b>  Length: Approx. 3m	<b>CB-908</b>  Length: Approx. 3m		<b>CB-908</b>  Length: Approx. 3m	<b>CB-908</b>  Length: Approx. 3m	Special orders are acceptable.
<b>External Contact Point cable</b> Necessary cable for measurement external contact points.	<b>CB-808</b>  Length: Approx. 3m	<b>CB-808</b>  Length: Approx. 3m		<b>CB-808</b>  Length: Approx. 3m	<b>CB-808</b>  Length: Approx. 3m	Special orders are acceptable.

The Cables for Connecting A Force Gauge/An Amplifiers to A Test Stand.

<b>Force Control cable</b> ※2 Connect test stand MX/MH and a force gauge/ an amplifier. Control the test stand activities and activate the overload preventing function.	<b>CB-508</b>  Length: Approx. 1.5m	<b>CB-508</b>  Length: Approx. 1.5m				<b>CB-601</b>  Length: Approx. 1m
<b>Force Control cable</b> ※2 Connect test stand MX2/MH2/EMX and a force gauge/ an amplifier. Control the test stand activities and activate the overload preventing function.	<b>CB-518</b>  Length: Approx. 1.5m	<b>CB-518</b>  Length: Approx. 1.5m				<b>CB-705</b>  Length: Approx. 1.5m
<b>Displacement cable (MX2-FA connecting)</b> ※3 It enables to output displacement by connecting a test stand MX2-FA/MH2-FA which equips a linear scale.	<b>CB-718</b>  Length: Approx. 1.5m					<b>CB-707</b>  Length: Approx. 1m
<b>Displacement cable (EMX-FA connecting)</b> ※3 It enables to output displacement by connecting a test stand EMX-FA which equips a linear scale.	<b>CB-728</b>  Length: Approx. 1.5m					<b>CB-705</b>  Length: Approx. 1.5m

The Cable for Connecting A Test Stand and External Devices.

<b>For input and output external signals.</b> Connect test stand MX2-CN/MH2-CN and activate the external control	<b>CB-706</b>  Length: Approx. 1.5m
---	---

※1 CB-201 (25P male) and CN-202 (25P female) are also available.  
※2 Please refer to "The helpful functions of Motorized Test Stand" on Page 30  
(Overload preventing function is a compulsive stop function of the test stand when the applied force is beyond the capacity, however, it does not completely guarantee the overload prevention.)  
※3 It is also enables to work the activity control/ the overload prevention function by force values.  
※4 We accept the special orders of cables such as extending the length, changing the connector shape (Example: Change Analog output to BNC connector) and so on.

Printer DP-1VR

(Mitutoyo Digimatic Mini Processor)



It enables to print measuring Maximum/Minimum/Average standard deviation values.  
To print, a digimatic cable is required.

Compatible models

ZTA/ZTS/DS2/HTGS/HTGA/DTXS/DTXA

The Cables for Past Models

Please refer to the right list if you are necessary to know the cable for the past models.  
※Other past models are also available.  
Please contact us if you need.

[The Model List]

	ZP,Z2 series	HTG2,DTX2 series
Analog cable	CB-104	CB-104
RS-232C cable	CB-204	CB-204
Digimatic cable	CB-304	CB-304
Force Control cable	CB-501 (Connect with MX series)	

Cable Applications Examples

Digital Force Gauge ZT series

Detect force abnormalities by connecting a buzzer/light/equipment.  
(The comparator output function and the overload output function)

Record a force value at a moment of turning switch on or cable breaking.  
(The external contact point output function)

It is also possible to display the momentary point at turning the switch on or cable breaking on Force Recorder Standard/Professional.  
(The mark point function)

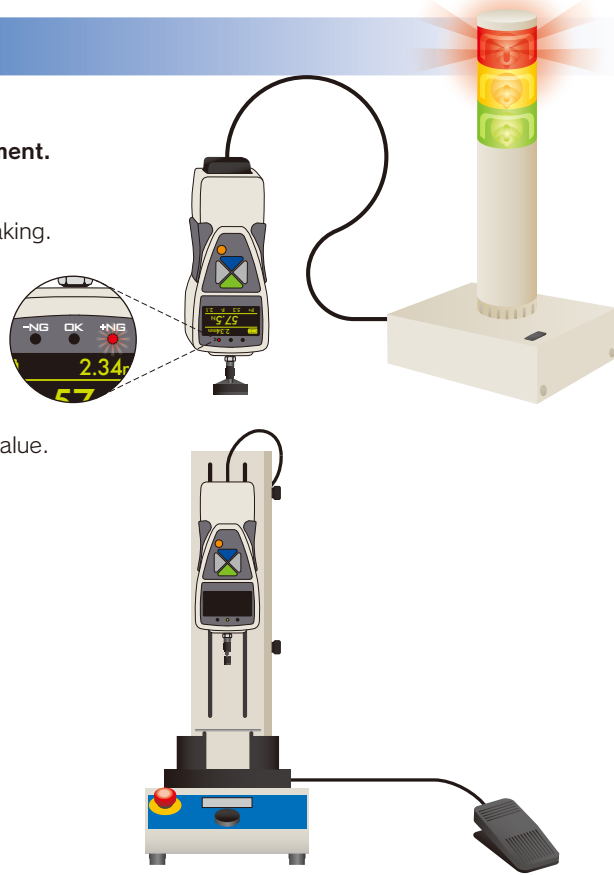
Control external devices when measuring value reaches at specific value.  
(The sub-comparator function: it is only available for ZTA series.)

Motorized Test Stand MX2(MH2) series (Option-CN version)

External operation from a foot switch and so on.

Improve equipment safety with an interlock mechanism.

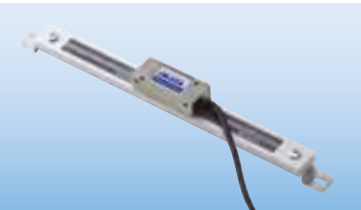
Link wire conduction and test stand activities.



Built-in Linear Scale Unit

A displacement linear scale to connect ZTA series (Page 11). It is used for force-displacement measurement by mounting on equipment.

Model	DMK-100	DMK-300	DMK-500	DMK-800
Stroke(mm)	Max.100	Max.300	Max.500	Max.800
Size(mm)	254X21	454X21	654X21	800X21
Fixing screw	M4	M4	M4	M4



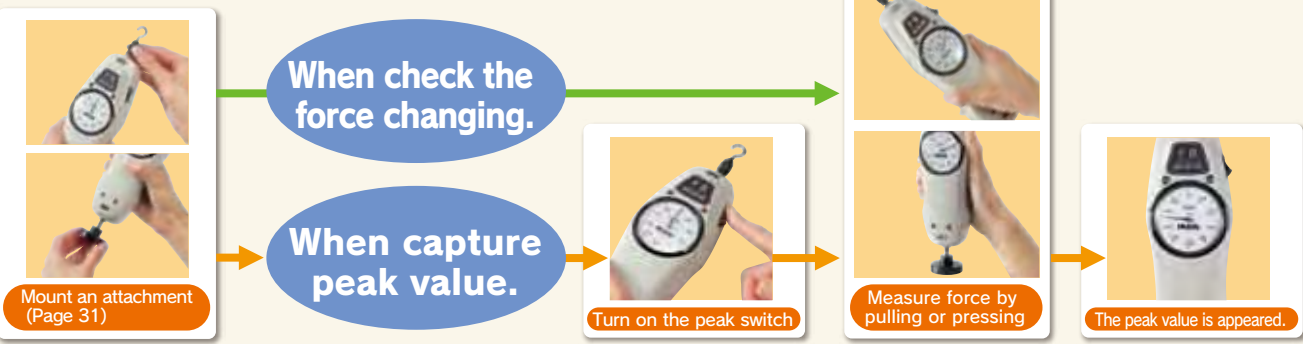


# Mechanical Force Gauge

Analog type force gauge.  
It is easy to read force changes. Electricity is not necessary.

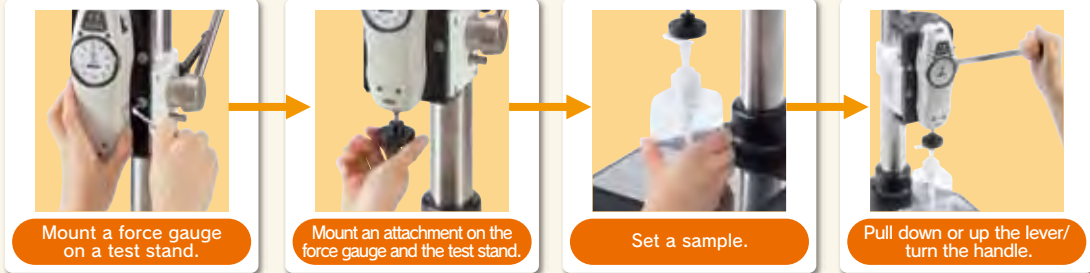
## How to Use Mechanical Force Gauges (Using Example Model: FB series)

### When Measuring Simply (It can measure force with a hand.)



### When Measuring with High-repeatability

High-repeatability measurements are possible by using a test stand together.



## Please See below to Choose Your Suitable Mechanical Force Gauge

The remarkable points of mechanical force gauges

#### Strong Points

- Stable force can be applied with the 10mm stroke thread.
- Malfunctions or mechanical troubles from external circumstance such as noise or static electricity are less due to the mechanical type.

#### Weak Point

- It is not suitable for shock tests such as breaking tests.

## Economical Type FB series

### ○ The Most Simple Model

Compression and Tension Compatible

- Size: Approx. W67 × D48 × H232.5mm
- Weight: Approx. 630g



#### Improve Measuring Repeatability

Test Stands ————— To Page 24



#### Apply Stable Force by Handheld

Handle FOH-1 ————— To Page 37



FB/FS Standard set

#### Specifications

Accuracy	±0.3%F.S. or less
Division	100lines(※1)
Reading method	Real time/Peak hold(Selector type)
Standard accessories	Attachment 6pcs(※3)-the instruction manual-the carry case-Inspection certificate etc.

#### Model lists

Model	Capacity	Resolution	Thread
FB-10N	10N	0.1N	
FB-20N	20N	0.2N	
FB-30N	30N	0.25N	
FB-50N	50N	0.5N	
FB-100N	100N	1N	
FB-200N	200N	2N	
FB-300N	300N	2.5N	
FB-500N	500N	5N	

#### Export model lists(※2)

Model	Capacity	Resolution	Thread
FS-1K	1kgf	10gf	
FS-2K	2kgf	20gf	
FS-3K	3kgf	25gf	
FB-10K	10kgf	100gf	
FB-20K	20kgf	200gf	
FB-30K	30kgf	250gf	
FB-50K	50kgf	500gf	

Model	Capacity	Resolution	Thread
FB-5lb	5lbf	0.05lbf	
FB-10lb	10lbf	0.1lbf	
FB-20lb	20lbf	0.2lbf	
FB-30lb	30lbf	0.25lbf	
FB-50lb	50lbf	0.5lbf	
FB-100lb	100lbf	1lbf	

## Standard Type PS series

### ○ High Accuracy Model

Compression and Tension Compatible

- Size: Approx. W67 × D48 × H232.5mm
- Weight: Approx. 630g



#### Improve Measuring Repeatability

Test Stands — To Page 24



#### Apply Stable Force by Handheld

Handle FOH-1 — To Page 37

#### Specifications

Accuracy	±0.1%F.S. or less
Division	100lines(※1)
Reading method	Real time/Peak hold (Selector type)
Standard accessories	Attachment 8pcs(※3)-the instruction manual-the carry case-Inspection certificate etc.

#### Model lists

Model	Capacity	Resolution	Thread
PS-5N	5N	0.05N	
PS-10N	10N	0.1N	
PS-20N	20N	0.2N	
PS-30N	30N	0.25N	
PS-50N	50N	0.5N	
PS-100N	100N	1N	
PS-200N	200N	2N	
PS-300N	300N	2.5N	
PS-500N	500N	5N	

#### Export model lists(※2)

Model	Capacity	Resolution	Thread
PSS-0.5K	500gf	5gf	
PSS-1K	1kgf	10gf	
PSS-2K	2kgf	20gf	
PSS-3K	3kgf	25gf	
PS-5K	5kgf	50gf	
PS-10K	10kgf	100gf	
PS-20K	20kgf	200gf	
PS-30K	30kgf	250gf	
PS-50K	50kgf	500gf	

Model	Capacity	Resolution	Thread
PS-5lb	5lbf	0.05lbf	
PS-10lb	10lbf	0.1lbf	
PS-20lb	20lbf	0.2lbf	
PS-30lb	30lbf	0.25lbf	
PS-50lb	50lbf	0.5lbf	
PS-100lb	100lbf	1lbf	

## High Capacity Type PSH series

### ○ It Is Possible To Measure 500N to 3000N

Compression and Tension Compatible

- Size: Approx. 95 × D63.4 × 290mm
- Weight: Approx. 3.1kg



#### Improve Measuring Repeatability

Test Stands — To Page 24

#### Specifications

Accuracy	±0.1%F.S. or less
Division	100lines(※1)
Reading method	Real time/Peak hold(Selector type)
Standard accessories	Attachment 6 pcs(※3)-the instruction manual-the carry case-Inspection certificate etc.

#### Model lists

Model	Capacity	Resolution	Thread
PSH-500N	500N	5N	
PSH-1000N	1000N	10N	
PSH-2000N	2000N	20N	
PSH-3000N	3000N	25N	

#### Export model lists(※2)

Model	Capacity	Resolution	Thread
PSH-50K	50kgf	0.5kgf	
PSH-100K	100kgf	1kgf	
PSH-200K	200kgf	2kgf	
PSH-300K	300kgf	2.5kgf	

Notes: ①The weight is depending on the range. (※1)120 lines for 30N, 300N, 30k and 30lb.  
(※2) The export models are NOT able to sell in Japan due to the Measurement Act.(※3)Please refer to Page 31 for the included attachments.

# Mechanical Force Gauge

## Precision Type PSM series

### ○ Accurate Model with The Small Divisions

Compression and Tension Compatible

- Size: Approx. W67 × D48 × H232.5mm
- Weight: Approx. 630g



#### Improve Measuring Repeatability

Test Stands — To Page 24



#### Apply Stable Force by Handheld

Handle FOH-1 — To Page 37

#### Specifications

Accuracy	±0.1%F.S. or less
Division	200lines(※1)
Reading method	Real time/Peak hold(Selector type)
Standard accessories	Attachment 8pcs(※3)-the instruction manual-the carry case-Inspection certificate etc.

#### Model lists

Model	Capacity	Resolution	Thread
PSM-20N	20N	0.1N	
PSM-30N	30N	0.2N	
PSM-50N	50N	0.25N	
PSM-100N	100N	0.5N	
PSM-200N	200N	1N	
PSM-300N	300N	2N	
PSM-500N	500N	2.5N	

#### Export model lists(※2)

Model	Capacity	Resolution	Thread
PSM-2K	2kgf	10gf	
PSM-3K	3kgf	20gf	
PSM-5K	5kgf	25gf	
PSM-10K	10kgf	50gf	
PSM-20K	20kgf	100gf	
PSM-30K	30kgf	200gf	
PSM-50K	50kgf	250gf	

## Compact Type UKT/UKK series

### ○ Ideal Small Model for Built-in Equipment

- Size: Approx. W60 × D40 × 156mm
- Weight: Approx. 300g

#### ● Exclusive use for tension: UKT series

#### ● Exclusive use for compression: UKK series

#### Specifications

Accuracy	±0.3%F.S. or less
Division	100lines(※1)
Reading method	Real time/Peak hold(memory pointer type)
Standard accessories	Attachment(UKK:5pcs-UKT:4pcs)-the instruction manual-the carry case-Inspection certificate etc.

#### Model lists

Model	Capacity	Resolution	Thread
UKT-20N	20N	0.2N	
UKT-30N	30N	0.25N	
UKT-50N	50N	0.5N	
UKT-100N	100N	1N	
UKT-200N	200N	2N	
UKT-300N	300N	2.5N	

#### Export model lists(※2)

Model	Capacity	Resolution	Thread
UKT-2K	2kgf	20gf	
UKT-3K	3kgf	25gf	
UKT-5K	5kgf	50gf	
UKT-10K	10kgf	100gf	
UKT-20K	20kgf	200gf	
UKT-30K	30kgf	250gf	

Model	Capacity	Resolution	Thread
UKT-5lb	5lbf	0.05lbf	
UKT-10lb	10lbf	0.1lbf	
UKT-20lb	20lbf	0.2lbf	
UKT-30lb	30lbf	0.25lbf	
UKT-50lb	50lbf	0.5lbf	



## What Is Unit “N”?

The “N” is a force unit called “Newton” .1kgf=9.80665N.  
In Japan, the force unit is established Newton in the Measurement Act.

According to the Measurement Act established on November 1st in 1993, other units,except the system of units in Table 1,are not able to use as legal measurement units of transaction or certification for force, moment of force, pressure, stress and viscosity.  
The current Measurement Act prohibits from selling measuring instruments using the other unit divisions, or displaying to sell them in Japan.  
※In Japan, we are selling the products equipping legal unit divisions.

Table 1 Excerpt of “Measurement Units pertaining to the International System of Units” (Ministry of Economy, Trade and Industry)

Quantity of the state of physical phenomena	Measurement unit
Force	Newton
Moment of force	Newton-meter
Pressure	Pascal or Newton per square meter bar
Stress	Pascal or Newton per square meter
Viscosity	Pascal second or Newton second per square meter

Reduced value for conventional force unit 1kgf=9.80665N

## What Is The Best Way to Choose The Most Suitable Range of A Force Gauge/ A Load Cell?

⚠ “Capacity” in the specifications means the applicable force for the measuring instrument. Force gauges or load cells will be broken by applying stronger force than the capacity. In order to prevent it, we recommend to choose a little larger range capacity. Please refer to below for choosing the suitable range to use our force gauges as long as you can.

### Shock or Breaking Test: When Measuring Rapid Force Change

→Please choose 200% capacity force range of the expectable measuring value.  
**Example Case) Expectable measuring value: 10N Measuring instrument: Digital Force Gauge ZTS**  
The suitable measuring instrument is ZTS-20 N. The capacity is 20N which is double of 10N.

### Tension Test: When Measuring Slow Force Change

→Please choose 150% capacity force range of expectable measure value.  
**Example Case) Expectable measuring value: 30N Measuring instrument: Digital Force Gauge ZTS**  
The suitable measuring instrument is ZTS-50 N.  
The range is the nearest from 45 N which is 1.5 times of 30N.

## What Is “F.S” for Accuracy, for example +/-0.2% F.S.

F.S is an abbreviation of “Full Scale” and means the capacity. For example, when the accuracy  $\pm 0.2\%$  for the capacity [F.S.] the error is “ $50\text{N} \times \pm 0.2\% = \pm 0.1\text{N}$ ” for the 50N capacity product. When the measuring value is 30, the error is “ $30\text{N} \pm 0.1\text{N} = 29.9 \sim 30.1\text{N}$ ” .

## Key Point of Maintenance of Measuring Instruments

The important thing of maintenance of measuring instrument is regular calibrations. The calibration means the verification process the accuracy keeps precisely or not. Measuring instruments are required regular verification process (calibration). It is similar to checking a watch time is correct or not with time signals. Because measuring instruments including force gauges will lose the accuracy as time passing. However regular calibration, and adjustments if necessary, supports to keep the accuracy and trustful measurements.

IMADA offers calibration services of force gauges. The users can keep using our products after purchasing at ease for a long time. Besides, we receive calibration certificate in accordance with ISO/ISE17025:2005, therefore, we can offer international high quality calibration of the force gauges as an option.

# Test Stand

## Advantage of Using Test Stand= Repeatability Improvement

**Reduce the measuring human errors by the stable speed and angles.**

Force gauges can be used with a hand, however, more accurate measurements are possible as a simple tester by combining with a test stand.

## Motorized Test Stand

It enables to keep the measuring speed and angles. It realizes the high- repeatable measurements.

### Simple Type MX(Vertical type)/MH(Horizontal type)



To Page 26

Capacity:  
(MX) 500N~5000N  
(MH) 1000N~3000N

#### The Most Simple Motorized Test Stand

- For simple compression/ tension tests
- Measuring speed can be changed with the dial, however, the setting speed is not able to be seen in digital. MX2/MH2 or EMX can display the speed on the monitor.

### The Standard Type MX2(Vertical type)/MH2(Horizontal type)



To Page 25

Capacity:  
(MX2) 500N~2500N  
(MH2) 500N

#### General Type with Friendly-use and Functionality.

- Digital setting and display are possible for measuring speed.
- The equipped monitor displays measuring condition. Several settings are easy.
- Timer and Counter functions are equipped. Durability tests/ Repeat tests are possible.

### The High Performance Type EMX



To Page 26

Capacity: 1000N

#### Advanced type of MX2

- A variety of measuring conditions are approved by 0.5~600mm/min speed setting and travel limit setting.
- The strongest rigidity. More accurate measurement is possible.
- 5 types of measuring pattern (speed/repeat frequency etc.)can be stored.

## Manual Test Stand

The test stand keeps the measuring angles. The measurements are higher repeatability than handheld.

### The Simple Type



To Page 27

- Capacity: 1000N
- The most simple test stand
  - The lever improves measuring efficiency.



To Page 27

- Capacity: 1000N
- The most simple test stand
  - The handle realizes stable measurements.

### The Low Capacity Type



To Page 28

- Capacity: 50N
- Ideal for small force measurements



To Page 28

- Capacity: 50N
- Varieties of measurements can be realized by the different installing ways.

### Long Stroke Type



To Page 27

- Capacity: 500N~3000N
- Ideal for stretching or large sample measurements

### Horizontal Type



To Page 28

- Capacity: 1000N~3000N
- Setting sample is easy.

※Actual measuring capacities are depending on the force gauge capacities.  
However, measurements are depending on test stand capacities when the test stand capacity is less than the force gauge capacity.

A lot of force measurements are introduced on our website by types of force or industries.  
Each product specification is possible to download from the website. Please feel free to contact us.

●IMADA service group telephone number: +81(0)532-33-3288

IMADA Search  
<http://www.forcegauge.net/en/>



# Motorized Test Stand

It enables to keep the measuring speed and angles.  
It realizes the high-repeatable measurements.

Various measurements are possible as a simple tester by combination of a force gauge and the attachments matching samples.



Compression Test



Tension Test



Peeling Test

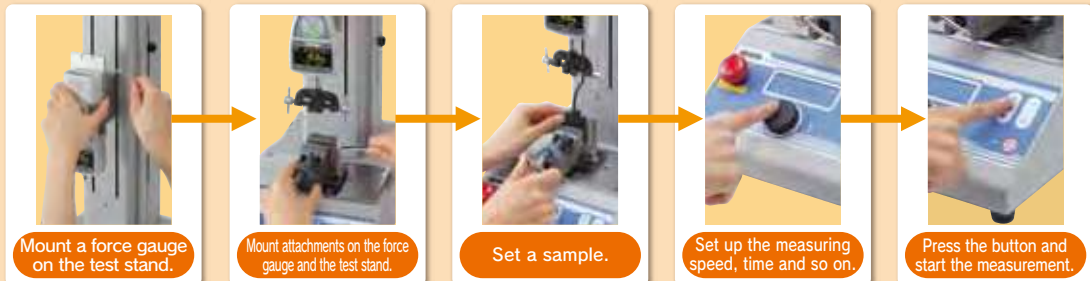


Friction Test



## How to Use Motorized Test Stand

(Using Example: MX2 series)



As options, the stroke extension and the measuring speed change are available.The details are on Page 29. Some models are possible to equip a linier scale (FA version) to measure and analysis the relationships of force and displacement. The details are on Page 29.

## Standard Type

- Measuring speed can be set in digital.
- The monitor displays the measuring conditions. Helpful for several settings.
- Durability or Repeat test is possible with the timer and the counter functions.



Setting display

## MX2 series

**Connect with External Devices**  
Application Example for using cables  
To Page 20

- Option**
- Length Scale
  - FA version
  - Long Stroke
  - Speed Change
  - Output and Input External Signal

Please refer to Page29 and Page30



### Specification

Lists	MX2-500N	MX2-1000N	MX2-2500N
Capacity	500N	1000N	2500N
Speed	10-300mm/min	10-300mm/min	10-300mm/min
Maximum Sample Height (※1)	Approx.235mm	Approx.300mm	Approx.320mm
Weight	Approx.18kg	Approx.19kg	Approx.26kg
Size	Approx.W220xD380xH562mm	Approx.W280xD410xH660mm	Approx.W280xD410xH644mm

## MH2-500N

### Horizontal Type

**Connect with External Devices**  
Application Example for using cables  
To Page 20

- Option**
- Length Scale
  - FA version
  - Speed Change
  - Output and Input External Signal

Please refer to Page29 and Page30



### Specification

Lists	MH2-500N
Capacity	500N
Speed	10-300mm/min
Maximum Sample Length (※1)	Approx.245mm
Weight	Approx.14kg
Size	Approx.W554xD220xH219mm

## Advanced Type

## EMX-1000N

- The wide speed range 0.5-600mm/min and the traveling setting function fulfill various measuring conditions.
- The highest rigidity.  
It realizes accurate measurements.
- Measuring patterns, maximum 5 types, can be stored. The function improves measuring efficiency.
- Connecting external devices are possible with the built-in I/O connector. It improves the measuring efficiency by installing to equipment.



Setting display

### Specification

Lists	EMX-1000N
Capacity	1000N
Speed	0.5-600mm/min
Maximum Sample Height (※1)	Approx.320mm
Weight	Approx.23.5kg
Size	Approx.W280xD410xH643mm

## Simple Type

- The most simple type motorized test stands.

## MX series

### Option

- Speed/ Length Meter
- Length Scale
- Long Stroke (except MX-5000N)
- Speed Change
- FA version (MX-5000N only)

Please refer to Page29 and Page30



### Specification

Lists	MX-500N	MX-1000N	MX-5000N
Capacity	500N	1000N	5000N
Speed	10-300mm/min	8-240mm/min	10-300mm/min
Maximum Sample Height (※1)	Approx.235mm	Approx.420mm	Approx.340mm
Weight	Approx.13kg	Approx.24kg	Approx.30kg
Size	Approx.W214xD428xH573mm	Approx.W263xD368xH903mm	Approx.W250xD420xH816mm

**Note:** ①A force gauge is separately sold.②Actual measuring capacities are depending on the force gauge capacities. However, measurements are depending on test stand capacities when the test stand capacity is less than the force gauge capacity. (※1)The maximum height or length means the distance between the test stand table and the thread of the force gauge ZT series general type(1000N or less) at the highest position of the test stand. The distance is not including attachments. The distance of MX-5000N or MX2-2500 is in case of mounting ZT series high capacity type.

# Motorized Test Stand



**Connect with External Devices**  
Application Example for using cables  
To Page 20

### Option

- FA version
- Long Stroke

Please refer to Page29 and Page30



EMX-1000N



## MH-1000N・MH-300

### Horizontal Type



### Specification

Lists	MH-1000N	MH-300
Capacity	1000N	3000N
Speed	6-180mm/min	8-240mm/min
Maximum Sample Length (※1)	Approx.280mm	Approx.295mm
Weight	Approx.14kg	Approx.29kg
Size	Approx.W700xD195xH210mm	Approx.W700xD252xH227mm

### Option

- Speed/ Length Meter
- Length Scale
- Speed Change (MH-1000N only)

Please refer to Page29 and Page30



# Manual Test Stand

It keeps the measuring angles. The measurements are more accurate than using with a hand.



Various measurements are possible as a simple tester by combination of force gauges and the attachments matching samples.

Cloth Button Pull Off Test



Ball Hardness Test



## How to Use Manual Test Stand

(Using Example: SVL-1000N)



Mount a force gauge on the test stand.



Mount attachments on the force gauge and the test stand.



Set a sample



Pull down the lever/ Turn the handle.

As options, the stroke extension and the measuring speed change are available.  
The detail is on Page 29.

## Simple Type

# SVL-1000N/SVH-1000N

- The simplest test stand.
- The lever type improves the measuring efficiency.  
The handle type realizes stable measurements.

### ■Specification

Lists	SVL-1000N(Lever type)	SVH-1000N(Handle type)
Capacity	1000N	1000N
Maximum Sample Height(※1)	Approx.225mm	Approx.225mm
Maximum Stroke※A	60mm	60mm
Feed Amount	60 mm when 170 degree turn of the lever	3mm/1 turn
Weight	Approx. 7.3kg	Approx. 7.7kg
Size	Approx.W200xD280xH410mm	Approx.W200xD280xH410mm

※A Maximum stroke means maximum travelling distance of a force gauge.

※B GF-1/2: These are necessary adapters for mounting a chuck fixture.(Separate-sold)



### Option

- Length Scale
- Long Stroke

Please refer to Page29 and Page30

## Long Stroke Type

# HV series

- Handle type test stands with a long stroke.  
Ideal for measurements of large or stretching samples.

### ■Specification

Lists	HV-500NII	HV-1000N	HV-3000N
Capacity	500N	1000N	3000N
Maximum Sample Height(※1)	Approx.240mm	Approx.375mm	Approx.415mm
Feed Amount	2mm/1 turn	1.2mm/1 turn	0.6mm/1 turn
Weight	Approx.10kg	Approx.18kg	Approx.24kg
Size	Approx.W327xD309xH597.5mm	Approx.W305xD275xH730mm	Approx.W355xD310xH744mm

**Note:** ①A force gauge is separately sold. ②Actual measuring capacities are depending on the force gauge capacities. However, measurements are depending on test stand capacities when the test stand capacity is less than the force gauge capacity. (※1)The maximum height or length means the distance between the test stand table and the thread of the force gauge ZT series general type(1000N or less)at the highest position of the test stand. The distance is not including attachments. The distance of HV-3000N or SH-3000N is in case of mounting ZT series high capacity type.



HV-500N II

HV-1000N

### Option

- Length Scale
- Long Stroke (except HV-3000N)

Please refer to Page29 and Page30

# Manual Test Stand

## Low Capacity or Small Type

- Ideal for 50N or less measurements.
- Small travelling is possible with screw feed.

# KV-50N

- Desktop type.  
The handle supports small travellings.

### ■Specification

Lists	KV-50N
Capacity	50N
Maximum Sample Height(※1)	Approx.63mm
Feed Amount	1.0mm/1 turn
Weight	Approx.2kg
Size	Approx.W140xD180xH220mm

### Option

- Length Scale

Please refer to Page29 and Page30



KV-50N

# MSF-50N

- Various measurements are possible by the different installing ways.



Using with the handle or the tripod realizes a lot of measuring purposes at various places.  
※The mounting adapter for the handle or the tripod is separately sold.

### ■Specification

Lists	MSF-50N
Capacity	50N
Maximum Sample Height(※1)	Approx.44mm
Feed Amount	18mm/1 turn
Weight	Approx.1.2kg
Size	Approx.W110xD81xH204mm



MSF-50N

## Horizontal Type

# SH series

- Horizontal type: The setting sample is easy.

### ■Specification

Lists	SH-1000N	SH-3000N
Capacity	1000N	3000N
Maximum Sample Length(※1)	Approx.250mm	Approx.355mm
Feed Amount	1.2mm/1 turn	0.6mm/1 turn
Weight	Approx.15kg	Approx.22kg
Size	Approx.W560.5xD265xH219.5mm	Approx.W696.5xD285xH225mm

### Option

- Length Scale

Please refer to Page29 and Page30



SH-1000N



Test Stand Option Model List

To increase the types of measurement or to improve the measuring efficiency, the users can choose the options below.

Mutual Options for The Manual and Motorized Test Stands	
<b>Length Scale (-S)</b> It displays the traveling of the force gauge in digital. (We recommend the below "FA version" for the users who need to analyze the relationships of force and displacement)	
<b>Long Stroke (-L)</b> Extend the test stand stroke. (The extendable length is different by the model. Besides, some models could decrease the allowable force capacity. Pleased contact us if you need the detail.)	
Limited Options for The Motorized Test Stands	
<b>Speed / Length Meter (-E)</b> It displays the measuring speed and the travel amount of force gauges.	
<b>FA version (-FA)</b> The option is equipping a linear scale in a test stand. It enables to output the force gauge travel. It makes possible to analyze force and displacement. The details of Force-Measurement Unit are on Page 39.	
<b>Speed Change (-V○○)</b> Change the measuring speed. (The speed is different by the model. Besides, some models could decrease the maximum force value. Please contact us if you need the detail.)	
<b>Output and Input External Signals (-CN)</b> Equip a connector for external input and output. For example, the test stand connect a foot switch to operate the test stand. (Stepping a switch is Start or stepping a brake is Stop etc.) Please contact us if you need the detail.	

Motorized Test Stand Available Option Table

	Model	MX-500N	MX-1000N	MX-5000N	MH-1000N	MH-300	MX2-500N	MX2-1000N	MX2-2500N	MH2-500N	EMX-1000N
Speed/ Length Meter	-E	○	○	○	○	○	/	/	/	/	/
Length Scale	-S	○	○	○	○	○	○	○	○	○	/
FA Specification	-FA	/	/	○	/	/	○	○	○	○	○
Long Stroke (mm)	-L	○ +200	○ +250	/	/	/	○ +200	○ +300	○ +300	/	○ +300
Output and Input External Signals	-CN	/	/	/	/	/	○	○	○	○	※1
Speed Change (mm/min)	-V●●	○ 40~1200 20~600 2~60	○ 15~400 4~120	○ 5~150	○ 10~300	/	○ 20~600 3~90	○ 25~750 2.5~75	○ 2.5~75	○ 20~600 3~90	/

※1 It is already installed as the standard function.

◆Example of Option Additional Model

- Extend the stroke of MX2-500N→Long Stroke (-L) additional option= **MX2-500N-L**
- The measuring speed change additional option of MX2-500N= **MX2-500N-V600**

※The●● part is numbers (-V●●).

Example) When the speed range changes into the fastest speed **The number is here.**  
20~**600**mm/min

Manual Test Stand Available Option Table

	Model	SVL-1000N	SVH-1000N	HV-500NⅡ	HV-1000N	HV-3000N	KV-50N	MSF-50N	SH-1000N	SH-3000N
Length Scale	-S	○	○	○	○	○	○	/	○	○
Long Stroke (mm)	-L	○ +200 ※1	○ +200 ※1	○ +200	○ +150	/	/	/	/	/

※1 The extension is only approved for the test stand shaft. The force gauge movable distance does not change.

◆Example of Additional Option Model of the Manual Test Stand.

- See the force gauge travel when measuring with SVH-1000N→Add the Length Scale Option = **SVH-1000N-S**

The Helpful Functions of Motorized Test Stand

The optional functions can be used by connecting a force gauge ZTS/ZTA series and a motorized test stand with the suitable cable.

①The Overload Preventing Function

The emergency stop function is activated when applied force is beyond the force gauge capacity. It helps to prevent overload (The sensor breakdown caused by over capacity capacity.)

※It does not mean completely helping to prevent the sensor breakdown.

②Force Control Function

A lot of types of measurements are possible. For example...

- Stop the travel when the applied force reaches at the setting force.
- Keep applying force in the setting range. etc.

.....  
**We Accept Special Orders As Well. Please Feel Free to Contact Us If You Need.**  
.....



Attachment

The Fixture Mounting on A Force Gauge Thread or A Test Stand Table.

It helps compression/tension/peeling/coefficient of friction test and so on.



The Attachment Types and How to Use

IMADA attachments are separated to 2 types generally.

1

The force gauge thread is M6 or M10 screw. The measurements are possible to mount the matching attachment on the force gauge thread.

2

The mounting attachment for the test stand table.

1

Type 1 is also possible to mount on test stands with a grip mounting adapter.

※It is attached with test stands (except some models)

- ⚠ The attachment weight is applied as force. It is therefore, please choose the mounting attachments which is 10% or less of the capacity of force gauges.
- ⚠ Please ask us how to use attachments before purchasing. Some sample shapes or materials are not approved for using. We help your measurements!!
- ⚠ Some attachments are in accordance with Japanese Industrial Standard(JIS). A force gauge or a test stand is required for measurements in accordance with JIS. Please feel free to contact us for the details. When you need other standard such as ISO or ASTM, please contact us as well.

Included Standard Attachments

The IMADA force gauge is including below attachments for basic compression/tension test.

Standard Type

M6

(Standard attachments for the force gauge 1000N or less capacities.)

Made of Aluminum (A type) is included for the 100N or less capacity force gauge.  
Made of Steel is included for 200N to 1000N capacity force gauges.

A-1/S-1/SR-1

A-2/S-2

A-3/S-3

A-4/S-4

A-5/S-5

A-6/S-6

A-7/S-7

A-8/S-8

The including contents ZTS/ZTA General type: ①~⑧、ZTA/ZTS-DPU-2~500N:①~⑧、DS2:①~⑥、PS/PSM:①~⑧、FB:①~⑥  
For 1000N capacity, SR-1 is included instead of S-1.  
A lot of force measurements are introduced on our website by types of force or industries.  
Each product specification is possible to download from the website. Please feel free to contact us.  
●IMADA service group telephone number: +81(0)532-33-3288

High Capacity Type

M10

(Standard attachments for beyond 1000N high capacity model force gauges.)

B-1

B-2

B-3

B-4

B-5

B-6

B-7

B-8

The included contents: ZTA/ZTS-2500N/5000N:①~⑧、ZTA/ZTS-DPU-1000~5000N:①~⑧、PSH:①~⑧

IMADA Search  
<http://www.forcegauge.net/en/>

Attachments for Compression Test

Fixtures for varieties of compression test such as durability tests, bending tests, sticking tests.

Compression Test for Small Spots  
PG-2/3/4/5

PG-2

○Representative applications  
Plastic injection components, Switch, LCD panel, Food

The test example of sponge hardness test with PG-2.

Models	PG-2	PG-3	PG-4	PG-5
Capacity(N)	100	100	200	200
External diameter(mm)	Approx. φ2	Approx. φ3	Approx. φ4	Approx. φ5
Weight(g)	Approx.2	Approx.3	Approx.4	Approx.5
Mounting screw			M6	

Sticking Test Fixture  
TKS-20N/250N

TKS-250N

○Representative applications  
Film, Metal foil, PET bottle, Cloth, Fiber material

Film sticking test with TKS-250N

Models	TKS-20N	TKS-250N
Capacity(N)	20	250
Pin diameter(mm)	Approx. φ1	Approx. φ1
Pin weight(g)	Approx.22.2(Pin+Pin vice)	Approx.1.6
Mounting screw		M6

It is in accordance with JIS Z 1707(1998)

Bending Test Fixture  
GA-10N/5000N

GA-10N

○Representative applications  
Metal board, Plastic board, Carbon, Wire net, Ply wood board, Ceramic

The test example of metal material bending test with GA-10N.

Models	GA-10N	GA-5000N
Capacity(N)	500	5000
Weight(g)	Force gauge side: Approx.100	Force gauge side: Approx.120
Mounting screw	M6	M10

Durability Test Fixture  
PR-500N/2500N

PR-2500N

○Representative applications  
Retort pouch, Packing box, Food pack, Tube container

The test example of cardboard box durability test with PR-2500N.

Models	PR-500N	PR-2500N
Capacity(N)	500	2500
Measurable size(mm)	W194XD120XH105	W200XD140XH105
Weight(g)	Force gauge side: Approx.900	Force gauge side: Approx.3100
Mounting screw	M6	M10

PR-2500N: Partly in accordance with JIS Z 0238(1998)

Compression Test Fixture  
A-40/60, S-40/60

A-40

○Representative applications  
Cushioning materials, Cushion, Tablet, Ball, Spring

The test example of ball compression test with S-40.

Models	A-40	A-60	S-40	S-60
Capacity(N)	200	200	500	500
External diameter(mm)	φ40	φ60	φ40	φ60
Weight(g)	Approx.38	Approx.84	Approx.110	Approx.238
Mounting screw			M6	

Compression Test Fixture  
UR-8S/8M

UR-8S

○Representative applications  
Switch, Electrical components, Touch panel

The switch feeling test with UR-8S.

Models	UR-8S	UR-8M
Capacity(N)	50	50
Weight(g)	Approx.5.4	Approx.5.2
Hardness	ShoreA50	ShoreA40
Mounting screw		M6

※ Please note the fixture does not react to capacitance touch panels.

High Capacity Compression Test Fixture[disc type]  
PC series

PC series

○Representative applications  
PET bottle, Ball, Tablet, Plastic

The test example of PET bottle compression strength test with PC-5060.

Models	PC-5040	PC-5060	PC-5100
Capacity(N)	5000	5000	5000
External diameter(mm)	φ40	φ60	φ100
Weight(g)	Approx.160	Approx.330	Approx.820
Mounting screw		M10	

High Capacity Compression Test Fixture[rectangle type]  
SQ series

SQ series

○Representative applications  
Tablet, Plastic, Plastic Package

The test example of tablet strength test with PC-5060.

Models	SQ-5030	SQ-5075	SQ-5150
Capacity(N)	5000	5000	5000
寸法(mm)	30X20	75X50	150X100
Weight(g)	Approx.65	Approx.500	Approx.1560
Mounting screw		M10	

High Capacity Compression Test Fixture[spherical type]  
SP series

SP series

○Representative applications  
Cushioning materials

The test example of tablet strength test with PC-5060.

Models	SP-5010	SP-5020	SP-5030
Capacity(N)	5000	5000	5000
External diameter(mm)	φ10	φ20	φ30
Weight(g)	Approx.26	Approx.55	Approx.135
Mounting screw		M10	



# Attachments for Tensile Test

The grips are used for varieties of tensile test such as tearing tests, breaking tension test.

## Film Grip FC series

Ideal grips for gripping thin samples like film. The single side of grip of FC-21U/41U/21UQ is attached urethane. The grips can tightly hold the samples without the breakings. FC-21UQ is lever type. It makes easy to grip samples.

○Representative applications

Film Heat sealing Adhesive tape Magnetic card Substrate



The test example of 180 degree peeling test of adhesive tapes with FC-21

Models	FC-21	FC-20	FC-40	FC-21U	FC-41U	FC-21UQ
Capacity(N)	250	500	500	250	250	250
Features	Light type	up to 500N	Wide type up to 500N	One side urethane	Wide grip one side urethane	One side urethane with a lever
Aperture width(mm)	Approx.20	Approx.20	Approx.40	Approx.20	Approx.40	Approx.20
Aperture opening width(mm)	Max.2	Max.2	Max.2	Max.2	Max.2	Max.0.2
Weight(g)	Approx.25	Approx.73	Approx.125	Approx.40	Approx.70	Approx.50
Mounting screw			M6			

## Wire Clamp Grip CW-500N

The wedge type grip fixture. Easily but tightly hold wire/cable.

○Representative applications

Cable Wire



The test example of cable tension strength test with CW-500N..

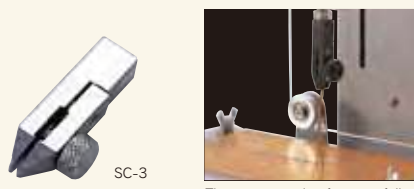
Models	CW-500N
Capacity(N)	500
Aperture opening width(mm)	Max.5
Weight(g)	Approx.220
Mounting screw	M6

## Small Grip SC-3/8

Ideal for gripping fine samples or measuring at narrow spaces.

○Representative applications

Electrical lead Copper foil



The test example of copper foil peeling test with SC-8.

Models	SC-3	SC-8
Capacity(N)	100	150
Aperture opening width(mm)	Max.1	Max.1
Weight(g)	Approx.20	Approx.21
Mounting screw	M6	

## Cam Grip GR-30/2000

Ideal for tension measurement for thin, small and rectangle shape samples. Easy setting steps, put sample and pull the lever. It promotes measuring efficiency.

○Representative applications

Rubber Tape Film



The test example of metal line tension strength test with GR-30.

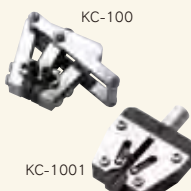
Models	GR-30	GR-2000
Capacity(N)	500	2000
Aperture opening width(mm)	Max.2	Max.4
Measurable width(mm)	Max.30	Max.50
Weight(g)	Approx.180	Approx.870
Mounting screw	M6	M10

## Wedge Grip KC series

Ideal for gripping wire, cable and so on. The gripping is as easy as promoting measuring efficiency. The holding mechanism is automatically becoming strong when pulling the sample. (It is not suitable for tempered samples.)

○Representative applications

Wire Cable Optical fiber cable Plastic Piece of metal



The test example of cable tension strength test with KC-1001.

Models	KC-100	KC-1001	KC-5000
Capacity(N)	500	1000	5000
Aperture opening width(mm)	Max.10	Max.2	Max.5
Weight(g)	Approx.330	Approx.95	Approx.565
Mounting screw	M6	M6	M10

## Pantograph Grip PGC series

It is easy to hold sample like a clothespin. The holding strength becomes strong when pulling the sample. It tightly grips changeable shape samples such as rubber or resin.

○Representative applications

Film Rubber Wire Cable Nonwoven fabric Plastic



The test example of rubber tension strength test with PGC-0510.

Models	PGC-0505	PGC-0510	PGC-2530
Capacity(N)	500	500	2500
Aperture opening width(mm)	Max.20	Max.15	Max.15
Weight(g)	Approx.170	Approx.110	Approx.750
Mounting screw			M10

※S-1 or SR-1 is required when mounting PGC-0510 and 0505 on a force gauge.  
※PGC-AD6 is required when mounting PGC-0510 and 0505 on a test stand.

## Fine Point Chuck FP-50/51

Ideal for fine line samples or measuring at narrow spaces.

○Representative applications

Textile Fur



The test example of metal line tension strength test with FP-51.

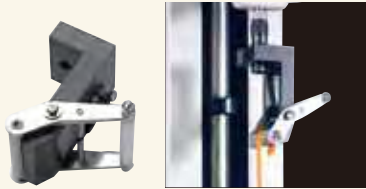
Models	FP-50	FP-51
Capacity(N)	100	50
Aperture opening width(mm)	Max.0.5	Max.0.5
Weight(g)	Approx.19	Approx.8
Mounting screw	M6	

## Tape Grip GC-60/100

Ideal for elastic or changeable shape samples such as rubber, film and tape. The holding strength is hardy by winding sample around the grip. It holds the sample properly.

○Representative applications

Rubber Film



The test example of rubber tape tension strength test with GC-60.

Models	GC-60	GC-100
Measurable width(N)	500	500
Measurable width(mm)	Max.30	Max.50
Aperture opening width(mm)		Max.2
Weight(g)	Approx.158	Approx.300
Mounting screw	M6	

## Wire Wrapping Grip GC-30,WC-2000

Wind and hold line samples such as string and wire. The applied force on the sample is spread due to the winding hold. It helps to prevent sample from breaking.

○Representative applications

Textile Wire Fur



The test example of fiber tension strength test with GC-30,WC-2000

Models	GC-30	WC-2000
Capacity(N)	500	2000
Diameter of bolt(mm)	M10	M16
Measurable line diameter(mm)	Max. φ 1	Max. φ 2
Weight(g)	Approx.136	Approx.900
Mounting screw	M6	M10

## Hook for Corrugated Cardboard Adhesion Test DF-60

Special measuring attachment for corrugated card board opening strength.

○Representative applications

Corrugated cardboard



The test example of corrugated card board opening strength test with DF-60

Models	DF-60
Capacity(N)	250
Width(mm)	Approx.60
Weight(g)	Approx.145
Mounting screw	M6

## Knurled Cam Grip GP-15/30

Ideal for soft samples like resin becoming thin when it stretches. It reduces the sample breaking with the knurled cam style.

○Representative applications

Rubber Cable Silicone Elastomer



The test example of rubber tube tension strength test with GP-15

Models	GP-15	GP-30
Capacity(N)	250	1000
Aperture opening width(mm)	Max.4.5	Max.10
Weight(g)	Approx.70	—
Mounting screw	M6	—

## Grip and Fixture for Tensile Strength Test of Sewed Buttons BC-15/PGC-BC

Ideal for measurement of cloth button sewed strength. It is possible to grip a button up to 15 mm diameter. The measuring efficiency is improved with the simple sample mounting.

○Representative applications

Cloth button



Models	PGC-BC	Models	BC-15
Capacity(N)	300	Capacity(N)	300
Aperture opening width(mm)	Max.20	Measurable diameter(mm)	Max. φ 15
Weight(g)	Approx.125	Measurable height(mm)	Max.3.5

# Attachments for Compression and Tension Test

Convertible type attachments for compression and tension test

## Pin Grip CP-150N

Ideal for gripping thin wire shape sample (cylindrical shape sample). Suitable for compression and tension test at a narrow space or low capacity measurements.

○Representative applications

Wire Optical fiber



The test example of wire tension strength test with CP-150N

Models	CP-150N
Capacity(N)	150
Aperture opening width(mm)	Approx. φ 0~3.2
Weight(g)	Approx.22
Mounting screw	M6

## Flat Chuck GC-1100/1200/5000

The large opening width chuck fixtures. They can grip varieties of thickness. Thin things and thick things are able to be gripped.

○Representative applications

Connector Cable Fastener Booklet Plastic Piece of metal

Models	GC-1100	GC-1200	GC-5000
Capacity(N)	1000	1000	5000
Aperture opening width(mm)	Max.10	Max.20	Max.30
Weight(g)	Approx.160	Approx.170	Approx.1400
Mounting screw	M6	M6	M10

## Jacob's Chuck GC-5/15

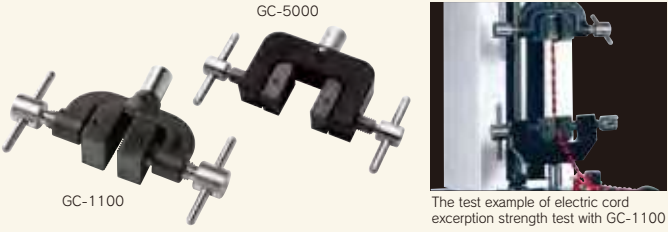
It is suitable for gripping a round stick shape sample. The chuck shape prevents the sample from slipping.

○Representative applications

Plastic



Models	GC-5	GC-15
Capacity(N)	500	1000
Aperture opening width(mm)	Approx. φ 0.5~6.5	Approx. φ 2.0~13
Weight(g)	Approx.235	Approx.500
Mounting screw	M6	



The test example of electric cord exception strength test with GC-1100



## Attachments for Wire Harness Test

It can be used as a simple harness tester to combine a force gauge, a test stand and attachments for wire harnesses. The combinations are available for various size harnesses.

~500N

### Included Attachments in A Manual Wire Clamp Pull Tester[LH-500N(P42)]

#### Terminal clamp jig

Speedy sample setting is possible by hooking a crimp terminal.



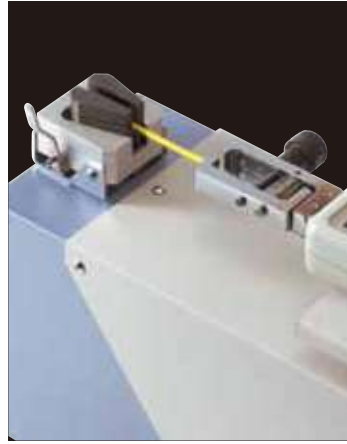
Models	CH-500N
Capacity(N)	500
Aperture opening width(mm)	Max.6
Weight(g)	Approx.210
Mounting screw	M6

#### Wire clamp jig

The wedge type clamp tightly grips wire and cables by only pulling the lever.



Models	CW-500N
Capacity(N)	500
Aperture opening width(mm)	Max.5
Weight(g)	Approx.220
Mounting screw	M6



~1000N

### Attachments for Vertical Test Stands

#### Rotary wire terminal jig

It is approved for sample diameters from 1mm to 8mm.



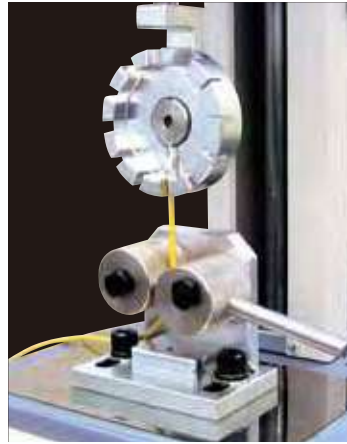
Models	FW-12
Capacity(N)	1000
Measurable diameter(mm)	φ 1~8
Weight(g)	Approx.380
Mounting screw	M6

#### Wire clamp jig

Knurled cam grip. It prevents the wire breaking.



Models	GP-30
Capacity(N)	1000
Aperture opening width(mm)	Max.10
Weight(g)	Approx.880



~5000N

### Attachments for High Capacity Measurements

#### Wire terminal jig

It is approved for terminal hole inside diameters from φ 4 to φ 12.



Models	CH-5000N
Capacity(N)	5000N
Measurable diameter(mm)	φ 4~12(Internl diameter of the terminal hole)
Weight(g)	Approx.315
Mounting screw	M10

#### Wire clamp jig

The reduced design for wire coating breaking



Models	CW-5000N
Capacity(N)	5000
Measurable diameter(mm)	Max. φ 30(Cable diameter)



When using CH-5000N and CW-5000N together, the measurement is partly in accordance with JIS C 2805 (2010)

## Attachments for Peeling Test

Peeling strength tests (adhesive strength tests) for sticky tapes and coating surfaces.

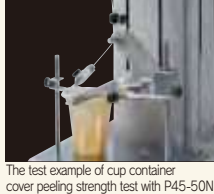
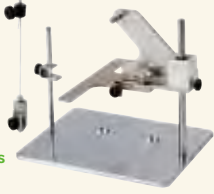
45 Degree Peel Test Fixture

P45-50N

Ideal for peeling test of cup container film covers. It keeps the peeling degree at 45 degree which is almost same as opening a cup container.

Representative applications

Film for cup container



Models	P45-50N
Capacity(N)	50
Measurable size(mm)	Height: Approx. 10~100 Diameter: Approx. 20~140
Chuck opening width(mm)	Max.2

It is partly in accordance with JIS S 002(2001).

180 Degree Peel Test Fixture

P180-200N

Ideal for 180 degree peeling test for adhesive tape and so on.

Representative applications

Adhesive tape



Models	P180-200N
Measurable force(N)	0.5~200
Measurable size(mm)	Length: Max.150 Width: Max.40

It is partly in accordance with JIS Z 0237(2009).

Coating Surface Peeling Test Attachment

TH-1000N/5000N

It is ideal for peeling test of coating surfaces. It is including 5 peeling heads.

Representative applications

Painted surface

Models	TH-1000N	TH-5000N
Capacity(N)	1000	5000
Upper fixture	Adhesive area shape Diameter20mm	Diameter20mm
(Force gauge side)	Weight (g) Approx.90	Approx.195
Mounting screw	M6	M10
Lower fixture	The center hole diameter (mm) Diameter30	Diameter30

It is partly in accordance with JIS Z 5600-5-7(1999)

90 Degree Peel Test Fixture

P90-200N/200N-EZ

Ideal for 90 degree peeling test for adhesive tape and so on. P90-200N keeps the peeling degree at 90 degree. The moderated price model is P90-200N-EZ.

Representative applications

Adhesive tape, Copper foil, Magnetic card, Poulitice



Models	P90-200N	P90-200N-EZ
Measurable force(N)	~200	0.4~200
Measurable size(mm)	Length: Max.155 Width: Max.80	

P90-200N is partly in accordance with JIS Z 0237(2009) and JIS C 5016(1994)

Rubber Roller for Peel Test

APR-97

It helps more accurate peeling test by applying stable pressure to stick samples.



Models	APR-97
The roller weight(g)	Approx.2000
The sample contacting part material	Rubber(Hardness A80)

It is partly in accordance with JIS Z 0237(2009)

## Attachments for Coefficient of Friction

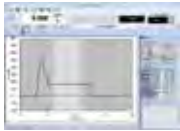
The included software automatically calculates Coefficient of Kinetic friction and coefficient of Static friction and draws graphs.

Representative applications

Paper, Film, Panel

Models	COF2-2N	COF2-10N	COF-2N-V	COF-10N-V
Compatible test stand	Horizontal type MH2		Vertical type ※1	
Weight of the weight part(g)	200	1000	200	1000
Measurable size(mm)		Thickness: Max.1.5	Length: Max.150	

※1 Some vertical test stand can be not attached the fixture. Please contact us if you need the details. COF-2N,COF-2N-V is partly in accordance with JIS K 7125(1999).



The test example of paper coefficient of friction test with COF2-10N

## Fixture for Shear Test

Fixture Set of Shear Test

LF

The fixture set for shear test of QFP lead and chip components. The X-Y stage can set the test position precisely.

Hook attachment for 45 degree lead QFP-45-1

Representative applications

QFP lead, Tip component

Models	LF
The set content	For QFP lead strength test: ① Hook attachment / QFP-45-1 ② 45 degree table / QFP45-2 For soldered chip shearing test: ③ 90 degree chip shear attachment / TIP90-1 ④ 90 degree table / TIP90-2 For QFP lead strength test and soldering shearing test: ⑤ XY table / QFP-1
Capacity(N)	100
Table dimensions	200X150
Weight(g)	① QFP45-1: Approx.60g ③ TIP90-1: Approx.50g

It is in accordance with JIS Z 3198-6(2003), JIS Z 3198-7(2003)



Chip Peeling Fixture

GT-10/20

Ideal for peeling (shearing) test for soldered or adhesive electric components.

Representative applications

Electrical component, Flange cap

Models	GT-10	GT-20
Applying force	for Tension	for Compression
Capacity(N)		500
Weight(g)		Approx.34
Mounting screw		M6



The test example of chip peeling strength test with GT-10



Other Attachments

Vice Grip GT-30 / 2000N

It is possible to fix a sample by mounting on a vertical type test stand.



GT-30




The test example of tensile strength of test of resin molding item.

Models	GT-30	GT-2000N
Capacity(N)	1000	2000
Aperture opening width(mm)	Max.38	Max.64
Mounting	to Test stand table	

XY Table XY-500N

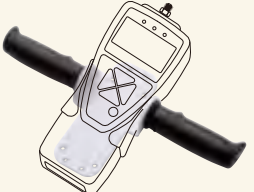
It makes a sample put at the center with precise adjustment for X direction and Y direction.



Models	XY-500N
Capacity(N)	Tension:500 Compression:1000
X-Y movement amount	±30
Mounting	to Test stand table

Optional Handle for Force Gauge FOH-1

It can mount on a force gauge with screws. It enables to apply stable force by mounting on a force gauge.



Models	FOH-1
Compatible model	1000N or less range of ZTA/ZTS/DS2/PSS/PS/PSM/FS/FB series
Weight(g)	Approx.500

Conversion Adapter CA series

The screw diameter of test shafts mounting attachments is different by force gauges. The conversion adpoter enables to mount various attachments.

Models	Screw diameter	Capacity	Purpose
CA-F6T4	M6(Female Screw)→M4	100N	When mounting a M4 screw attachment of FRT to a M6 screw thread of a force gauge.
CA-F6T10	M6(Female Screw)→M10	500N	When mounting a M10 screw attachment to a M6 screw thread of a force gauge.
CA-F10T6	M10(Female Screw)→M6	500N	When mounting a M6 screw attachment to a M10 screw thread of a force gauge.
CA-F4T6	M4(Female Screw)→M6	100N	When mounting a M6 screw attachment to FRT series.
CA-F5T4	M5(Female Screw)→M4	100N	When mounting a M4 screw attachment to a M5 screw thread of Load cell LMU series.
CA-F5T6	M5(Female Screw)→M6	500N	When mounting a M6 screw attachment of FRT series to a M5 screw thread of a load cell LMU series.
CA-8T4	M8→M4	100N	When mounting a M4 screw attachment of FRT series to M8 screw thread of a load cell LU series. ※It does not mount to a T nut.
CA-8T6	M8→M6	500N	When mounting a T nut / M8 screw thread of load cell LU series to M6 screw attachment.
CA-8T10	M8→M10	2000N	When mounting a T nut / M8 screw thread of load cell LU series to M10 attachment.

Self-centering Vice Grip GTW-50R / 50L

Self-centering vice when gripping a sample. High operability knob type and strong holding lever type.



Knob type

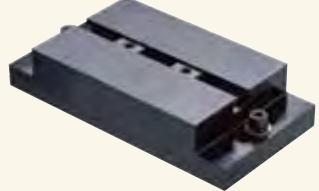


Lever type

Models	GTW-50R	GTW-50L
type	Knob type	Lever type
Capacity(N)	500	1000
Aperture opening width(mm)	Max.68	
Mounting	to Test stand table	

T-Slot Table TS-5000N

The attachment for holding fixture. It can easily be attached and removed fixtures.



Models	TS-5000N
Capacity(N)	5000
Diameter of T-nut hole	M8
The space between T-nuts	Max.125
Movement amount(mm)	X: ±64 Y: ±15
Mounting	to Test stand table

Attachment Adapter JF / EJ series

The mounting adapter for grip type attachment for tension test. They helps smooth sample fixation and precise adjustments of gripping positions and angle.



JF6-50N



EJ6-1000N

Models	JF6-50N	EJ6-1000N	EJ10-5000N
Capacity(N)	50	1000	5000
Mounting screw for a force gauge	—	M6	M10
Mounting screw for a chuck fixture	M6	M6	M10
Weight(g)	Approx.8	Approx.29	Approx.140

※Please contact us the detail that which attachment is available.  
※A-1/S-1/SR-1 is required for attaching JF6-50N to mount on a force gauge.



Eye Bolt and Eye Nut for Load Cells


Hoisting attachment for tension test by mounting on load cells.

for Load Cell DPU series


Eye Bolt EB series

It makes a sample or a load cell hang by catching a hook, chain, rope and so on.

Models	EB-500N-M6	EB-2000N	EB-20kN
Compatible load cell	DPU-5N~500N	DPU-1000N/2000N	DPU-10kN/20kN
Capacity	500N	2000N	20kN
Weight(g)	Approx.18	Approx.137	Approx.1100
How to mount	M6 Male Screw	M12 Male Screw	M18 Male Screw



EB-2000N




EB-20kN

for Load Cell LU series

Eye Bolt EB-500N-M8

It makes a sample or a load cell hang by catching a hook, chain, rope and so on.

Models	EB-500N-M8
Compatible load cell	LU series
Capacity(N)	500
Weight(g)	Approx.39
Mounting screw	M8 Male Screw




EB-500N-M8

Rod End[for shafts] RE-20kN

Use by getting through a shaft.

Models	RE-20kN
Compatible load cell	DPU-10kN, DPU-20kN
Capacity(kN)	20
Weight(g)	Approx.300
Mounting screw	M18 Male Screw




RE-20kN

for Load Cell LMU series

Eye Nut EN-500N

It makes a sample or a load cell hang by catching a hook, chain, rope and so on.

Models	EN-500N
Compatible load cell	LMU series
Capacity(N)	500
Weight(g)	Approx.11
Mounting screw	M5 Female Screw



EN-500N

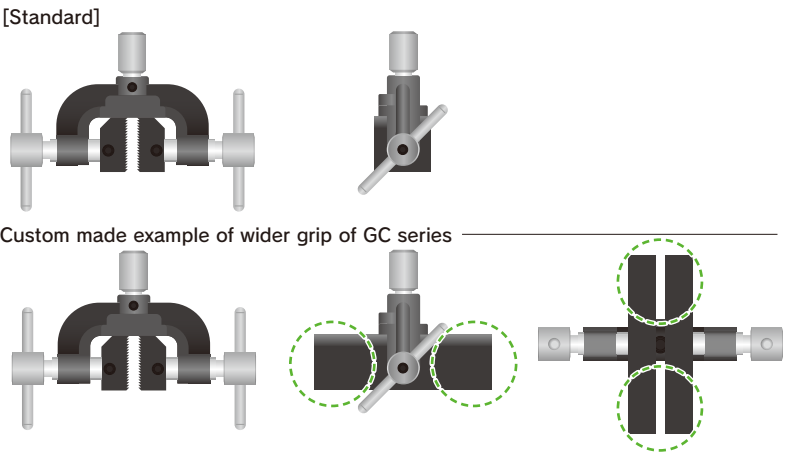
Custom Order Examples

1.Size Change of Regular Size Attachment

[Example. GC-1200 series Length change of grip part]

It is possible to change the sample grip width and length.

The size change is available for compression attachment PR series, Film grip FC series and others. Please contact us if need the details.

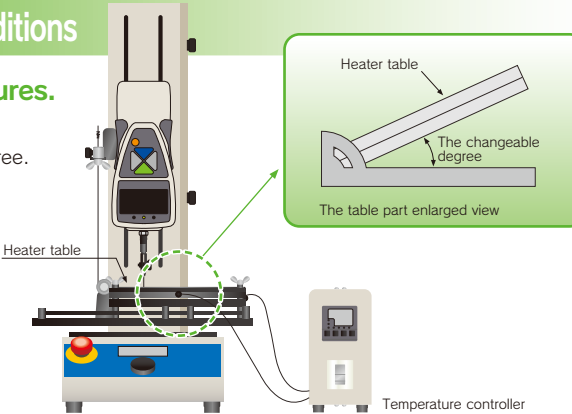


2.Specification Change of A Variety of Measurement Conditions

●Condition change for the measuring angles and temperatures.

[Example: Specification change of peeling test fixture]

The peeling degree can be changed from the fixed one degree to changeable degree. Besides, it is possible to heat the test stand table by combing a heater.



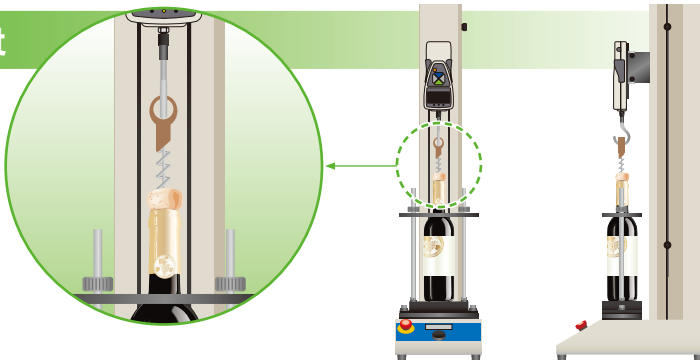
●Measurements in accordance with standards such as Japanese Industrial Standard, ISO or ASTM.

The testers which is approved for measuring conditions of standards ( measuring speed / fixture design and so on) can be made.

3.Completely Original Product

[Example: Cork excerpption measuring unit]

We accept to make the special use fixture for your sample. Improve the measuring repeatability and efficiency.





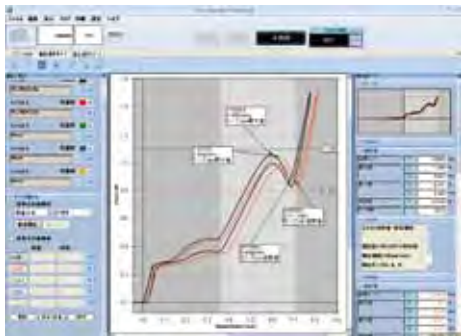
# FSA series Force-Displacement Unit

## Simple but High-performance Measurement Unit for Force and Displacement Analysis.

Measure change amount (displacement) of sample for compression (tension) force.  
It is ideal for tactile test and material characteristic evaluation.



## Draw Graphs of The Relationships of Force and Displacement (Max.2000Hz)



### Standard Functions of Force-Displacement Measurements

- Easy connecting to PC by USB
- Smooth graphing performance by the capturing speed 2000 data/ sec
- Graph zooming function
- Possible to insert comments on graphs
- Easy output the graphs to WORD, EXCEL, PDF

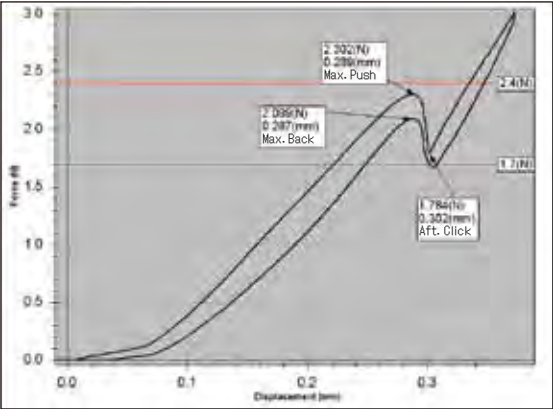
### Useful Functions for Measurements and Analysis

- Graph comparing function Max 5 graphs.
- Reference line function
- Automatic output function for the maximum/ minimum/ average values.
- Automatic displacement reset function at the measurement start (when the force reaches to the user setting force)
- Automatic saving start function of the software (when the force reaches to the user setting displacement)

## The Advantage of Measuring Displacement and Force Together.

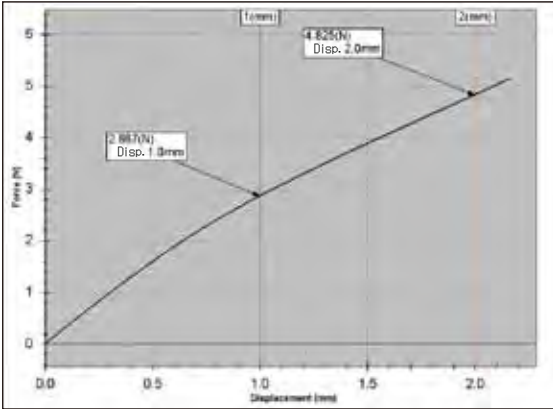
It is ideal for tactile test and material characteristic evaluation.

### Example of A Switch Characteristic Evaluation



Force-Time graph continues to be drawn the curve for the right side. While, Force-Displacement graph is based on "Displacement". It is therefore, the curve returns to left side. It helps to identify the hysteresis (the returning to zero).

### Example of Plastic Bending Test



Measuring displacements means identification of the shape change amount. It is easy to check "How much is the force when the sample is transformed at specific size (change the shape)".

### Other Test Examples

- Spring characteristic simple evaluation
- Rubber product characteristic simple evaluation
- Cushioning material repulsion test
- Car cushion hardness test

- Fitting quality test of cosmetic containers
- Extract test of connectors
- Peeling test with distance of tape and films
- Compression and Breaking test for electric components

- Pulling test for slide structures.
- Repulsion test for sport equipment (Tennis ball)
- Food texture test
- LCD panel strength test

A lot of force measurements are introduced on our website by types of force or industries.  
Each product specification is possible to download from the website. Please feel free to contact us.  
●IMADA service group telephone number: +81(0)532-33-3288

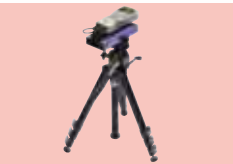
IMADA Search  
<http://www.forcegauge.net/en/>

# Varieties of Line-up for Varieties of Purpose

- Simple**
  - Simple operation
  - Simple wire connecting
- Accuracy**
  - High speed sampling rate 2000Hz captures measuring data accurately.

## Portable Type (Knob type the capacity is up to 50N)

It realizes various measurements with several types of the installations.



It can be used in various places for various purposes with a tripod.  
※The adaptor to mount on the tripod is separately sold.



**FSA-MSL- 2~50N**

## Compact Type (Motorized type the capacity is up to 500N)

- The sample maximum height 235mm(※1)
- Speed: 10-300mm/min



**FSA-0.5K2- 2~500N**

## Accurate Type (Motorized type the capacity is up to 1000N)

- The sample maximum height 320mm(※1)
- Speed: 0.5-600mm/min
- Digital setup of measuring travel.
- Memory of 5 operating patterns.



**FSA-1KE- 2~1000N**

## High Capacity Type (Motorized type the capacity is up to 2500N)

- The sample maximum height 320mm(※1)
- Speed: 10-300mm/min



**FSA-2.5K2- 2~2500N**

## The Other Combinations Are Also Possible. Please Feel Free to Contact Us.

Measurement unit	Force	N, kgf, lbf ※
	Displacement	mm, inch ※
Range	2N(200gf), 5N(500gf), 20N(2kgf), 50N(5kgf), 100N(10kgf), 200N(20kgf), 500N(50kgf), 1000N(100kgf), 2500N(250kgf)	
Resolution	Force	4 digit (e.g. Resolution of 5N force gauge is 0.001N)
	Displacement	0.001mm (on software; Force Recorder Professional) 0.01mm (on force gauge display)
Accuracy	Force	+/-0.2% F.S. +/-1digit
	Displacement	+/-0.1mm +/-1 digit (with no load)
Sampling rate	2000 data/sec	
Output	USB, Serial(RS232C), Analog(Approx. +/-2V), Comparator, Overload, Sub comparator, USB flash drive * USB flash drive is not included.	
Accessories	Instruction manual, Inspection certificate, Power cable, 2 pcs of spare fuses, Driver CD-ROM(including software for data log "ZT-Logger"), Graphing software "Force-Recorder Professional".	

**Note:** ①Actual measuring capacities are depending on the force gauge capacities. However, measurements are based on test stand capacities when the test stand capacities are less than the force gauge capacities.(※1)The maximum height means the distance between the test stand table and the thread of the force gauge ZT series general type(1000N or less)at the highest position of the test stand head. The distance is not including attachments. The distance of FSA-2.5K2 is in case of mounting ZT series high capacity type. ※The unit is different from Japanese domestic models.



# Special Testers

## Special Testers for Improving The Measuring Efficiencies and Labor Saving.

Each measuring instrument is specialized in texture analysis/ peeling test/ wire harness test. They improve the measuring efficiency and the labor saving.

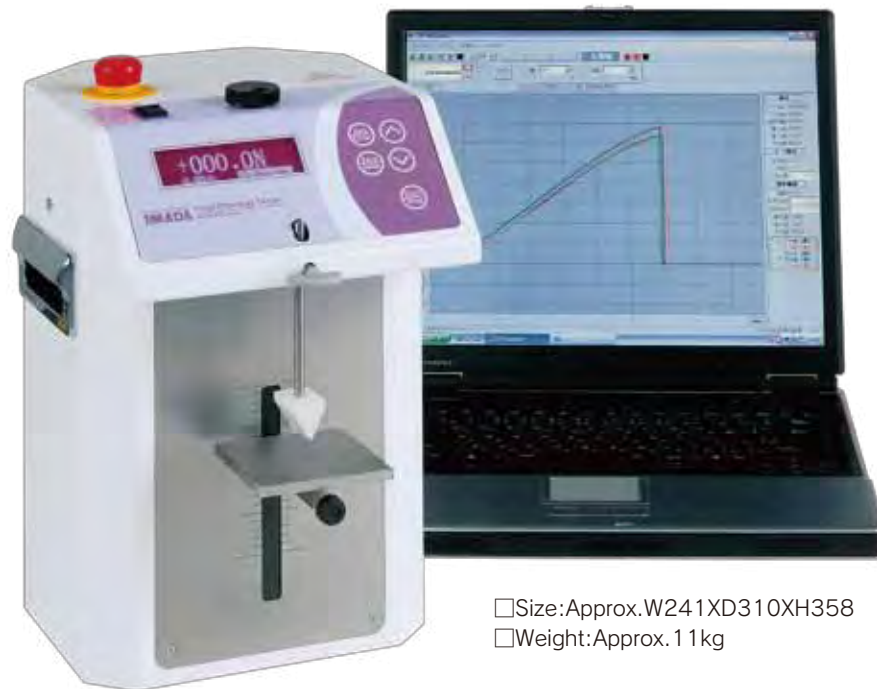


Texture Analyzer

## Food Rheology Tester FRT series

Digitize food textures

Firmness Viscosity Elasticity Texture etc.



### Simple Operations

- Easy measuring setting by the simple operations
- Simple installation

#### 1 Mount a probe.



#### 2 Set the stop position.



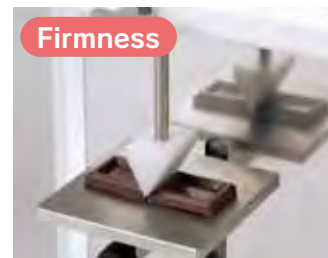
#### 3 Program the measuring activity.



Press the START and the test starts.

Model	FRT-5N	FRT-50N	FRT-100N
Capacity	5N	50N	100N
Accuracy	±0.2%F.S.±1digit		
Movable range of the table	Approx.100mm		
Distance travel error	±0.03 mm or less		
Deflection of rigidity	0.25mm or less		
Test speed	0.1~10mm/sec		
Speed variation	±1% or less for set speed		
Accessory	Power cable/ Driver CD-ROM/USB cable/ZP-Recorder (Graph drawing software), 4pcs probe/ Inspection certificate		

#### Firmness



**Cookies and Chocolate**  
Test the firmness of sample from cracking or bending force

#### Viscosity



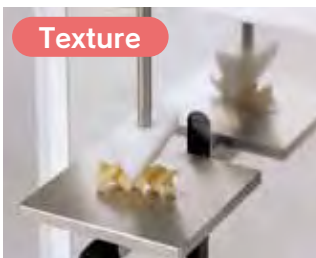
**Cheese**  
Test the viscosity from sample adhesive strength.

#### Elasticity



**Jerry and Sponge cake**  
Test the elasticity from repulsive force for pushing in.

#### Texture



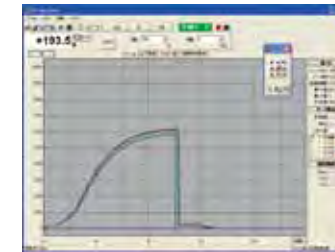
**Noodles such as pasta.**  
Test chewing texture of noodle from the firmness change.

### Ideal for food texture analysis.

The most important factor of food is "Deliciousness". The "Deliciousness" is composed of flavor, savory and texture. Texture is mainly mastication, firmness to the tooth, feeling to the tongue and so on. It is expressed with food material characteristic and human feeling characteristic. The material characteristic is assorted into mechanical characteristic, geometry characteristic and others. FRT can measure mechanical characteristic such as firmness, elasticity, adhesion and so on.

### High-performance Analysis

- Measuring data can be drawn into a graph in real time by high speed sampling rate 1000Hz during using the included software.



### Hygienic Design

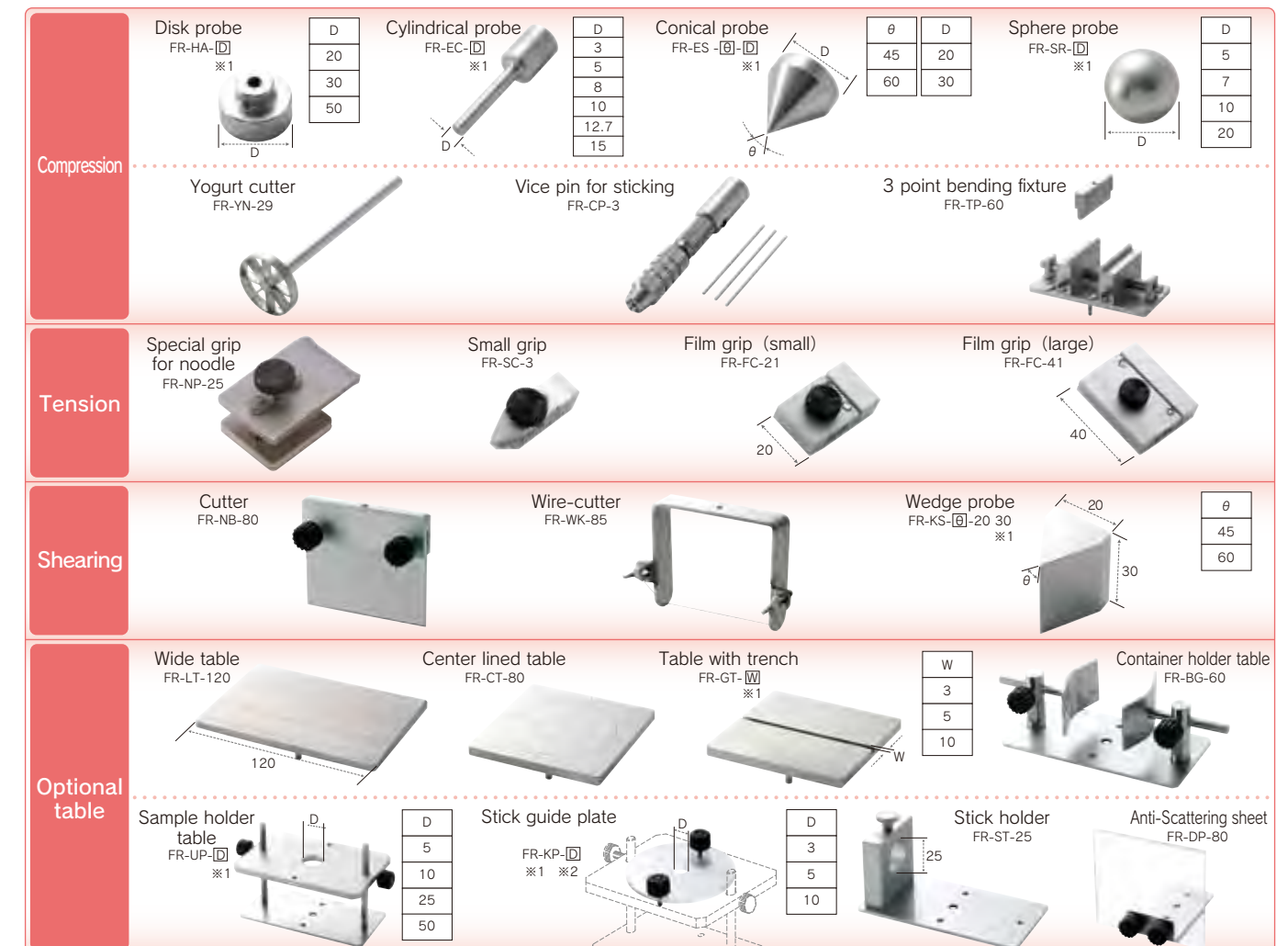
- Easy care design based on hygienic considerations.



### Included Standard Probes



### Separately Sold Probes and Tables Which Help Various Tests



Other probes and tables are also available for users' measurements. The custom order is acceptable. Please feel free to contact us.  
※1 Please choose designated length in □ when you order. ※2 Sample holder table is required when using Stick guide plate.




180 Degree Peel Tester


# IPT 200 series

- It is ideal for peeling test such as cover film or tape of emboss carrier.
- The included software automatically draw graphs from the measuring results and calculate minimum, maximum and average values.

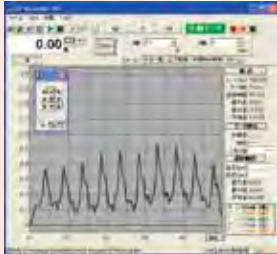
The Specialized Peeling Test Design=Easy Manipulation→Improve The Measuring Efficiency



Set a sample



Program the measuring speed and start the measurement by pressing the start button.



The included software creates the graph. It also automatically calculate the statics.

- Cover film peeling test of emboss carrier tape→IPT200-5N  
[It is possible to measure partly in accordance with JIS C0806-3(2010)]
- Tape or Film peeling test 5N or more.→IPT200-20N/50N

Model	IPT200-5N	IPT200-20N	IPT200-50N
Capacity	5N(500gf)	20N(2kgf)	50N(5kgf)
Accuracy	±0.2%F.S. ±1 digit		
Display	4 digit		
	5.000N	20.00N	50.00N
Testing speed	120, 300, 500, 1000, 1500mm / min (switchable)		
Peel angle	165-180 degree (Height and angle are adjustable.)		
Testable width of samples	8 to 88mm	1 to 20mm	
Testable thickness of samples	0.5mm at maximum	0.2mm at maximum	
Accessory	Driver CD-ROM, ZP-Recorder (graph drawing software), Power cable, Inspection certificate, Instruction manual Clamp attachments ※1		

※1 The attachments are different between 5N model and 20/50N model.



Size:Approx. W710XD300XH126mm  
Weight:Approx. 1.1kg


The example of peeling strength test of emboss carrier cover tape.

Crimp Tester


# LH-500N

- It is ideal for tensile strength test of crimped terminal.


The Specialized Wire Harness Test Design=Easy Manipulation→Improve The Measuring Efficiency



Only hook for terminals



Only grip wire by lever operation



Measurement finishes by pulling up the lever.

Included Attachments

**CW-500N Wire Clamp fixture:**  
Wedge system design. It is possible to grip tightly by pulling the lever.

**CH-500N Terminal Clamp fixture:**  
It is wide size fixture as gripping a crimp contact.

Model	LH-500N
Capacity	500N
Accessory	Terminal Clamp Fixture:CH-500N Wire Clamp Fixture:CW-500N * Force gauge is not included.



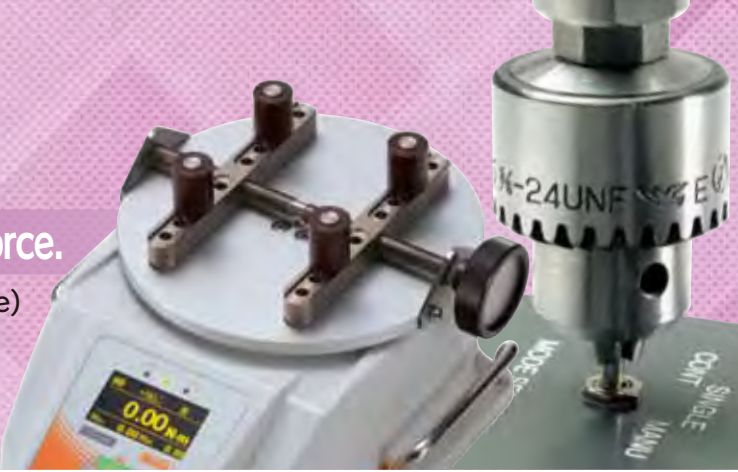
Test example of crimp contact strength test with LH-500N

Size:Approx. W155XD450XH182mm  
Weight:Approx. 1.1kg

# Torque Gauge

## Torque Gauge Measuring Rotating/Twisting Force.

“Torque” means twisting moment (rotating/twisting force) at object turning. The unit is N-m or N-cm. It is possible to measure by IMADA torque gauge, easily and accurately.



### Hand Use

To Page 45

## HTGS/HTGA series

- Capacity 2N-m~10N-m

It realizes torque measurements of Tighten/Loosen screws or bolts or turning rotary switches.



The test example of door knob turning force



The test example of rotary switch click feeling test with HTGS.

### Screw Cap Torque Tester

To Page 45

## DTXS/DTXA series

- Capacity 2N-m~10N-m

Measure screw cap Opening/Closing torque of beverages, food containers, cosmetic containers and so on.



The test example of lipstick container turning force



Screw cap opening torque test with DTXS.

### Automatic Torque Tester

To Page 46

## MTG series

- Capacity 2N-m~10N-m

Measurements with high repeatability are possible by the uniform speed rotating with the electric motor.



The test example of a circuit board twisting strength test with MTG.

### Attachment

To Page 46

## Torque Gauge Attachments

Replaceable attachments of torque gauges. They realize to measure various samples twisting endurance and tighten/loosen torque for bottles, screws, bolts and so on.



A lot of force measurements are introduced on our website by types of force or industries. Each product specification is possible to download from the website. Please feel free to contact us.  
●IMADA service group telephone number: +81(0)532-33-3288

IMADA Search  
<http://www.forcegauge.net/en/>



# HTGS/HTGA series

□Size(The indicator only) : Approx. W75XD34XH188mm  
□Weight(The indicator only) : Approx. 490g  
※This product is NOT including the attachment on the top of the gauge.



## Accurate

- Capture accurate values by high speed sampling rate 2000Hz.
- The bearing support thread reduces the bending, compressing and tensile influences during measurements.

## Measurement Efficiency

- Capture the maximum torque easily by the peak hold function.
- Easy torque checking by OK·NG function.

## Varieties of Torque Can Be Measured

- Measurements for various samples are possible due to the replaceable attachments. Please refer to Page 46.

### HTGS

Standard Type



Check Torque Changing on Graphs  
Software Force Recorder — To Page 17



Print The Results  
Printer DP-1VR — To Page 20  
+Cable CB-308 — To Page 19

Model	Capacity	Display
HTGS-2N	2N-m(200N-cm)	2.000N-m(200.0N-cm)
HTGS-5N	5N-m(500N-cm)	5.000N-m(500.0N-cm)
HTGS-10N	10N-m(1000N-cm)	10.00N-m(1000N-cm)
HTGA-2N	2N-m(200N-cm)	2.000N-m(200.0N-cm)
HTGA-5N	5N-m(500N-cm)	5.000N-m(500.0N-cm)
HTGA-10N	10N-m(1000N-cm)	10.00N-m(1000N-cm)

Accuracy	± 0.5%F.S. ± 1 digit
Unit of measurement	N-m, N-cm, kgf-m, kgf-cm, lbf-in, ozf-in(※1)
Display	4-digit Organic EL
Sampling rate	2000 data / sec at maximum
Function	Customized display (header and footer), Peak hold (clockwise and counter-clockwise), Internal 1000 points data memory, Comparator (judgment of OK or NG), Reversible display, Sign inversion, Zero clear timer, +NG alarm, Off timer (auto power off), Dumping, Time display, 1st/2nd peak (only for HTGA), Angle detection at torque peak value (only for HTGA)(※2), Angle zero reset at selected torque (only for HTGA)(※2)
Output	USB, RS232C, Mitutoyo digimatic (※3), 2 VDC analog output (D/A), Comparator 3 steps (+NG/OK+NG), Overload alarm, Sub comparator 2 steps (output of large or small judgment) (only for HTGA), USB flash drive (only for HTGA), Angle displacement (only for HTGA)(※2)
Accessory	CD driver (including simple software for data logging), USB cable, AC adapter, Carrying case, Instruction manual, Inspection certificate, L wrench, Force Recorder Professional 1 trial version, Handles (10N-m range only), USB flash drive adapter (only for HTGA)(※4)

※1 These are the specifications for International model. Please note that this unit is different from Japanese domestic model.  
※2 Angle(displacement) scale is necessary to valid this function.  
※3 Not always available for Mitutoyo digimatic products.  
※4 USB flash drive is not included.

### HTGA

Direct data saving to USB flash drive (100 data/sec) continuously

## Screw Cap Torque Tester

# DTXS/DTXA series



## Accurate

- Capture accurate values by high speed sampling rate 2000Hz.
- Reduce the weight influences by the bearing which supports the table. It makes the torque measurements more accurate.

## Measurement Efficiency

- Manual type screw cap tester. High measuring efficiency.
- Capture the maximum torque easily by the peak hold function.
- Easy torque checking by OK·NG function.

## Varieties of Torque Can Be Measured

- Standard Table and Standard Pins are included. Measurements for various samples are possible due to the replaceable attachments. Please refer to Page 46.

### DTXS

Standard Type



Check Torque Changing on Graphs  
Software Force Recorder — To Page 17



Print The Results  
Printer DP-1VR — To Page 20  
+Cable CB-308 — To Page 19

Model	Capacity	Display
DTXS-2N	2 N-m (200N-cm)	2.000N-m (200.0N-cm)
DTXS-5N	5 N-m (500N-cm)	5.000N-m (500.0N-cm)
DTXS-10N	10N-m (1000N-cm)	10.00N-m (1000N-cm)
DTXA-2N	2 N-m (200N-cm)	2.000N-m (200.0N-cm)
DTXA-5N	5 N-m (500N-cm)	5.000N-m (500.0N-cm)
DTXA-10N	10N-m (1000N-cm)	10.00N-m (1000N-cm)

Accuracy	± 0.5%F.S. ± 1 digit
Unit of measurement	N-m, N-cm, kgf-m, kgf-cm, lbf-in, ozf-in(※1)
Display	4-digit Organic EL
Sampling rate	2000 data / sec at maximum
Function	Customized display (header and footer), Peak hold (clockwise and counter-clockwise), Internal 1000 points data memory, Comparator (judgment of OK or NG), Reversible display, Sign inversion, Zero clear timer, +NG alarm, Off timer (auto power off), Dumping, Time display, 1st/2nd peak (only for DTXA), Angle detection at torque peak value (only for DTXA)(※2), Angle zero reset at selected torque (only for DTXA)(※2)
Output	USB, RS232C, Mitutoyo digimatic (※3), 2 VDC analog output (D/A), Comparator 3 steps (+NG/OK+NG), Overload alarm Sub comparator 2 steps (output of large or small judgment) (only for DTXA), USB flash drive (only for DTXA), Angle displacement (only for DTXA)(※2)
Accessory	CD driver (including simple software for data logging), USB cable, AC adapter, Carrying case, Instruction manual, Inspection certificate, L wrench, Force Recorder Professional 1 trial version, Handles (10N-m range only), USB flash drive adapter (only for DTXA)(※4)

※1 These are the specifications for International model. Please note that this unit is different from Japanese domestic model.  
※2 Angle(displacement) scale is necessary to valid this function.  
※3 Not always available for Mitutoyo digimatic products.  
※4 USB flash drive is not included.

### DTXA

Direct data saving to USB flash drive (100 data/sec) continuously

# MTG series

□Size : Approx. W433 × D322 × H524 (without the main shaft.)  
□Weight : Approx. 17kg



## High Repeatability

- Uniform speed rotating by the electric motor realizes high repeatable measurement.

Model	Capacity	Display
MTG-2N	2N-m	2.000N-m
MTG-5N	5N-m	5.000N-m
MTG-10N	10N-m	10.00N-m
MTG-200Nc	200N-cm	200.0N-cm
MTG-500Nc	500N-cm	500.0N-cm
MTG-1000Nc	1000N-cm	1000N-cm

Accuracy	±/-0.5% F.S. ±/-1 digit
Unit of measurement	N-m/kg-m/lb-in, or N-cm/kg-cm/lb-in
Display	4-digit LCD
Sampling rate	1000 data / sec.
Allowable diameter of samples	φ 20 to φ 90mm: Upper (Cap) side φ 20 to φ 180mm: Down (Table) side
Allowable height of samples	80 to 240mm
Testing speed	3 to 90 degree / sec.
Mode	Normal mode: Rotates in the direction of the button that you press, and stops operating, by pressing the stop button. +NG stop mode: Stops operation when torque reaches set point, using comparator function. Endurance test mode: Repeats operation, using comparator function. (The number of test is indicated at the monitor)
Function	Peak hold, Comparator (judgment of acceptance or rejection), Off timer (auto power off), Internal 1000 points data memory
Output	USB, Digital(RS232C), Analog(Approx. ±/-2V)
External connecting	SEND (HOLD) / ZERO clear / PEAK
Accessory	USB cable, Driver CD-ROM, Inspection certificate, Instruction manual

## Torque Gauge Attachment

# HTGS/HTGA Attachment

Pin chuck	Large φ 1.2~13mm HT-DC-13※1 Medium φ 0.5~6.5mm HT-DC-6.5 Medium Stainless Steel φ 0.5~6.5mm HT-DC-6.5SUS※2 Small φ 0.5~4mm HT-DC-4	9.5 Socket holder HT-9.5SQ	Torque driver HT-DBH	Sensor holder SHT-5N	Capacity: 5N-m The holder is for the sensor fixation.
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# HTGS/HTGA Table Attachment

Small table and Standard pins HT-ST	Capacity: 5N-m Allowable sample diameter: φ 7~50mm Ideal table attachment for measuring small sample torque.	Small table and Notch pins HT-ST-01	Capacity: 5N-m Allowable sample diameter: φ 7~50mm Ideal table attachment for holding sample such as resin connectors.	Small table and Long clamp pins HT-ST-02	Capacity: 5N-m Allowable sample diameter: φ 7~50mm Ideal table attachment for measuring torque of doorknobs, electric bulbs and so on.
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# DTXS/DTXA Attachment

Standard table and Standard pins DT-TB	Capacity: 10N-m Allowable sample diameter: φ 20~160mm The approved table attachment for samples which diameters are φ 20~160mm such as PET bottles, glass bottles and cans.	Standard table and Notch pins DT-TB-01	Capacity: 10N-m Allowable sample diameter: φ 20~160mm Ideal for slippery samples such as aluminum cans.	Standard table and Long clamp pins DT-TB-02	Capacity: 10N-m Allowable sample diameter: φ 20~160mm Ideal for tall samples such as 2 liter PET bottles.
Small table and Standard pins DT-ST	Capacity: 5N-m Allowable sample diameter: φ 7~50mm Ideal for measuring torque of small samples such as eye drop bottles.	Small table and Notch pins DT-ST-01	Capacity: 5N-m Allowable sample diameter: φ 7~50mm Ideal table attachment for holding sample such as resin connectors.	Small table and Long clamp pins DT-ST-02	Capacity: 5N-m Allowable sample diameter: φ 7~50mm Ideal for small and tall samples such as cosmetic bottles.
Pin chuck	Large φ 1.2~13mm DT-DC-13 Medium φ 0.5~6.5mm DT-DC-6.5 Medium Stainless Steel φ 0.5~6.5mm DT-DC-6.5SUS※2 Small φ 0.5~4mm DT-DC-4	Sample stage TB-SP	This block is for putting samples stably.		

※1 It can NOT use with HTGS/HTGA-2N together. ※2 We recommend to use Stainless steel type under the circumstances which make steel rust. ※3 Please choose OON from 2N, 5N or 10N and □ from 2N or 5N.