

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
DIGITAL FORCE GAUGE
MECHANICAL FORCE GAUGE
MOTORIZED TEST STAND
2014/2015-1

FORCE MEASUREMENT
IMADA

IMADA CO.,LTD

99 Jinnoshinden-cho aza Kanowari Toyohashi 441-8077 Japan
Telephone:+81-(0)532-33-3288 Telefax:+81-(0)532-33-3866
E-mail:info@forcegauge.net

The further information is on our website.

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



Our website can be seen from your tablet.

- The contents will be changed in advance without any notices.
- We accept custom made orders which is not in this catalogue.
- Please feel free to contact us or our distributor below for the products detail.

Agency



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

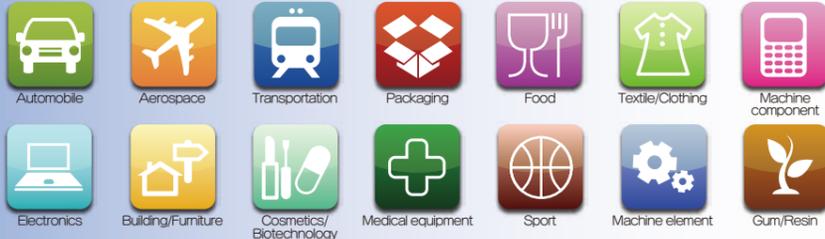
We are a specialty of force measurements.

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.

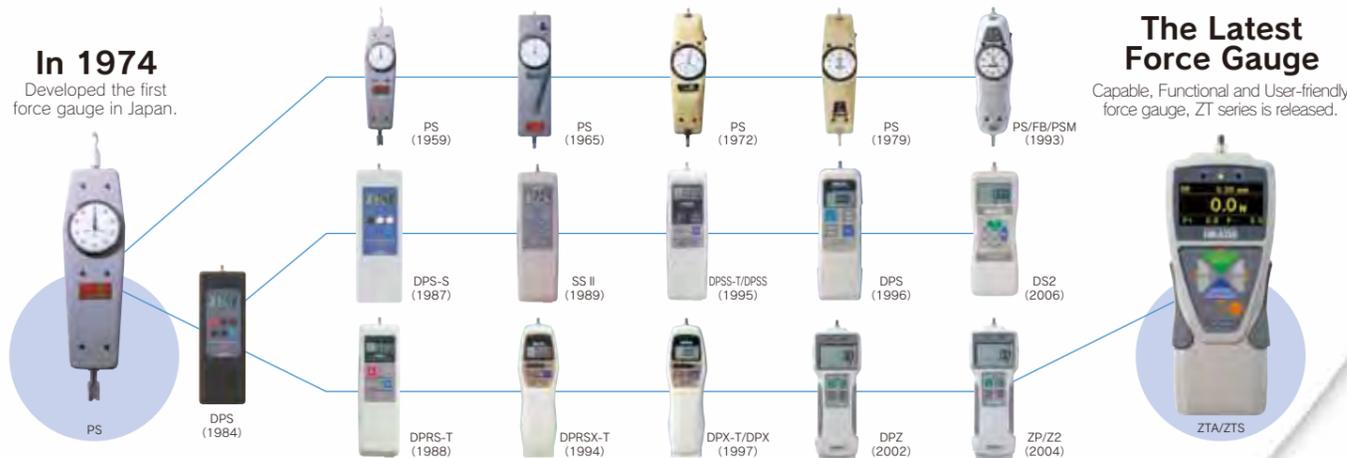


IMADA offers the best force measurement solution.

Force changes shape and speed of objects. Force is defined as $Mass \times Acceleration = Force$. 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.

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.



To page 07

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.

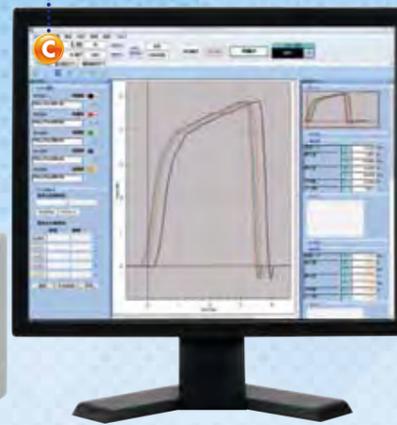


To page 31

C Software

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

To page 17



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.



To page 19

Hand-use measurement

Easy and simple measurements for compression and tension.



Measurement Examples

Compression Test

Durability Test, Bending Test, Sticking Test



Tension Test

Tearing Test, Extracting Test, Pull off Test



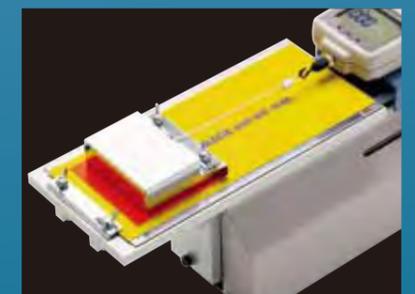
Peeling Test

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.



Other Product Line-up

FSA Force-Displacement Measurement Unit

Easy graph drawing of force and displacement relationships

To page 39



180 Degree Peel Tester IPT200

Specialized tester for peeling test such as tapes and films.

To page 43



Crimp Tester LH

Test stand for crimp pull test.

To page 43



Food Rheology Tester FRT

Digitizing food texture such as stickiness, hardness and more.

To page 41



Torque Gauges

Measurements for rotating and twisting force.

To page 44



Table of contents

Category	Page	Details
Force Gauges and Related Items		
Force Gauge Comparison&Applications	07~08	Please use for comparing and selecting force gauges.
Digital Force Gauges		
ZTS	09~10	Standard type force gauge with high repeatability.
ZTA	11~12	Advanced high functional force gauge.
DS2	13	Simple type force gauge
Load cells and Amplifiers		
Load cells	14~16	Force sensor widespread line-up for various measurement conditions
Amplifiers	16	Indicators to read force values for a load cell.
Software		
Force Recorder Light/Standard	17	Force-Time graphing software for ZTS/ZTA, HTGS/HTGA and DTXS/DTXA
Force Recorder Professional	18	Force-Displacement graphing software for ZTA, HTGA and DTXA
ZLINK3	18	Force-Time graphing software for DS2
Cable and Printer		
Cable	19	Cables to output for external devices like PC and activate optional functions.
Printer	20	Printing measuring data.
Cable Application Examples	20	Introduce of use of cables.
Mechanical Force Gauges		
FB	21	Simple type force gauge
PS	22	High accurate force gauge
PSM	22	Force gauge equipping high resolution to realize accurate measurements.
PSH	22	High capacity force gauge up to 3000N
UKT/UKK	22	Ideal small force gauge for mounting on equipment
Force Gauge Supplementary Information	23	Introduce of the cautions for a selecting suitable range, key points of managing force gauges and so on.
Test Stands		
Test Stand Comparisons&Applications	24~25	Please use for comparing and selecting test stands.
Motorized Test Stands		
MX2	25	Digital vertical stand to improve repeatability and operating performance.
MH2	25	Digital horizontal stand to improve repeatability and operating performance.
EMX	26	High- performance and high functional model with wide speed range and digital stroke limit function.
MX	26	Simple type vertical test stand.
MH	26	Simple type horizontal test stand.
Manual Test Stands		
SV	27	Simple type vertical test stands. Lever type and Handle type.
HV	27	Long stroke type. Ideal model for large/flexible samples.
KV	28	Small test stand. Ideal model for low capacity measurement less than 50N.
MSF	28	Compact test stand helps many measurement by different ways of installation.
SH	28	Horizontal test stand with a handle.
Test Stand Option Model List	29~30	Available option list for extending the stroke, speed range change and so on.
Attachments and Fixtures		
Included Standard Attachment	31	Included standard attachment in a set of force gauge.
Compression Test Attachment	32	Attachments for compression test like bending test and pressing test.
Tensile Test Attachment	33~34	Attachments for tensile test like extracting strength test.
Compression and Tensile Test Attachment	34	Attachments for compression and tensile test.
Wire Harness Test Attachment	35	Wire clamps for wire harness test.
Peeling Test Attachment	36	Attachments for peeling strength measurement such as for tape, film coating surfaces and so on.
Coefficient of Friction Fixtures	36	The fixtures are including the auto calculating software of Coefficient of Static Friction and Average of Coefficient of Kinetic Friction.
Soldering Strength Test Fixtures	36	Fixtures for soldering strength test of QFP lead.
Other Attachments	37	Varieties of tables and adapters like vice grips, XY table.
Eye Bolts and Eye Nuts for Load Cells	38	Hoisting attachments to load cells for tensile tests.
Custom-made Examples	38	Introducing examples of custom-made attachments.
Force Measurement Units/Simple Testers		
Force Displacement Measurement Unit FSA	39~40	Measurement unit which can draw Force-Displacement curves easily.
Food Rheology Tester FRT	41~42	Measuring texture of food such as stiffness, elasticity, viscosity and so on.
180 Degree Peel Tester IPT200	43	Exclusive testers for 180 degree adhesion test for tape, stickers and so on.
Crimp Tester LH-500N	43	Crimp pull tester for the tensile strength test of crimped terminal.
Torque Gauges		
Torque Gauge Comparisons & Applications	44	Please use for comparing and selecting torque gauges.
HTGS/HTGA	45	Handheld type digital torque gauge.
DTXS/DTXA	45	Desktop type screw cap torque tester.
MTG	46	Motorized type screw cap torque tester.

Index

Please search the product page

A		G		R	
A-1/2/3/4/5/6/7/8	31	GA-10N/5000N	32	RE-20kN	38
A-40/60	32	GC-1100/1200/5000	34		
APR-97	36	GC-30	34	S	
		GC-5/15	34	S-1/2/3/4/5/6/7/8	31
B		GC-60/100	33	S-40/60	32
B-1/2/3/4/5/6/7/8	31	GF-1/2	27	SC-3/8	33
BC-15	34	GP-15/30	34	SH series	28
		GR-30/2000	33	SHT-5N	46
C		GT-10/20	36	SK series	14
CA series	37	GT-30/2000N	37	SKM-1000N	16
CB series	19	GTW-50R/50L	37	SP-5010/5020/5030	32
CH-500N	35			SQ-5030/5075/5150	32
CH-5000N	35	H		SR-1	31
COF-2N-V/10N-V	36	HTGA/HTGS series	45	SVH-1000N	27
COF2-2N/10N	36	HT series	46	SVL-1000N	27
CP-150N	34	HV series	27	SW1 series	14
CW-500N	33			SW3 series	14
CW-5000N	35	I			
		IPT200 series	43	T	
D				TB-SP	46
DD2 series	15	J		TH-1000N/5000N	36
DF-60	34	JF6-50N	37	TKS-20N/250N	32
DM-2000N	15			TS-5000N	37
DMK series	20	K			
DS2 series	13	KV-50N	28	U	
DP-1VR	20	KC-100/1001/5000	33	UR-8S/8M	32
DPU series	14			UKK series	22
DT series	46	L		UKT series	22
DTXS/DTXA series	45	LC series	15		
		LF	36	W	
E		LH-500N	43	WC-2000	34
EB series	38	LM series	15		
EJ6-1000N	37	LMT-1000N	15	X	
EJ10-5000N	37	LMU series	14	XY-500N	37
EMX-1000N	26	LU series	14		
EN-500N	38			Z	
		M		ZD1 series	15
F		MH series	26	ZD2-20kN (Load cells)	15
FA Plus	16	MH2-500N	25	ZLINK3	18
FB series	21	MSF-50N	28	ZTA series	11~12
FC series	33	MTG series	46	ZTS series	9~10
FOH-1	37	MX series	26	ZU series	15
Force Recorder Light	17	MX2 series	25	ZW1-10kN	15
Force Recorder Professional	18				
Force Recorder Standard	17	P			
FP-50/51	33	P45-50N	36		
FRT series	41~42	P90-200N/200N-EZ	36		
FR series	44	P180-200N	36		
FS series	21	PC-5040/5060/5100	32		
FSA series	39~40	PG-2/3/4/5	32		
FW-12	35	PGC-0505/0510/2530	33		
		PGC-BC	34		
		PK1-500N	16		
		PK2-1500N	16		
		PN-50N	14		
		PR-500N/2500N	32		
		PS series	22		
		PSH series	22		
		PSM series	22		
		PSS series	22		

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

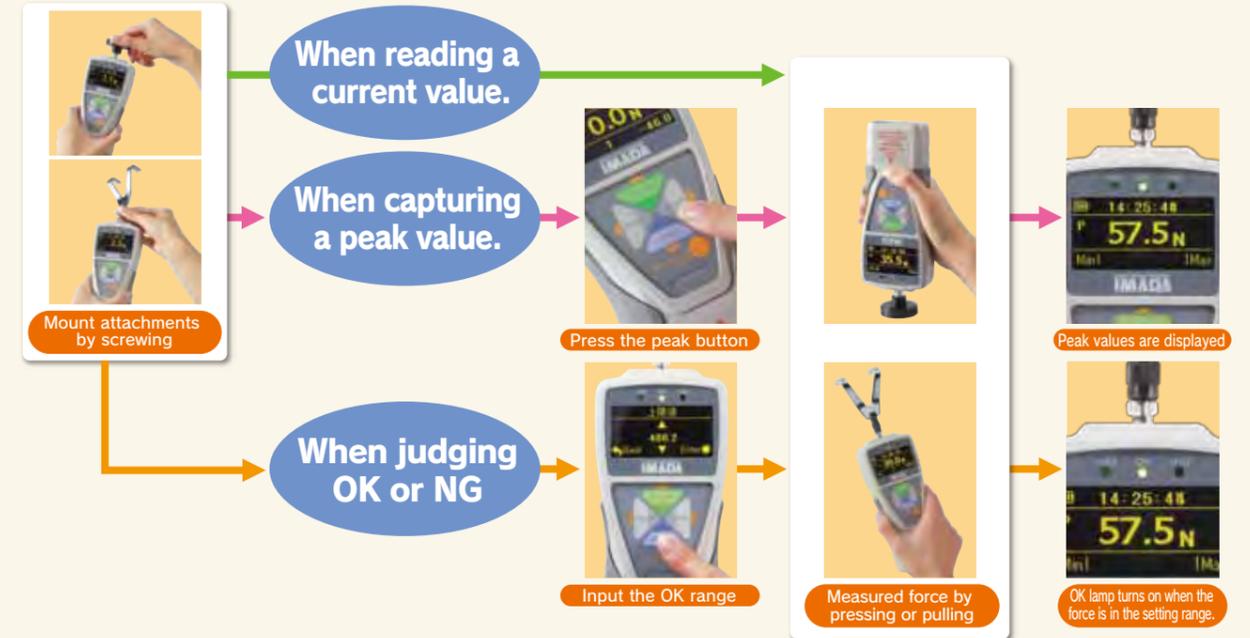
The force gauge with the internal sensor. The remarkable points are preventions of human reading errors by the digital display, easy data managements and analyses by connecting PC.



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

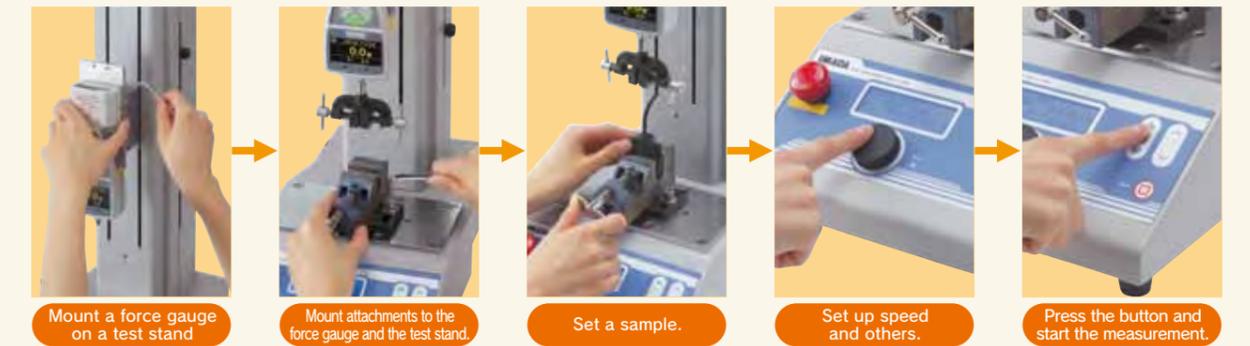
When Measuring Simply

It is possible to use with a hand



When Measuring with High Repeatability

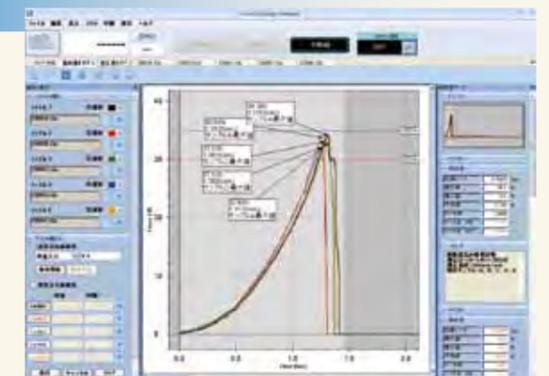
Measurements with high repeatability is possible by combining a test stand which keeps the measuring angles and speeds.



When Checking Force Change Visually.

Data graphing is possible with the software by connecting a PC (Page 17).

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: $\pm 0.2\%F.S \pm 1$ digit

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.

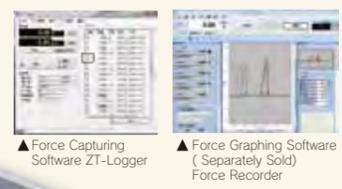
Compression and Tension Compatible

Size: Approx. W75 x D34 x H191 mm
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)	2.00N/2000mN(200.0gf)	M6
ZTS-5N	5N(500gf)	5.00N/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.
 ●IMADA service group telephone number: +81(0)532-33-3288
 IMADA Search <http://www.forcegauge.net/en/>

ZTS series (High Capacity Model)



Compression and Tension Compatible
 Size: Approx. W83 x D44.5 x H221 mm
 Weight: Approx. 1100g

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)	M10

- 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

ZTS series (Sensor Separate Model)



Size (the indicator only): Approx. W75 x D34 x H188 mm
 Weight (the indicator only): Approx. 490g

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

Model	Capacity	Display	Thread
ZTS-DPU-2N	2N(200gf)	2.00N/2000mN(200.0gf)	M6
ZTS-DPU-5N	5N(500gf)	5.00N/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(10.00kgf)	
ZTS-DPU-200N	200N(20kgf)	200.0N(20.00kgf)	
ZTS-DPU-500N	500N(50kgf)	500.0N(50.00kgf)	

- 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
Printer DP-1VR ——— To Page 20
+Cable CB-308 ——— To Page 19
- Connect with External Devices
Cable Using Applications ——— To Page 20

(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)	
ZTS-DPU-10kN	10kN(1000kgf)	10.00kN(1000kgf)	
ZTS-DPU-20kN	20kN(2000kgf)	20.00kN(2000kgf)	
ZTS-DPU-50kN	50kN(5000kgf)	50.00kN(5000kgf)	

◎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



Force-displacement measurement unit FSA series

○ **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



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)	
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(10.00kgf)	
ZTA-DPU-200N	200N(20kgf)	200.0N(20.00kgf)	
ZTA-DPU-500N	500N(50kgf)	500.0N(50.00kgf)	

(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.



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	Female Screw M8P1.25
SW1-500N	500N	
SW1-1000N	1000N	Female Screw M10P1.5
SW1-2000N	2000N	
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-BT6 (for M6 screw)/CA-BT10 (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.



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.



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.



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.



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.



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.



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.



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 x x

- The second code (IP 0 to 8 for water penetration)
- The first code (IP 0 to 8 for human body and sold 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

※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.



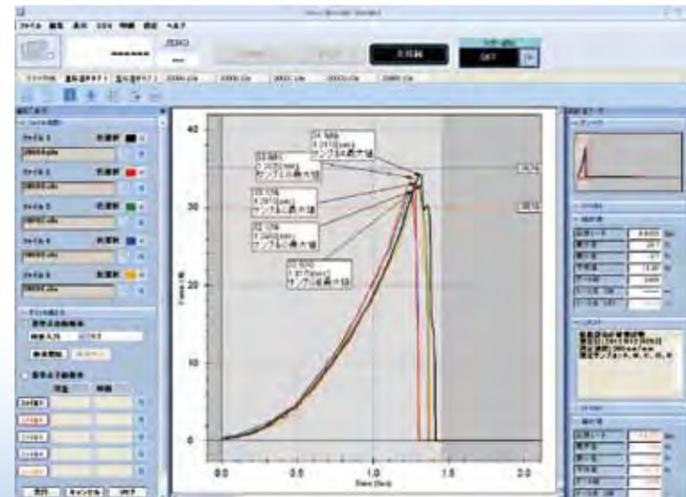
Advantage of Using The Software

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
	Force Recorder Standard	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
	Force Recorder Light	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
	Force Recorder Professional	for Drawing Force-Displacement Graph	ZTA To Page 11, HTGA to Page 45, DTXA to Page 45	USB	Max. 2000Hz
	ZLINK3	for Drawing Force-Time Graph	DS2 To Page 13	RS232C	Max. 50Hz

Force Recorder Standard

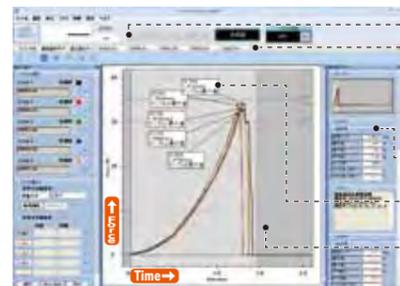
Force-Time Graphing Software

Compatible models

ZTS to Page 09
ZTA to Page 11
HTGS/HTGA to Page 45
DTXS/DTXA to Page 45

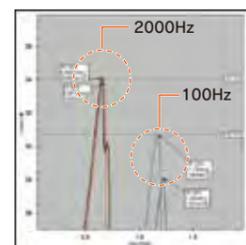
Easy and Accurate Analysis of Measuring Data. Easy Report Creating.

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.



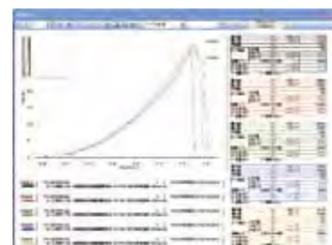
○ Accurate graphing for measuring value with data sampling rate Maximum 2000Hz

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

Compatible models

ZTS to Page 09
ZTA to Page 11
HTGS/HTGA to Page 45
DTXS/DTXA to Page 45

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

Compatible models

ZTA to Page 11
HTGA to Page 45
DTXA to Page 45

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

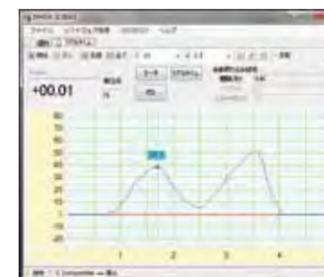


ZLINK3

Force-Time Graphing Software

Compatible models

DS2 to Page 13



- 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
Platform	.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.



ZTA To Page 11	ZTS To Page 09	DS2 To Page 13	HTGS/HTGA To Page 45	DTXS/DTXA To Page 45	FA Plus To Page 16
------------------------------	------------------------------	------------------------------	------------------------------------	------------------------------------	----------------------------------

The Cables for Connecting External Devices and Force/Torque Gauges.

RS232C cable Connect PC and Enable to save force values and to operate force gauge setting from PC.	CB-208 Length: Approx. 3m	CB-208 Length: Approx. 3m	CB-203 (9P)*1 Length: Approx. 3m	CB-208 Length: Approx. 3m	CB-208 Length: Approx. 3m	Special orders are acceptable.
Digimatic cable Connect Mitutoyo Digimatic Mini Processor and Enable to save measuring values on paper.	CB-308 Length: Approx. 3m	CB-308 Length: Approx. 3m	CB-301 Length: Approx. 3m	CB-308 Length: Approx. 3m	CB-308 Length: Approx. 3m	Special orders are acceptable.
Analog cable Connect analog devices such as a pen recorder, and Enable to save measurement force changes.	CB-108 Length: Approx. 3m	CB-108 Length: Approx. 3m	CB-101 Length: Approx. 3m	CB-108 Length: Approx. 3m	CB-108 Length: Approx. 3m	Special orders are acceptable.
Open End cable The necessary cable for connecting special devices when the users attaching connectors.	CB-908 Length: Approx. 3m	CB-908 Length: Approx. 3m		CB-908 Length: Approx. 3m	CB-908 Length: Approx. 3m	Special orders are acceptable.
External Contact Point cable Necessary cable for measurement external contact points.	CB-808 Length: Approx. 3m	CB-808 Length: Approx. 3m		CB-808 Length: Approx. 3m	CB-808 Length: Approx. 3m	Special orders are acceptable.

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

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

The Cable for Connecting A Test Stand and External Devices.

For input and output external signals. Connect test stand MX2-CN/MH2-CN and activate the external control	CB-706 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

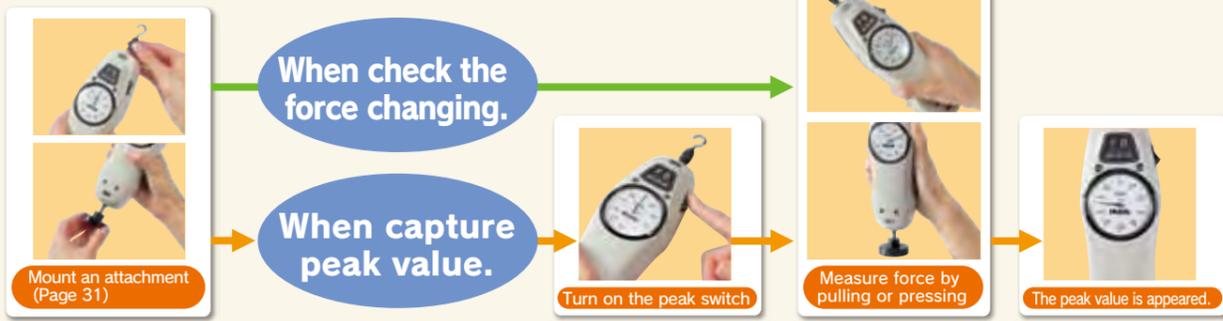


Mechanical Force Gauge

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

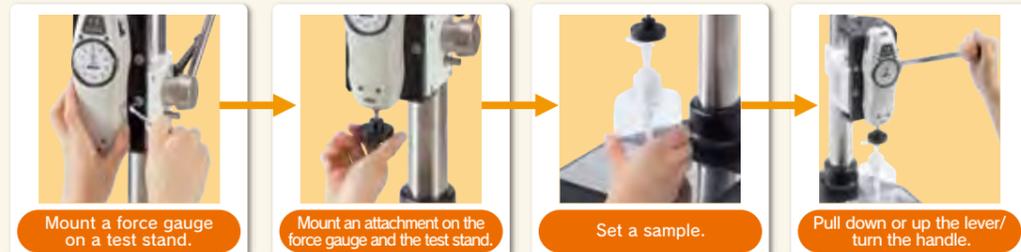
How to Use Mechanical Force Gauges (Using Example Model: FB series)

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	M6
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-5K	5kgf	50gf	
FB-10K	10kgf	100gf	M6
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	M6
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	M6
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
PS-0.5K	500gf	5gf	
PS-1K	1kgf	10gf	
PS-2K	2kgf	20gf	
PS-3K	3kgf	25gf	
PS-5K	5kgf	50gf	M6
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	M6
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	M10
PSH-3000N	3000N	25N	

Export model lists(※2)

Model	Capacity	Resolution	Thread
PSH-50K	50kgf	0.5kgf	
PSH-100K	100kgf	1kgf	M10
PSH-200K	200kgf	2kgf	
PSH-300K	300kgf	2.5kgf	

Model	Capacity	Resolution	Thread
PSH-200lb	200lbf	2lbf	
PSH-300lb	300lbf	2.5lbf	M10
PSH-500lb	500lbf	5lbf	

Notes: ①The weight is depending on the range. (※1)120 lines for 30N, 300N, 30kg 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	M6
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	M6
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	UKK-20N	20N	0.2N
UKT-30N	UKK-30N	30N	0.25N
UKT-50N	UKK-50N	50N	0.5N
UKT-100N	UKK-100N	100N	1N
UKT-200N	UKK-200N	200N	2N
UKT-300N	UKK-300N	300N	2.5N

Export model lists(※2)

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

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

What Is Unit "N"?

The "N" is a force unit called "Newton". $1\text{kgf}=9.80665\text{N}$.
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 $1\text{kgf}=9.80665\text{N}$

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/IEC 17025:2005, 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

SVL-1000N



To Page 27

Capacity: 1000N

- The most simple test stand
- The lever improves measuring efficiency.

SVH-1000N



To Page 27

Capacity: 1000N

- The most simple test stand
- The handle realizes stable measurements.

The Low Capacity Type

KV-50N



To Page 28

Capacity: 50N

- Ideal for small force measurements

MSF-50N



To Page 28

Capacity: 50N

- Varieties of measurements can be realized by the different installing ways.

Long Stroke Type

HV



To Page 27

Capacity: 500N~3000N

- Ideal for stretching or large sample measurements

Horizontal Type

SH



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

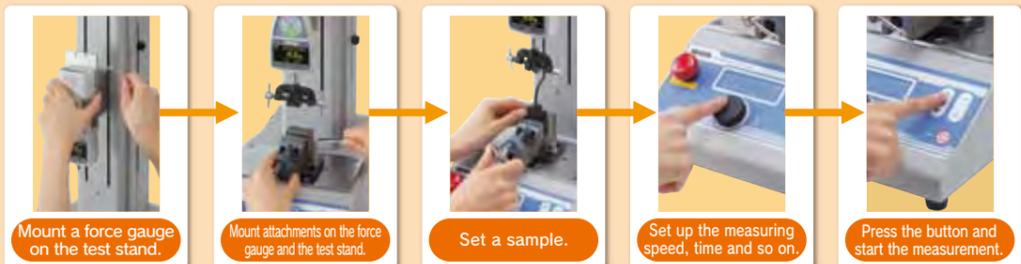


Friction Test



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 linear 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.



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.1.8kg	Approx.1.9kg	Approx.2.6kg
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.1.4kg
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.1.3kg	Approx.2.4kg	Approx.3.0kg
Size	Approx.W214xD28xH573mm	Approx.W263xD368xH903mm	Approx.W250xD420xH816mm

Note: ○A force gauge is separately sold. ○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. (※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 MX-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

CE

EMX-1000N



MH-1000N·MH-300

Horizontal Type

- Option
- Speed/ Length Meter
 - Length Scale
 - Speed Change (MH-1000N only)
- Please refer to Page29 and Page30

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.1.4kg	Approx.2.9kg
Size	Approx.W700xD195xH210mm	Approx.W700xD252xH227mm

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

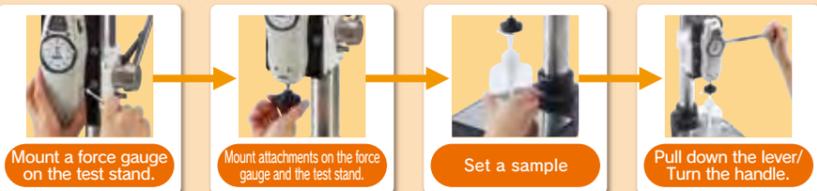


Ball Hardness Test



How to Use Manual Test Stand

(Using Example: SVL-1000N)



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.

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)



Long Stroke Type HV series

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

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. 1.0kg	Approx. 1.8kg	Approx. 2.4kg
Size	Approx. W327xD309xH597.5mm	Approx. W305xD275xH730mm	Approx. W355xD310xH744mm



Note: ○A force gauge is separately sold. ○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. (※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.

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.

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



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.

Lists	MSF-50N
Capacity	50N
Maximum Sample Height(※1)	Approx. 44mm
Feed Amount	1.8mm/1 turn
Weight	Approx. 1.2kg
Size	Approx. W110xD81xH204mm



Horizontal Type SH series

- Horizontal type: The setting sample is easy.

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

Length Scale (-S)

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)



Long Stroke (-L)

Extend the test stand stroke.
(The extendable length is different by the model. Besides, some models could decrease the allowable force capacity. Pleas contact us if you need the detail.)



Limited Options for The Motorized Test Stands

Speed / Length Meter (-E)

It displays the measuring speed and the travel amount of force gauges.



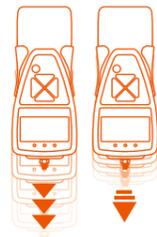
FA version (-FA)

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.



Speed Change (-V○○)

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.)



Output and Input External Signals (-CN)

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.

20~600mm/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

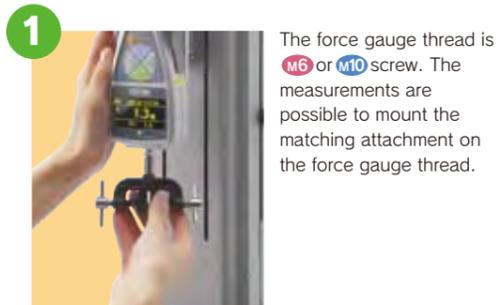
The Fixture Mounting on A Force Gauge Thread or A Test Stand Table.

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.



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

The mounting attachment on force gauges.



The mounting attachment for the test stand table.

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.



The including contents ZTS/ZTA General type: ①~⑧, ZTA/ZTS-DPU-2~500N: ①~⑧, DS2: ①~⑥, PS/PSM: ①~⑥, 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.)



The included contents: ZTA/ZTS-2500N/5000N: ①~⑧, ZTA/ZTS-DPU-1000~5000N: ①~⑥, 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

Ideal for small sample compressions and intrusion tests.



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

Ideal for sticking test for thin measuring samples such as film.



TKS-20N
○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

Ideal for 3 points bending test for metals and glasses.



GA-10N
○Representative applications
Metal board, Plastic board, Carbon, Wire net, Plywood 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

Ideal for durability tests for retort pouch, heat sealed packages, box and so on.



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

Ideal for crushing test. Type A made of aluminum and Type S made of steel. Especially, Type A is suitable for low capacity force gauges.



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

Hemisphere compression test fixture made of urethane. It helps touching test with the hardness and the elasticity.



UR-8S
○Representative applications
Switch, Electrical component, 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
	Hardness like eraser	Hardness like rubber ball for base ball
Mounting screw		M6

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

High Capacity Compression Test Fixture[disc type]

PC series

Ideal for high capacity compression/ breaking test up to 5000N. The free joint design is closer fitting the samples.



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

Ideal for high capacity compression/ breaking test up to 5000N. The free joint design is closer fitting the samples.



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	
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

Ideal for high capacity compression/ breaking test up to 5000N.



SP series
○Representative applications
Cushioning materials

Models	SP-5010	SP-5020	SP-5030
Capacity(N)		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-21UQ	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.



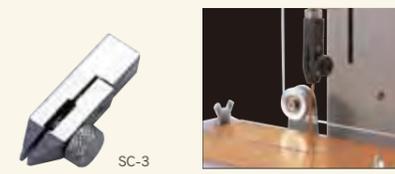
○Representative applications
Cable **Wire**

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-3.

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-1s 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

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

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

The test example of button strength test with BC-15

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

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

The test example of resin molding tension exception strength test with GC-5.

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.



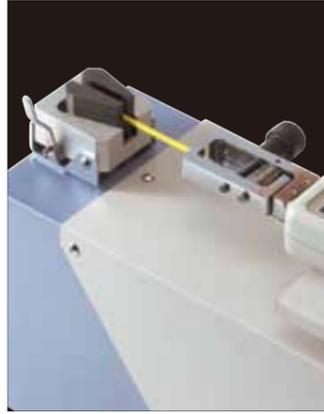
Models	CH-500N
Capacity(N)	500
Aperture opening width(mm)	Max.6
Weight(g)	Approx.210
Mounting screw	M6

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.



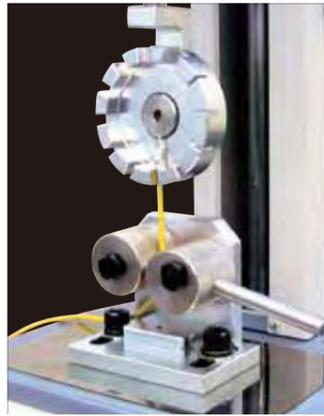
Models	FW-12
Capacity(N)	1000
Measurable diameter(mm)	φ 1~8
Weight(g)	Approx.380
Mounting screw	M6

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(Internal 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, Poutlice



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)

Attachments for Coefficient of Friction

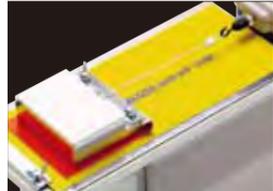
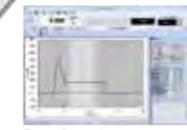
The included software automatically calculates Coefficient of Kinetic friction and coefficient of Static friction and draws graphs.

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).



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.

Representative applications

QFP lead, Chip component



The test example of chip components solder joints shear strength test

Models	LF
The set content	For QFP lead strength test: ①Hook attachment / QFP-45-1 ②45 degree table/QFP45-2 For soldered chip shearing test: ③90 degree chip shear attachment/TIP90-1 ④90 degree table/TIP90-2 For QFP lead strength test and soldering shearing test: ⑤XY table/QFP-1
Capacity(N)	100
Table dimensions	200X150
Weight(g)	①QFP45-1: Approx.60g ③TIP90-1: 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	

Other Attachments

Vice Grip **GT-30/2000N**

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



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

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

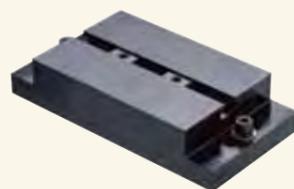
Self-centering vice when gripping a sample. High operability knob type and strong holding lever type.



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

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

Attachment Adapter **JF/EJ series**

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



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.

Conversion Adapter **CA series**

The screw diameter of test shafts mounting attachments is different by force gauges. The conversion adapter 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. <small>※It does not mount to a T nut.</small>
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.



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



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



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



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



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.

[Standard]



Custom made example of wider grip of GC series

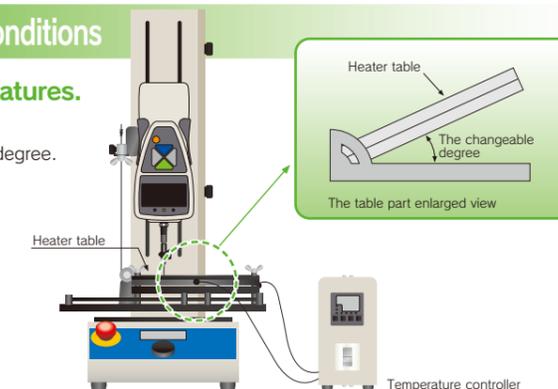
The size change is available for compression attachment PR series, Film grip FC series and others. Please contact us if need the details.

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.



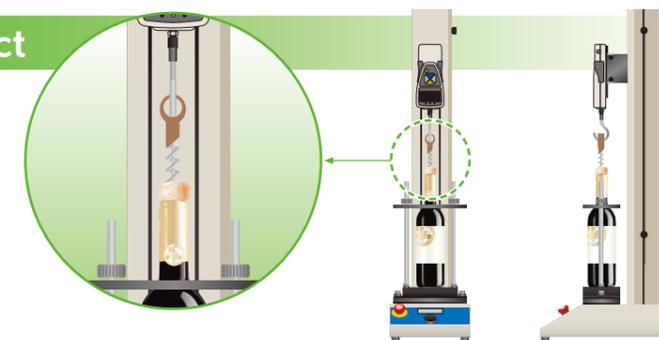
● Measurements in accordance with standards such as Japanese Industrial Standard, ISO or ASTM.

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 excerpction measuring unit]

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



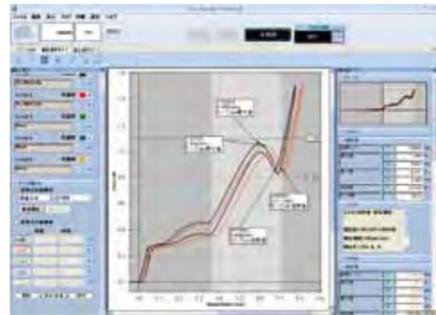
FSA series Force-Displacement Unit

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

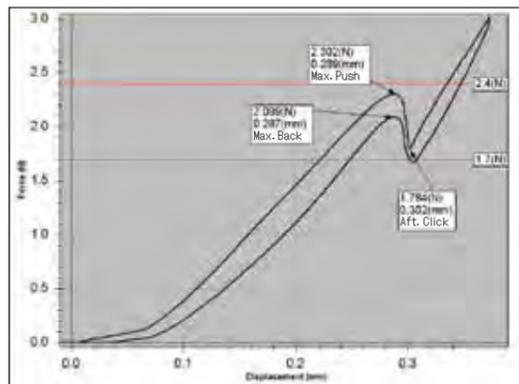
Useful Functions for Measurements and Analysis

- 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.

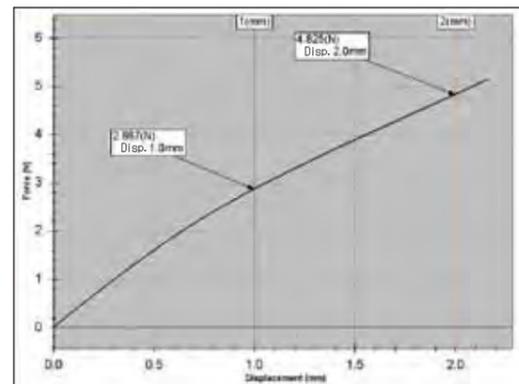
It is ideal for tactile test and material characteristic evaluation.

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

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: ※Actual 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.

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/>

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.



□Size:Approx.W241XD310XH358
□Weight:Approx.11kg

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		

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.



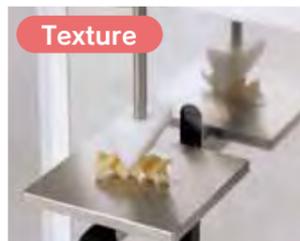
Firmness
Test the firmness of sample from cracking or bending force



Viscosity
Test the viscosity from sample adhesive strength.



Elasticity
Test the elasticity from repulsive force for pushing in.



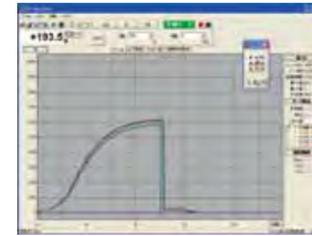
Texture
Test chewing texture of noodle from the firmness change.

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

Compression	Disk probe FR-HA-□ ※1	Cylindrical probe FR-EC-□ ※1	Conical probe FR-ES-□-□ ※1	Sphere probe FR-SR-□ ※1
	Yogurt cutter FR-YN-29	Vice pin for sticking FR-CP-3	3 point bending fixture FR-TP-60	
Tension	Special grip for noodle FR-NP-25	Small grip FR-SC-3	Film grip (small) FR-FC-21	Film grip (large) FR-FC-41
	Cutter FR-NB-80	Wire-cutter FR-WK-85	Wedge probe FR-KS-□-20 30 ※1	
Optional table	Wide table FR-LT-120	Center lined table FR-CT-80	Table with trench FR-GT-□ ※1	Container holder table FR-BG-60
	Sample holder table FR-UP-□ ※1	Stick guide plate FR-KP-□ ※1 ※2	Stick holder FR-ST-25	Anti-Scattering sheet FR-DP-80

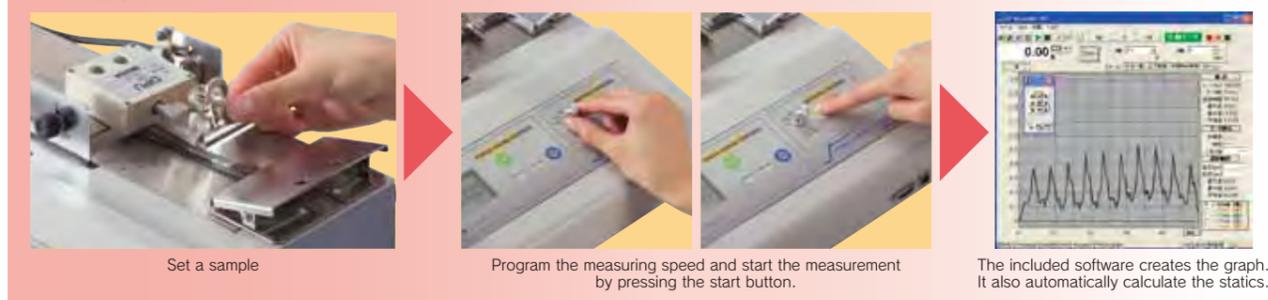
Other probes and tables are also available for users' measurements. The custom order is acceptable. Please feel free to contact us.
※1 Please choose designated length in □ when you order. ※2 Sample holder table is required when using Stick guide plate.

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.



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

- Size: Approx. W710XD300XH126mm
- Weight: Approx. 1.1kg

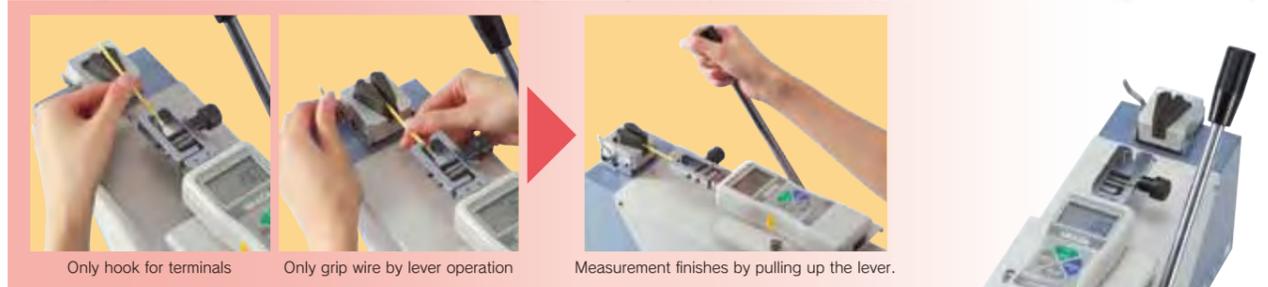


Crimp Tester

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.



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

HTGA

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



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.

DTXS/DTXA series



□Size: Approx. W233×D305×H87mm (without the table and the pins.)
 □Weight: Approx. 4.5kg (including Standard table and 4 pc Standard pins.)

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

DTXA

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



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.

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. ±1.2V)	
External connecting	SEND (HOLD) / ZERO clear / PEAK	
Accessory	USB cable, Driver CD-ROM, Inspection certificate, Instruction manual	

HTGS/HTGA Attachment

<p>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</p>	<p>9.5 Socket holder HT-9.5SQ</p>	<p>Torque driver HT-DBH</p>	<p>Sensor holder SHT-5N Capacity: 5N-m The holder is for the sensor fixation.</p>
---	---	---	---

HTGS/HTGA Table Attachment

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

DTXS/DTXA Attachment

<p>Standard table and Standard pins 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. DT-TB (DTXS/DTXA-COON when combining with DTXS/DTXA body.※3)</p>	<p>Standard table and Notch pins Capacity: 10N-m Allowable sample diameter: φ 20~160mm Ideal for slippery samples such as aluminum cans. DT-TB-01 (DTXS/DTXA-COON-ST-01 when combining with DTXS/DTXA body.※3)</p>	<p>Standard table and Long clamp pins Capacity: 10N-m Allowable sample diameter: φ 20~160mm Ideal for tall samples such as 2 liter PET bottles. DT-TB-02 (DTXS/DTXA-COON-ST-02 when combining with DTXS/DTXA body.※3)</p>
<p>Small table and Standard pins Capacity: 5N-m Allowable sample diameter: φ 7~50mm Ideal for measuring torque of small samples such as eye drop bottles. DT-ST (DTXS/DTXA-COON-ST when combining with DTXS/DTXA body.※3)</p>	<p>Small table and Notch pins Capacity: 5N-m Allowable sample diameter: φ 7~50mm Ideal table attachment for holding sample such as resin connectors. DT-ST-01 (DTXS/DTXA-COON-ST-01 when combining with DTXS/DTXA body.※3)</p>	<p>Small table and Long clamp pins Capacity: 5N-m Allowable sample diameter: φ 7~50mm Ideal for small and tall samples such as cosmetic bottles. DT-ST-02 (DTXS/DTXA-COON-ST-02 when combining with DTXS/DTXA body.※3)</p>
<p>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</p>	<p>Sample stage TB-SP This block is for putting samples stably.</p>	

※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 COON from 2N, 5N or 10N and COON from 2N or 5N.