

FORCE MEASUREMENT **IMADA** Product Catalog

Force Gauges & Associated Equipment

DIGITAL FORCE GAUGE
MECHANICAL FORCE GAUGE
MOTORIZED TEST STAND

2023-1

*Next
Series*

Next Series

A group of upgraded measurement devices with new PCBs. Those devices under Next Series enable a variety of benefits online through the user support site.



Force Gauges

IMADA force gauges can be used for tensile tests, compression tests, peel tests, and unlimited force testing applications. We offer a wide range of gauges such as mechanical models (easy to handle), digital models (various functions equipped), and a variety of sensors.



Software

Software records force transitions graphically, calculates the statistics automatically, and equips various functions to enable you to analyze the data in detail.



Test Stands

A test stand achieves greater accuracy since it provides constant test angle/speed. Combined with a digital force gauge, a motorized test stand can activate useful functions to protect sensors from breakdown, streamline measurement, and more.



Attachments

We provide a wide range of grips and fixture to meet your force measurement needs. One force gauge can be combined with various attachments to handle a wide range of force testing applications.



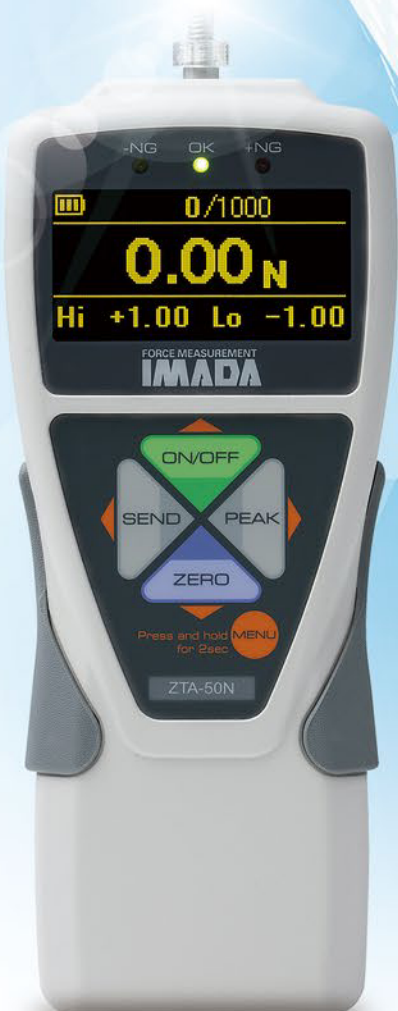
Force Testing System

We provide various force testing system below to improve your productivity and meet a variety of force testing needs.

- Force-displacement analysis system
- Specialized testers for peeling etc.
- And more

IMADA's force testers are used worldwide in R&D and quality control of every industry to assess and ensure the quality.

IMADA offers a wide range of force testing products and know-how accumulated for many decades, enabling you to measure a huge variety of "force" such as mechanical strength (breaking/deformation force), tactile sensation (softness/hardness), functionality of operational physical force, and more.



The best force measurement solution

We are an expert of force measurement.

IMADA force gauges have been used worldwide for more than 75 years to assess and ensure quality by professionals in every industry.

IMADA gauges can be used for a wide range of force testing applications such as tensile, compression, peel, and more.

They can even measure ambiguous things such as “cheese stickiness” and “switch pressing force.” We provide the best force measurement solutions with our know-how and a wide range of products.

The industries using our force gauges



Automobile



Aerospace



Transportation



Packaging



Food



Textile/Clothing



Machine component



Electronics



Building/Furniture



Cosmetics/
Biotechnology



Medical equipment



Sport



Machine element



Gum/Resin

IMADA offers the best

Force changes shape and speed of objects. Force is defined as $\text{Mass} \times \text{Acceleration} = \text{Force}$. There are many types of forces such as Tension/ Compression/Shearing/ Bending, and more. Below you can see force measuring instruments called “force gauges,” which quantify the force in units of “Newton,” “Kilogram,” and “Pound.” We provide a wide range of force gauges and related equipment to fit your measuring needs.

75 Years History of IMADA Force Gauge

In 1947

Developed the first force gauge in Japan.



PS
(1959)



PS
(1965)



PS
(1972)



PS
(1979)



PS/FB/PSM
(1993)

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DPS-S
(1987)



SS II
(1989)



DPSS-T/DPSS
(1995)



DPS
(1996)



DS2
(2006)



DSV/DST
(2017)

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DPRS-T
(1988)



DPRSX-T
(1994)



DPX-T/DPX
(1997)



DPZ
(2002)



ZP/Z2
(2004)



ZTA/ZTS
(2013)

To page 11~14

The Latest Force Gauges

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

Before-sales services

Test Method Consulting

We provide the best measurement solution based on our 75 years knowledge and experiences. 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, and the like.



● Pull force



● Insertion force



● Pushing force



● Extraction force



● Peeling/adhesive force



● Shearing force/Tension force

force measurement solution.

After-sales services

Repair

We and some of our sales partners provide repair services. We are dedicated to short-term delivery.



Calibration

We and some of our sales partners also provide calibration service to keep the accuracy. Some of our products can be provided calibration services in accordance with ISO/IEC 17025:2017.



Publishing Various Certifications

Many types of certifications can be published in short terms such as Calibration Certificate, Traceability Chart and so on.



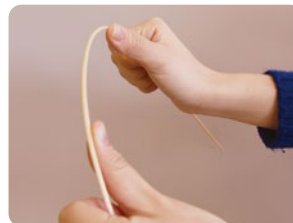
● Rotating/Twisting force



● Crushing force



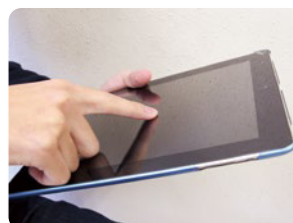
● Opening force



● Bending force



● Closing force



● Frictional force

From simple testing to professional one, you can easily conduct force measurement anytime, anywhere.

Force measurement is conducted to assess safety, durability, functionality, operability, and more. We offer a wide range of force gauges and related equipment to fit your measurement needs.

For use as a simple testing machine

A force gauge can be combined with a test stand to achieve high repeatability.



For use by hand

Compression and tension force can be easily measured.



Other Product Line-up

FSA Force-Displacement Analysis Unit

Easy graph drawing of force and displacement relationships

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180 Degree Peel Tester IPTS-5N/20N/50N

A specialized tester for peeling test of such as cover film of electric components and tapes

— To page 54



Texture Analyzer FRTS

Digitizing food texture such as stickiness, hardness and more

See another catalog, "Catalog for Torque testers and Food testers."



Measurement Examples

Compression Test

IMADA compression testers handle a wide range of testing applications such as, durability, bending, sticking, and more.



Tension Test

IMADA tension testers handle a wide range of testing applications such as tearing, extracting, pull-off, and more.



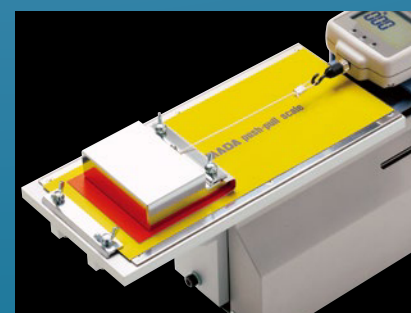
Peel Test

IMADA peel testers handle a wide range of testing applications of such as adhesive tape, film, and more.



Coefficient of Friction Test

IMADA COF testers calculate coefficient of static Friction and average of coefficient of kinetic Friction automatically.



A Force gauges (Push Pull Scales)

They measure compression, tension, peeling force, and more. They can be readily used by hand to conduct a test, or can be combined with a test stand to create your own testing machine.



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B Attachments

Attachments are integral components to be combined with a force gauge or a test stand, enabling compression, tension, peeling and other force measurement.

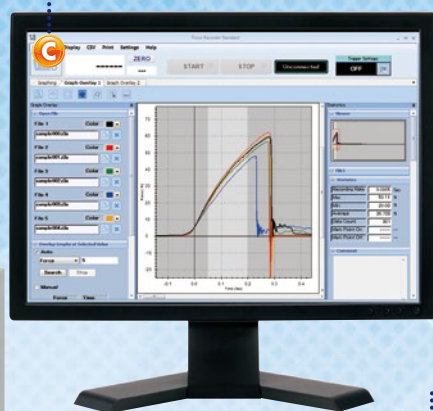


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C Software

Software draw graphs of the relationships between Force and Time or Force and Displacement. Utilize it for detailed analysis.

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D Test Stands

Test stands move a force gauge vertically or horizontally. It helps high-repeatability measurements by keeping the speeds and the angles.



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E Connecting Cables

A cable connects a force gauge and a test stand, activating the force controlling function and the preventing overload function. Besides, cables are also used to connect external equipment like PC.



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Automatic crimp tester ACT-1000N

A specialized tester for tensile strength test of crimped terminal

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Torque Gauges

For rotating and twisting force measurement



See another catalog, "Catalog for Torque testers and Food testers."

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Force Gauges(Push Pull Scales)

Measuring instruments for compression/tension/peel force

A force gauge can be used by hand, or combined a test stand to creat your force testing machine. They are also called for “push pull scales” or “push pull gauges.”



Digital Force Gauges

Strong Points

- Force values can be easily read.
- It can be connected with a PC to analyze data particularly and manage it easily.
- Digital functions are available such as OK/NG judgment, and more.
- It is suitable for impact tests and breaking tests.

Weak Points

- Batteries need to be charged.
- It is difficult to read force transition without graphing software.

DST

To page 16

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



- ◎ It is ideal for simple measurements by hand.
- ◎ Easily detect a peak value with its peak hold function.

DSV

To page 17

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



- ◎ Tilt-sensing-function improves the repeatability even in handheld measurement.

ZTS

To page 11~12

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



- ◎ Captures a peak value accurately due to its high sampling rate.
- ◎ Displays clearly.
- ◎ Manages data easily with included software.

ZTA

To page 13~14

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



- Advanced Functionality Model
- ◎ Outputs and inputs displacement using a linear scale together.
- ◎ Saves data in a USB flash drive.

Simple

Functional
Accurate

Mechanical Force Gauges

Strong Points

- They work without battery.
- They have durable bodies.
- Read force transition easily.

Weak Points

- It is not suitable for impact tests and breaking tests.
- It may cause human reading error.

FB

To page 27

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



- ◎ This is the most economical model

PS

To page 27

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



- ◎ This is high accuracy model.
- When measuring high capacity more than 500N: PSH→To Page 28

PSM

To page 28

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



- ◎ This is the most accurate model with high resolution dial.

Digital force gauges

A digital force gauge has an internal sensor.

It has 2 remarkable features; 1. Its digital indication prevents human reading error.

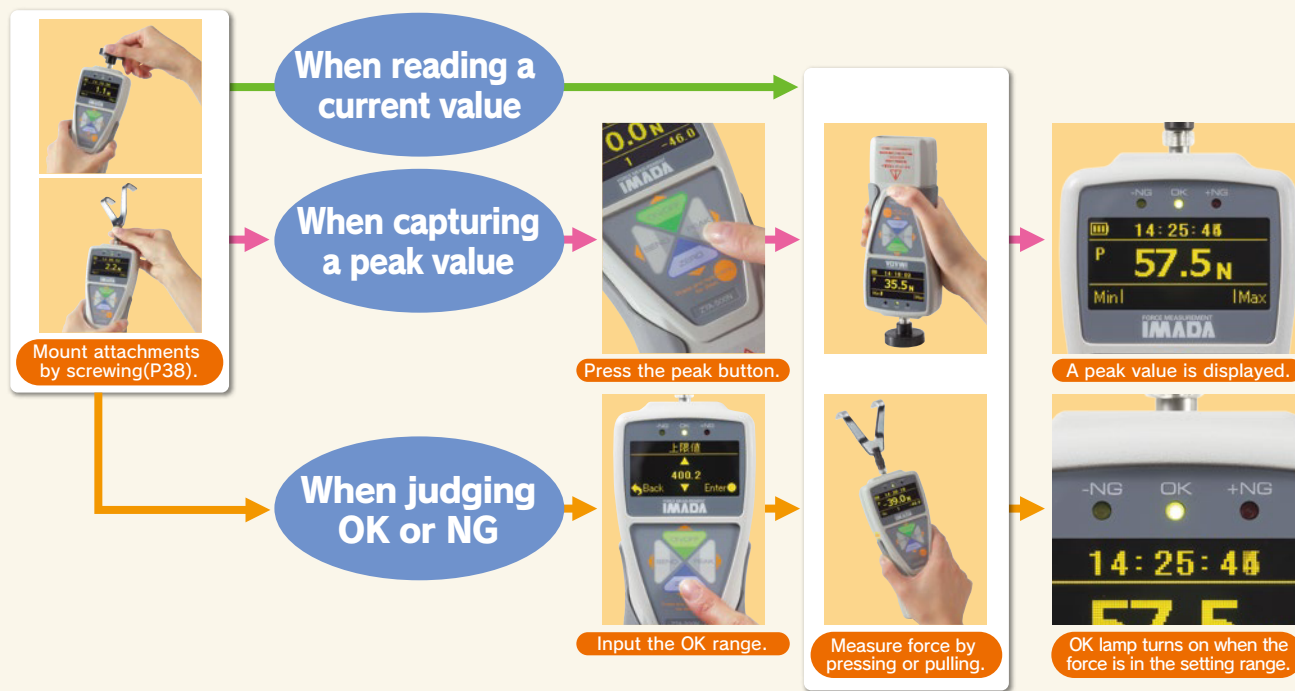
2. Easily manage or analyze test data with connecting it to a PC.



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

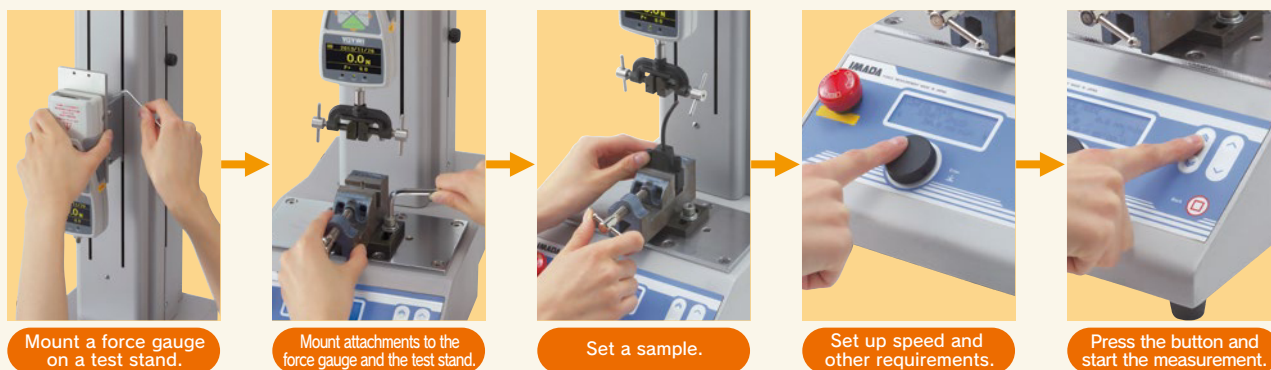
Simple Method

Easily measure force by hand.



Highly Repeatable Method

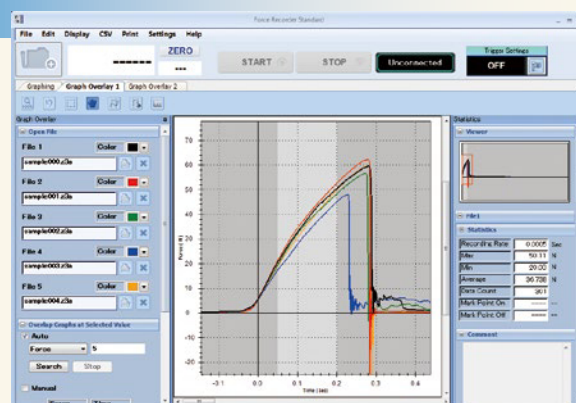
Combining a digital force gauge with a test stand (page 30), enables you to conduct a highly repeatable test since the test stand provides constant test speed and angle.



Graphing

With software (page 22), the force transition can be confirmed graphically on a PC.

Connecting a digital force gauge with a PC enables you to see force transition graphically and analyze data in detail.





Next Series

~Continue to Evolve

Typified by ZT digital force gauge series, Next Series is a generic term to describe the next generation models of IMADA measurement devices.

Unlike previous models, these devices under Next Series are equipped with new PCBs allowing them to avail various benefits on our user support website.

Especially additional functions downloadable on the site expand the usage scenes of the devices by improving efficiency or safety in measurement or enhancing the compatibility of test data.

Consequently, Next Series devices have high customizability to meet complex needs of each user.

IMADA, a solution provider in Force Measurement, increases both hard and software product line-ups to enable various measurements for more comprehensive requirements.



FOR MORE INFORMATION PLEASE CONTACT:



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Standard Type with High Repeatability

ZTS series (Basic Model)

Next Series

This is user-friendly and functional model.

This series of gauges can be used for a wide range of measuring purposes from peak measurement to highly repeatable measurement.

The gauges come with data-capturing software.

Accurately / Precisely

High Speed Sampling:2000Hz

It follows rapid force change, capturing peak values more accurately.

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

User-friendly

High Luminance Organic EL Display

Clear organic display has excellent readability.

8 languages available

Setting menu in 8 languages helps easy operation.

Making efficient

OK-NG Judgment Function

Picks out defective products easily.

(+NG or -NG light goes on when the force is over or under the borderline that you have decided.)

3 Line Indicator

A force value is indicated in the middle tier, and can select information as required in the upper and lower tiers.

Connect and Link to Various External Equipment.

Compression and Tension Compatible

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

Easy Data Management on PC

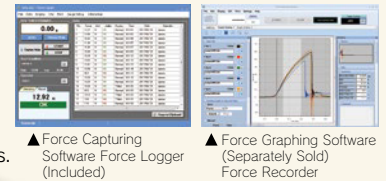
Data Capturing

Software Force Logger is included.

- It sends 10 data/sec to PC.
- It automatically detects maximum and minimum values.
- It saves data in CSV format.

Graphing by Optional Force Graphing Software

The software shows force vs time graphically on PC in real time (at Max.2000Hz) The detail is in Page 22.



CE



ZTS set



Check Force Transition on Graphs

Software Force Recorder — To Page 23~24



Connect with External Devices

Cable Using Applications — To Page 26



Improve Measuring Repeatability

Test Stands — To Page 30



Apply Stable Force by Hand

Handle FOH-1 — To Page 48

Hand Grip Belt HGB-1 — To Page 48



Transmit Data Wirelessly

Wireless Unit WL01-ADP/WL01-USB

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Standard Type Model List

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

ZTS series specifications

Accuracy	$\pm 0.2\%F.S. \pm 1$ digit (Excepted sensor separated model)
Unit of measurement(※1)	N, kgf, lbf (※1)
Display	4-digit Organic EL
Sampling rate	2000Hz (2000 data / sec) at maximum
Function	Customized display (header and footer), Peak hold (tension and compression), Internal 1000 points data memory, Comparator (judgement of OK or NG), Reversible display, Sign inversion, Zero clear timer, +NG alarm, Off timer (auto power off), Dumping, Time display
Operating environment	Temperature: 0 to +40 degree Celsius, Humidity: 20 to 80%RH
Output	USB, RS232C, ± 2 VDC analog output (D/A), Comparator 3 steps (-NG/OK/+NG), Overload alarm
Battery	6.5 hours (2 hours full re-charging)
Accessory	Attachments(※2), AC adapter, Inspection certificate, CD-driver(including simple software for data logging), 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 Please refer to Page 38 for the detail of accessory attachments.

◎The weights are slightly different by the ranges.

ZTS series (High Capacity Model)



- The load capacity ranges from 2500N to 5000N.
- This model has the same functions and performance as ZTS series basic model.



ZTS (High capacity model) set

Compression and
Tension Compatible

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

High Capacity Model List

Model	Capacity	Display	Thread
ZTS-2500N	2500N	2500N (2.500kN)	M10
ZTS-5000N	5000N	5000N (5.000kN)	



Check Force Transition on Graphs

Software Force Recorder — To Page 23~24



Improve Measuring Repeatability

Test Stands — To Page 30



Connect with External Devices

Cable Using Applications — To Page 26



Transmit Data Wirelessly

Wireless Unit WL01-ADP/WL01-USB
To Page 26

ZTS series (Separated Sensor Model)



ZTS (Separated sensor model) set

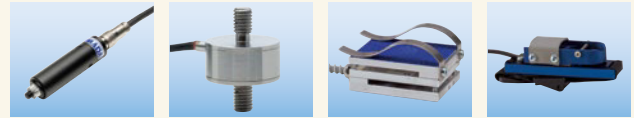
- Size (the indicator only): Approx. W75×D34×H188mm
- Weight (the indicator only): Approx. 490g

- It features an external sensor, which is ideal for installing into facilities or measuring under special circumstance.

- We offer a wide range of sensors such as waterproof, wide temperature range, pen shape, and more to meet your force measurement requirement.

※ Please select one load cell from page 19 to 21.

※ Sensor interchangeable model eZ-Connect (page 18) is recommended for those who change load cells.



- This model has the same functions and performance as ZTS series basic model.
(Accuracy and testing direction is determined by the sensor combined with the indicator.)



Check Force Transition on Graphs

Software Force Recorder — To Page 23~24



Connect with External Devices

Cable Using Applications — To Page 26



Transmit Data Wirelessly

Wireless Unit WL01-ADP/WL01-USB
To Page 26

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

Model	Capacity	Display	Thread
ZTS-DPU-2N	2N	2.000N (2000mN)	M6
ZTS-DPU-5N	5N	5.000N (5000mN)	
ZTS-DPU-10N	10N	10.00N	
ZTS-DPU-20N	20N	20.00N	
ZTS-DPU-50N	50N	50.00N	
ZTS-DPU-100N	100N	100.0N	
ZTS-DPU-200N	200N	200.0N	
ZTS-DPU-500N	500N	500.0N	

(When selecting load cell DPU series [High capacity model])

Model	Capacity	Display	Thread
ZTS-DPU-1000N	1000N	1000N (1.000kN)	M10
ZTS-DPU-2000N	2000N	2000N (2.000kN)	
ZTS-DPU-5000N	5000N	5000N (5.000kN)	M18P1.5 Depth 22 female screw
ZTS-DPU-10kN	10kN	10.00kN	
ZTS-DPU-20kN	20kN	20.00kN	

○ Please refer to Page 19 for the detail of load cell DPU series

An example of separated sensor
model combined with a load cell

ZTS-LM-500N

Load cell model
Choose ZTS or ZTA

※ In the case where you combine ZTS with a load cell, LM-500N

High-functional Type with Various Functions

ZTA series (Basic Model)

Next Series

This series have the highest functionality. They have 2 remarkable points; 1. They input or output displacement. 2. They can connect to USB flash drive to save the original graph data.

ZTA has all the functions of ZTS(Page 11) with a few more additional features, including I/O for displacement, saving data to USB flash drive, and more.

ZTA series features

Input and Output Displacement

Force vs displacement data management on PC

FSA series (Force-Displacement Analysis Unit) [Page 50~52] can be used to manage force-displacement data on PC.

Showing displacement on a force gauge with a test stand

FA version test stand [Page 32~33] can be used together to show displacement on a force gauge. Need an optional cable [Page 25] for that.

Measuring force-displacement with external facilities

Built-in linear scale [Page 26] can be used together with ZTA.



Force-displacement measurement unit FSA series

CE



ZTA set

Data Saving to a USB Flash Drive

Data Saving into a USB Flash Drive at 100Hz.

Series of data can be saved without PC.



Compression and Tension Compatible

□Size: Approx. W75×D34×H191 mm
□Weight: Approx. 490g



Check Force Transition on Graphs

Software Force Recorder — To Page 23~24



Connect with External Devices

Cable Using Applications — To Page 26



Improve Measuring Repeatability

Test Stands — To Page 30



Apply Stable Force by Hand

Handle FOH-1 — To Page 48
Hand Grip Belt HGB-1 — To Page 48



Analyze Force-Displacement Relation

Force-Displacement Analysis Unit — To Page 50



Transmit Data Wirelessly

Wireless Unit WL01-ADP/WL01-USB — To Page 26

ZTA series model list

Model	Capacity	Display	Thread
ZTA-2N	2N	2.000N/2000mN(200.0gf)	M6
ZTA-5N	5N	5.000N/5000mN(500.0gf)	
ZTA-20N	20N	20.00N(2.000kgf)	
ZTA-50N	50N	50.00N(5.000kgf)	
ZTA-100N	100N	100.0N(10.00kgf)	
ZTA-200N	200N	200.0N(20.00kgf)	
ZTA-500N	500N	500.0N(50.00kgf)	
ZTA-1000N	1000N	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 Maximum 100 data/sec capturing series of data with a USB flash drive.
※3 A USB flash drive and a liner scale consume more battery.
Thus, when you combine ZTA with the USB flash drive or the liner scale, the battery runs out faster.
※4 A USB flash drive is not included.
※5 Please refer to Page 38 for the detail of accessory 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	2000Hz (2000 data / sec) at maximum
Function	Customized display (header and footer), Peak hold (tension and compression), Internal 1000 points data memory, Comparator (judgement 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, ±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(※2), Displacement(※3)
Operating environment	Temperature: 0 to +40 degree Celsius, Humidity: 20 to 80%RH
Battery	6.5 hours (2 hours full re-charging)
Accessory(※4)	Attachments (※5), AC adapter, Inspection certificate, CD driver (including simple software for data logging), USB cable, Carrying case, Adaptor for USB flash drive.

ZTA series (High Capacity Model)



- The load capacity ranges from 2500N to 5000N.
- This model has the same functions and performance as ZTA series basic model.



ZTA (High capacity model) set

Compression and Tension Compatible

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

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)	



Check Force Transition on Graphs

Software Force Recorder — To Page 23~24



Improve Measuring Repeatability

Test Stands — To Page 30



Connect with External Devices

Cable Using Applications — To Page 26



Analyze Force-Displacement Relation

Force-Displacement Analysis Unit — To Page 50



Transmit Data Wirelessly

Wireless Unit WL01-ADP/WL01-USB

To Page 26

ZTA series (Separated Sensor Model)



ZTA (Separated sensor model) set

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

- It features an external sensor, which is ideal for installing into facilities or measuring under special circumstance.

- We offer a wide range of sensors such as waterproof, wide temperature range, pen shape, and more to meet your force measurement requirement.

※Please select one load cell from page 19 to 21.

※Sensor interchangeable model eZ-Connect (page 18) is recommended for those who change load cells.



- This model has the same functions and performance as ZTA series basic model.
(Accuracy and testing direction is determined by the sensor combined with the indicator.)



Check Force Transition on Graphs

Software Force Recorder — To Page 23~24



Connect with External Devices

Cable Using Applications — To Page 26



Connect with a Linear Scale

Built-in Linear Scale Unit — To Page 26



Transmit Data Wirelessly

Wireless Unit WL01-ADP/WL01-USB

To Page 26

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

Model	Capacity	Display	Thread
ZTA-DPU-2N	2N	2.000N (2000mN)	M6
ZTA-DPU-5N	5N	5.000N (5000mN)	
ZTA-DPU-10N	10N	10.00N	
ZTA-DPU-20N	20N	20.00N	
ZTA-DPU-50N	50N	50.00N	
ZTA-DPU-100N	100N	100.0N	
ZTA-DPU-200N	200N	200.0N	
ZTA-DPU-500N	500N	500.0N	

(When selecting 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	M18P1.5 Depth 22 female screw
ZTA-DPU-20kN	20kN	20.00kN	

○Please refer to Page 19 for the detail of load cell DPU series

An example of separated sensor model combined with a load cell

ZTA-LM-500N

Load cell model

Choose ZTS or ZTA

※In the case where you combine ZTA with a load cell, LM-500N

Advanced Measurement Examples using ZT series

Force Gauge



Motorized Test Stand



Connecting them via Force Control Cable CB series,



enables you to maximize the functions such as the following.

※Please contact us for the combinations. (Our service group: +81-(0)532-33-3288)

following functions

Preventing Overload

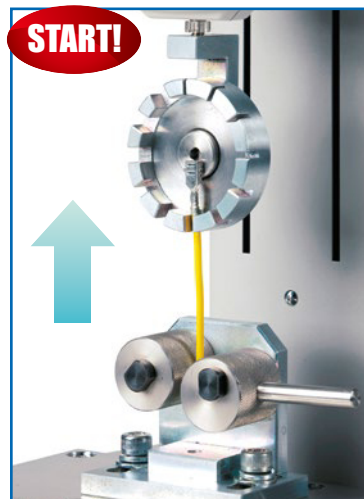
◎For reducing overload risks, a test stand stops when a force gauge senses too much force over its capacity.



If the motorized stand goes beyond the overload value during its operation, it will not continue to operate.

※Not able to prevent overload in some cases.

Making Efficient



◎It automatically starts graphing and recording data.

※Graphing software is sold separately.

Automatically it starts graphing.



Force Control Functions

◎Improve operating efficiency

- The force gauge automatically returns to starting point after reaching a pre-set force limit.
- It can change the test speed when a force gauge senses a set point. Using this function, you can move the force gauge quickly until it touches a test sample, which reduces the time taken for measurement.

For example, slow down when a force gauge detects 0.1N.



For example, pause for 60 seconds, applying 500N pressure constantly.

◎Suitable for pressure/endurance tests

- It can automatically regulate the load so as to be in a pre-set range for a pre-set time period, which is fit for pressure/endurance tests.

Affordable & Simple Type

DST Series

Covering measurement of low, medium force area, from 2N~1000N.
It features simple functions and easy handling with light weight and compactness.



Ideal for hand use

○ **Hand fitting design**

It has an easy gripping shape.

○ **Light weight**

Approx. 460g, light enough to measure with one hand

○ **Long lasting battery**

Use up to 30 hours continuously (when backlight off).

○ **USB power supply available**

Charge it from a PC or mobile battery.

Easy quality control

○ **Pass (OK) judgment function**

Easy checking for defects
(It indicates OK when a force is within acceptable range.)

○ **Notice of calibration schedule**

Set the calibration date and notify 30 days before the scheduled date

○ **Overload alarm**

Notify with a warning when the measured value approaches capacity

Easy data management on PC

○ **Easy connection via USB**

○ **Data capture software (Force Logger) included**

- Transfer 10 data / second to PC
- Automatic detection of max. and min. values
- Can be saved in CSV format



▲ Supplied force acquiring software Force Logger



DST set

Compression /
Tension compatible

- Size: Approx. W72×D32×H181mm
□ Weight: Approx. 460g



Check force transition on graphs

Software ZLINK4 ————— To Page 24



Apply Stable Force by Hand

Handle FOH-1 ————— To Page 48
Hand Grip Belt HGB-1 ————— To Page 48



Improve Measuring Repeatability

Test Stand ————— To Page 30

■ Model table of DST series

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

■ Specifications of DST series

Accuracy	+/-0.2%F.S.+/- 1 digit
Unit of measurement	N(mN/kN), kgf(gf), lbf (※1)
Display	4-digit
Sampling rate	1000Hz (1000 data / sec) at maximum
Battery	Approx. 30 hours (backlight off); Approx. 14 hours (backlight on) (4.5 hours full charge)
Power	Built-in Ni-MH battery, USB power supply (PC, mobile battery, AC adaptor)
Operating environment	Temperature: 0 - 40° C Humidity: 20 - 80% RH
Function	Peak hold (tension and compression)/Comparator (judgement of acceptance or rejection)/Setting sensitivity (3 Levels)/Reversible display/ Reversible symbols/Setting lock/ Date time setting/Off timer/ Calibration time notice
Output	USB/RS232C
Overload alarm	Advance notice alarm: Range 90% or above Overload warning (Alarm/Display): Range 110%
Accessory	Force Logger (Data capturing software)/USB cable/AC adaptor/ Attachment (※2)/Carrying/Operation manual/Inspection certificate

※1 kN is available at 1000N, mN and gf are available at 2N and 5N ranges.

The available units are different from Japanese domestic model and international one.

※2 Please refer to Page 38 for the detail of accessory attachments.

◎Weight are slightly different by the ranges.

◎Specifications for international models only.

Specifications for Japanese domestic models vary on functions and performance.

High Repeatable Type for Handheld Use

DSV Series

Covering measurement of low, medium force area, from 2N~1000N.

Increase the reproducibility of measurements of hand-held, with warning function of posture change.

High-end model with a few additional functions while keeping the performance of DST series (Page 16)

● Features of DSV Series

Increase repeatability

- Detection of posture change, notification by alarm (tilt alarm)
- Data record of posture change abnormalities

Higher operability

○ Internal memory

Record 1000 data with date & time, and judgment results

○ Continuous peak mode

Increase productivity of measurement by continuously acquiring peak value without button operation

Compression / Tension compatible

- Size: Approx. W72×D32×H181mm
- Weight: Approx. 460g



DSV set



Check force transition on graphs

Software ZLINK4 _____ To Page 24



Apply Stable Force by Hand

Handle FOH-1 _____ To Page 48
Hand Grip Belt HGB-1 _____ To Page 48



Improve Measuring Repeatability

Test Stand _____ To Page 30

■ Model table of DSV series

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

■ Specifications of DSV series

Accuracy	+/-0.2%F.S.+/- 1 digit
Unit of measurement	N(mN/kN), kgf(gf), lbf (※1)
Display	4-digit
Sampling rate	1000Hz (1000 data / sec) at maximum
Battery	Approx. 30 hours (backlight off); Approx. 14 hours (backlight on) (4.5 hours full charge)
Power	Built-in Ni-MH battery, USB power supply (PC, mobile battery, AC adaptor)
Operating environment	Temperature: 0 - 40° C Humidity: 20 - 80% RH
Function	Peak hold (tension and compression)/Comparator (judgement of acceptance or rejection)/Setting sensitivity(3 Levels)/Reversible display/Reversible symbols/Setting lock/ Date time setting/ Off timer/Calibration time notice/Tilt alarm/Continuous peak mode/Internal memory(1000 data)
Output	USB/RS232C
Overload alarm	Advance notice alarm: Range 90% or above Overload warning (Alarm/Display): Range 110%
Accessory	Force Logger (Data capturing software)/USB cable/AC adaptor/ Attachment (※2)/Carrying/Operation manual/Inspection certificate

※1 kN is available at 1000N, mN and gf are available at 2N and 5N ranges.

The available units are different from Japanese domestic model and international one.

※2 Please refer to Page 38 for the detail of accessory attachments.

◎Weight are slightly different by the ranges.

◎Specifications for international models only.

Specifications for Japanese domestic models vary on functions and performance.

Load Cells and Amplifiers

Load cells convert sensing force to electric signal. You need an amplifier to indicate the force value measured by load cells. They are ideal for built-in or use under unique environment such as dangerous / narrow / dusty, and the like.



eZ-Connect series



eZ-Connect series are...

● **eZ-Connect is composed of an amplifier and load cells. Load cells can be replaced without additional adjustment.**

- Choose a load cell from page 19 to 21 to connect with the amplifier. Available load cells have a mark
- Its overall accuracy is calculated as the total of the accuracy of the amplifier (+/- 0.2%F.S.) and a load cell connected with it.
- We do not offer inspection certificate when we ship it out. Therefore, please calibrate it by yourself, or request calibration for each combination if needed(available at a charge).

[This is recommended in these cases below.]

Measure things from
low load to high load.

Carry out different types of
tests such as tension and torque.

Keep a spare load sensor to
reduce risks in operation.

Models of load cells for eZ-Connect series

● Add "e" to model name of a load cell for eZ-Connect series as stated below.

Example Normal load cell: DPU-50N

Load cell for eZ-Connect series: eDPU-50N

Sensor Interchangeable Amplifier eZT

Precise

● Capture test data precisely due to its high sampling rate (Max.2000Hz).

Easy

● No additional adjustment is needed to replace load cells.

Multifunctional

● It has many useful functions such as OK/NG judgement, saving data in USB flash drive, and more.



- Size (Amplifier only) : Approx. W75×D34×H188mm
- Weight (Amplifier only) : Approx. 490g

eZT Specifications

Model	eZT
Accuracy	+/-0.2%F.S. (※1)
Unit of measurement	Depends on load cell and settings *(N,kN,kgf,lbf N-m,N-cm,kgf-m,kgf-cm,lbf-in,ozf-in)
Display	4-digit
Display update	16 / sec
Sampling rate	2000 data / sec at maximum (※2)
Functions	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, setting lock
Output	USB, RS232C, ±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, Displacement.
Operating environment	Temperature: 0 to +40 degree Celsius, Humidity: 20 to 80%RH
Battery	6.5 hours (2 hours full re-charging)(※3)
Accessories	AC adapter, CD driver (including simple software for data logging), USB cable, Operation manual, Carrying case, Adaptor for USB flash drive (※4)

- ※1 Japanese domestic model does not indicate kgf (kgf-m, kgf-cm) and lbf (lbf-in, ozf-in).
 - ※2 The accuracy of load cell is added during measurement.
 - ※3 You can save up to 100 data/sec in USB flash drive (selectable among 1, 50, and 100 /sec)
 - ※4 A USB flash drive and a liner scale consume more battery.
- Thus, when you combine ZTA with the USB flash drive or the liner scale, the battery runs out faster.
- ※4 USB flash drive is not included.
- If you would like to use this amplifier combined with a test stand, please contact us or our sales partner.

- Check Force Transition on Graphs**
Software Force Recorder — To Page 23~24
- Connect with External Devices**
Cable Using Applications — To Page 26

- Connect with a Linear Scale**
Built-in Linear Scale Unit — To Page 26
- Transmit Data Wirelessly**
Wireless Unit WL01-ADP/WL01-USB — To Page 26

Desktop Amplifier FA Plus2 series



- Its box-shaped design is ideal for integration into facilities.
- Its rich output functions allow easy connection to external devices such as PLC.



- Size: W151×D150×H90mm
- Weight: Approx. 1.1kg



This amplifier is available with all load cells from page 19 to 21 except SKM-1000N and eZ-Connect load cells.
Load cells can be replaced in the most cases although they need adjustments. However, some load cells are incompatible, and they cannot be combined with an amplifier. Please contact us for the details.

Accuracy

● **High speed sampling :2000Hz**

It shows force value precisely and even follows rapid force change due to its high sampling rate.

Connect with external equipment

● **It can be used as a part of factory automation equipment using input and output signals.**

Model	FA Plus2	eFA Plus2
Features	Adjustment is required when change the load cell	Load cell interchangeable eZ-Connect series (no need for adjustment)
Unit of measurement	Depends on load cell and settings	Depends on load cell and settings
Display	(N, kN, kgf, lbf, N-m, N-cm, kgf-m, kgf-cm, lbf-in, ozf-in) (※1)	(N, kN, kgf, lbf, N-m, N-cm, kgf-m, kgf-cm, lbf-in, ozf-in) (※1)
Sampling rate	4-digit	4-digit
Functions	2000 data / sec at maximum	2000 data / sec at maximum
Output	Customized display (header and footer), Peak hold (tension and compression), Comparator (judgment of OK or NG), Display of AD value, Reversible display, 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, setting lock	Customized display (header and footer), Peak hold (tension and compression), Comparator (judgment of OK or NG), Display of AD value, Reversible display, 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, setting lock
Accessories	RS232C (baud rate available from 57600bps to 9600bps), USB, ±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, Displacement.	RS232C (baud rate available from 57600bps to 9600bps), USB, ±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, Displacement.
	AC adapter (only for standard model), Force Logger (software for data logging), USB cable, Adapter for USB flash drive (※2), Instruction manual	AC adapter (only for standard model), Force Logger (software for data logging), USB cable, Adapter for USB flash drive (※2), Instruction manual
	Inspection certification	Inspection certification

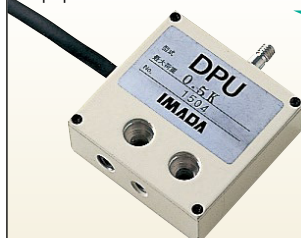
- ※1 The available units are different from Japanese domestic model and international one.
- ※2 USB flash drive is not included.

Load Cells

for Compression and Tension

Standard Type DPU

Easy built-in shape to external equipment.



It measures 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.



It measures 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 (※1)
DPU-2000N	2000N	
DPU-5000N	5000N	
DPU-10kN	10kN	N/A(※2)
DPU-20kN	20kN	

※1 A female screw M12 P1.75 is available by removing the measuring shaft.
※2 DPU-10kN/20kN equips a female screw M18 P1.5. The measuring shaft is separately sold.

for Compression and Tension

Waterproof and Dust-proof Type SW1

Able to connect samples to the two sides of the sensor.



Fix it with female screws or connect it to eye bolts to measure force.

Capacity	100~5000N
Accuracy	±0.5%F.S. or less
Size	Approx. W40×D20×H40mm
Cable Length	Approx. 0.5~2m (Curl cable)

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

※Please contact us if the users need the male thread.

for Compression and Tension

Waterproof and Dust-proof Type SW3

Able to connect samples to the two sides of the sensor.



Fix it with female screws or connect it to eye bolts to measure force.

Capacity	10kN~20kN
Accuracy	±0.5%F.S. or less
Size	Approx. W80×D25×H80mm
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 male thread.

for Compression and Tension

Extra Small Type SCX

Suitable for measurement where access is limited due to the extra compact body.



It measures force by mounted to equipment with female threads.

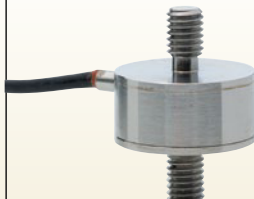
Capacity	100N~2000N
Accuracy	±1.0%F.S. or less
Size	Approx. W16×D12×H19.1mm
Cable Length	Approx. 3m

Model	Capacity	Thread
SCX-100N	100N	Female Screw M6
SCX-200N	200N	
SCX-500N	500N	
SCX-2000N	2000N	

for Compression and Tension

Extra Small Type LMU

Sensor part diameter is Approx. φ18mm.



It measures force by mounting an attachment on the thread (the male screw part).

Capacity	50~500N
Accuracy	±1.0%F.S. or less
Size	Approx. φ18×H25mm
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 48) is required when M6 screw attachments mounting on the load cell.

for Compression and Tension

Small Type LU

Able to connect samples to the two sides of the sensor.



Fix it with female screws or connect it to eye bolts to measure force.

Capacity	50~2000N
Accuracy	±1.0%F.S. or less
Size	Approx. φ28×H35mm
Cable Length	Approx. 3m

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

Conversion adaptor CA-8T6 (for M6 screw)/CA-8T10 (for M10 screw) (Page 48) 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.



It measures force by mounting an attachment on the thread (the male screw part).

Capacity	50N
Accuracy	±2.0%F.S. or less
Size	Approx. φ20×H90mm
Cable Length	Approx. 2m

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

for Compression

Standard Type
LM

It can be inserted in narrow spaces due to the coin shape.



It measures force by applying compression on the top of projection.

Capacity	10N~20kN
Accuracy	10N~10kN: $\pm 2.0\%$ F.S. or less 20kN: $\pm 3.5\%$ F.S. or less
Size	Approx. $\phi 12 \times H4 \sim \phi 21 \times H10$ mm
Cable Length	10N~2000N: Approx. 2m 5000N~20kN: Approx. 3m

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

High Accuracy Type
LC

High accuracy model.



It measures force by applying compression on the top of projection.

Capacity	500N~20kN
Accuracy	$\pm 0.5\%$ F.S. or less
Size	Approx. $\phi 50 \times H25$ mm
Cable Length	Approx. 5m

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

for Compression

Extra Small and Flat Type
CFX

Extra small load cell with the large load-bearing area.



It measures force by applying compression on the flat sensor area.

Capacity	20N~200N
Accuracy	$\pm 1.0\%$ F.S. or less
Size	Approx. $\phi 15 \times H9$ mm
Cable Length	Approx. 3m

Model	Capacity	Thread
CFX-20N	20N	Female Screw M2
CFX-50N	50N	
CFX-200N	200N	

for Compression

Thin and Flat Type
CLFX

Able to insert in narrow space due to the extra thin body.



It measures force by applying compression on the flat sensor area.

Capacity	50N~500N
Accuracy	$\pm 2.0\%$ F.S. or less
Size	Approx. $\phi 20 \times H6$ mm
Cable Length	Approx. 3m

Model	Capacity	Thread
CLFX-50N	20N	Female Screw M2
CLFX-500N	500N	

for Compression

Washer Type
CHX

Ideal for press-fit force measurement due to the washer (through hole) design



It measures press-fit force by pushing in a rod-shaped sample through a part.

Capacity	100N~2000N
Accuracy	100~500N: $\pm 2.0\%$ F.S. or less 2000N: $\pm 1.0\%$ F.S. or less
Size	100~500N: Approx. $\phi 25 \times H7.1$ mm 2000N: Approx. $\phi 30 \times H14$ mm
Cable Length	Approx. 3m

Model	Capacity
CHX-100N	100N
CHX-500N	500N
CHX-2000N	2000N

for Compression

High Capacity Type
DD2

High accuracy model. Available for high capacity measurement.



It measures force by applying compression on the top of projection.

Capacity	5000N~20kN
Accuracy	$\pm 0.5\%$ F.S. or less
Size	Approx. $\phi 94 \times H48$ mm
Cable Length	Approx. 5m

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

for Compression

Wide Temperature Range Type
LMT-1000N

It can be used in temperatures between -40 degrees Celsius and +130 degrees Celsius.



It measures force by applying compression on the top of projection.

Capacity	1000N
Accuracy	$\pm 1.0\%$ F.S. or less
Size	Approx. $\phi 14 \times H4.3$ mm
Cable Length	Approx. 2m

Model	Capacity
LMT-1000N	1000N

for Compression or Tension

High Capacity
ZD

Small-size sensor in capacity from 1000N up to 20kN.



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

Capacity	1000N~20kN
Accuracy	$\pm 0.5\%$ F.S. or less
Size	Approx. $\phi 7.8 \times D30 \times H44 \sim \phi 11.6 \times H38 \times D46$ mm
Cable Length	Approx. 3m

Model	Capacity	Thread
ZD1-1000N	1000N	Male Screw M12P1.75
ZD1-2000N	2000N	
ZD1-5000N	5000N	
ZD1-10kN	10kN	Male Screw M20P1.5
ZD2-20kN	20kN	

※Please choose tension or compression

※Load cells with the mark (eZ) can be combined with eZ-Connect series. eZ-Connect series are comprised of a sensor interchangeable amplifier and a load cell. Put "e" at the head of a load cell model for eZ-Connect to tell it apart from normal model. Please see the page 18 for the details.

Load Cells

for Compression or Tension

High Accuracy Type SK

Durable sensor.

IP67

eZ



Mount metal fittings in 3 holes as required.

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

for Tension

High Capacity Type ZU

Two rod ends are included. Small-size sensor in capacity from 10kN up to 20kN.

IP67

eZ



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

Capacity	10kN~20kN
Accuracy	±1.0%F.S. or less
Size	Approx. φ30xH210~φ39xH234mm
Cable Length	Approx. 5m

Model	Capacity
ZU-10kN	10kN
ZU-20kN	20kN

for Tension

Crane Scale Type ZW1-10kN

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

IP67

eZ



It can be used as a crane scale.

Capacity	10kN
Accuracy	±1.0%F.S. or less
Size	Approx. W79×L250
Cable Length	Approx. 0.5~2m (Curl cable)

Model	Capacity
ZW1-10kN	10kN

Special Use Load Cell

Door Tester DM-2000N

Exclusively for measuring closing force of automatic doors and revolving doors.

eZ



It measures force by making the blue sensor part touch a closing door.

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

Model	Capacity
DM-2000N	2000N

Complies with the corresponding part of BS EN 12453 (2017) "Industrial, commercial and garage doors and gates - safety in use of power operated doors - requirements and test methods", JIS A 4722 (2017) "Power operated pedestrian doorsets -- Safety"

Special Use Load Cell

Closing Force of Car Windows SKM-1000N

Exclusively for automatic closing force of car windows.

IP65



Put this sensor between a car window and its frame to measure the closing force.

Capacity	1000N
Accuracy	±1.0%F.S. or less
Size	Approx. W70XD50XH32mm
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

Handbrakes Force of Two-Wheelers PK1-500N

Exclusively for gripping hand brakes force of two-wheelers.

IP65



Put this sensor on hand breaks and grip them together to measure the force.

Capacity	500N
Accuracy	±1.0%F.S. or less
Size	Approx. W100XD25XH24mm
Cable Length	Approx. 1.5m

Model	Capacity
PK1-500N	500N

Special Use Load Cell

Foot Brakes Force of Cars PK2-1500N

Exclusively for stepping foot brakes of cars.

IP65

eZ



It measures footbrake 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. W50XD70XH28mm
Cable Length	Approx. 1.5m

Model	Capacity
PK2-1500N	1500N

For Torque(only for eZ-connect)

Torque Load Cell eHT series

It measures turning/twisting force.

eZ



It measures torque using optional attachments such as pin chuck, socket holder, torque driver etc. Please see another torque catalog for the details of the attachments.

Capacity	0.5N-m~10N-m
Accuracy	±0.5% F.S. or less
Size	φ38×138mm
Cable Length	Approx. 0.5~1m (curl cable)

Model	Capacity
eHT-0.5N	50N-cm(※1)
eHT-2N	2N-m(200N-cm)
eHT-5N	5N-m(500N-cm)
eHT-10N	10N-m(1000N-cm)

※1 Displayed unit is "N-cm" only.
※You can switch N-m(N-cm) to kgf-m(kgf-cm) or lbf-in(ozf-in).

For Torque(only for eZ-connect)

Flange type Torque load Cell eTFX

It measures turning/twisting force.

IP64

eZ



Ideal for integration to equipment by fixing it with its equipped through holes on both sides.

Capacity	5N-m~10N-m
Accuracy	±1.0%F.S. or less
Size	Approx. φ35×28mm
Cable Length	Approx. 2m

Model	Capacity
eTFX-5N	5N-m(500N-cm)
eTFX-10N	10N-m(1000N-cm)

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 ■ ●■ : Protection rating against solid foreign objects
● : Protection rating against water

(Some IMADA load cells are rated with IP67 /65/ 64.)

Only the load cell part is rated with IP.

Its amplifier (indicator), connecting parts, and connector parts do not comply with IP.

IP 6 7 Protected from immersion in water under the specified time and water pressure (depth).IP 6 5 Protected against water jets from any direction.IP 6 4 Protected against water splashed from any direction.

└ No ingress of dust

(Refers to IEC 60529; 2001)

Custom Order Examples

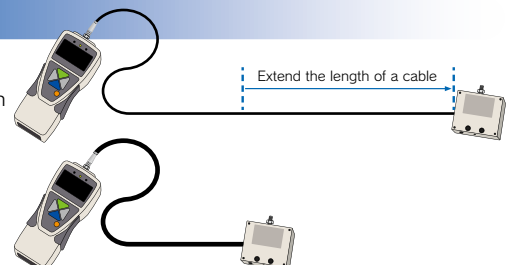
[Example:Extend the length of a cable]

We can extend the length of a cable for gauge-PC connection or loadcell-amplifier connection.

[Example:Enhance flexibility of a cable]

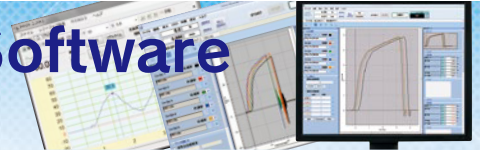
We can offer high-flex cable to reduce risks of disconnection.

※We cannot offer it in some cases Contact us for further information.



Data Collection and Analysis Software

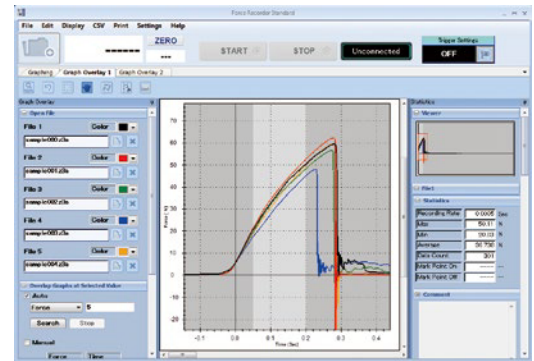
Force transition can be graphically confirmed in real time by connecting force gauge and PC via USB cable. Software allows easy data management and analysis.



Advantage of Using The Software

Transfer data from a force gauge to a PC in real time via a cable. It shows test data graphically on a PC, and force transition can be confirmed visually. Moreover, it automatically calculates the statistics and stores recorded data, enabling you to manage data with ease.

※All software is available in English and Japanese by language setting.



Software Lists

CD	Name of software	Purpose	Compatible model	Connecting port	Maximum data capturing rate
	Force Recorder Light	for drawing Force-Time Graph This software is moderate-priced edition.	ZTS To Page 11, ZTA To Page 13, eZT To Page 18, FA Plus2 To Page 18, HTGS/HTGA(-TFX) See a torque catalog., DTXS/DTXA See a torque catalog.	USB	Max. 2000Hz
	Force Recorder Standard	for drawing Force-Time Graph	ZTS To Page 11, ZTA To Page 13, eZT To Page 18, FA Plus2 To Page 18, HTGS/HTGA(-TFX) See a torque catalog., DTXS/DTXA See a torque catalog.	USB	Max. 2000Hz
	Force Recorder Professional	for drawing Force-Displacement Graph	ZTA To Page 13, eZT To Page 18, FA Plus2 To Page 18, HTGA(-TFX) See a torque catalog., DTXS/DTXA See a torque catalog.	USB	Max. 2000Hz
	Force Recorder Plus	for drawing Force-Time Graph up to 4 force gauges.	ZTS To Page 11, ZTA To Page 13, eZT To Page 18, FA Plus2 To Page 18, HTGS/HTGA(-TFX) See a torque catalog., DTXS/DTXA See a torque catalog.	USB	Max. 1000Hz
	Force Logger Plus	for acquiring data from up to 4 force gauges ※Not available for drawing a graph	ZTS To Page 11, ZTA To Page 13, eZT To Page 18, FA Plus2 To Page 18, DSI To Page 16, DSV To Page 17, HTGS/HTGA(-TFX) See a torque catalog., DTXS/DTXA See a torque catalog.	USB	Max. 10Hz
	ZLINK4	for drawing Force-Time Graph	DSI To Page 16, DSV To Page 17	USB	Max. 50Hz

Operating Environment for Force Recorder series, Force Logger Plus, ZLINK4, Force Recorder Plus [Operating Environment]

Model	Force Recorder Light/Standard/Professional, ZLINK4	Force Recorder Plus	Force Logger Plus
OS	Windows 8.1 / 10 / 11	Windows 8.1 / 10 / 11	Windows 8.1 / 10 / 11
Hardware	CPU: 1GHz or higher/Memory: 2GB or more Hard disk: 10GB(Data storage area) more	CPU: 1GHz or higher/Memory: 4GB or more Hard disk: 10GB(Data storage area) more	CPU: 1GHz or higher/Memory: 2GB or more Hard disk: 10GB(Data storage area) more
Platform	.NET Framework 4.8 later	.NET Framework 4.8 later	.NET Framework 4.8 later
Image size	Resolution: 1024×768 pixel more	Resolution: 1920×1080 pixel more	Resolution: 1280×768 pixel more

Comparison Table

Function Comparison

Software	Force Recorder Light	Force Recorder Standard	Force Recorder Professional	Force Recorder Plus	Force Logger Plus	ZLINK4
Feature	Graphing only	With editing functions	Force-displacement graphing	Graphing for multiple force gauges at the same time	Connect up to max. 4 force gauges	Simple Graphing
Graph	Force-time	Force-time	Force-time; Force-displacement	Force-time	N/A	Force-time
Data transferring speed (Max)	2000 data/sec	2000 data/sec	2000 data/sec	1000 data/sec	10 data/sec	50 data/sec
Recording data point (Max)	7.2 million	7.2 million	7.2 million	3 million	65 thousand	7.2 million
Displacement output	N/A	N/A	✓	N/A	N/A	N/A
Graph overlaying function	N/A	✓(Max. 5 graphs)	✓(Max. 5 graphs)	✓(Max. 10 graphs)	N/A	N/A
Trigger function	N/A	✓	✓	✓	N/A	✓
Point marking	N/A	✓	✓	N/A	N/A	N/A
Border line function	N/A	✓	✓	N/A	N/A	N/A
Capture function	N/A	✓	✓	✓	N/A	N/A
Graph scaling	✓(Auto)	✓(Auto)	✓(Auto)	✓(Auto/Manual)	N/A	✓
Statistics output	✓	✓	✓	✓	✓	✓
Comment	✓	✓	✓	N/A	N/A	✓
Print	✓	✓	✓	✓	✓	✓
CSV file converting	✓	✓	✓	✓	✓	✓
Preview saving (PDF/Word/Excel)	✓	✓	✓	✓	N/A	✓
Force gauge setting	✓	✓	✓	✓	✓	✓
Managing force gauge	N/A	N/A	N/A	✓	✓	N/A

※Old models of force gauges may not be compatible partially or wholly. Contact us for the detail about old models.



Force Recorder Light Force-Time Graphing Software

Moderated Price Model



Affordable model focusing on graph acquisition

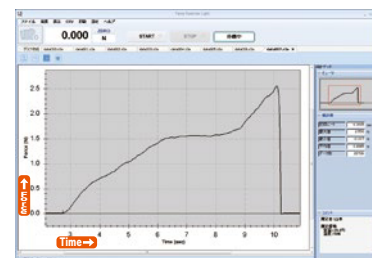
■ Acquire measuring data accurately and precisely

- It graphs measurement accurately and precisely at high sampling rate, up to max. 2000Hz.

■ Create report instantly

- Easily saves data in Word, Excel and PDF format, reducing time to create reports.
- It automatically inputs graphs, dates & time, and statistics. Comments also can be input manually.

• Refer to the [Operating Environment] on the previous page for the details of operating environment.



Force Recorder Standard Force-Time Graphing Software

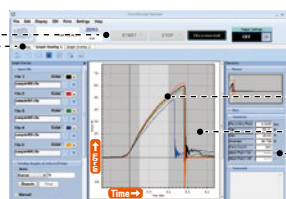


Analyze data easily and accurately, and create report with ease

■ Make efficient by simple manipulations and useful functions

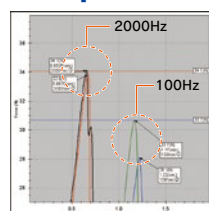
- Easy steps for recording:
Connect a force gauge and PC with a USB cable, and click START.

- Data can be easily compared due to plural tabs.



- It automatically calculates Max/Min/Ave values.
- Comments can be inserted.
- Maximum 5 graphs can be overlaid in a table, allowing easy comparison and accurate analysis.

■ Capture measuring data accurately —

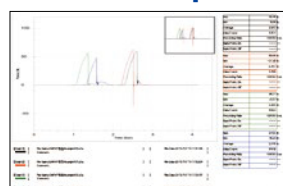


- It graphs the measurement accurately due to high sampling rate, at Max.2000Hz

A peak value can be captured more precisely due to the higher sampling rate.

◀ Comparison of 2000Hz and 100Hz
2000Hz is more to capture peak value than 100 Hz.

■ Create reports quickly



- Data can be easily saved in Word, Excel, and PDF format, reducing the time to create reports.
- It automatically inputs graphs, date & time, and statistics. Comments also can be input manually if necessary.

• Refer to the [Operating Environment] on the previous page for the details of operating environment.



Force Recorder Professional Force-Displacement Graphing Software



Draw and analyze force vs displacement graphs (FS curve)

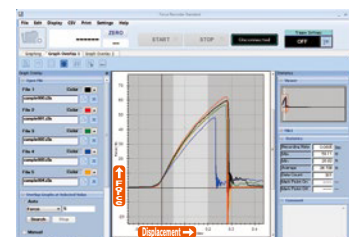
In force-displacement measurement, a dedicated device measures force and travel amount (compression, tension) of the force gauge on the motorized stand as displacement at the same time.

■ Force vs displacement graphs can be drawn.

- Force-displacement graph can be created by connecting the linear scale (Page 26) or test stand with inbuilt linear scale (FA model) (Page 36) together with force gauge.
- FSA series (Page 50~52) include this software.

■ Professional is basically the same as Standard in performance&function

• Refer to the [Operating Environment] on the previous page for the details of operating environment.





Force Recorder Plus

Multiple gauges Force-Time Graphing Software



Graph the data up to 4 force gauges, and display different measurement unit such as force and torque in 1 screen

■ Acquire data up to 4 force gauges

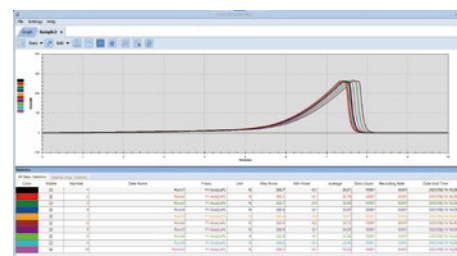
- Easy USB connection ※A self-power USB hub is required separately.
- Acquire synchronized data (up to 1000 times/sec)
- The force applied to different parts of the sample can be measured up to 4 points at the same time

■ Display different unit such as force and torque in 1 screen

- Record the transition of the multiple movements such as pressing and turning

■ Maximum 10 graphs can be overlaid in a table and compared

- It enables you to analyze test results more easily since 10 graphs can be compared at the same time, which is more than other software
- Refer to the [Operating Environment] on the previous page for the details of operating environment.



Force Logger Plus

Multiple Gauges Managing Software



Manage data up to 4 force gauges

■ Acquire data up to 4 force gauges

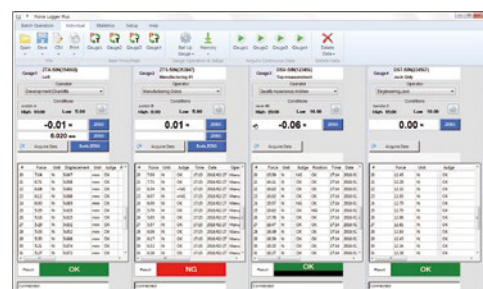
- Easy USB connection ※A self-power USB hub is required separately.
- Acquire single data or synchronized data (up to 10 times/sec)

■ Simple data management

- Record data by each serial number of the force gauge, together with the date & time of recording and person in charge.
- Register the force gauge by each serial number and manage the force gauge with an operator's name and a department.

■ Force gauge setting

- Easily set functions of the force gauge by the software.



※The wire less Unit(P24) is available only for Ver. 1.10 and later.
Force Logger is available with Ver. 2.10 and later.

• Refer to the [Operating Environment] on the previous page for the details of operating environment.



ZLINK4

Force-Time Graphing Software for DST/DSV

Compatible models



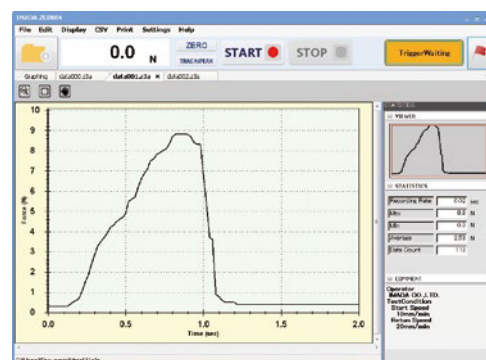
Draw force-time graph easily

■ Graphing at Max. 50Hz

- Open multiple graphs with tabs
- Zoom specific parts in detail easily with zoom function

■ High operability by trigger function

- Automatic recording by setting the force value of when to start and end. The recording time also can be set.
- Refer to the [Operating Environment] on the previous page for the details of operating environment.



Cables

Cables expand the functionality of digital force gauges and test stands.

	ZTA  To Page 13	ZTS  To Page 11	eZT  To Page 18	DSV  To Page 17	DST  To Page 16	FA Plus2  To Page 18
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The Cables to Connect a Force Gauge to an External Devices

RS232C cable Connects a PC to a force gauge, enabling to record the measurement and transmit command signals from the PC to the gauge.	CB-208 (9-pin)  Length: Approx. 3m	CB-208 (9-pin)  Length: Approx. 3m	CB-208 (9-pin)  Length: Approx. 3m	CB-203 (9-pin)  Length: Approx. 3m	CB-203 (9-pin)  Length: Approx. 3m	CB-208 (9-pin)  Length: Approx. 3m
Analog cable Connects analog devices such as a pen recorder to a force gauge, enabling to record force transition. ※CB-118 works for "AN" option. ※1	CB-108  Length: Approx. 3m	CB-108  Length: Approx. 3m	CB-108  Length: Approx. 3m			CB-108  Length: Approx. 3m
Open End cable Connects a force gauge to a special device.	CB-908  Length: Approx. 3m	CB-908  Length: Approx. 3m	CB-908  Length: Approx. 3m			CB-908  Length: Approx. 3m
Cable with Terminal Block Connects an external equipment such as PLC	CTB-A  Length: Approx. 1m	CTB-A  Length: Approx. 1m	CTB-A  Length: Approx. 1m			CTB-A  Length: Approx. 1m
External Contact Point cable Enables you to measure external contact points.	CB-808  Length: Approx. 3m	CB-808  Length: Approx. 3m	CB-808  Length: Approx. 3m			CB-808  Length: Approx. 3m

The Cables to Connect a Force Gauge/an Amplifier to a Test Stand

Force Control cable ※2 Connects a test stand (MX/MH) to a force gauge/an amplifier, activating motion control by set force values and an overload-preventing function.	CB-508  Length: Approx. 1.5m	CB-508  Length: Approx. 1.5m				
Force Control cable ※2 Connects a test stand (MX2/MH2/EMX) to a force gauge/an amplifier, activating motion control by set force values and an overload-preventing function.	CB-528  Length: Approx. 1.5m	CB-528  Length: Approx. 1.5m	CB-528  Length: Approx. 1.5m			CB-528  Length: Approx. 1.5m
Displacement cable (EMX-FA/MX2-FA/MH2-FA connecting) ※2※3※4 Allows displacement output by connecting a force gauge/an amplifier to a test stand equipping a linear scale (EMX-FA/MX2-FA/MH2-FA).	CB-718  Length: Approx. 1.5m		CB-718  Length: Approx. 1.5m			CB-718  Length: Approx. 1.5m
Displacement cable (EMX-FA connecting) ※2※3※4 Allows displacement output by connecting a test stand equipping a linear scale (EMX-FA) to a force gauge/an amplifier.	CB-728  Length: Approx. 1.5m		CB-728  Length: Approx. 1.5m			CB-728  Length: Approx. 1.5m

The Cable to Connect a Test Stand to an External Device

External Signals I/O Cable Connects a test stand (MX2-CN/MH2-CN/EMX), activating the external control.	CB-706  Length: Approx. 1.5m
--	---

※1 ZTS/A series force gauges output raw sensor data as fast analog voltage without conversion with -AN option.

※2 Please refer to "ZT series Advanced Measurement Examples" on Page 15

(A test stand stops when a force gauge senses force beyond its capacity(overload-preventing function) however, it cannot prevent overload completely. We do not guarantee the complete overload-prevention.)

※3 It also activates motion control by set force values and an overload-preventing function.

※4 EMX series with firmware ver.2.0 or later requires CB-718.

※ We offer custom-made options for the cables such as extending the length, changing the connector (from analog output to BNC connector), enhancing the flexibility and more.

※ CB-308 are required to connect Mitutoyo Digimatic Mini Processor to ZTS/A series (earlier than Ver.5.00).



Wireless Data Transmit System WL01-ADP/ WL01-USB

It transmits measurement data wirelessly from a force gauge to a PC or other device.

- **Reliable data transmission/reception:** It equips reception-detecting function such as "group-name" setting and send-error detection.
- **High security data protection:** It prevents data leak with AES data encryption
- **Various methods of data management:** Using published communication-command, you can import data to your Excel format or other software, and it can receive data from 26pcs of force gauge at a maximum. ※1



Wireless Transmit Adapter	
Adapter which connected to force gauge to send data	
Model	WL01-ADP
Compatible Models ※2	ZTA/ZTS(Separated Sensor Models Included)eZT, FA Plus2, eFA Plus2, DTXA/DTXS, HTGA/HTGS, HTGA/HTGS-TFX
Communication Distance ※4	Approx. 20m
Wireless Communication Standard / Frequency	Complies with IEEE802.15.4 World Common Frequency: 2.4GHz Complies with CE: Radio Equipment Directive[2014/53/EU] Complies with Japanese Technical Standard: ARIB STD-T66 ※Please contact us for use in other available areas

USB Wireless Receiver	
Receiver which connected to PC to receive data	
Model	WL01-USB
Compatible Software ※3	Force Logger (Attachment, available from the Ver. 2.10 later) Force Logger Plus (Sold Separately, available from Ver. 1.10 later)
Communication Distance ※4	Approx. 20m
Wireless Communication Standard / Frequency	Complies with IEEE802.15.4 World Common Frequency: 2.4GHz Complies with CE: Radio Equipment Directive[2014/53/EU] Complies with Japanese Technical Standard: ARIB STD-T66 ※Please contact us for use in other available areas

※ In the case of using the output signal by connecting force gauge to a test stand or external device while using wireless communication, you can use Wireless Transmit BOX (WL01-BOX).

※1 Depending on the software used, the number of connectable devices is limited.

※2 All compatible models are available from firmware Ver.3.10 and later.

※3 The maximum number of gauges connected to it in IMADA software is Force Logger: 1 unit / Force Logger Plus: 4 unit

In the case of using Wireless Data Transmission System Unit with IMADA software, you cannot use some functions. Please contact us for the details. E.g. Acquire continuous data

※4 The communication distance may vary depending on the obstacles and environmental conditions. Please contact us for the details.

Built-in Linear Scale Unit

Connect this linear scale to ZTA(P13) series/eZT(P18) series to measure force and displacement. It can be mounted on your equipment easily.

Model	DMK-100	DMK-300	DMK-500	DMK-800
Stroke(mm)	Max.100	Max.300	Max.500	Max.800
Size(mm)	254X25	454X25	654X25	954X25
Fixing screw	M4	M4	M4	M4

※Select from 37 pin connector or cable without connector.



The Cables for Past Models

If you need a cable for past-model force gauges/torque gauges, please refer to the right list. If your model is not mentioned in the list, please contact us.

[The Model List]

Model	ZP,Z2 series	HTG2,DTX2 series	DS2 series
Analog cable	CB-104	CB-104	CB-101
RS-232C cable	CB-204	CB-204	CB-203
Digimatic cable	CB-304	CB-304	CB-301
Force Control cable	CB-501(Connect with MX series)		

※Please select CB-504 if CB-204 and CB-501 are required to use at the same time.

Examples of Cable Applications

●with Digital Force Gauge ZT series

It enables you to

- detect abnormalities using a buzzer / light / your equipment together. (Using the functions of comparator and overload output)
- record the force value of contact point in a switch tactile test or broken point in a cable strength test. (Using the function of the external contact point output)
- show the point at the moment contact point of switch tactile test or a broken point of cable strength test on a graph using software (Force Recorder Standard/Professional). (Using the mark point function)
- control an external device when the force gauge senses a set point. (Using sub-comparator function; Available only in ZTA/eZT series)

●with Motorized Test Stand EMX, MX2(MH2) series(Optional-CN version)

It enables you to

- Operate externally from a foot switch and the like.
- Improve equipment safety with an interlock mechanism.
- Link wire conduction and test stand activities.



Mechanical Force Gauges

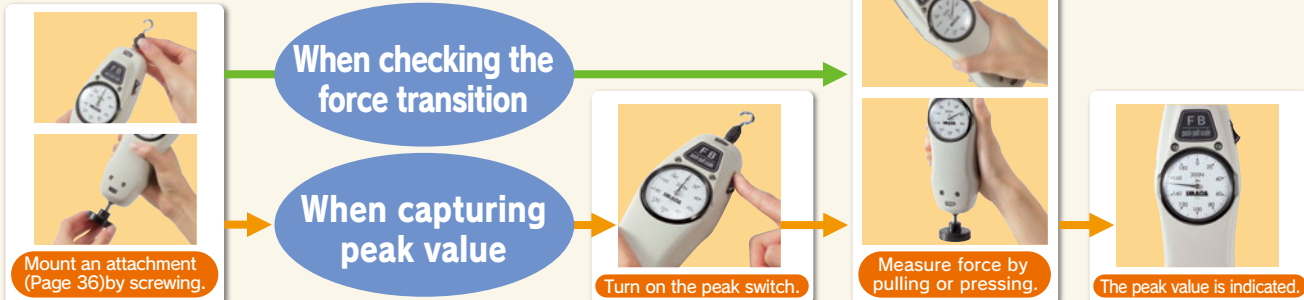
Analog type force gauges. It is easy to read force transition.
Electricity is not needed. They are stout and long-lasting.



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

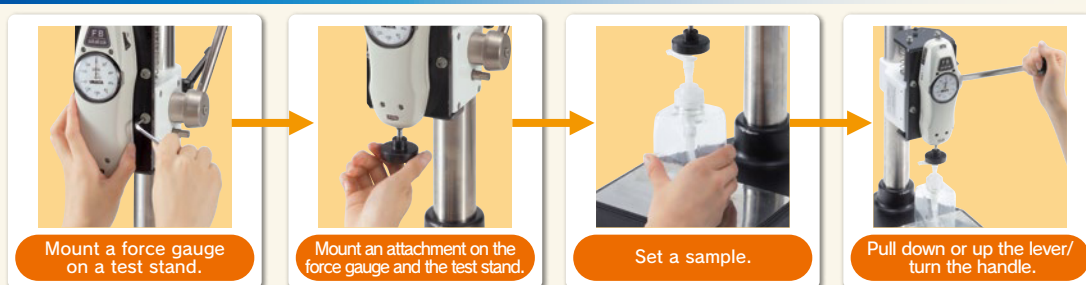
Simple Method

Readily measure force by hand.



Reproducible Method

Combine a test stand(P30) with a force gauge to improve repeatability.



Economical Type FB/FS 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 30



Apply Stable Force by Hand

Handle FOH-1 —To Page 48

Standard Type PS/PSS series

○High Accuracy Model

Compression and Tension Compatible

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



Improve Measuring Repeatability

Test Stands —To Page 30



Apply Stable Force by Hand

Handle FOH-1 —To Page 48

■Specifications

Accuracy	±0.3%F.S. or less
Division	100lines(※1)
Reading method	Real time/Peak hold(Switchable)
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	M6
FB-20N	20N	0.2N	
FB-30N	30N	0.25N	
FB-50N	50N	0.5N	
FB-100N	100N	1N	
FB-200N	200N	2N	
FB-300N	300N	2.5N	
FB-500N	500N	5N	

■International model lists(※2)

Model	Capacity	Resolution	Thread
FS-1K	1kgf	10gf	M6
FS-2K	2kgf	20gf	
FS-3K	3kgf	25gf	
FB-5K	5kgf	50gf	
FB-10K	10kgf	100gf	
FB-20K	20kgf	200gf	
FB-30K	30kgf	250gf	
FB-50K	50kgf	500gf	
Model	Capacity	Resolution	Thread
FB-5lb	5lbf	0.05lbf	M6
FB-10lb	10lbf	0.1lbf	
FB-20lb	20lbf	0.2lbf	
FB-30lb	30lbf	0.25lbf	
FB-50lb	50lbf	0.5lbf	
FB-100lb	100lbf	1lbf	

■Specifications

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

■Model lists

Model	Capacity	Resolution	Thread
PS-5N	5N	0.05N	M6
PS-10N	10N	0.1N	
PS-20N	20N	0.2N	
PS-30N	30N	0.25N	
PS-50N	50N	0.5N	
PS-100N	100N	1N	
PS-200N	200N	2N	
PS-300N	300N	2.5N	
PS-500N	500N	5N	

■International model lists(※2)

Model	Capacity	Resolution	Thread
PSS-0.5K	500gf	5gf	M6
PSS-1K	1kgf	10gf	
PSS-2K	2kgf	20gf	
PSS-3K	3kgf	25gf	
PS-5K	5kgf	50gf	
PS-10K	10kgf	100gf	
PS-20K	20kgf	200gf	
PS-30K	30kgf	250gf	
PS-50K	50kgf	500gf	
Model	Capacity	Resolution	Thread
PS-5lb	5lbf	0.05lbf	M6
PS-10lb	10lbf	0.1lbf	
PS-20lb	20lbf	0.2lbf	
PS-30lb	30lbf	0.25lbf	
PS-50lb	50lbf	0.5lbf	
PS-100lb	100lbf	1lbf	

Precision Type PSM series

- ◎ The Highest Accuracy 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 30



Apply Stable Force by Hand
Handle FOH-1 – To Page 48



PSM Standard set

Specifications

Accuracy	±0.1%F.S. or less
Division	200lines(※1)
Reading method	Real time/Peak hold(Switchable)
Standard accessories	Attachment 6pcs(※3)-the instruction manual-the carry case-Inspection certificate etc.

Model lists

Model	Capacity	Resolution	Thread
PSM-20N	20N	0.1N	M6
PSM-30N	30N	0.2N	
PSM-50N	50N	0.25N	
PSM-100N	100N	0.5N	
PSM-200N	200N	1N	
PSM-300N	300N	2N	
PSM-500N	500N	2.5N	

International model lists(※2)

Model	Capacity	Resolution	Thread
PSM-2K	2kgf	10gf	M6
PSM-3K	3kgf	20gf	
PSM-5K	5kgf	25gf	
PSM-10K	10kgf	50gf	
PSM-20K	20kgf	100gf	
PSM-30K	30kgf	200gf	
PSM-50K	50kgf	250gf	

Notes: ◎The weight is depending on the range. (※1)120 lines for 30N, 300N, 30k and 30lb.(150lines for PSM)
(※2) The international models are NOT able to sell in Japan due to the Measurement Act.(※3)Please refer to Page 38 for the accessory attachments.

High Capacity Type PSH series

- ◎ High Capacity Model in capacity from 500N to 3000N

Compression and Tension Compatible

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



Improve Measuring Repeatability
Test Stands – To Page 30



PSH Standard set

Specifications

Accuracy	±0.1%F.S. or less
Division	100lines(※1)
Reading method	Real time/Peak hold(Switchable)
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	M10
PSH-1000N	1000N	10N	
PSH-2000N	2000N	20N	
PSH-3000N	3000N	25N	

International model lists(※2)

Model	Capacity	Resolution	Thread
PSH-50K	50kgf	0.5kgf	M10
PSH-100K	100kgf	1kgf	
PSH-200K	200kgf	2kgf	
PSH-300K	300kgf	2.5kgf	
Model	Capacity	Resolution	Thread
PSH-200lb	200lbf	2lbf	M10
PSH-300lb	300lbf	2.5lbf	
PSH-500lb	500lbf	5lbf	

Built-in Type UKT/UKK series

- ◎ Small Model Ideal for Built-in Equipment

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



- Exclusive use for tension:UKT series
- Exclusive use for compression:UKK series

Specifications

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

Model lists

Model	Capacity	Resolution	Thread
UKT-20N	20N	0.2N	M6
UKK-20N	20N	0.2N	
UKT-30N	30N	0.25N	
UKK-30N	30N	0.25N	
UKT-50N	50N	0.5N	
UKK-50N	50N	0.5N	
UKT-100N	100N	1N	
UKK-100N	100N	1N	
UKT-200N	200N	2N	
UKK-200N	200N	2N	
UKT-300N	300N	2.5N	
UKK-300N	300N	2.5N	

International model lists(※2)

Model	Capacity	Resolution	Thread
UKT-2K	2kgf	20gf	M6
UKK-2K	2kgf	20gf	
UKT-3K	3kgf	25gf	
UKK-3K	3kgf	25gf	
UKT-5K	5kgf	50gf	
UKK-5K	5kgf	50gf	
UKT-10K	10kgf	100gf	
UKK-10K	10kgf	100gf	
UKT-20K	20kgf	200gf	
UKK-20K	20kgf	200gf	
UKT-30K	30kgf	250gf	
UKK-30K	30kgf	250gf	
Model	Capacity	Resolution	Thread
UKT-5lb	5lbf	0.05lbf	M6
UKK-5lb	5lbf	0.05lbf	
UKT-10lb	10lbf	0.1lbf	
UKK-10lb	10lbf	0.1lbf	
UKT-20lb	20lbf	0.2lbf	
UKK-20lb	20lbf	0.2lbf	
UKT-30lb	30lbf	0.25lbf	
UKK-30lb	30lbf	0.25lbf	
UKT-50lb	50lbf	0.5lbf	
UKK-50lb	50lbf	0.5lbf	

Muscle Force Measurement Device

Muscle Force Measurement Device

- ◎ Muscle force measurement device is a kit including a force gauge, a handle, and pads, designed for measurement of muscle strength and job task analysis (workload test).



6 types of included attachments deal with wide variety of test samples.
[Application]



Compression and Tension Compatible



[Specification chart]

Model	RZTA-1000N	RDSV-1000N	RFB-750N
Capacity	1000N	1000N	750N
Size	Approx. W302×D37×H200mm	Approx. W302×D36×H189mm	Approx. W302×D51×H218mm
Weight	Approx. 1kg	Approx. 1kg	Approx. 1.1kg

What is Unit “N”?

The “N” is a force unit called “Newton.” $<1\text{kgf}=9.80665\text{N}>$

In Japan, Measurement Act established in 1993 requires you to use only Newton for force measurement.

Thus, in Japan our gauges indicate N.

For outside of Japan, we offer international models providing N/kgf/lbf. To be specific, as for digital force gauges you can switch units (N/kgf/lbf), and as for mechanical force gauges you have to select one from the 3 units before purchase.

For your information, in Japan the unit only in the table below can be used according to Measurement Act.

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 specifications means the maximum force that can be applied to a force gauge / a load cell. Force gauges or load cells would be broken if you applied force over their capacity. Therefore, we recommend that you choose the force gauge whose capacity is a little larger than expected force in your testing. Please utilize the information below to prolong gauges' lives.

Shock or Breaking Test : When Measuring Rapid Force Change

→Please choose the force gauge whose capacity is 200% of expected force in your testing.

Ex) Expected force: 10N, Measuring instrument: Digital force gauge ZTS →ZTS-20N is recommended.

(①Double the expected force(10N) → 20N, ②Choose the ZTS whose capacity is 20N → ZTS-20N)

Elongation Test : When Measuring Slow Force Change

→Please choose the force gauge whose capacity is 150% of expected force in your testing.

Ex) Expected force: 30N, Measuring instrument: Digital force gauge ZTS series →ZTS-50N is recommended.

(①Increase expected force(30N) by half → 45N, ②Choose the ZTS whose capacity is 45N

→ We do not offer ZTS-45N, then ZTS-50N is the nearest one.)

What Is “F.S.” for Accuracy, for example $\pm 0.2\% \text{F.S.}$?

“F.S.” is abbreviation of “Full Scale,” and it means the capacity.

Ex) ZTS-50N offers $\pm 0.2\% \text{F.S.}$ accuracy, and has 50N capacity.

→The error is... $50\text{N} \times \pm 0.2\% = \pm 0.1\text{N}$.

→When the measured value is 30N using ZTS-50N,
guaranteed result is... $30\text{N} \pm 0.1\text{N} = 29.9 \text{ to } 30.1\text{N}$.

Key Point of Maintenance of Measuring Instrument

Measuring instruments should be calibrated periodically. Calibrating means checking if they maintain initial accuracy or not. All of the measuring instruments including force gauges reduce their accuracy slightly day by day, therefore, they should be calibrated, and adjusted as required to conduct precise measurement continuously.

IMADA offers calibration services, so you can keep using our force gauges for long after purchase at ease. Besides, our calibration center is certified with ISO/IEC17025:2017, therefore, we offer high quality of calibration service if required.

※Some products cannot be calibrated for some reasons.

Test Stands

Test Stands Improve Repeatability.

They provide constant test speed and apply load straight, reducing the variation from a person to a person.

A force gauge can be used by hand, and also it can be used with a test stand for greater accuracy. Combine a test stand with a force gauge and attachments to create a force testing machine, which offers a significant advantage over handheld use in precision.



Motorized Test Stands

They provide constant test speed and apply force straight, offering high repeatability.

Simple MX(Vertical)/MH(Horizontal)



To Page 33

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

The Simplest Type

- For simple compression/tension tests

Measuring speed can be changed with its dial, however, the setting speed is not able to be seen in digital. MX2/MH2 or EMX can display the speed on its monitor.

Manual Test Stands

With a manual test stand, force can be applied straight, offering higher repeatability than measurement by hand.

Simple

SVL-1000N



To Page 34

Capacity: 1000N

- The simplest test stand
- The lever improves measuring efficiency.

SVH-1000N



To Page 34

Capacity: 1000N

- The simplest test stand
- The handle realizes stable measurement.

Standard MX2(Vertical)/MH2(Horizontal)



To Page 32

Capacity:
(MX2)500N~5000N
(MH2)500N~2500N

User Friendly and High Functionality

- Digitally set testing speed and see it on its monitor.
- The equipped monitor indicates measuring conditions which can be easily set.
- MX2/MH2 include Timer and Counter function which enable you to conduct durability tests and repeat tests.

FCA-50N



To Page 35

Capacity: 50N

- Simple Lever Test Stand can set travel distance.

KV-50N



To Page 35

Capacity: 50N

- Ideal for small force measurement.

MSF-50N



To Page 35

Capacity: 50N

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

High Performance EMX



To Page 33

Capacity: 500~1000N

Advanced type of MX2 with several features below

- It provides a wide range of testing speed (0.5-600mm/min) and travel distance setting, covering a wide variety of testing conditions.
- It has highest rigidity, offering great precision.
- 5 types of measuring pattern (speed/repeat frequency etc.) can be stored.

Long Stroke



To Page 34

Capacity: 500N~3000N

- Ideal for stretching or large sample measurement.

Horizontal



To Page 35

Capacity: 1000N~3000N

- A sample can be set very easily.

※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.

On our website, you can see a wide range of force testing applications, and download a specification sheet of each product. Please feel free to contact us.

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

IMADA

Search

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

Motorized Test Stands

They provide constant test speed and apply force straight.
They realize the high-repeatable measurement.



Combining a test stand with a force gauge and attachments enables you to create a testing machine to meet your testing needs.



Compression Test



Tension Test



Peeling Test



Friction Test



How to Use Motorized Test Stand

(Using Example: MX2 series)



Mount a force gauge on the test stand.



Mount attachments on the force gauge and the test stand.



Set a sample.



Set up speed and other requirements.



Press the button to start the measurement.

As options, we can extend stroke, change speed range, and more to meet your measurement needs.
Some models can equip a linear scale (FA version) to measure / analyze the relationships of force and displacement.
The details are on Page 36.

Common overview of Motorized Test Stand (Compatible Test Stand : MX2 series, MH2 series, EMX series)

Adjusting Speed ※1



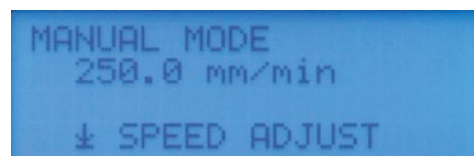
Testing speed is easily adjustable with the dial.

Setting Resolution:

Speed Range	UNIT
10-20mm/min	0.5mm/min
20-100mm/min	5mm/min
100-300mm/min	10mm/min

※Adjustable speed types: Start/Measuring/Return

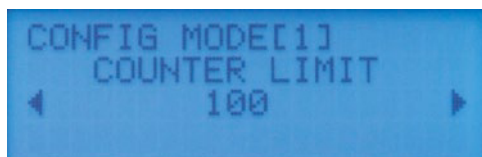
Three Measuring Modes



Three Testing Modes are available:

- MANUAL MODE:** It moves a force gauge at the set speed while Up/Down or Left/Right button pressed.
- JOG MOVE:** It moves a force gauge at light feeds (approx. 0.05mm/1 turn) by turning the dial.
- CYCLE MODE:** It reciprocate a force gauge between stroke-limit knobs.

Other Functions



In CYCLEMODE, you can set the reciprocating frequency and pausing time.

Counter (the reciprocating frequency): Max. 65535 times

Timer (pausing time): Max. 99 min 59 sec 9 (by 0.1 sec)

Versatile Functions with Force Gauge



Versatile functions are available with the Force Gauge (ZT Series) and the CB series cables.

- Overload Prevention:** A test stand stops when a force gauge senses too much force over its capacity.
- Force Control:** A test stand stops when a force gauge senses a pre-set force limit. Or it can automatically regulate the load so as to be in a pre-set range for a pre-set time period.
- Measurement Speed Control:** Auto-switch function between the Moving direction and the Measurement Speed.
- Auto-Functions:** Auto-Zero Reset of the Force Gauge and Auto-recording of the measured values reflected in the Software during the measurement.

Refer to the P.15 for details

※1 The speed ranges vary per product.

Standard Type

- Measuring speed can be set digitally.
- This type of stands have a monitor to show measuring conditions which enables you to set them easily.
- Durability test using its timer function and repeat test using its counter functions can be conducted.



MX2 series

Option

- Length Scale
 - FA version
 - Long Stroke
 - Extended Column (MX2-5000N only)
 - Speed Range Change
 - Output and Input External Signal
- Please refer to Page36



Measure under the safe environment

Accessory

To Page 35



Connect with External Devices

Application examples of how cables are used
To Page 15 and Page 25



Analyze Force-Displacement Relation
Force-Displacement Analysis Unit

To Page 50



MX2-500N



MX2-2500N

Specification

Model	MX2-500N	MX2-1000N	MX2-2500N	MX2-5000N
Capacity	500N	1000N	2500N	5000N
Speed	10-300mm/min	10-300mm/min	10-300mm/min	0.5-300mm/min
Maximum Sample Height (mm)	Approx. 235mm	Approx. 300mm	Approx. 320mm	Approx. 380mm
Weight	Approx. 18kg	Approx. 19kg	Approx. 26kg	Approx. 51kg
Size	Approx. W220xD380xH562mm	Approx. W280xD410xH660mm	Approx. W280xD410xH644mm	Approx. W295xD444xH823mm

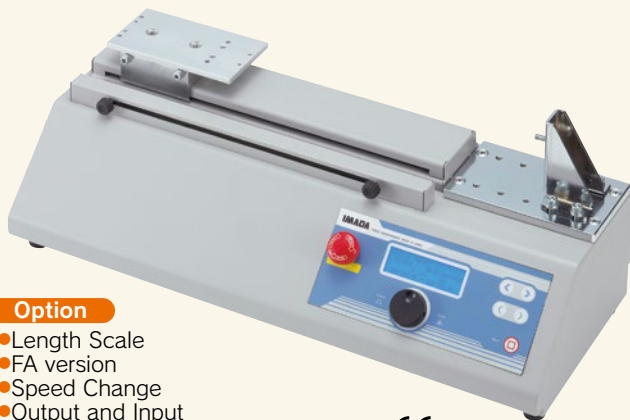
MH2 series



Horizontal Type

Option

- Length Scale
 - FA version
 - Speed Change
 - Output and Input External Signal
- Please refer to Page36



CE MH2-500N



CE MH2-2500N

Specification

Model	MH2-500N	MH2-2500N
Capacity	500N	2500N
Speed	10-300mm/min	10-300mm/min
Maximum Sample Length (mm)	Approx. 245mm	Approx. 340mm
Weight	Approx. 14kg	Approx. 27kg
Size	Approx. W554xD220xH219mm	Approx. W666xD340xH261mm



Connect with External Devices

Application examples for using cables
To Page 15 and Page 25



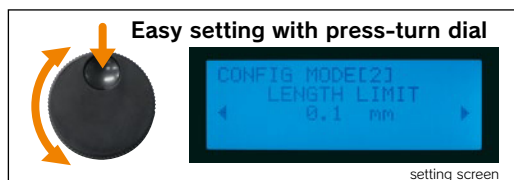
Analyze Force-Displacement Relation
Force-Displacement Analysis Unit

To Page 50

Advanced Type

EMX series

- Meets your various measuring requirements by wide speed range (0.5~600mm/min)
- Enables you to measure precisely with the highest rigidity
- Sets the travel distance digitally and unify measuring condition
- Improves measuring efficiency by storing up to 5 measuring patterns
- Allows communication with various external devices by equipped I/O connector
- Improves measuring accuracy and efficiency by CONTACT/BREAK DETECTION
- Makes it simple to set measuring conditions by Easy set-up mode



Specification

Model	EMX-500N	EMX-1000N
Capacity	500N	1000N
Speed	0.5-600mm/min	0.5-600mm/min
Maximum Sample Height(※1)	Approx.295mm	Approx.320mm
Weight	Approx.19kg	Approx.23.5kg
Size	Approx.W220xD380xH637mm	Approx.W280xD410xH643mm



Measure under the safe environment

Accessory

To Page 35



Connect with External Devices

Application Example for using cables

To Page 15 and Page 25



Analyze Force-Displacement Relation

Force-Displacement Analysis Unit

To Page 50

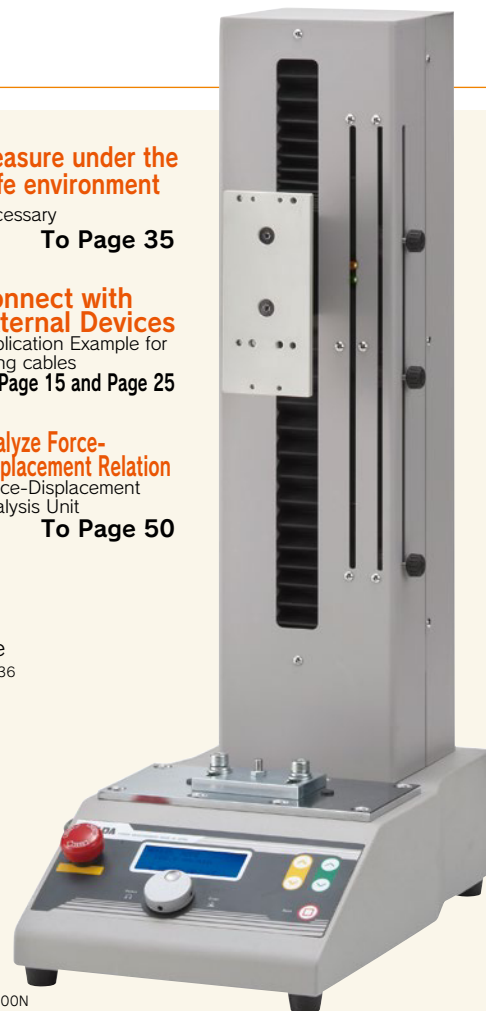
Option

- FA version
- Long Stroke

Please refer to Page36

CE

EMX-500N



Simple Type

- This type is the simplest.

MX series

Option

- Speed/ Length Meter
- Length Scale
- Long Stroke
- Speed Change

Please refer to Page36



Measure under the safe environment

Accessory

To Page 35

CE

MX-500N



Specification

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

MH-1000N

Horizontal Type

CE

Option

- Speed/ Length Meter
- Length Scale
- Speed Change

Please refer to Page36

MH-1000N



Specification

Model	MH-1000N
Capacity	1000N
Speed	6-180mm/min
Maximum Sample Length(※1)	Approx.280mm
Weight	Approx.14kg
Size	Approx.W700xD195xH210mm

Note: ①A force gauge is separately sold. ②Actual measuring capacity depends on the force gauge's capacity. However, when the test stand's capacity is less than the force gauge's capacity, you can measure force up to the test stand's 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 does not include attachments. The distance of MX2-2500, MX2-5000N or MH2-2500N is in the case of mounting ZT series high capacity type.

Manual Test Stands

They provide constant test angles, offering higher repeatability than measurement by hand.



Combining a test stand with a force gauge and attachments, you can create a testing machine to meet your testing needs.

Cloth Button Pull Off Test

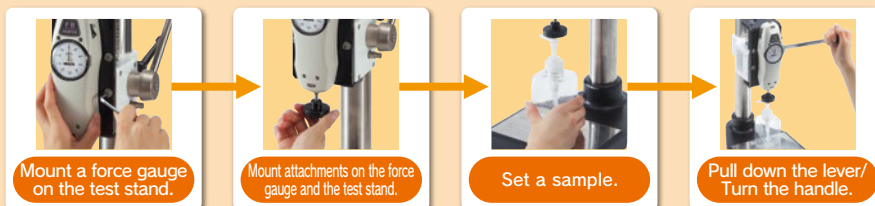


Ball Hardness Test



How to Use Manual Test Stand

(Using Example: SVL-1000N)



As options, we can extend its stroke or mount a length scale. The detail is on Page 36.

Simple Type

SVL-1000N/SVH-1000N

- ⊙The lever type improves the measuring efficiency. The handle type realizes stable measurement.

Specification

Model	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 / 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 traveling distance of a force gauge.

※B GF-1/2: These are necessary adapters for mounting a chuck fixture on the tables of the stand. (Separately sold)



Long Stroke Type

HV series

- ⊙HV series have a long stroke, ideal for testing extensible or large specimens.
- ⊙They are operated by a handle.

Specification

Model	HV-500NII	HV-1000N	HV-3000N
Capacity	500N	1000N	3000N
Maximum Sample Height(※1)	Approx.240mm	Approx.375mm	Approx.415mm
Feed Amount	2mm/1 turn	1.2mm/1 turn	0.6mm/1 turn
Weight	Approx. 10kg	Approx. 18kg	Approx. 24kg
Size	Approx.W327xD309xH597.5mm	Approx.W325xD275xH730mm	Approx.W355xD310xH744mm



Note: ①A force gauge is separately sold. ②Actual measuring capacity depends on the force gauge's capacity. However, when the test stand's capacity is less than the force gauge's capacity, you can measure force up to the test stand's 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 does not include attachments. The distance of HV-3000N or SH-3000N is in case of mounting ZT series high capacity type.

Low Capacity or Small Type

- This type is ideal for measurement in capacity up to 50N.
- A force gauge can be moved at light feed.

FCA-50N

- Sets a travel distance to move a force gauge, and measures the force value to the distance.

FCA-50N

Specifications

Model	FCA-50N
Capacity	50N
Distance	0~45mm (Adjustable with the limit knob)
Measuring Space	50~80mm (※1)
Weight	Approx. 3kg
Size	Approx. W175xH296xD178mm
Compatible force gauge	ZTS ZTA DST DSV (※2)

※1 The measuring space means the distance between the test stand table and the thread of a force gauge. The distance depends on where you put the force gauge.
 ※2 You cannot combine high capacity model force gauges with this stand.
 ※We also offer an food testing unit including this FCA-50N. For further information, please see "Catalog for Torque testers and Food testers."

KV-50N

- It is a desktop type.
- It can move a force gauge at light feed (1.0mm/1 turn).

KV-50N

Option

- Length Scale
- Please refer to Page 36

Specifications

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

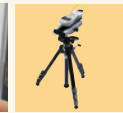
MS series

- Various measurements are possible by the different installing ways.



Analyze Force-Displacement Relation
Force-Displacement Analysis Unit

To Page 50



MSF-50N

You can combine this stand with an optional handle or your tripod to expand the range of measuring opportunity.
 ※You need an optional adaptor (sold separately) to combine it with a tripod.
 ※We do not sell any tripods.

Specifications

Model	MSF-50N	MSL-50N
Type	Standard	FA version(Page33)
Capacity	50N	
Maximum Sample Height(※1)	Approx. 44mm	
Feed Amount	18mm/1 turn	
Weight	Approx. 1.2kg	
Size	Approx. W110xD81xH204mm	

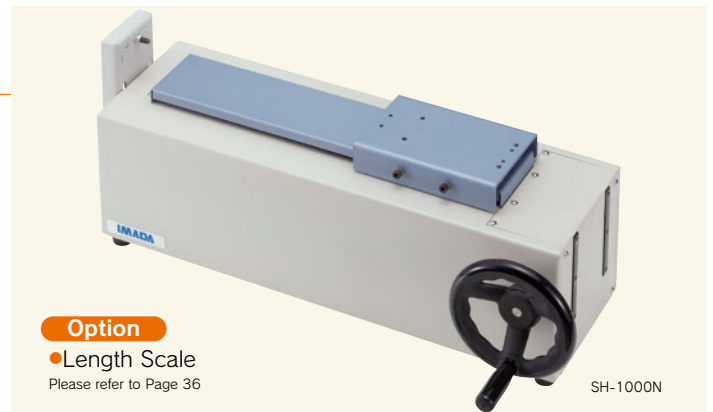
Horizontal Type

SH series

- Horizontal type: Sets a sample easily.

Specification

Model	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 Page 36

SH-1000N

Accessories for Test Stand

Interlocking Shield

OP-MX2EMX-IC OP-MX250-IC

- Interlocking shield for MX2 and EMX series automatically stops operation when the door is open.

OP-MX2EMX-IC

Specification

Model	OP-MX2EMX-IC	OP-MX250-IC
Cover Material	PET	Polycarbonate
Weight	Approx. 9.1kg	Approx. 5.5kg
Size	Approx. W410xD312xH650mm	Approx. W375xD250xH803mm
Compatible Test Stand(※1)	MX2-500N/1000N/2500N EMX series	MX2-5000N

※1 -CN option and safety setting of MX2 series are required to activate interlock function. (-CN option is installed standardly for EMX series)

Safety Shield

ST-SS

- It is a safety shield put in front of a test stand, protecting an operator from sample debris.

ST-SS

Specification

Model	ST-SS
Cover Material	Acrylic
Weight	Approx. 500g
Size	Approx. W406xD305xH628mm

User Mounted Kit FA version

OP-EMX-FA

- Displacement unit can be mounted by yourself to EMX series firmware ver 2.0 or later .



Specification

Model	OP-EMX-FA	OP-EMX-L-FA
Size	Approx. W81xD82xH455mm	Approx. W81xD82xH755mm
Fixing Screw	Use included M3 truss head screws(Short:2pcs,Long:4pcs).	

※Use CB-718 Sold separately to measure displacement.

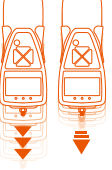
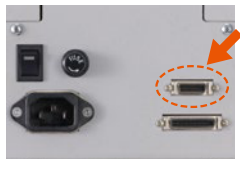
Options for Test Stands

The options below can be added to expand functionality of test stands or improve measuring efficiency.

Options for The Manual and Motorized Test Stands

Length Scale (-S) It digitally indicates travel distance of a force gauge. (We recommend another option [FA version] below if you need to analyze the relations of force and displacement.)		Long Stroke (-L,-2L) We extend the stand's stroke. Extended Column (-EXT) We extend the stand's column. The stand's stroke does Not change.	
--	---	---	---

Limited Options for The Motorized Test Stands

Speed / Length Meter (-E) It displays the measuring speed and travel distance of force gauges.		FA version (-FA) We build a linear scale into a test stand to output travel distance of a force gauge, and you can utilize it for analysis of force-displacement relations. For further information of force-displacement analysis unit, please see page 45.	
Speed Range Change (-V○○) We can change the range of measuring speed. (The customizable range differs among models. Besides, some models could decrease their force capacity. Please contact us for further information.)		Output and Input External Signals (-CN) We can equip a connector for external input and output. For example, you can connect a footswitch with the stand via the connector to operate it by the footswitch (like step on it to start measurement). Please contact us for further information.	

Options Available for Motorized Test Stands

	Model	MX-500N	MX-1000N	MX2-500N	MX2-1000N	MX2-2500N	MX2-5000N	EMX-500N	EMX-1000N	MH-1000N	MH2-500N	MH2-2500N
Speed/ Length Meter	-E	○	○	/	/	/	/	/	/	○	/	/
Length Scale	-S	○	○	○	○	○	◎ ※1	/	/	○	○	◎ ※1
FA Specification	-FA	/	/	○	○	○	◎ ※1	◎ ※1	◎ ※1	/	○	◎ ※1
Long Stroke (mm)	-L	○ +200 ※2	○ +250 ※2	○ +200	○ +300	○ +300	/	○ +300	○ +300	/	/	/
	-2L	/	/	○ +400 ※3	/	/	/	/	/	/	/	/
Extended Column (mm) ※4	-EXT	/	/	/	/	/	○ +200	/	/	/	/	/
O/I External Signals	-CN	/	/	○	○	○	○	※5	※5	/	○	○
Speed Range Change (mm/min) ※6	-V●●	○ 40~1200 2~800 2~60	○ 40~1200 20~800 20~600 15~450 4~120	○ 30~900 20~600 15~450 3~90 1.5~45	○ 35~1000 25~750 5~150 2.5~75	○ 2.5~75 5~150	/	/	/	○ 30~900 20~600 15~450 10~300 3~90	○ 30~900 20~600 15~450 10~300 1.5~45	○ 2.5~75 5~150

※1 User mounted unit is available. ※2 It may decrease its capacity. ※3 The -2L option is incompatible with length scale (-S option). Additional charge for wooden packaging is required for shipping.

※4 The column is extended but the stroke remains the same. ※5 It is already installed as the standard function. ※6 Some models could decrease their force capacity. Please contact us for further information.

◆ Examples of Model with Options

• When you want to extend the stroke of MX2-500N → Choose the option "Long Stroke (-L)" = **MX2-500N-L**

• When you want to change the speed range of MX2-500N → Choose the option "Speed Range Change (-V●●)" = **MX2-500N-V600**

※ In ●●, we put figure of speed. → Example) When the speed range changes into the fastest speed

20~ **600** mm/min The number is here.

Options Available for Manual Test Stands

	Model	SVL-1000N	SVH-1000N	HV-500NII	HV-1000N	HV-3000N	KV-50N	MSF-50N	MSL-50N	SH-1000N	SH-3000N
Length Scale	-S	○	○	○	○	○	○	/	/	○	○
Long Stroke (mm)	-L	/	/	○ +200 ※1	○ +150 ※1	/	/	/	/	/	/
Extended Column (mm)	-EXT	○ +200 ※2	○ +200 ※2	/	/	/	/	/	/	/	/

※1 It may decrease its capacity. ※2 We can extend the column length, but travel distance of force gauge does Not change.

◆ Examples of Model with Options.

• When you want to see the travel distance of a force gauge using SVH-1000N → Choose the option "Length Scale (-S)" = **SVH-1000N-S**

The Helpful Functions of Motorized Test Stand

The optional functions can be activated by connecting a force gauge ZTS/ZTA series to a motorized test stand via the suitable cable.

① The Overload Preventing Function

② Force Control Functions

For further information, see page 15

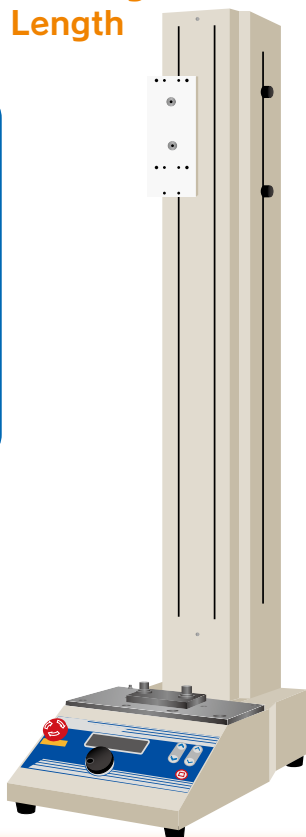
Examples of Customized Test Stands

We provide made-to-order test stands to fit your needs.

Changing Test Speed Range / Extending Column Length

[This is recommended when you...]

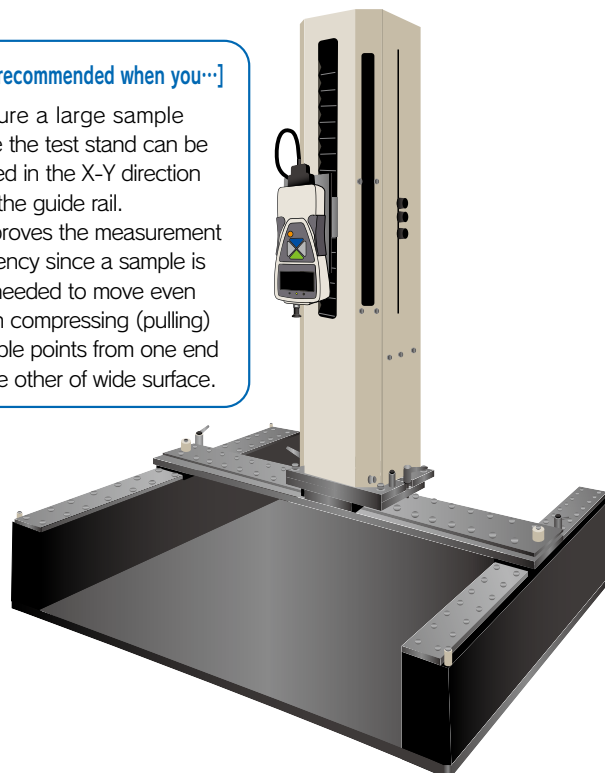
- Test stretch samples.
- Compress (Tensile) long.
↑ We can extend column length of both horizontal and vertical test stands.
- Test speedily.
- Test slowly.
↑ We can change the range of measuring speed.



Testing Large Samples

[This is recommended when you...]

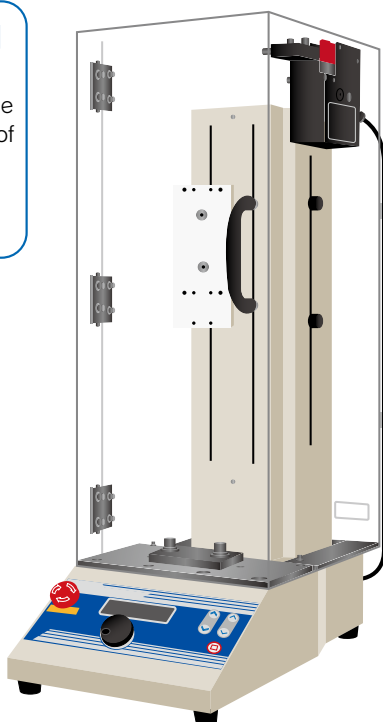
- Measure a large sample since the test stand can be moved in the X-Y direction with the guide rail.
- It improves the measurement efficiency since a sample is not needed to move even when compressing (pulling) multiple points from one end to the other of wide surface.



The electromagnetic lock cover provides safety

[This is recommended when you...]

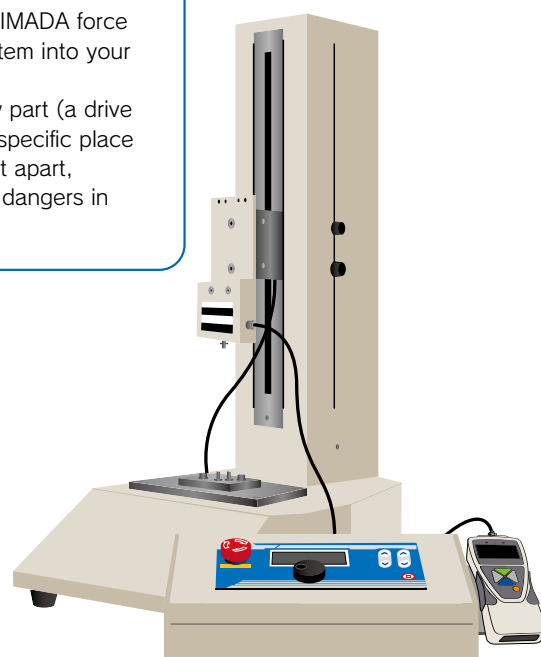
- Would like to stop the test stand completely before the door is unlocked, instead of unlocking the door at the same time as the stand stops.



Separating a Display Part from a Drive Part for Built-in

[This is recommended when you...]

- Incorporate IMADA force testing system into your equipment
- Fix a display part (a drive part) on a specific place
- Manipulate it apart, preventing dangers in testing.

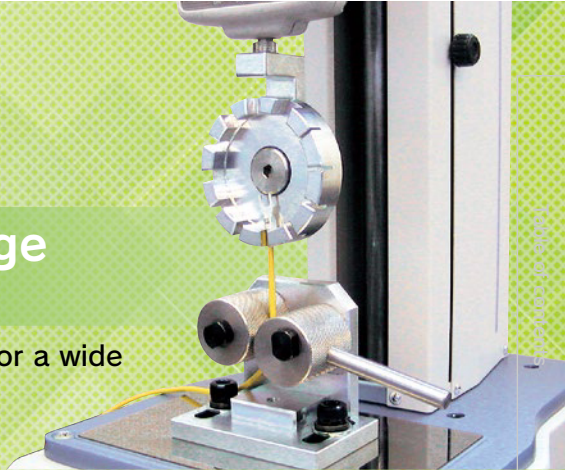


Please feel free to contact us about made-to-order issues. We will provide the best solution for you.

Attachments

The fixtures mounting on a force gauge thread or a test stand table

Attachments are integral components of testing systems, designed for a wide variety of force testing applications for tension, compression, peeling, COF, and more.



The Attachment Types and How to Use

IMADA attachments are separated to 2 types generally.

1 Attachments to be mounted on a force gauge.

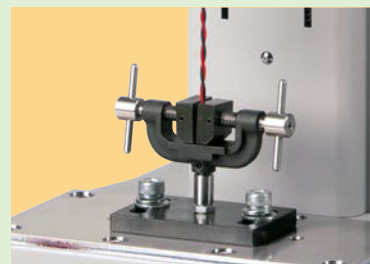


A force gauge's thread is **M6** or **M10** screw, and type **1** attachments are designed to fit into either screw. You can choose desired one from a wide range of attachments, and mount it on a force gauge's thread to complete a force tester.

2 Attachments to be mounted on a test stand table.



Type **1** can be mounted on a test stand with a grip mounting adapter.※



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

- ⚠ Weight of an attachment is applied as force to a force gauge, therefore, please choose an attachment whose weight is 10% or less of the force gauge's capacity.
- ⚠ Please contact us before purchase to choose the most appropriate attachment for your testing. Some samples cannot be tested appropriately due to their shapes or materials. We are pleased to help you choose the best attachment to meet your testing needs.
- ⚠ Some attachments are in accordance with Japanese Industrial Standard(JIS). A force gauge and a test stand are required for measurements complying 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.

Accessory Attachments

The IMADA force gauges come with attachments below for basic compression/tension tests.

Standard Type

M6

(Accessory attachments for the force gauges whose capacities are 1000N or less)

Force gauges whose capacities are 100N or less come with aluminum made attachments (A-type). Steel made attachments (S-type) are included in force gauges whose capacities are from 200N to 1000N.



The number of attachments varies by models.
ZTS/ZTA Basic model:①~⑧、ZTS/ZTA-DPU-2~500N:①~⑧、
DST/DSV:①~⑥、PS/PSM:①~⑧、FB:①~⑥
For 1000N capacity, SR-1 is included instead of S-1.

High Capacity Type

M10

(Accessory attachments for the force gauges whose capacities are higher than or equal to 1000N)



The number of attachments varies by models.
ZTS/ZTA-2500N/5000N:①~⑧、
ZTS/ZTA-DPU-1000~5000N:①~⑥、PSH:①~⑧



Compression Attachments

We offer fixtures for a variety of compression testing such as a durability test, a bending test, a sticking test, and more.

Puncture Test Fixture **TKS-20N/250N**

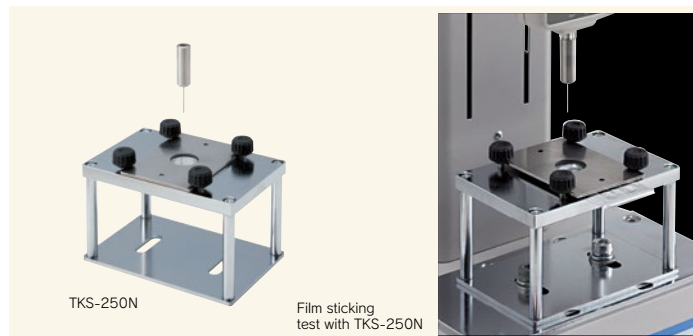
Designed for puncture strength test of thin samples such as film.

Representative applications

Film Metal foil PET bottle Cloth Fiber material

Model	TKS-20N	TKS-250N
Capacity(N)	20	250
Pin diameter(mm)	Approx. ϕ 1	Approx. ϕ 1
Pin weight(g)	Approx. 22.2(Pin+Pin vice)	Approx. 16
Mounting screw		M6

In accordance with a part of JIS Z 1707(2019)



TKS-250N

Film sticking test with TKS-250N

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

Ideal for compression and penetration tests of small samples.



PG-2

Representative applications

Plastic injection components Switch LCD panel Food



Sponge hardness test with PG-2.

Model	PG-2	PG-3	PG-4	PG-5
Capacity(N)	100	100	200	200
External diameter(mm)	Approx. ϕ 2	Approx. ϕ 3	Approx. ϕ 4	Approx. ϕ 5
Weight(g)	Approx. 2	Approx. 3	Approx. 4	Approx. 5
Mounting screw			M6	

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

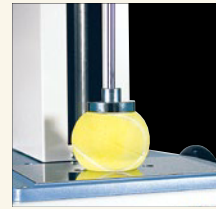
Ideal for crushing tests. Type A is made of aluminum and Type S is made of steel. Type A is for low capacity force gauges.



S-60

Representative applications

Cushioning materials Cushion Tablet Ball Spring

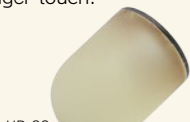


Ball compression test with S-40.

Model	A-40	A-60	S-40	S-60
Capacity(N)	200	200	1000	1000
External diameter(mm)	ϕ 40	ϕ 60	ϕ 40	ϕ 60
Weight(g)	Approx. 38	Approx. 84	Approx. 110	Approx. 238
Mounting screw			M6	

Compression Test Fixture **UR-8S/8M**

Hemisphere shaped fixture made of urethane. It produces finger-touch.



UR-8S

Representative applications

Switch Electrical component Touch panel



The switch tactile test with UR-8S.

Model	UR-8S	UR-8M
Capacity(N)	50	50
Weight(g)	Approx. 5.4	Approx. 5.2
Hardness	ShoreA50	ShoreA70
	Hardness like eraser	Hardness like rubber ball for base ball
Mounting screw		M6

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

For High Capacity [Disc type] **PC series**

Ideal for high capacity compression/ breaking testing up to 5000N. They can contact a test sample closely due to a free joint design.



Representative applications

PET bottle Ball Tablet Plastic



PET bottle compression strength test with PC-5060.

Model	PC-5040	PC-5060	PC-5100
Capacity(N)	5000	5000	5000
External diameter(mm)	ϕ 40	ϕ 60	ϕ 100
Weight(g)	Approx. 160	Approx. 330	Approx. 820
Mounting screw		M10	

For High Capacity [Rectangle type] **SQ series**

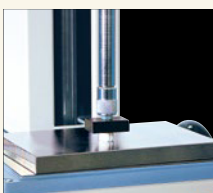
Ideal for high capacity compression/ breaking testing up to 5000N. They can contact a test sample closely due to a free joint design. (Only SQ-5075/5150)



SQ series

Representative applications

Tablet Plastic Plastic Package



Tablet strength test with PC-5060.

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

For High Capacity [Spherical type] **SP series**

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



SP series

Representative applications

Cushioning materials



Hardness test of cushioning material with SP-5010

Model	SP-5010	SP-5020	SP-5030
Capacity(N)		5000	
External diameter(mm)	ϕ 10	ϕ 20	ϕ 30
Weight(g)	Approx. 26	Approx. 55	Approx. 135
Mounting screw		M10	

Compression Attachments

We offer fixtures for a variety of compression testing such as a durability test, a bending test, a sticking test, and more.

Press Test Fixture **PR-500N/2500N**

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

Representative applications

Retort pouch, Packing box, Food pack, Tube container

Model	PR-500N	PR-2500N
Capacity(N)	500	2500
Measurable size(mm)	W194XD120XH156	W200XD140XH105
Weight(g)	Force gauge side: Approx.900	Force gauge side: Approx.3100
Mounting screw	M6	M10

PR-2500N: In accordance with a part of JIS Z 0238(1998)



Bending Test Fixture **BT-500N/5000N/5000N-CB**

Designed for 3 points bending tests for metals, glasses, and more.

Representative applications

Metal board, Plastic board, Carbon, Wire net, Ply wood board, Ceramic

Model	BT-500N	BT-5000N	BT-5000N-CB
Capacity(N)	500	5000	5000
Upper anvil diameter(mm)	R2.5	R3	R5
Block diameter(mm)	R2.5	R3	R2
Upper anvil Weight(g)	Approx.100g	Approx.130g	Approx.150g
Mounting screw	M6	M10	M10

BT-5000N: Complies with the corresponding part of JIS C2141(1992)/R1601(2008)/R1602(1995)/K7088/IEC60672-2(1991)/ISO14704-2016
BT-5000N-CB: Complies with the corresponding part of JIS K7074(1988)/K7017(1999)/C2141(1992)/H7406(1993)/K7088/IEC60672-2(1991)/ISO FDIS-1425



Optional Tray **OT-8IN**

Protective tray for test stand
Receives the contents from leaking out during measurement.



Model	OT-8IN
Capacity(N)	500(Compression)
Weight(g)	Approx.160
Attachment for this tray	—
Compatible test stands	MX2-500N, MX2-1000N, MX2-2500N, MX2-5000N, EMX-1000N, MX-500N, MX-1000N, SVL-1000N(Lever type), SVH-1000N(Handle type), HV-500NII, HV-1000N, HV-3000N, KV-50N(Only for OT-8IN)

※ This product does not guarantee waterproofing to all equipment.
※ Designed to be placed on the test stand, not to be fixed.

Soft Pad Attachments **PAD series**

Ideal for when not damage the surface of sample and apply force slowly not to generate the impact force.

Representative applications

Furniture, Plastic cup, Human body

Model	PAD-100-25	PAD-R80	PAD-25-25	PAD-D80
Capacity(N)	1000	1000	1000	1000
Size(mm)	100×25×25	100×31.4×25	25×25×25	φ80×25
Hardness	Asker C35			
Weight(g)	Approx.95	Approx.75	Approx.30	Approx.140
Mounting screw		M6		



Tension Attachments

We offer a wide range of fixtures and grips for tensile testing such as a tearing test, a breaking tension test, and more.

Flat Chuck **GC series**

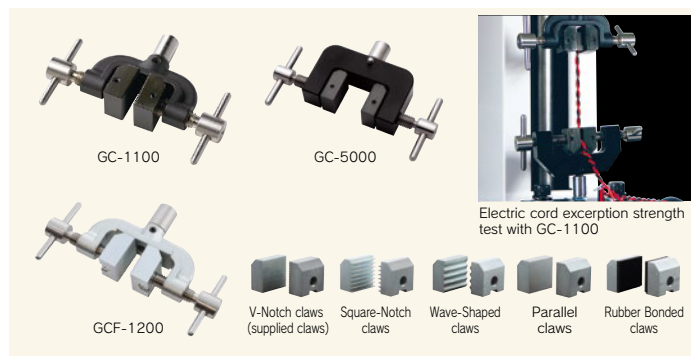
These grips can be used for a wide range of testing applications. Its jaw is manually tightened, and individually adjusted for samples up to 10-30mm thick.(The maximum thick differs among models.) GCF-1200 is multi-purpose model, replaceable the claws.

Representative applications

Connector, Cable, Fastener, Booklet, Plastic, Piece of metal

Model	GC-1100	GC-1200	GC-5000	GCF-1200
Capacity(N)	1000	1000	5000	1000
Aperture opening width(mm)	Max. 10	Max. 20	Max. 30	Max. 20
Weight(g)	Approx.160	Approx.170	Approx.1400	Approx.170
Mounting screw	M6	M6	M10	M6
Replaceable claws exchange	—	—	—	○

GCF-1200 with wave-shaped claws complies with the corresponding part of ISO 1924-2(1994)/JIS P 8113(2006).
※Fixed models(-F) are available, recommended when you attach it on a test stand since their attaching parts are fixed.(Fixed mounting screw is standard equipped to GCF-1200.)



Tension Attachments

We offer a wide range of fixtures and grips for tensile testing such as a tearing test, a breaking tension test, and more.

Film Grip

FC series

Ideal for gripping thin samples such as film and the like. FC-21U/41U/21UQ has urethane gripping part (only one side), thus the grips can hold the sample tightly but gently enough to avoid breaking samples. FC-21UQ is lever type, easy to grip samples.

○Representative applications

Film Heat sealing Adhesive tape Magnetic card Substrate



180 degree peel testing of adhesive tapes with FC-21

Model	FC-21	FC-20	FC-40	FC-21U	FC-41U	FC-21UQ
Capacity(N)	250	500	500	250	250	250
Features	Light type	up to 500N	Wide type up to 500N	One side urethane	Wide grip one side urethane	One side urethane with a lever
Aperture width(mm)	Approx.20	Approx.20	Approx.40	Approx.20	Approx.40	Approx.20
Aperture opening width(mm)	Max.2	Max.2	Max.2	Max.2	Max.2	Max.0.2
Weight(g)	Approx.16	Approx.73	Approx.125	Approx.40	Approx.58	Approx.38
Mounting screw			M5			

※We provide a film cutter (P45) ※Fixed models (F) are available, recommended when you attach it on a test stand since their attaching parts (mounting screws) are fixed.

Roller Grip

GC-60/100

Ideal for testing elastic or deformable samples such as rubber, film, tape and so on. This grip holds a sample tightly since the sample is wound around the grip.

○Representative applications

Rubber Film



GC-60



Rubber tape tension strength test with GC-60.

Model	GC-60	GC-100
Capacity(N)	500	500
Measurable width(mm)	Max.30	Max.50
Measurable thickness(mm)		Max.2
Weight(g)	Approx.158	Approx.300
Mounting screw		M5

※We provide a film cutter (P45)

Pantograph Grip

PGC series

A self-tightening grip designed to grip samples easily like a cloth pin. It can grip even deformable samples like rubber, resin, and so on. It is not suitable for slippery or hard samples.

○Representative applications

Film Rubber Wire Cable Nonwoven fabric Plastic



Rubber tension strength test with PGC-0510.

Model	PGC-0505	PGC-0510	PGC-2530
Capacity(N)	500	500	2500
Aperture opening width(mm)	Max.20	Max.15	Max.15
Sample diameter	Max.6	Max.6	Max.10
Weight(g)	Approx.170	Approx.110	Approx.750
Mounting screw			M10

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

※PGC-AD6 is required when mounting PGC-0510 or 0505 on a test stand.

Wedge Grip

KC series

A self-tightening grip for wire, cable and so on. Designed to grip samples very easily, improving measurement efficiency. (It is not suitable for slippery or hard samples.)

○Representative applications

Wire Cable Optical fiber cable Plastic Piece of metal



Cable tension strength test with KC-1001.

Model	KC-100	KC-1001	KC-5000
Capacity(N)	500	1000	5000
Aperture opening width(mm)	Max.8	Max.2	Max.5
Weight(g)	Approx.330	Approx.95	Approx.565
Mounting screw	M6	M6	M10

For Tensile Strength Test of Sewed Button

BC-15/PGC-BC

Designed for tensile strength test of cloth button. It can grip the button whose diameter is up to 15mm. You can set a sample easily, improving measurement efficiency.

○Representative applications

Cloth button



Model	PGC-BC	Model	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

※S-1 or SR-1 is required when mounting PGC-BC on a force gauge.

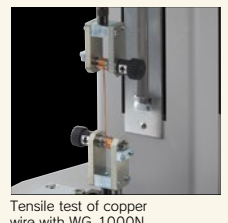
Wire Winding Grip

WG Series

Ideal for tensile test of wire-type material. Winding clamp reduces crimping of sample.

○Representative applications

Textile Wire Fur



Tensile test of copper wire with WG-1000N

Model	WG-250N	WG-1000N	WG-5000N
Capacity(N)	250	1000	5000
Diameter of bolt(mm)	17	9	12
Sample diameter(mm)	Max. ϕ 1	Max. ϕ 1.2	Max. ϕ 3
Weight(g)	Approx.60	Approx.180	Approx.610
Mounting screw		M6	M10

Wire Clamp Grip

CW-500N

The wedge type grip for wire/cable, designed to secure a sample easily. It is not suitable for slippery or hard samples.

○Representative applications

Cable Wire



Cable tension strength test with CW-500N.

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

※CW-500N is attachable for our horizontal stands.

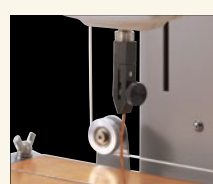
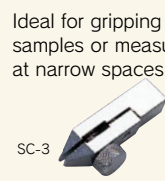
Small Grip

SC-3/8

Ideal for gripping fine samples or measuring at narrow spaces.

○Representative applications

Electrical lead Copper foil



Copper foil peeling test with SC-8.

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

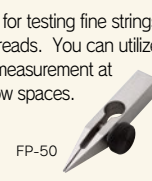
Fine Point Chuck

FP-50/51

Ideal for testing fine strings or threads. You can utilize it in measurement at narrow spaces.

○Representative applications

Textile Fur Soft wire



Metal line tension strength test with FP-51.

Model	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

Cam Grip

GR-30/2000

Ideal for gripping thin and rectangle shaped samples. Easy steps to set a sample (1. Put through sample, 2. Pull its lever) improves measurement efficiency.

○Representative applications

Tape **Film**

GR-30



Tape tension strength test with GR-30.

Model	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

※We provide a film cutter (P45)

Knurled Cam Grip

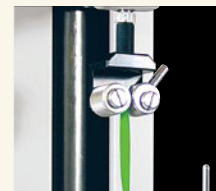
GP-15/30

Ideal for testing resin or soft samples becoming thin when they are pulled. Knurled cam mechanism reduces the possibility of breaking samples.

○Representative applications

Rubber **Cable** **Silicone** **Elastomer**

GP-15



Rubber tube tension strength test with GP-15

GP-30

Model	GP-15	GP-30
Capacity(N)	250	1000
Aperture opening width(mm)	Max.4.5	Max.10
Weight(g)	Approx.70	Approx.880
Mounting screw	M6	—

Jig for opening pull-tab of beverage can

PTD-100N

Designed to pull up aluminum beverage can's pull-tab to 90 degree.

Pull-tab of beverage can



Opening testing for pull-tab of beverage can

Model	PTD-100N
Capacity (N)	100
Maximum sample size (mm)	Height:170 Width:90

PTD-100N is in accordance with a part of JIS S 0021-2(2018). ISO1748(2015)

※We provide an optional tray to receive outflowing contents. (See P45 for further information.)

※A-1, S-1, or SR-1 (Page38) are required to attach the upper part of the fixture to a force gauge.

Jig for opening pull-tab of canned food's container

PTF-100N

Designed to pull up a pull-tab of canned food's container to 90 degree to measure force opening the container's lid.

※You cannot open the full lid of the container.

Pull-tab of canned food's container



Opening testing for pull-tab of canned food's container.

Model	PTF-100N
Capacity (N)	100
Maximum sample size (mm)	Height:170 Width:110

※We provide an optional tray to receive outflowing contents. (See P45 for further information.)

※A-1, S-1, or SR-1 (Page38) are required to attach the upper part of the fixture to a force gauge.

Attachment for polypropylene band(PP band) tensile test

PPC-5000N

Designed to clamp polypropylene band firmly without slipping.

○Representative applications

PP band

PPC-5000N



PP band tension strength test with PPC-5000N.

Model	PPC-5000N
Capacity(N)	5000
Measurable width (mm)	40
Measurable thickness (mm)	1
Weight (g)	Approx.620
Mounting screw	M10

Complies with the corresponding part of JIS Z 1527(2002)

Loop Tensile Test Fixture

LOP-1000N

Ideal for tightening strength measurement of binding band.

○Representative applications

binding band

L

S

LOP-1000N



Binding band tension strength test with LOP-1000N

Model	LOP-1000N
Capacity(N)	1000
Aperture width (mm)	10
Mandrel diameter (mm)	9.53 (Sample length below 127mm), 38.1 (Sample length exceed 127mm)
Mandrel weight (g)	Force gauge side(S):Approx140g Force gauge side(L):Approx195g
Mounting screw	M6

It is in accordance with a part of SAE AS23190 UL62275

Hook for Corrugated Cardboard Adhesion Test

DF-60

Designed exclusively for corrugated cardboard opening strength testing.

○Representative applications

Corrugated cardboard



Corrugated card board opening strength test with DF-60

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

Double Arm Hook

SHF Series

Designed to hook a sample by two claws. Ideal for tension test of cap or cap-shaped samples.

○Representative applications

Plastic Bottle

SHF-100N



Cap Tension test with SHF-100N

Model	SHF-100N	SHF-100N-L
Capacity(N)		100
Maximum sample size	30(W)x30(H)mm	30(W)x55(H)mm
Weight (g)	Approx.100	Approx.110
Mounting screw	M6	

Flip Cap Opening Force Test Hook

HFC-50N

Designed for flip cap (plastic made) opening force test, shortens the adjusting time of sample by moveable hook.

○Representative applications

Flip Cap

HFC-50N



Flip Cap Opening test with HFC-50N

Model	HFC-50N
Capacity(N)	50
Maximum sample size	Approx.11mm
Weight (g)	Approx.15
Mounting screw	M6

Compression and Tension Attachments

These attachments can be used for both compression and tension testing.

Pin Grip

CP-150N

For gripping thin wire-shaped samples.
You can utilize it in measurement at narrow spaces.

○Representative applications

Wire



Collet
Wire tension strength test with CP-150N

Model	CP-150N
Capacity(N)	150
Aperture opening width(mm)	Approx. $\phi 0 \sim 3.2$
Weight(g)	Approx.22
Mounting screw	MG

Jacobs Chuck

GC-5/15

Ideal for gripping round cylindrical shaped samples.
Designed to prevent the samples from slipping.

○Representative applications

Plastic



GC-5
Resin molding tension exception strength test with GC-5.

Model	GC-5	GC-15
Capacity(N)	500	1000
Aperture opening width(mm)	Approx. $\phi 0.5 \sim 6.5$	Approx. $\phi 2.0 \sim 13$
Weight(g)	Approx.235	Approx.500
Mounting screw	MG	MG

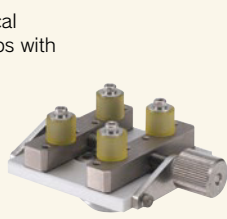
Cap Clamping Jig

CCJ Series

Firmly Clamps small cylindrical specimen such as bottle caps with 4 adjustable pins.
(Not suitable for soft or easy-to-deform samples.)

○Representative applications

Plastic



Bottle cap insertion/extraction test with CCJ-100N

Model	CCJ-100N	CCJ-100N-01	CCJ-100N-02	CCJW-100N	CCJW-100N-01	CCJW-100N-02
Capacity (N)			100			
Allowable sample diameter(mm)		7~50		10~100		
Clamping Pin	Standard Pin (Urethan)	Notch Pin	Long clamp pin	Standard Pin (Urethan)	Notch Pin	Long clamp pin
Weight (g)	Approx.250	Approx.300	Approx.260	Approx.330	Approx.380	Approx.340

Pinching Force Test Attachment

Pinching Force Measurement Jig

PCA-150N

Designed for pinching/spreading force measurement of double-handle tools, like clips and calipers.
Easy adjusting of the measuring widths along with the scale.

○Representative applications

Caliper **Pliers** **Forceps** **Clips**



Pinching strength test of forceps with PCA-150N

Model	PCA-150N
Capacity (N)	150
Pinching widths (mm)	5~15
Spreading section widths of the jig (mm)	1~15
Weight (g)	Force gauge mounting side : Approx. 50

Friction Attachments

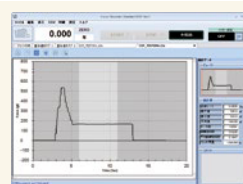
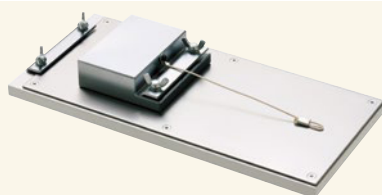
The included software automatically calculates Coefficient of Kinetic friction and coefficient of Static friction and draws graphs.

Coefficients of Friction Fixture

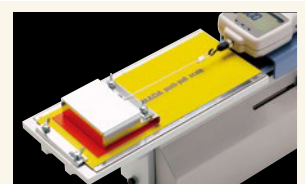
COF Series

○Representative applications

Paper **Film** **Panel**



Force Recorder Standard COF Ver.



Paper coefficient of friction test with COF2-10N

Model	COF2-2N	COF2-10N	COF-2N-V	COF-10N-V
Compatible test stand		MH2-500N		Vertical type ≈ 1
Weight of the weight part(g)	200	1000	200	1000
Measurable size(mm)		Thickness: Max.1.5 Length: Max.150		

※You need A-1 or S-1 (Page38) to attach the weight to a force gauge.

※1 Some vertical test stand can not be combined with the fixture. Please contact us if you need the details.

COF-2N, COF-2N-V: In accordance with a part of JIS K 7125(1999).

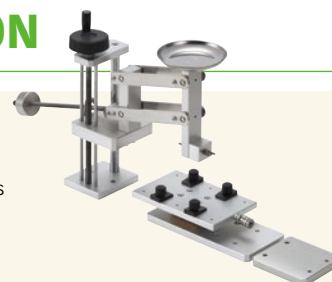
Variable Weight Reciprocating Friction Test Jig

VWF-10N

This jig enables you to measure the friction occurring when vertical force is applied by a weight, reciprocating friction, repeated friction and more.
Various holders which are sold separately allow you to diversity test applications.
The included software (Force Recorder Standard COF Ver.) automatically calculates Coefficient of friction.

○Representative applications

Pen&Paper **Lipstick&artificial skin** **spatula&glass**



Coefficient of friction test for lipstick&artificial skin

Model	VWF-10N
Capacity $\times$	1000g
Sample diameter	8mm
Compatible force gauge	ZTS/ZTA Series
Compatible test stand	MH2-500N

※Weight is required separately.

Model	①VWF-STH	②VWF-STH-VA	③VWF-ATH-VA	④VWF-BAH6	⑤VWF-BLH
Feature	Stick Holder	Variable Angle Stick Holder	Variable Angle Attachment Holder	$\phi 6$ Ball Holder	Blade Holder

Wire Crimp Pull Test Attachments

Combining these attachments with a force gauge and a test stand, enables you to create a wire harness testing machine. These attachments are designed to grip different sizes of harnesses.

~500N Accessory Attachments for A Manual Wire Clamp pull Tester [LH-500N(P53)]

Terminal clamp jig

It is designed to secure a crimp terminal easily and quickly. For engaging it, you only have to hook it between its jaws.



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

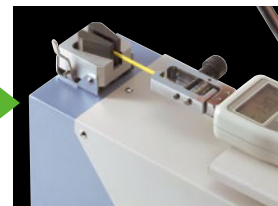


Wire clamp jig

It is designed to secure the ends of wire/cable tightly and easily. For engaging sample, you only have to pull its lever and put your sample on.



Model	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

The grip secures wire terminals and other samples. It has grooves of different sizes to accommodate wire diameters up to 8mm. Rotate the wheel to the desired size.



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

Rotary wire terminal jig

The grip secures wire terminals and other samples. It has pins of different sizes to accommodate the round terminal diameters up to 8mm. Rotate the wheel to the desired size.



Model	PW-4
Capacity(N)	1000
Dimensions of pins (mm)	φ 3/ φ 5/ φ 8/ M4 Female Screw
Weight(g)	Approx.310
Mounting screw	M6

※The M4 tapped hole enables you to install desired size of pin to suit your sample.

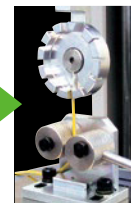


Wire clamp jig

It is for securing the end of wire/cable. Knurled cam mechanism reduces the possibilities of breaking samples.



Model	GP-30
Capacity(N)	1000
Aperture opening width(mm)	Max. 1.0
Weight(g)	Approx.880



~5000N Attachments for High Capacity

Wire terminal jig

It engages terminals from φ 4 to φ 12mm diameter.



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

A test can be conducted complying with a part of JIS C 2805 (2010) using CH-5000N and CW-5000N together.

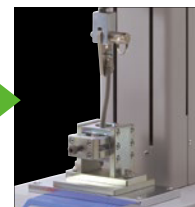


Wire clamp jig

It is designed for preventing wire coating from breaking.



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



Chip Components Tension/Shear Test Attachments

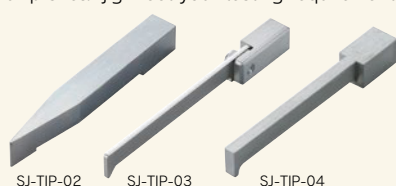
QFP Lead Hook/Chip Shear Jig

SJ Series

Chip Peel Fixture

GT-10/20

5 types of attachment for QFP lead hook/chip shear jig meet your testing requirements.



○Representative applications

QFPlead Chip



Endurance test for surface mount solder joint with SJ-QFP-01.

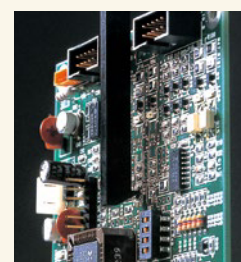
Model	SJ-QFP-01	SJ-TIP-01	SJ-TIP-02	SJ-TIP-03	SJ-TIP-04
Capacity(N)			100		
Dimension(mm)	Approx.118	Approx.79	Approx.78	Approx.93	Approx.75
Mounting screw			M6		
Weight (g)※1	Approx.60	Approx.50	Approx.50	Approx.15	Approx.25

Ideal for peel (shear) testing for soldered or adhered electric components.



○Representative applications

Electrical components Flange cap



Chip peeling strength test with GT-10

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

Alignment stage for solder joint strength test

SJS-100N-L/S

Designed for solder joint strength test.

The table enables you to finely adjust the stage position.

The direction of stage is switchable and enables you to perform solder joint strength test of 45 and 90 degrees.

○Representative applications

QFPlead Chip Electronic Components

Model	SJS-100N-L	SJS-100N-S
Capacity(N)		100
Dimension(mm)	Approx.W236×D155×H247	Approx.W236×D155×H190
Weight(kg)※1	Approx.3.2	Approx.2.8
Moving distance of XY stage	±30mm	

※1 Weight of the attachment is also applied as a load on the force gauge. Consider it when selecting the capacity of a force gauge.



SJS-100N-L



SJS-100N-S

Peel Test Fixtures

We offer fixtures for peel testing (adhesive testing) of sticky tapes, coating surfaces, and more.

90 Degree Peel Test Fixture **P90-200N/200N-EZ/200N-BB**

Ideal for 90 degree peel testing for adhesive tape and the like. P90-200N keeps the peeling degree at 90 degree.
The moderated price model is P90-200N-EZ.

○Representative applications

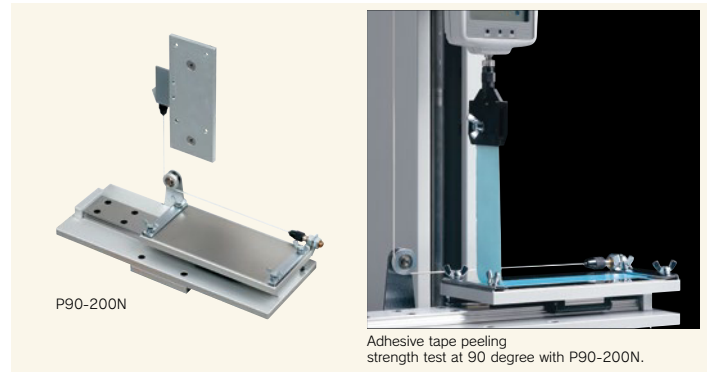
Adhesive tape, Copper foil, Magnetic card, Pouttice

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

P90-200N Complies with the corresponding part of JIS C5016(1994)/Z0237(2022),IEC249-1(1982)/326-2(1990),ASTM D6862-11(2016)/D3330(2010),ISO29862(2007)
P90-200N-BB Complies with the corresponding part of IEC249-1(1982)/326-2(1990),ISO4525(2003),JIS H 8630(2006).

※We provide a film cutter (P45). With the cutter, you can cut film in constant-width.

※We also provide a rubber roller according to JIS (See P45 for further information).



P90-200N

Adhesive tape peeling strength test at 90 degree with P90-200N.

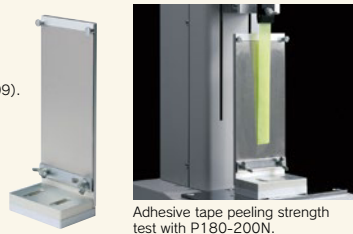
180 Degree Peel Test Fixture **P180-200N/200N-BB**

Ideal for 180 degree peel testing for adhesive tape and so on.

It is in accordance with a part of JIS Z 0237(2009).

○Representative applications

Adhesive tape



Adhesive tape peeling strength test with P180-200N.

Model	P180-200N	P180-200N-BB
Measurable force(N)	0.5~200	0.5~200
Measurable size(mm)	Length:Max.150 Width:Max.40	Contact us

P180-200N Complies with the corresponding part of IEC249-1(1982)/326-2(1990),ISO29862(2007),ASTM D3330(2010),JIS C5016(1994)/JIS Z 0237(2022).

P180-200N-BB Complies with the corresponding part of IEC249-1(1982)/326-2(1990),JIS C5016(1994).

※We provide a film cutter (P45). With the cutter, you can cut film in constant-width.

※We also provide a rubber roller according to JIS (See P45 for further information).

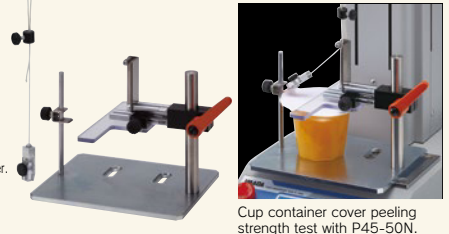
45 Degree Peel Test Fixture **P45-50N**

Ideal for peel testing of cup container's film covers. It standardize the peeling degree at 45 degree which is similar to practically opening a cup container.

※You cannot open the full lid of the container.

○Representative applications

Film for cup container



Cup container cover peeling strength test with P45-50N.

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

※We provide an optional tray to receive outflowing contents. (See P45 for further information.)

※A-1,S-1, or SR-1 (Page38) are required to attach the upper part of the fixture to a force gauge.

Surface Coating Pull-Off Test Fixture **TH-1000N/5000N**

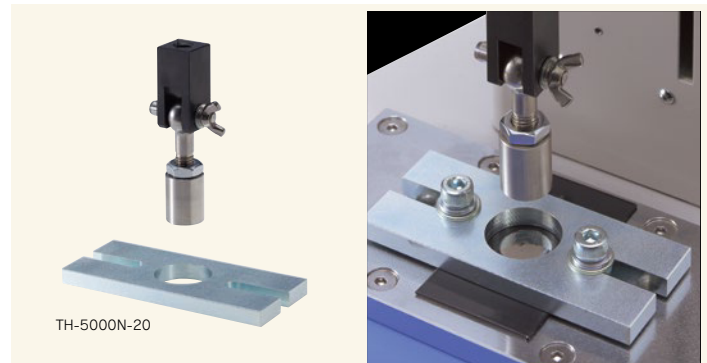
Ideal for pull-off testing of surface coating. It comes with 5 peeling heads(10 peeling heads for TH-1000N-7).

○Representative applications

Painted surface

Model	TH-1000N-7	TH-1000N-20	TH-5000N-20
Capacity(N)	1000	1000	5000
Upper fixture	Adhesive area shape	Diameter 7mm	Diameter 20mm
(Force gauge side)	Weight(g)	Approx.40	Approx.90
	Mounting screw	M6	M6
Lower fixture	The center hole diameter (mm)	Diameter 30	Diameter 30

TH-1000N-7 is in accordance with a part of JIS K 5600-5-7 (2014). TH-1000N-20 and TH-5000N-20 are in accordance with a part of JIS K 5600-5-7 (1999).



TH-5000N-20

Rubber Roller for Peel Test **APR-97 series**

With this roller, you can apply stable pressure to stick samples, improving repeatability.



APR-97-2K



Model	APR-97-1K	APR-97-2K
The roller weight(g)	Approx.1000	Approx.2000
The sample contacting part material	Rubber(Hardness A80)	Rubber(Hardness A80)

APR-97-1k is in accordance with a part of JIS Z0237(2022),ISO 29862(2018).

APR-97-2k is in accordance with a part of JIS Z0237(2022),ISO 29862(2018), and ISO 29863(2018).

Film Cutter **FSC-1525**

This cutter enables you to cut film in constant-width, improving measurement efficiency. It comes with 2 sets of spare edges.



Model	FSC-1525
Width to cut	15~70mm
Width adjustment block	15mm/1inch

FSC-1525 is in accordance with ASTM F88, JIS Z 0238 (1998), and JIS Z 1707 (2019).

Optional tray **PTW-10IN**

For receiving outflowing contents. It is attached on an IMADA test stand.



Setting Image

Model	PTW-10IN
Size (mm)	264 x 178
Attachments using with this tray	P45-50N,PTD-100N,PTF-100N,MED-SCT-500N

※Even though you combine the tray with a test stand, remember that the stand is still weak in water.

Attachment for Probe Tack Test

MED-IS-20N

Ideal for measuring adhesiveness of sticking plaster etc. by tack test.

Representative applications

Sticking plaster

Model	MED-IS-20N
Capacity (N)	20
Surface diameter of contact (mm)	5
Weight (g)	Force gauge mounting side: Approx. 70g
Mounting screw	M6

In compliance to 6.12.3.4 of the Probe Tack Method by the Japanese Pharmacopoeia



Attachment for Needle Pull Out Test

MED-NPT-200N

Ideal for testing pull out strength of a needle from a needle base.

Representative applications

Needle

Model	MED-NPT-200N
Capacity	200
Measurable needle diameter (mm)	0.3-20
Measurable length diameter (mm)	above 10
Weight (g)	Force gauge mounting side: Approx. 210g
Mounting screw	M6

Complies with a part of JIS T3209(2011)/T3220(2011)/T3221(2011)/T3222(2011)/T3223(2016)/T3228(2018)/T3229(2011)
Complies with a part of ISO 7864(2016)/10555-5(2013)/11608-2(2012)



Attachment for Compression Test of Syringe

MED-SCT-500N

Ideal for compression test of syringe.

Representative applications

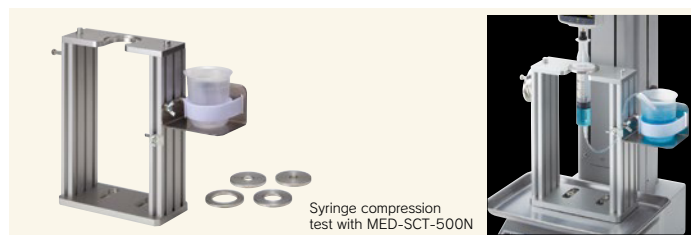
Syringe

Model	MED-SCT-500N
Capacity (N)	500N
Measurable capacity (ml)	0.5~50
Diameter of attached outer cylinder (mm)	10/15/24/33
Installation	Mounting on the stand

Complies with a part of ISO 7886-1(2017)

※We provide an optional tray to receive outflowing contents. (See P45 for further information.)

※You need S-2 (Page38) to push syringe.



Luer fitting adapters

MED-LFA-20N series

Designed to connect sample needles to force gauges without removing their needle hubs.

Representative applications

Needle Vial stopper

Model	MED-LFA-20N-MS	MED-LFA-20N-FS	MED-LFA-20N-ML
Capacity(N)	20	20	20
Weight(g)	Approx. 15	Approx. 15	Approx. 15
Mounting Screw	M6	M6	M6
Product Type	Male Luer Slip Adapter	Female Luer Slip Adapter	Male Luer Lock Adapter

Complies with a part of ISO 8871-5(2016)/ISO 7864(2016)



Attachment for Acupuncture Needle: Strength and Sharpness

MED-ACU-2N

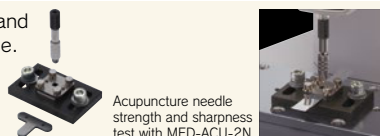
Designed to measure strength and sharpness of acupuncture needle.

Representative applications

Acupuncture needle

Model	MED-ACU-2N
Capacity (N)	2
Applicable Diameter (mm)	Φ0.1~1.0
Weight (g)	The side with force gauge: 22g
Mounting screw	M6

Complies with the corresponding part of JIS T 9301(2016)



Vial holder

MED-VH-5N

Ideal for penetrability test of vial stoppers

Representative applications

Vial stopper

Model	MED-VH-5N
Capacity (N)	5(※)
Weight (g)	Approx. 220

Complies with a part of ISO 8871-5(2016)

※Force value applied to the clasper when extracting the needle cannot exceed 5N.



Vise Grips and Tables

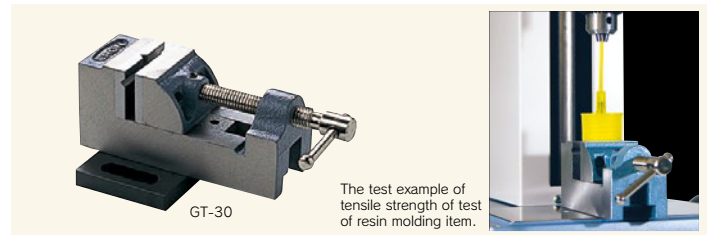
Vise Grip

GT-30/2000N

Wide opening range accommodates different sizes or shaped samples. Use with vertical test stands. (Contact us for models available with this grip.)

Model	GT-30	GT-30-E	GT-30-U	GT-2000N
Features	Compatible with 1000N	Notch Jaw ※1	One side urethan Jaw One side Notch Jaw ※1	Compatible with 2000N Interchangeable mounting directions
Capacity (N)	1000	1000	250	2000
Aperture opening width (mm)	38	35	35	66
Mounting	To Test stand table			

※1 We provide spare notch jaw.



Self-centering Vise Grip

GTW-50R/50L

Self-centering vice. 2 models are available: 1. Knob model (high operability type)
2. Lever model (Strong clamp type)
Use with vertical test stands. (Contact us for models available with this grip)

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



High Capacity Self-centering Vise Grip

GTW-2500N

A wide opening jaw enables gripping a larger samples.
The stainless material unaffected magnetic specimen.
It is designed to replace jaws easily and even mount your own jaw.
※It comes with standard jaw GTW-2500-MP(2pieces).

Model	GTW-2500N
Capacity (N)	2500
Aperture opening width (mm)	Max. 160
Mounting	To Test stand table

※We provide the Jaw (GTW2500-MP10) which can be fixed up to 6 pieces and Sample stage (GTW-SP) which helps to put a sample stably.



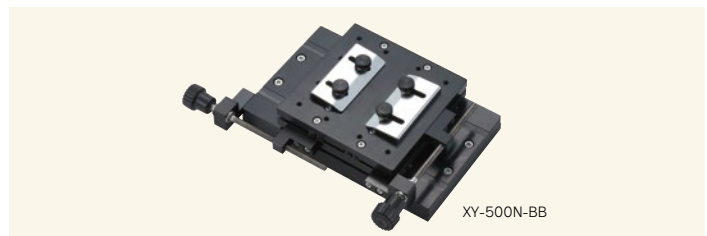
XY Table

XY-500N series

A sample can be put at the center using this XY table since the stage can be moved manually in X and Y directions at light feed. Use with vertical test stands.
(Contact us for models available with this table)

Model	XY-500N-BB	XY-500N-M8	XY-500N-EZ
Features	Breadboard type	M8 screw type	M8 screw and free movable table type
Capacity (N)	Tension: 500 Compression: 1000	Tension: 500 Compression: 1000	Tension: 500 Compression: -
X-Y movement amount (mm)	+/- 30		
Mounting	To test stand table		

※The table position of -BB/-M8 can be adjusted with knobs, and feed amount of per turning the knob is 0.8mm.



X-axis Slide Table

XST-500N

This table enables you to align a test sample easily.

Model	XST-500N
Capacity (N)	500
Movement amount (mm)	70
Weight (kg)	1.9
Mounting	To test stand table



T-Slot Table

TS-5000N

It is for holding attachments, being utilized to mount/remove attachments quickly.
A sample also can be centered readily since the table moves in X/Y directions.

Model	TS-5000N
Capacity (N)	5000 (2500N for 1pc, 5000N for 2pcs)
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

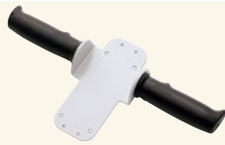


Optional Handles

Optional Handle for Force Gauges

FOH-1

Combining a force gauge with this handle by screws, you can apply force stably.



When mounted with force gauge

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

Hand Grip Belt

HGB-1

Designed to prevent a force gauge slipping from hand. It enables you to apply force easily.



When mounted with force gauge

Model	HGB-1
Compatible model	200N or less range of ZTA/ZTS/DSV/DST/PSS/PS/PSM/FS/FB
Weight(g)	Approx.45

Optional Handle for Fire Door Closing Measurement

HDC-1

Specialized for fire door closing force measurement according to the Building Standard Law of Japan.



When mounted with force gauge

Model	HDC-1
Compatible model	1000N or less range of ZTA/ZTS/DSV/DST/PSS/PS/PSM/FS/FB
Weight(g)	Approx.330

Conversion Adapters

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.



JF6-50N

EJ6-1000N

Model	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 for the detail that which attachment is available.
※A-1/S-1/SR-1 (Page 38) is required to mount JF6-50N on a force gauge.

Conversion Adapter

CA series

Gauges' threads (a part to mount an attachment) differ in size among models, thus you can use these adaptors to combine a force gauge and a desired attachment even if their sizes are different.

CA-F6T10



CA-F10T6

Model	Screw diameter	Capacity	Purpose
CA-F6T4	M6(Female Screw)→M4	100N	When mounting a M4 screw attachment of FRTS to a M6 screw thread of a force gauge.
CA-F6T10	M6(Female Screw)→M10	1000N	When mounting a M10 screw attachment to a M6 screw thread of a force gauge.
CA-F10T6	M10(Female Screw)→M6	1000N	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 FRTS 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 FRTS series to a M5 screw thread of a load cell LMU series.
CA-8T4	M8→M4	100N	When mounting a M4 screw attachment of FRTS series to M8 screw thread of a load cell LU series. (It does not mount a 1 nut.)
CA-8T6	M8→M6	500N	When mounting a 1 nut / M8 screw thread of load cell LU series to M6 screw attachment.
CA-8T10	M8→M10	2000N	When mounting a 1 nut / M8 screw thread of load cell LU series to M10 attachment.

Universal Joint

UJ6-1000N/UJ10-5000N

It features free-joint design to reduce biased load to a force gauge. Combine this joint and an attachment, and mount them to a force gauge's thread, then the attachment uniformly contacts a test specimen, which improves repeatability.



UJ6-1000N

UJ10-5000N

Model	UJ6-1000N	UJ10-5000N
Capacity (N)	1000	5000
Mounting screw for a force gauge	M6	M10
Mounting screw for an attachment	M6	M10
Weight (g)	Approx.25	Approx.140

Eye Bolt and Eye Nut for Load Cells

Hoisting attachment for tension test by load cells (Page 19).

Eye Bolt

EB series

It hangs a test sample or a load cell by hooking chain, rope, hook etc.

Model	EB-500N-M6	EB-500N-M8	EB-5000N	EB-20kN
Compatible load cell	DPU-5N~500N SW1-100N/200N	LU series SW1-500N	DPU-1000N~ 5000N	DPU-10kN/ 20kN
Capacity(N)	500	500	5000	20k
Weight(g)	Approx.18	Approx.39	Approx.137	Approx.1100
Mounting screw	M6 Male Screw	M8 Male Screw	M12 Male Screw	M18 Male Screw



EB-500N-M8



EB-5000N



EB-20kN

Rod End[for shafts]

RE-20kN

A shaft can be put through it.

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



RE-20kN

Eye Nut

EN-500N

It hangs a test sample or a load cell by hooking chain, rope, hook etc.

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



EN-500N

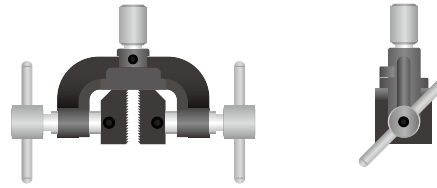
1. Resizing Ready-Made Attachment

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

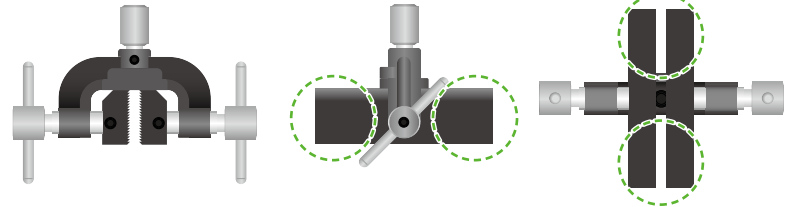
We can resize the width and the length of the grip part.

We flexibly change sizes (width, depth) of fixtures and grips to fit your testing needs. Please contact us for the details.

Standard



Custom made example of wider grip of GC series



2. Changing Specifications to Fit Your Testing Needs

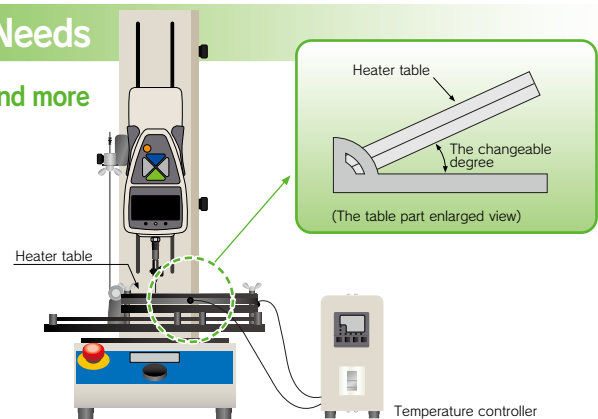
● **Changing conditions such as measuring angles, temperatures, and more**

[Example: Specification change of peeling test fixture]

We can offer a degree changeable table for peel testing.
Besides, we can combine a heater with a table of a test stand.

● **Measurement in accordance with standards such as Japanese Industrial Standard, ISO or ASTM**

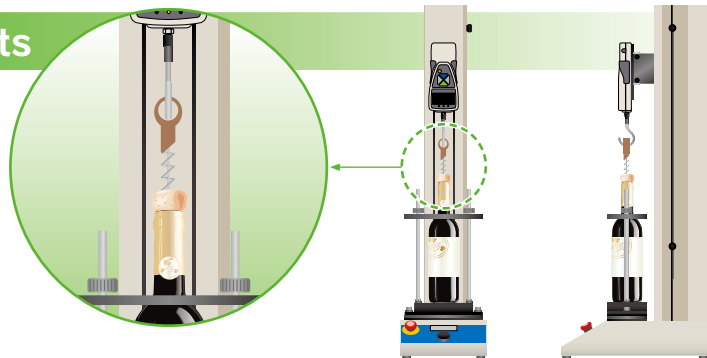
We offer force measuring instrument complying with standards' requirement (measuring speed, fixture design, etc).



3. Completely Original Products

[Example: Cork excerpption measuring unit]

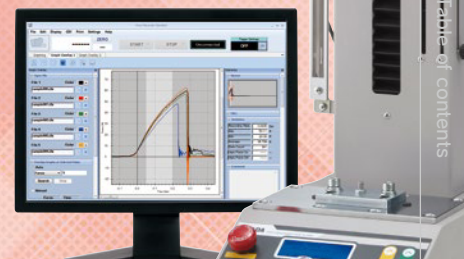
We offer the special use fixture for your sample to improve measuring repeatability and efficiency.



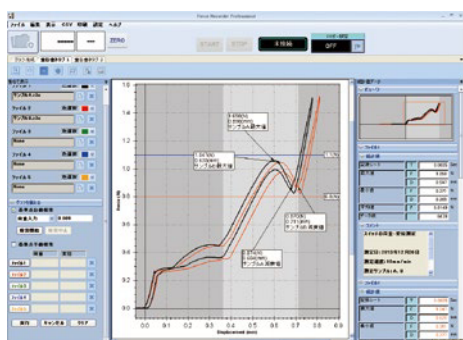
FSA series Force-Displacement Analysis Unit

High-performance measurement unit that can easily analyze the relationship between force and displacement

With this unit, deformation amount (displacement) to compression (tension) force can be measured.
It is ideal for tactile test and material characteristic evaluation.



It draws Force vs Displacement graphs in real time at Max.2000Hz



Basic Functions of Force-Displacement Measurements

- Easy connection to PC by USB
- Smooth graphing performance at 2000Hz
- Graph zooming function
- Comment insertion on graphs
- Quick data export to WORD, EXCEL, PDF

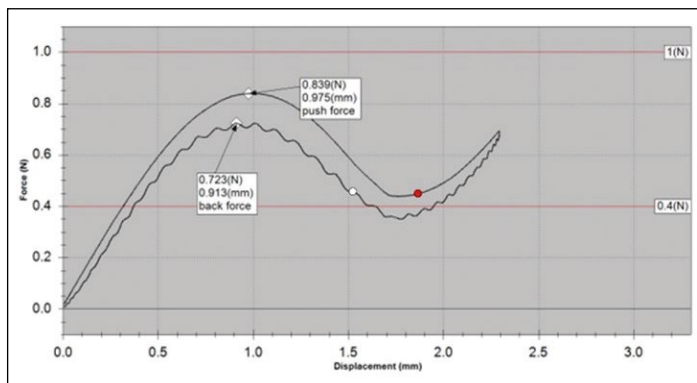
Useful Functions for Measurements and Analysis

- Graph comparing function Max 5 graphs.
- Reference line function
- Statistical calculation (maximum/ minimum/ average values).
- Automatic displacement reset at the measurement start (when the force reaches the set force value)
- Test trigger function (when the force reaches the set displacement value)

The Advantage of Measuring Displacement and Force Together.

Since force transition with reference to displacement can be confirmed, this unit is perfect for tactile testing, material characteristic evaluation, and more.

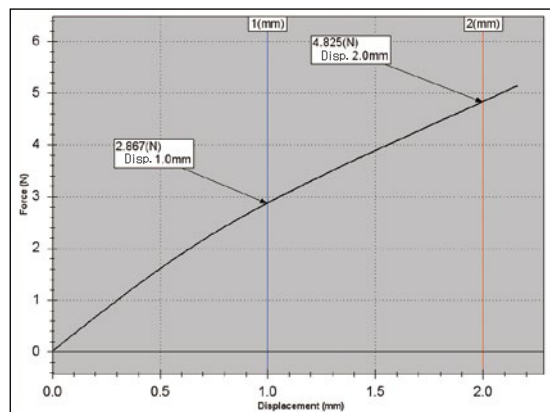
Example of A Switch Characteristic Evaluation



Curves in force-time graphs constantly goes from left to right, and never come back to left.
On the other hand, curves in force-displacement graphs come back to left since it is drawn based on displacement.
Therefore, force-displacement analysis method is better choice to identify the hysteresis(zero reversion).
Moreover, the point of switch ON/OFF can be automatically defined and displayed by using Mark On function.

※Custom-made cable is required for Mark-On function.

Example of Plastic Bending Test



Measuring displacement means identification of deformation amount. It is easy to check "How much force does it need to transform a testing sample(dent a sample at ○○mm)?"

Other Test Examples

- Simple evaluation of spring characteristic
- Simple evaluation of rubber product characteristic
- Cushioning material repulsion test
- Car cushion hardness test
- Fitting quality test of cosmetic containers
- Extract test of connectors
- Peel 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



Configuration

A Force Gauge

It measures force, and indicates force and displacement values. Different attachments can be combined to handle a wide range of force testing applications. Easily put it on (off from) a test stand by screws.

A Test Stand

It is a machinery to move a force gauge up and down (left and right). Move it with up/down (left/right) buttons. Easily set up test requirement such as test speeds, pause and more with its dial.

A Cable

It connects the force gauge and the test stand for control. (FSA-MSL does not include this cable since it operates manually.)

Standard Attachments

Attachments are integral components of this testing system. Although this testing system comes with some basic attachments, optional attachments can be combined as required. We offer a wide range of optional attachments to fit various measurement needs.

Standard Refer to page38



Optional Attachments Refer to page39~49



Software

This software can draw force-displacement graph. It captures force and displacement values at Max. 2000/sec, and draw them into graphs smoothly. It automatically starts graphing using Trigger function. ※MSL-FSA does not have this Trigger function.

CE



FSA-0.5K2-500N



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), 5000N(500kgf)
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: ①A force gauge is separately sold. ②Actual measuring capacity depends on the force gauge's capacity. However, when the test stand's capacity is less than the force gauge's capacity, you can measure force up to the test stand's 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 does not include attachments. The distance of FSA-2.5K2, FSA-5K2, FSA-2.5HK2 is in case of mounting ZT series high capacity type. ※The unit is different from Japanese domestic models.

We provide a wide range of testing system to fit your needs

Easily

- Digitally set up test requirements such as speed, pause, a number of times, and more with simple operation (Except FSA-MSL).
- Start graphing by one click or record data automatically.

Precisely

- Capture data accurately due to its high sampling rate (Max. 2000Hz).
- Overlay graphs for detailed analysis.

Vertical

The MX2 series test stand is set.
Testing speed can be adjusted digitally.
It is compact enough to be put on a desk.

FSA-0.5K2, 1K2, 2.5K2
□ Speed: 10-300mm/min (standard)

FSA-5K2
□ Speed: 0.5-300mm/min (standard)



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

- Capacity: 2~500N
- The max. sample height: 235mm

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

- Capacity: 2~2500N
- The max. sample height: 320mm

Models: **FSA-1K2-2~1000N**

- Capacity: 2~1000N
- The max. sample height: 300mm

Models: **FSA-5K2-2N~5000N**

- Capacity: 2~5000N
- The max. sample height: 380mm

Multifunctional and Accurate

- Speed: 0.5~600mm/min (Standard)

The travel distance to move a force gauge can be set digitally.
Test requirements also can be stored in it.

Since this test stand has high intensity, enables you to measure force and displacement more accurately.



Models: **FSA-0.5KE-2~500N**

- Capacity: 2~500N
- The max. sample height: 295mm

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

- Capacity: 2~1000N
- The max. sample height: 320mm

Horizontal

The MH2 series test stand is set.
Testing speed can be adjusted digitally.
□ Speed: 10-300mm/min (standard)



Models: **FSA-0.5HK2-2~500N**

- Capacity: 2~500N
- The max. sample height: 245mm

Models: **FSA-2.5HK2-2~2500N**

- Capacity: 2~2500N
- The max. sample height: 340mm

Portable (Knob operation, Up to 50N)

- Capacity: 2~50N (※1)
- The sample maximum height: 44mm (※2)

◎ Easy knob operation



Mounting on tripod enables you to measure wider range of testing applications.
An optional adaptor is required to mount it on a tripod.



Since it is lightweight, it can be carried to various places.
It also can be fixed on a wall by screws.

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

※1 Force gauge's capacity decides the capacity of testing system.

※2 The sample maximum height means the distance between the test stand table and the thread of the force gauge ZT series general model (1000N or less) at the highest position of the test stand head.
The figure for FSA-2.5K2, FSA-2.5HK2, FSA-5K2 is in the case of ZT series high capacity model combined.

Automatic crimp tester

ACT-1000N



[You can carry out the test in accordance with a part standards UL 486A-486B and JISC2805.]

- The start button provides smooth flow from testing to saving data including OK/NG judgment.
- Test conditions can be saved up to 26 patterns in it, which is useful for multiple tests. Recall a suitable setting easily and instantly.
- 2 test modes are available; "BREAK mode" and "KEEP mode".
With BREAK mode, Detect the force when a crimp terminal is broken. With KEEP mode, Test the tensile durability at a set point.

ACT-1000N provides speedy test due to its ease of use.



Hook for terminals, and grip a wire.



Press the START button.



It carries out a test and save the test data automatically. Done.

Optional attachment



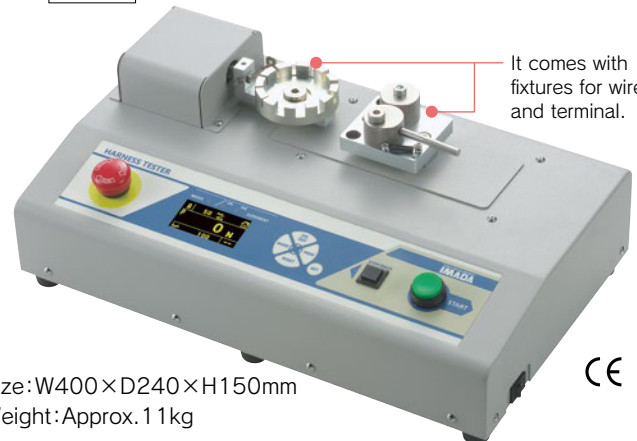
ACT-T-01
Jig for round terminals:
Easily fix round terminals.



ACT-T-02
Jig for rod terminals:
Grips a small terminal such as a rod terminal.

Model	ACT-1000N	ACT-1000N-V300
Capacity	1000N	
Accuracy	+/-0.5% F.S +/-1 digit	
Unit	N, kgf, lbf(※1)	
Sampling rate	2000Hz	
Measuring speed	10/25/50/100 mm/min (Choose from 4 steps)	25/50/100/300 mm/min (Choose from 4 steps)
Stroke	Approx. 50mm	
Allowable sample diameter	Terminal side: 1~8mm Harness side: 1~8mm	
Allowable sample length	100mm or more	
Mode	BREAK mode / KEEP mode	
Output	USB/RS232C/pass or fail decision signal(OK/NG)	
Security lock	Emergency stop button and Overload prevention(at the power on)	
Power supply	AC100~240V	
Operating environment	Temperature:0~40 degree Celsius Humidity:20~80%RH	
Accessory	Software, USB cable, Power cord, Inspection Certificate	

※1 This is the specifications for International model.
Please note Japanese domestic model shows force in N only.



It comes with fixtures for wire and terminal.

□ Size: W400×D240×H150mm
□ Weight: Approx. 11kg



Test Lever Stand

LH-500N

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

Designed exclusively for wire harness testing = Easy manipulation → Improve measurement efficiency



Put a terminal on a hook.



Grip a wire part



Pull up the lever, and the test is done.

Accessory Attachment



CW-500N
Wire Clamp fixture:
Wedge type. You can grip wire/cable easily by pulling the lever.



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

□ Size:
Approx. W155×D450×H182mm
□ Weight:
Approx. 11kg



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

Peel Tester

IPTS-5N



- It enables peel test of embossed carrier tape complying with IEC.
- It graphs the measurement accurately due to its high sampling rate, at Max. 2000Hz.
- It handles a wide range of test speed up to 1500mm/min.
- One-click Operation: The start button provides smooth flow from testing to data saving.



CE

Size: Approx. W702×D300×H140mm
Weight: Approx. 11kg

Related Standards

- A part of JIS C0806-3(2014) [Packaging of components for automatic handling-Part 3: Packaging of surface mount components on continuous tapes]
- A part of IEC 60286-3(2019) [Packaging of components for automatic handling - Part 3: Packaging of surface mount components on continuous tapes] (Peel test part)



Peel test of embossed carrier tape

High Speed Peel Tester

IPTS-20N/50N



- It graphs the measurement accurately due to its high sampling rate, at Max. 2000Hz.
- It handles a wide range of test speed up to 1500mm/min.
- One-click Operation: The start button provides smooth flow from testing to data saving.
- It enables to test samples at a thickness of up to 0.5mm.



CE

Size: Approx. W702×D300×H140mm
Weight: Approx. 11kg

Related Standards

- A peel test part of ISO 29862:2018 [Self adhesive tapes - Determination of peel adhesion properties] (A peel test part of JIS Z 0237:2022)
- A peel test part of ISO 8510-2:2006 [Adhesives - Peel test for a flexible-bonded-to-rigid test specimen assembly - Part 2 : 180° peel] (A peel test part of JIS K6854-2:1999)
- A peel test part of Japanese Pharmacopoeia

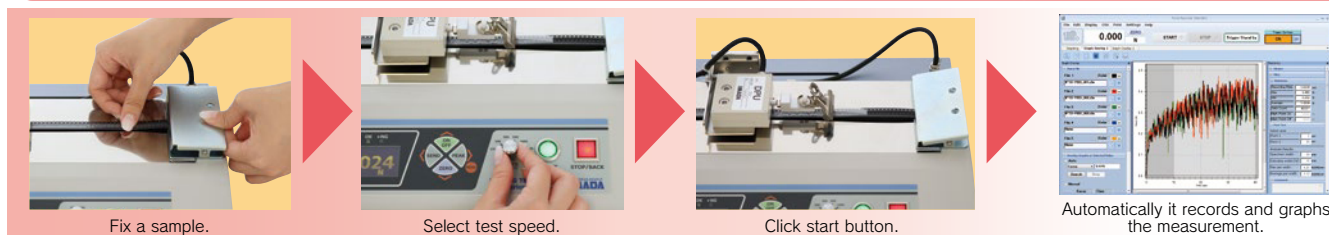
Test Samples

Label, adhesive tape, stickers, screen protector sheet, laminated package, adhesive tape for first-aid, postcard, magnetic tape, foil laminated film, electrode's line of solar cell, copper foil of circuit board.



Peel test of copper foil

IPTS series is specialized for 180-degree peel test. =It ensures the high performance of your works and accurate test.



Model	IPTS-5N	IPTS-20N	IPTS-50N
Capacity	5N	20N	50N
Resolution	0.001N	0.01N	
Unit※	N, gf, ozf	N, kgf, lbf	
Accuracy	±0.2%F.S. ±1digit		
Overload	Approx.150%F.S (It warns with light flashing and buzzer when the force is over 110% of capacity.)		
Sampling rate	Max.2000 data / sec (2000Hz)		
Test speed	120, 200, 300, 500, 1000, 1500mm/min(Switchable)		
Stroke (length)	Travel of load cell: Approx. 400mm(Peel length : Approx.200mm)		
Peel angle	165°-180° (Height and angle are adjustable.)		
Max. sample width	Adhesion: 88mm(Film clip: 40mm, Sample clip: 95mm)	Adhesion: 88mm(Grip: 20mm, Clamp: 50mm)	
Max. sample thickness	Cover film: 0.5mm	Grip: 3mm	Clamp: 13mm
Safety device	Emergency stop button, Overload prevention (Valid only when the power is ON) (※1)		
Power	AC100~240V free input (※2)		
Weight	Approx. 11kg		
Operating environment	Temperature: 0~40° C Humidity: 20~80%RH		
Accessories	Force Recorder Standard(graphing software), USB cable, Power cable, Film grip, Inspection certificate, Instruction manual		

※1 You cannot prevent overload in some cases.
 ※2 Please specify the voltage when you order. (Accessory varies depending on voltage.)
 ※3 The film grip attachments for IPTS-5N and IPTS-20N/50N are different.
 ※ Japanese domestic models do not indicate gf/kgf/ and ozf/lbf.

FORCE MEASUREMENT
IMADA
IMADA CO.,LTD

FOR MORE INFORMATION PLEASE CONTACT:



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AN ISO 9001 : 2015 CERTIFIED COMPANY

FORCE MEASUREMENT
IMADA
Product Catalog
Torque and Food Testers
TORQUE GAUGES
TEXTURE ANALYZER
2023-1



Next Series

A group of upgraded measurement devices with new PCBs.

Those devices under Next Series enable a variety of benefits online through the user support site.



Torque Testers

IMADA's torque testers can measure various torque such as twisting, turning, etc.

We offer a wide range of torque testing products such as test stands for higher repeatability, torque-angle testers, and more to fit your measurement needs.



Testers for Food Industries

IMADA'S food texture analyzer can be used for analyzing food texture (firmness, elastic force, and more).

We offer a wide variety of food testers and jigs to meet your measurement needs.

Some of our testers can perform tests according to standards.

IMADA's force testers are used worldwide in R&D and quality control of every industry to assess and ensure the quality.

IMADA offers a wide range of force testing products and know-how accumulated for many decades, enabling you to measure a huge variety of "force" such as mechanical strength (breaking/deformation force), tactile sensation (softness/hardness), functionality of operational physical force, and more.



Turning / Twisting Force Testing



Screw cap torque tester

P05

Handheld torque testers

P08

Torque meter for motor screw drivers and torque drivers

P10

Sensor interchangeable amplifiers

P11

Software for graph drawing

P12

Motorized torque test stands providing high repeatability due to automatic operation

P14

Torque and angle testing

P15

Food characteristic testing



Food texture analyzer

P18

Food testing applications

P19

Attachments

P20

Easy way to test food firmness
Simple food firmness test measurement unit

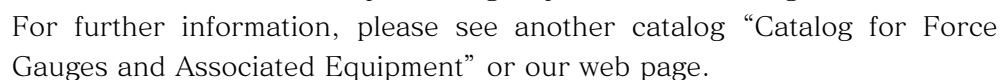
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Utilize this index to find the number of the page of your desired product.

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AMK series	09	Force Recorder Plus		12	MT-DC-13/MT-DC-6.5/MT-DC-6.5SUS/MT-DC-4	14
		Force Recorder Professional		12	MT-EXT/MT-EXT2	14
C		Force Recorder Standard		12	MTS series	14
CB series	13	FR series (Attachment for food testing)		20	MT-ST	14
		FRTS series		18	MT-TB	14
D						
DT-DC-13/DT-DC-6.5/DT-DC-6.5SUS/DT-DC-4	07	H		O		
DT-ST/DT-ST-01/DT-ST-02	07	HT-AD-M10	09	OW-025/OW-10/OW-20/OW-60	10	
DT-STL/DT-STL-01/DT-STL-02	07	HT-DBH/HT-DBH-P	09			
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DT-TB/DT-TB-01/DT-TB-02	06	HTGS/HTGA series	08	RSH series	09	
DTXS/DTXA series	05	HTGS/HTGA-TFX series	10			
		HT-ST/HT-ST-01/HT-ST-02	09	S		
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Torque Gauges

Torque Gauge Measuring Rotating/Twisting Force

“Torque” is the force that can cause an object to rotate around an axis, fulcrum or pivot. The Unit of torque is N-m/N-cm, Kgf-m/Kgf-cm, or lbf-in/ozf-in.

IMADA torque gauges enable you to measure torque easily and accurately.



Screw Cap Torque Tester

DTXS/DTXA series

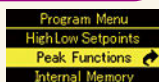


Accurately / Precisely

- It captures torque values accurately due to its high sampling rate (2000Hz).
- It is designed to reduce weight influence by its bearing mechanism for greater accuracy.

User friendly

- High Luminance Organic EL display
Clear organic display has excellent readability.
- 8 languages are available
Setting menu in 8 languages helps easy operation.

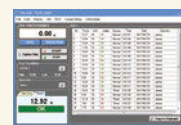


Making efficient

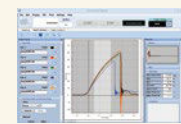
- High working efficiency due to manual operation
- Easily capture peak value using peak hold function.
- Picks out defective products easily using OK/NG judgement function.

Easy data management on PC

- Easy connection with USB interface
- Data capturing software Force-Logger is included
 - It sends 10 data/sec.
 - It automatically detects maximum and minimum values.
 - It saves data in CSV format.
- Graphing by optional force capturing software
The software shows torque vs time graphically on PC in real time (at Max. 2000Hz). Go to page 12 for further information.



▲ Torque capturing software Force-Logger(Included)



▲ Torque graphing Software Force Recorder (Separately sold)

DTXS

Standard Type

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



DTXA

High-functional type

DTXA series include all the functions of DTXS series, with a few additional features below.

Inputting/Outputting Angle

- DTXA indicates both torque and angle on its monitor, combined with an angle meter.
Torque-Angle Analysis with DTXA Go to page 15

Capturing 2 Peaks

- Captures 1st and 2nd peaks of measurement.

Saving Data to USB Flash Drive

- Saves continuous data into USB flash drive at 100Hz.
In other words, data can be saved even without PC.



Check Torque Transition on Graphs

Software Force Recorder ——— To page 12



Transmit Data Wirelessly

Wireless Unit WL01-ADP/WL01-USB
————— To Page 13



Improve Measuring Repeatability

Motorized Torque Test Stand ——— To page 14



Analyze the Relation of Torque and Angle

Torque-Angle Analysis Unit TAA series — To page 15

Accuracy	±0.5%F.S. ±1 digit
Unit of measurement	N-m, N-cm, kgf-m, kgf-cm, lbf-in, ozf-in (switchable) (※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, ±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, Handles (10N-m range only) USB flash drive adapter (only for DTXA) (※3)

※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 USB flash drive is not included.

Model	Capacity	Display
DTXS-0.5N-Z (※1)	0.5N-m (50N-cm)	0.500N-m (50.00N-cm)
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-0.5N-Z (※1)	0.5N-m (50N-cm)	0.500N-m (50.00N-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)

※1 The Unit shown in only "N-cm"

※1 The Table and the Pins sold separately.

※ The above model except DTXS-0.5N-Z and DTXA-0.5N-Z are models with a standard table and standard pins. DTXS-0.5N-Z and DTXA-0.5N-Z are models with a standard table and standard pins.

DTXS-0.5N-Z and DTXA-0.5N-Z are models with a standard table and standard pins.

DTXS/DTXA series can handle opening/closing torque tests of various containers' caps.



PET bottles



Medicine jars



Eye drop bottles



Cosmetics containers



Lipstick containers



Rotary switches

How to Measure



Set a table.



Put pins in holes with consideration for sample's size.



Turn the handle to fix the sample.



Turn its cap by hand.

Attachment for DTXS/DTXA

We provide several kinds of interchangeable tables to fit your test samples.

※Only pins without tables are available. Please see our web page for further information.

Standard table and Standard pins

(DTXS/DTXA-〇〇N when combining with DTXS/DTXA body.※1)



Standard pins
(included item)

This table grips PET bottles, aluminium cans, glass jars and the like whose diameters are $\phi 20 \sim 160\text{mm}$

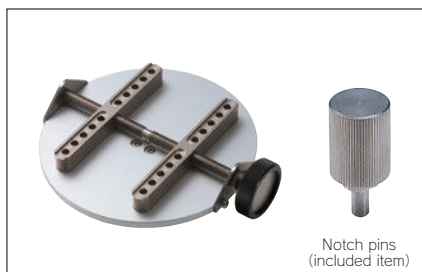
Model: **DT-TB**

Capacity: 10N-m

Allowable sample diameter: $\phi 20 \sim 160\text{mm}$

Standard table and Notch pins

(DTXS/DTXA-〇〇N-ST-01 when combining with DTXS/DTXA body.※1)



Notch pins
(included item)

Ideal for slippery samples such as aluminum cans.

Model: **DT-TB-01**

Capacity: 10N-m

Allowable sample diameter: $\phi 20 \sim 160\text{mm}$

Standard table and Long clamp pins

(DTXS/DTXA-〇〇N-ST-02 when combining with DTXS/DTXA body.※1)



Long clamp pins
(included item)

Ideal for tall samples such as 2 liter PET bottles.

Model: **DT-TB-02**

Capacity: 10N-m

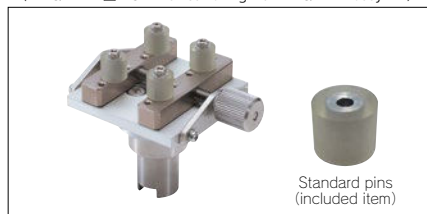
Allowable sample diameter: $\phi 20 \sim 160\text{mm}$

※1 Please choose 〇〇N from 2N, 5N or 10N.

Attachment for DTXS/DTXA

Small table and Standard pins

(DTXS/DTXA-□N-ST when combining with DTXS/DTXA body.※1)



Standard pins
(included item)

Ideal for measuring torque of small samples such as eye drop bottles.

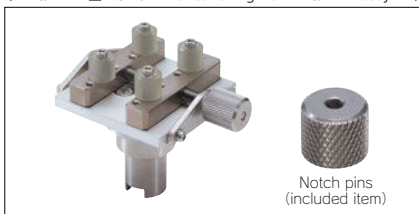
Model: **DT-ST**

Capacity: 2~5N-m

Allowable sample diameter: ϕ 7~50mm

Small table and Notch pins

(DTXS/DTXA-□N-ST-01 when combining with DTXS/DTXA body.※1)



Notch pins
(included item)

Ideal for gripping samples such as resin connectors and the like.

Model: **DT-ST-01**

Capacity: 2~5N-m

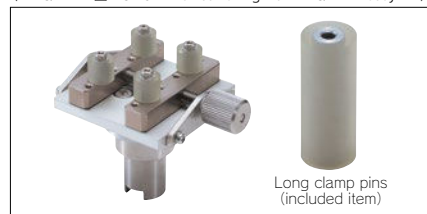
Allowable sample diameter: ϕ 7~50mm

※Image is for illustration purposes.

Actual attached pin is Notch pins

Small table and Long clamp pins

(DTXS/DTXA-□N-ST-02 when combining with DTXS/DTXA body.※1)



Long clamp pins
(included item)

Ideal for small and tall samples such as cosmetic bottles.

Model: **DT-ST-02**

Capacity: 2~5N-m

Allowable sample diameter: ϕ 7~50mm

※Image is for illustration purposes.

Actual attached pin is Long clamp pins

Light weight small table and Standard pins



Standard pins
(included item)

Suitable for measuring small samples such as plastic tubes.

Model: **DT-STL**

Available torque: 0.5~2N-m

Allowable sample diameter: ϕ 7~50mm

Light weight small table and Notch pins



Notch pins
(included item)

Ideal for firmly fixing samples such as small motors.

Model: **DT-STL-01**

Available torque: 0.5~2N-m

Allowable sample diameter: ϕ 7~50mm

※Image is for illustration purposes.

Actual attached pin is Notch pins

Light weight small table and Long clamp pins



Long clamp pins
(included item)

Ideal for fixing slim samples such as cosmetic containers.

Model: **DT-STL-02**

Available torque: 0.5~2N-m

Allowable sample diameter: ϕ 7~50mm

※Image is for illustration purposes.

Actual attached pin is Long clamp pins

Light weight wide table and Standard pins



Standard pins
(included item)

Suitable for measuring samples such as volume dials.

Model: **DT-STLW**

Capacity: 0.5~2N-m

Allowable sample diameter: ϕ 10~100mm

Light weight wide table and Notch pins



Notch pins
(included item)

Ideal for firmly fixing samples such as motors.

Model: **DT-STLW-01**

Capacity: 0.5~2N-m

Allowable sample diameter: ϕ 10~100mm

※Image is for illustration purposes.

Actual attached pin is Notch pins

Light weight wide table and Long clamp pins



Long clamp pins
(included item)

Ideal for fixing long and wide samples such as bottle shaped containers and diapers.

Model: **DT-STLW-02**

Capacity: 0.5~2N-m

Allowable sample diameter: ϕ 10~100mm

※Image is for illustration purposes.

Actual attached pin is Long clamp pins

Pin chuck



Ideal for gripping columnar samples.

Large pin chuck

Model: **DT-DC-13**

Capacity: 2~10N-m

Opening width:
 ϕ 1.2~13mm

Standard pin chuck

Model: **DT-DC-6.5**

Capacity: 2~10N-m

Opening width:
 ϕ 0.5~6.5mm

Model: **DT-DC-6.5SUS**※2
(Stainless)

Capacity: 2~10N-m

Opening width:
 ϕ 0.5~6.5mm

Small pin chuck

Model: **DT-DC-4**

Capacity: 2~5N-m

Opening width:
 ϕ 0.5~4mm

※1 Please choose □N from 2N or 5N.

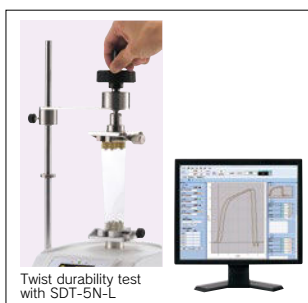
※2 We recommend to use Stainless steel type under easy-to-rust environment.

Rotation Support Jig for DTXS/DTXA



SDT-5N-L

This is an optional turn handle for DTXS/DTXA. The turn handle enables applying small torque stably. Beside, the handle helps you turn very small sample more easily or turn a sample 360 degree or more. If required, an angle meter can be combined (RA option), allowing analysis of torque resistance-angle relation.

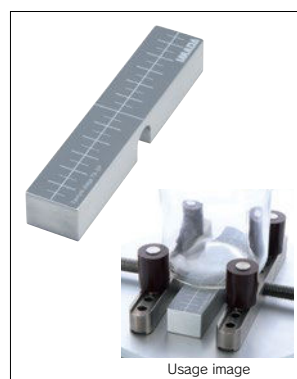


Twist durability test
with SDT-5N-L

Model	SDT-5N	SDT-5N-L	SDT-5N-2L	SDT-5N-RA	SDT-5N-RA-L	SDT-5N-RA-2L
Feature	Standard			With an angle meter		
Capacity	5N-m					
Max. Sample Height (mm) (When use with HT-ST,DT-STL series)	145	245	345	145	245	345
Max. Sample Height (mm) (When use with HT-ST,DT-ST series)	136	236	336	136	236	336
Weight(g)	1094	1181	1313	956	1043	1175
Accuracy				±0.1°		
Measuring Range				0.1~9999.9°		
Available Attachment ※1	Attachments for HTGS/A (P09)					

※1 To be mounted the upper turning part.

Sample stage



Usage image

Sample stage TB-SP
(for DTX series standard table)
Used on the Standard Table
DT-TB series (P.06) to stabilize the sample.
Model: **TB-SP**

HTGS/HTGA series



Accurately / Precisely

- It captures torque values accurately due to high sampling rate (2000Hz).
- HTGS and HTGA are designed to reduce the influence by its bearing mechanism, achieving greater accuracy. (Torque measurement is influenced by bending/compression/tension force during measurement, decreasing accuracy.)

User friendly

- High Luminance Organic EL display
Clear organic display has excellent readability.
- 8 languages are available
Setting menu in 8 languages helps easy operation.

Making efficient

- OK/NG judgment
Picks out defective products easily. (+NG or -NG light goes on when the torque is over or under the borderline that you decide.)
- 3 line indicator
A torque value is indicated in the middle tier, and you can select information as required in the upper and lower tiers.
©The available information is such as time / the number of memory / set points etc.
- Connecting to / interlock external equipment

Varieties of Torque Can Be Measured

- HTGS/HTGA can handle a wide range of torque testing applications using different attachments. Go to page 09 for further information.

Easy data management on PC

- Easy connection with USB interface
- Data capturing software Force-Logger is included
 - It sends 10 data/sec
 - It automatically detects maximum and minimum values.
 - It saves data in CSV format.
- Graphing by optional force capturing software
The software shows torque vs time graphically on PC in real time (at Max. 2000Hz)
Go to page 12 for further information.



▲ Torque capturing software Force-Logger(Included)

▲ Torque graphing Software Force Recorder (Separately sold)

HTGS

Standard Type



- Size(The indicator) : Approx. W75XD34XH187mm
(The sensor) : Approx. ϕ 39XL120mm
- Weight(The indicator) : Approx. 490g
(The sensor) : Approx. 430g

HTGA

High functional type

HTGA series include all the functions of HTGS series, with a few additional features below.

Inputting/Outputting Angle

- HTGA indicates both torque and angle on its monitor, combined with an angle meter.
Torque-Angle Analysis with HTGA – Go to page 15

Capturing 2 Peaks

- Captures 1st and 2nd peaks of measurement.

Saving Data to USB Flash Drive

- Saves continuous data into USB flash drive at 100Hz.
In other words, data can be saved even without PC.



Check Torque Transition on Graphs

Software Force Recorder ————— To page 12



Transmit Data Wirelessly

Wireless Unit WL01-ADP/WL01-USB
————— To Page 13



Analyze the Relation of Torque and Angle

Torque-Angle Analysis Unit TAA series – To page 15

Accuracy	±0.5%F.S. ±1 digit
Unit of measurement	N-m, N-cm, kgf-m, kgf-cm, lbf-in, ozf-in(Switchable)(※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, ±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, Handles (10N-m range only) USB flash drive adapter(only for HTGA)(※3)

※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 USB flash drive is not included.
 ©No attachments are included.

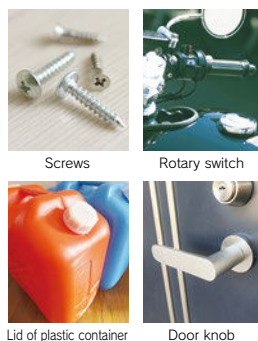
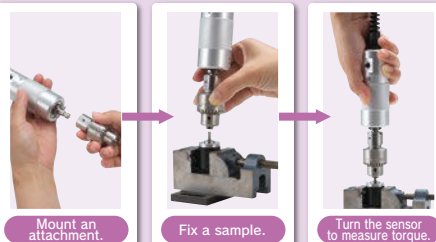
Model	Capacity	Display
HTGS-0.5N(※5)	50N-cm	50.00N-cm
HTGS-2N	2N-m(200N-cm)	2.000N-m(200.0N-cm)
HTGS-5N	5N-m(500N-cm)	5.000N-m(500.0N-cm)
HTGS-10N	10N-m(1000N-cm)	10.00N-m(1000N-cm)
HTGA-0.5N(※5)	50N-cm	50.00N-cm
HTGA-2N	2N-m(200N-cm)	2.000N-m(200.0N-cm)
HTGA-5N	5N-m(500N-cm)	5.000N-m(500.0N-cm)
HTGA-10N	10N-m(1000N-cm)	10.00N-m(1000N-cm)

※5 The Unit shown in only "N-cm"

Attachments for HTGS/HTGA

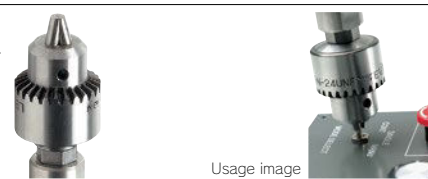
We provide a wide range of interchangeable attachments to fit various testing needs.

How to Measure



Pin chuck

Ideal for gripping columnar samples.



Model	HT-DC-13	HT-DC-6.5	HT-DC-6.5SUS(※1)	HT-DC-4
Capacity	5~10N-m(※2)	2~10N-m(※3)	2~10N-m(※3)	0.5~5N-m
Opening width	φ 1.2~13mm	φ 0.5~6.5mm	φ 0.5~6.5mm	φ 0.5~4mm
Weight	Approx.600g	Approx.200g	Approx.190g	Approx.100g

※1 HT-DC-6.5SUS (Stainless model) is recommended under easy-to-rust environment.
 ※2 Cannot be used for 0.5N-m or 2N-m range
 ※3 Cannot be used for 0.5N-m range

Torque driver

Ideal for measuring tightening / loosening torque.



Model	HT-DBH	HT-DBH-P
Bit	φ1 φ2 φ3×φ6×45	φ00×50
Weight	Approx.100g	Approx.12g

※ HT-DBH cannot be used for 0.5N-m range.
 ※ HT-DBH-P cannot be used except 0.5N-m range.

Socket holder

Ideal for torque wrench or screwdriver bit.



Model	HT-9.5SQ
Socket	9.5mm square
Weight	Approx.100g

※ Cannot be used for 0.5N-m range

M10 adaptor

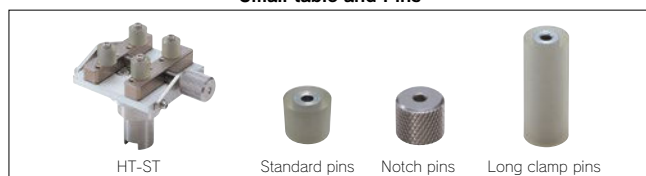
This adaptor is used to mount M10 attachment.



Model	HT-AD-M10
Screw	M10×L20
Weight	Approx.50g

※ Cannot be used for 0.5N-m range

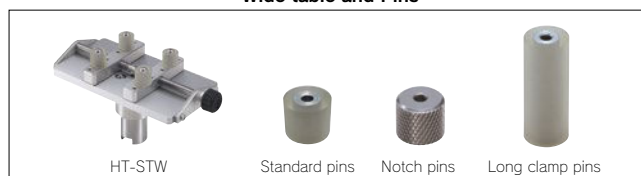
Small table and Pins



Model	HT-ST	HT-ST-01	HT-ST-02
Capacity	2~5N-m	2~5N-m	2~5N-m
Allowable sample diameter	φ 7~50mm	φ 7~50mm	φ 7~50mm
Attached pin	Standard pins	Notch pins	Long clamp pins

※ Cannot be used for 0.5N-m range
 ※ Image is for illustration purpose. Actual attached pins differ depending on the model.

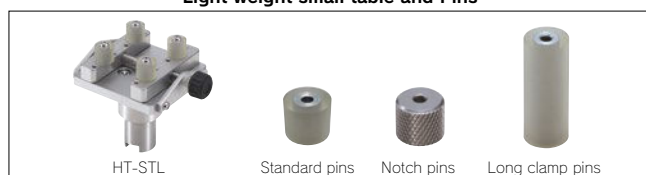
Wide table and Pins



Model	HT-STW	HT-STW-01	HT-STW-02
Capacity	2~5N-m	2~5N-m	2~5N-m
Allowable sample diameter	φ 10~100mm	φ 10~100mm	φ 10~100mm
Attached pin	Standard pins	Notch pins	Long clamp pins

※ Cannot be used for 0.5N-m range
 ※ Image is for illustration purpose. Actual attached pins differ depending on the model.

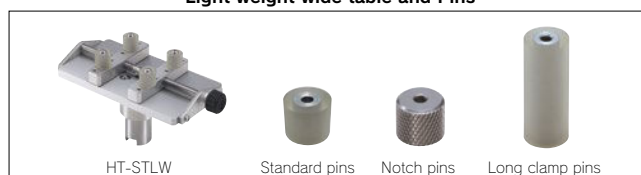
Light weight small table and Pins



Model	HT-STL	HT-STL-01	HT-STL-02
Capacity	0.5~2N-m	0.5~2N-m	0.5~2N-m
Allowable sample diameter	φ 7~50mm	φ 7~50mm	φ 7~50mm
Attached pin	Standard pins	Notch pins	Long clamp pins

※ Image is for illustration purpose. Actual attached pins differ depending on the model.

Light weight wide table and Pins

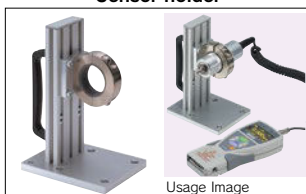


Model	HT-STLW	HT-STLW-01	HT-STLW-02
Capacity	0.5~2N-m	0.5~2N-m	0.5~2N-m
Allowable sample diameter	φ 10~100mm	φ 10~100mm	φ 10~100mm
Attached pin	Standard pins	Notch pins	Long clamp pins

※ Image is for illustration purpose. Actual attached pins differ depending on the model.

Accessory

Sensor holder



The holder is used to fix sensor.
 Model: **SHT-5N**
 Capacity: 5N-m

Angle Meter Unit AMK-360



· Angle Meter Unit for HTGA series (P08) and eHT Series (P11).
 · Enables torque-angle measurement.

Model	AMK-360	AMKL-360
Features	Standard	For low torque (0.5 to 2N-m)
Accuracy	±0.2°	
Angle Range	0.1~9999.9°	
Cable Length	Approx. 1m	
Compatible devices	HTGA-2N/5N/10N, eHT-2N/5N/10N	HTGA-0.5N/2N, eHT-0.5N/2N

Rotation Support Jig for HTGS/A



Manual rotation support jig for torque gauge HTGS/A series to measure torque in the horizontal direction

Model	RSH-5N	RSH-5N-EXT	RSH-5N-EXT2	RSH-5N-RA	RSH-5N-RA-EXT	RSH-5N-RA-EXT2
Features	Standard type			With angle-meter		
Capacity	5N-m (500N-cm)					
Maximum depth of a sample (With HT-ST,DT-TB series)	205mm	305mm	405mm	205mm	305mm	405mm
Weight	Approx.5.1kg	Approx.5.5kg	Approx.5.9kg	Approx.5.1kg	Approx.5.5kg	Approx.5.9kg

HTGS/HTGA-TFX series



Ideal for integration to equipment by fixing the sensor with its equipped holes on both sides

HTGS-TFX Standard Type



Accurately / Precisely

- It captures torque values accurately due to high sampling rate (2000Hz).

User friendly

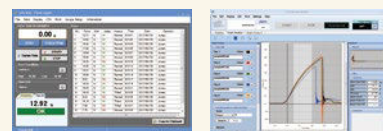
- High Luminance Organic EL display
Clear organic display has excellent readability.
- 8 languages are available
Setting menu in 8 languages helps easy operation.

Making efficient

- OK/NG judgment
Picks out defective products easily.
(+NG or -NG light goes on when the torque is over or under the borderline that you decide.)
- 3 line indicator
A torque value is indicated in the middle tier, and you can select information as required in the upper and lower tiers.
◎The available information is such as time / the number of memory / set points etc.
- Connecting to / interlock external equipment

Easy data management on PC

- Easy connection with USB interface
- Data capturing software Force-Logger is included
— It sends 1.0 data/sec
— It automatically detects maximum and minimum values.
— It saves data in CSV format.
- Graphing by optional force capturing software
The software shows torque vs time graphically on PC in real time (at Max. 2000Hz)
Go to page 12 for further information.



▲ Torque capturing software Force-Logger(Included)

▲ Torque graphing Software Force Recorder (Separately sold)

HTGA-TFX High functional type

HTGA-TFX series include all the functions of HTGS series, with a few additional features below.

Inputting/Outputting Angle

- By connecting with a customized angle meter, the angle value can be measured and displayed.

Capturing 2 Peaks

- Captures 1st and 2nd peaks of measurement.

Saving Data to USB Flash Drive

- Saves continuous data into USB flash drive at 100Hz.
In other words, data can be saved even without PC.



Check Torque Transition on Graphs
Software Force Recorder — **To page 12**



Transmit Data Wirelessly
Wireless Unit WL01-ADP/WL01-USB
— **To Page 13**

Accuracy	$\pm 1.0\%F.S. \pm 1$ 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/setting lock/1st/2nd peak (only for HTGA-TFX)/Angle detection at torque peak value (only for HTGA-TFX)(※2)/Angle zero reset at selected torque (only for HTGA-TFX)(※2)
Output	USB/RS232C/±2VDC 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-TFX)/USB flash drive (only for HTGA-TFX)/Angle (only for HTGA-TFX)(※2)
Accessory	AC adapter/inspection certificate/CD driver (including data logging software)/USB cable/carrying case/L wrench/USB flash drive adapter (only for HTGA-TFX)(※3)

※1 These are the specifications for international model. Note that available units are different from Japanese domestic model.

※2 Angle meter is necessary to activate these functions.

※3 USB flash drive is not included.

Model	Capacity	Display
HTGS-TFX-5N	5N-m(500N-cm)	5.000N-m(500.0N-cm)
HTGS-TFX-10N	10N-m(1000N-cm)	10.00N-m(1000N-cm)
HTGA-TFX-5N	5N-m(500N-cm)	5.000N-m(500.0N-cm)
HTGA-TFX-10N	10N-m(1000N-cm)	10.00N-m(1000N-cm)

Torque Meter for Motor Screw Drivers and Torque Drivers

I-8/I-80

Torque of a motor screw driver and torque driver can be easily measured. It is ideal for daily torque maintenance.



Driver adapter OW Series

Model	I-8	I-80
Measuring range	0.20~78.60 cN-m 0.020~8.000 kgf-cm 0.020~6.970 lbf-in	0.020~7.860 N-m 0.20~80.00 kgf-cm 0.20~69.70 lbf-in
Accuracy	±0.5% (reading value) or ±3digit in less than 499 digit.	
Display	4 digits LCD display	
Measuring direction	CW-CCW (Right turn /Left turn)	
Measuring mode	P-P(Peak-hold), T-R(Track), P-D(Peak-down),C(real time data output)	
Real-time output	Output torque at every 1/180 seconds	
Data output	ASCII (baud rate 19200)	
Functions	Upper/ Lower value setting, Pass-fail decision, Internal memory, Auto zero reset function, Auto power-off (in 10 minutes with no operation), Max./ Min./ Ave. display, Zero Reset function	
Battery	Ni-Cd 1.2V×5 cell(700mAh) 300 times	
Charging time/Usable time	Approx.3 hours/ Approx. 12 hours continuous use after full charge.	
Socket joint part (Detecting parts shape)	Square 20 mm / Square 9.5 mm	
Included items (1 each)	Driver adapter OW-025/OW-10	Driver adapter OW-20/OW-60
	Attache case, battery charger, inspection certificate, calibration certification, traceability system diagram.	

※This product is NOT suitable for impact tools testing.

[For Driver Adapter OW Series]

Model	OW-025	OW-10	OW-20	OW-60
Range	Max. 0.25N-m	Max. 1.0N-m	Max. 2.0N-m	Max. 6.0N-m
Mechanical life	10,000 times	8,000 times	5,000 times	5,000 times
Bit joint part	M2.6+Pan head screw	M3.0+Pan head screw	M4.0+Pan head screw	M6.0+Panhead screw
Body dimension	ϕ 28×44	ϕ 32×51	ϕ 32×51	ϕ 32×69

eZ-Connect series



eZ-Connect series are...

● **eZ-Connect is composed of an amplifier and load cells. Load cells can be replaced without additional adjustment.**

· Its overall accuracy is calculated as the total of the accuracy of the amplifier (+/- 0.2%F.S.) and a load cell connected with it.

· We do not offer inspection certificate when we ship it out. Therefore, please calibrate it by yourself, or request calibration for each combination if needed (available at a charge).

[This is recommended in these cases below]

Measure both low-load torque and high-load torque.

Perform different types of tests such as tension and torque.

Keep a spare load cell to reduce risks in operation.

Models of load cells for eZ-Connect series

● Add "e" to model name of a load cell for eZ-Connect series as stated below.

Example Normal load cell: DPU-50N

Load cell for eZ-Connect series: eDPU-50N

Sensor Interchangeable Amplifier eZT

Precise

- Captures test data precisely due to its high sampling rate (Max.2000Hz).

Easy

- No additional adjustment is needed to replace load cells.

Multifunctional

- It has many useful functions such as OK/NG judgement, saving data in USB flash drive, and more.

□ Size (Amplifier only) : Approx. W75 × D34 × H188mm

□ Weight (Amplifier only) : Approx. 490g



Desktop Amplifier FA Plus2 series

- Its box-shaped design is ideal for integration into facilities.
- Its rich output functions allow easy connection to external devices such as PLC.



□ Size: W151 × D150 × H90mm

□ Weight: Approx. 1.1kg



Check Force / Torque Transition on Graphs

Software Force Recorder ————— To Page 12



Connect with External Devices

Cable Using Applications ————— To Page 13



Transmit Data Wirelessly

Wireless Unit WL01-ADP/WL01-USB

————— To Page 13

For Torque (only for eZ connect)

Torque Load Cell eHT series

It measures turning/twisting force.



It measures torque using optional attachments such as pin chuck, socket holder, torque driver etc. (Page 09)

Capacity	0.5N-m~10N-m
Accuracy	±0.5% F.S. or less
Size	φ38 × 138mm
Cable length	Approx. 0.5~1m (curl cable)

Model	Capacity
eHT-0.5N	50N-cm(※)
eHT-2N	2N-m(200N-cm)
eHT-5N	5N-m(500N-cm)
eHT-10N	10N-m(1000N-cm)

※Displayed unit is "N-cm" only.

For Torque (only for eZ connect)

Flange type Torque load Cell eTFX

It measures turning/twisting force.



Ideal for integration to equipment by fixing it with its equipped through holes on both sides.

Capacity	5N-m~10N-m
Accuracy	±1.0%F.S. or less
Size	Approx. φ35 × 28mm
Cable length	Approx. 2m

Model	Capacity
eTFX-5N	5N-m(500N-cm)
eTFX-10N	10N-m(1000N-cm)

For Compression and Tension (only for eZ connect)

Standard Type eDPU

Easy built-in shape to external equipment



It measures 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
eDPU-2N	2N	Male Screw M6P1.0
eDPU-5N	5N	
eDPU-10N	10N	
eDPU-20N	20N	
eDPU-50N	50N	
eDPU-100N	100N	
eDPU-200N	200N	
eDPU-500N	500N	

● eZ-Connect series can be combined with various load cells.

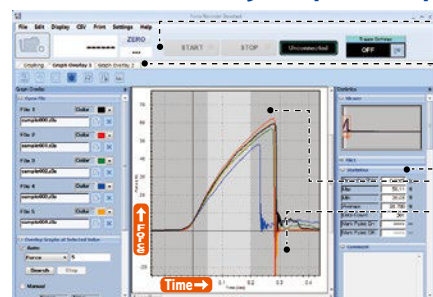
Please see "Force Gauges & Associated Equipment catalog" for the details of load cells available.

Data Analysis Software **Force Recorder series**

Analyze data easily and accurately, and create report with ease

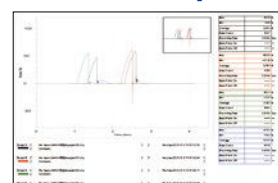
We offer 3 types(Light/Standard/Professional)to fit your needs.

■ Make efficient by simple manipulations and useful functions. —



- Easy steps for saving. Connect a force gauge and PC with a USB cable, and click START.
- Compares data easily due to plural tabs.
- 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. (Standard/Professional version only)
- Graphs the measurement accurately with high sampling rate up to 2000 Hz

■ Create reports quickly —

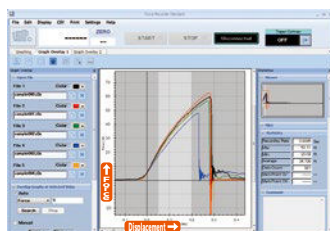


- Data can be easily saved in Word, Excel, and PDF format, reducing the time to create reports.
- It automatically inputs graphs, date & time, and statistics. Comments also can be input manually if necessary.

■ Force Recorder Professional —

Torque-angle graphs can be drawn precisely at Max. 2000Hz with ease.

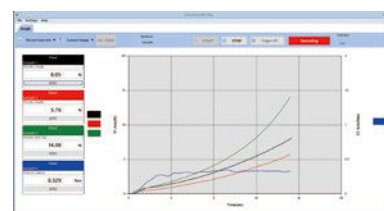
- For angle data acquisition, you need an angle meter in addition to DTXA/HTGA/HTGA-TFX/eHT (eZT).
- TAA series (Page 15) come with this software.



■ Force Recorder Plus —

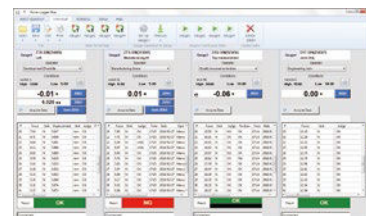
Graphs the data acquired from up to 4 force gauge/torque gauge at the same time

- Acquire continuous data (up to 1000 times/sec)
- Display different unit such as force and torque in 1 screen



Multiple Gauges Managing Software **Force Logger Plus**

Manages data up 4 force/torque gauges



■ Comparison Table

Function Comparison

Software	Force Recorder Light	Force Recorder Standard	Force Recorder Professional	Force Recorder Plus	Force Logger Plus
Feature	Graphing only	With editing functions	Force-displacement graphing	Graphing for multiple force gauges at the same time	Connect up to max. 4 force gauges
Graph	Force-time	Force-time	Force-time; Force-displacement	Force-time	N/A
Data transferring speed (Max)	2000 data/sec	2000 data/sec	2000 data/sec	1000 data/sec	10 data/sec
Recording data point (Max)	7.2 million	7.2 million	7.2 million	3 million	65 thousand
Displacement output	N/A	N/A	✓	N/A	N/A
Graph overlaying function	N/A	✓ (Max.5graphs)	✓ (Max.5graphs)	✓ (Max.10graphs)	N/A
Trigger function	N/A	✓	✓	✓	N/A
Point marking	N/A	✓	✓	N/A	N/A
Border line function	N/A	✓	✓	N/A	N/A
Capture function	N/A	✓	✓	✓	N/A
Graph scaling	✓ (Auto)	✓ (Auto)	✓ (Auto)	✓ (Auto/Manual)	N/A
Statistics output	✓	✓	✓	✓	✓
Comment	✓	✓	✓	N/A	N/A
Print	✓	✓	✓	✓	✓
CSV file converting	✓	✓	✓	✓	✓
Preview saving (PDF/Word/Excel)	✓	✓	✓	✓	N/A
Force gauge setting	✓	✓	✓	✓	✓
Managing force gauge	N/A	N/A	N/A	✓	✓

※Old models of force gauges may not be compatible partially or wholly. Contact us for the detail about old models.

■ Operating Environment for Force Recorder series, Force Logger Plus, Force Recorder Plus

[Operating Environment]

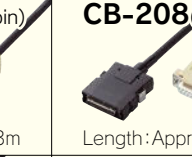
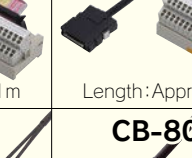
Model	Force Recorder Light/Standard/Professional	Force Recorder Plus	Force Logger Plus
OS	Windows 8.1 / 10 / 11	Windows 8.1 / 10 / 11	Windows 8.1 / 10 / 11
Hardware	CPU: 1GHz or higher/Memory: 2GB or more Hard disk: 10GB(Data storage area) more	"CPU: 1GHz or higher/Memory: 4GB or more Hard disk: 10GB(Data storage area) more"	CPU: 1GHz or higher/Memory: 2GB or more Hard disk: 10GB(Data storage area) more
Plat form	.NET Framework 4.8 later	.NET Framework 4.8 later	.NET Framework 4.8 later
Image size	Resolution: 1024×768 pixel more	Resolution: 1920x1080 pixel more	Resolution: 1280×768 pixel more

Cables

Cables expand the functionality of torque gauges.

	HTGS/HTGA 	HTGS/HTGA-TFX 	DTXS/DTXA 	eZT 	eFA Plus2 
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The cables to connect a torque gauge to an external device

RS232C cable Connects a PC to a torque gauge, enabling to record the measurement and transmit command signals from the PC to the gauge.	CB-208(9-pin)  Length: Approx. 3m	CB-208(9-pin)  Length: Approx. 3m	CB-208(9-pin)  Length: Approx. 3m	CB-208(9-pin)  Length: Approx. 3m	CB-208(9-pin)  Length: Approx. 3m
Analog cable Connects analog devices such as a pen recorder to a torque gauge, enabling to record torque transition. CB-118 works for "-AN" option. ※1	CB-108  Length: Approx. 3m	CB-108  Length: Approx. 3m	CB-108  Length: Approx. 3m	CB-108  Length: Approx. 3m	CB-108  Length: Approx. 3m
Open End cable Connects a torque gauge to a special device.	CB-908  Length: Approx. 3m	CB-908  Length: Approx. 3m	CB-908  Length: Approx. 3m	CB-908  Length: Approx. 3m	CB-908  Length: Approx. 3m
Cable with Terminal Block Connects an external equipment such as PLC	CTB-A  Length: Approx. 1m	CTB-A  Length: Approx. 1m	CTB-A  Length: Approx. 1m	CTB-A  Length: Approx. 1m	CTB-A  Length: Approx. 1m
External Contact Point cable Enables to measure external contact points.	CB-808  Length: Approx. 3m	CB-808  Length: Approx. 3m	CB-808  Length: Approx. 3m	CB-808  Length: Approx. 3m	CB-808  Length: Approx. 3m

※1 ZTS/A series force gauges output raw sensor data as fast analog voltage without conversion with -AN option.

※2 We offer customization including the length extension, connector's change in shape, and more.

※ CB-308 are required to connect Mitutoyo Digimatic Mini Processor to HTGS/A series (earlier than Ver.5.00).

Wireless Data Transmit System WL01-ADP/ WL01-USB

Transmits acquired measurement data to the device such as PCs wirelessly.

- Accurate data transmission/reception: "Group Name" settings and reception detection function which detects transmission errors
- High security data protection: Protect data leak with AES data encryption
- Various types of data management: By publishing communication formats, this single USB Wireless Receiver (WL01-USB) can receive up to 26 data of force gauge, and can use with your own software ※1



Wireless Transmit Adapter	
Adapter which connected to force gauge to send data	
Model	WL01-ADP
Compatible Models ※2	ZTA/ZTS(Separated Sensor Models Included), eZT, FA Plus2, eFA Plus2, DTXA/DTXS, HTGA/HTGS, HTGA/HTGS-TFX
Communication Distance ※4	Approx. 20m
Wireless Communication Standard / Frequency	Complies with IEEE802.15.4 World Common Frequency: 2.4GHz Complies with CE: Radio Equipment Directive[2014/53/EU] Complies with Japanese Technical Standard: ARIB STD-T66 ※Please contact us for use in other available areas

USB Wireless Receiver	
Receiver which connected to PC to receive data	
Model	WL01-USB
Compatible Software ※3	Force Logger (Attachment, available from the Ver. 2.1.0 later) Force Logger Plus (Sold Separately, available from Ver. 1.1.0 later)
Communication Distance ※4	Approx. 20m
Wireless Communication Standard / Frequency	Complies with IEEE802.15.4 World Common Frequency: 2.4GHz Complies with CE: Radio Equipment Directive[2014/53/EU] Complies with Japanese Technical Standard: ARIB STD-T66 ※Please contact us for use in other available areas

※1 In the case of using the output signal by connecting force gauge to a test stand or external device while using wireless communication, Wireless Transmit BOX (WL01-BOX) is available.

※2 Depending on the software used, the number of connectable devices is limited.

※3 All compatible models are available from firmware Ver.3.1.0 and later.

※4 Maximum connected number of IMADA software Force Logger: 1 unit / Force Logger Plus: 4 unit

In the case of using Wireless Data Transmission System Unit with IMADA software, some restrictions are on software function. Please contact us for the details. E.g. Acquire continuous data

※4 The communication distance may vary depending on the obstacles and environmental conditions. Please contact us for the details.

The Cables for Old Models

If you need a cable for old model force gauges/torque gauges, please refer to the list right.

If your model is not mentioned in the list, please contact us.

[The Model List]

Model	HTG2,DTX2 series
Analog cable	CB-104
RS-232C cable	CB-204
Digimatic cable	CB-304

Test Stands for Torque Testers

Combine this test stand with a DTXS/DTXA for greater accuracy. This test stand provides constant test speed due to automatic operation, and guarantees highly repeatable test result.

MTS series

Precisely

- High repeatability with constant test speed

Easily

- Easy and digital speed-setting
- Auto operation by a set torque

Efficiently

- Automatic stop at a set torque value
- Durability test with a set repeat count
- Automated data recording, interlocked with software
(An optional software is required to operate it.)



Check torque transition on graphs

Software Force Recorder ——— To Page 12



Analyze the Relation of Torque and Angle

Torque-Angle Analysis Unit TAA series — To Page 15



MTS-10N
(The standard chuck is not included.)



Model	MTS-10N	MTS-10N-L	MTS-10N-2L
Capacity	10N-m		
Maximum height of a sample	140mm	240mm	340mm
Speed range	3~ 90 degree/sec		
Weight	Approx. 14kg		
Size	W432×D400×H575mm	W432×D400×H675mm	W432×D400×H775mm
Function	Manual mode, JOG mode, Automatic mode(CONTINUOUS, ONE WAY) (※1) Overload preventing function (※1), Speed adjustment		
Accessory	Power cable, Torque gauge connecting cable (※2), Centering stick, Spare fuse, Instruction manual, tools, Packing cardboard		

※DTX series and attachments are sold separately. Please select one for each to complete testing system.

Option

- RA option(equipping an angle meter)
- Stroke Change

※1 Torque gauge should be connected with the cable (included).
 ※2 Standard model comes with CB-528.
 -RA (angle meter option) model comes with CB-728

Extension shaft (For -L,-2L)

Model: **MT-EXT** It is for MTS-10N-L. Please use this shaft when the height of your sample is 130mm or less. Or, you can also apply this shaft to MTS-10N-2L when the height of your sample is between 130-230mm.

Model: **MT-EXT2** It is for MTS-10N-2L. Please use this shaft when the height of your sample is 130mm or less.



Attachments for MTS

Attachments for MTS (Upper Part)

Standard chuck



Model: **MT-TB**
 Max. torque: 10N-m
 Sample diameter: ϕ 20~90mm

Small chuck (※1)



Model: **MT-ST** (※1)
 Max. torque: 5N-m
 Sample diameter: ϕ 7~50mm

Pin chuck



Max. torque: 10N-m

Model	Diameter
MT-DC-13	Large ϕ 1.2~13mm
MT-DC-6.5	Medium ϕ 0.5~6.5mm
MT-DC-6.5SUS	Medium (Stainless) ϕ 0.5~6.5mm (※2)

Max. torque: 5N-m

Model	Diameter
MT-DC-4	Small ϕ 0.5~4mm

M10 adaptor



Model: **MT-AD-M10**
 It helps you to mount attachment with a M10 female screw.

※1 We provide a few more kinds of pins to fit your test samples.
 For more details, please refer to Page 05 of "Attachments for DTXS/DTXA"
 ※2 MT-DC-6.5sus (stainless model) is recommended under easy-to-rust environment.

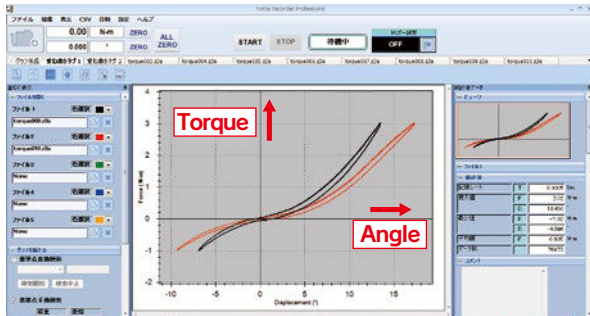
TAA series Torque-Angle Analysis Unit

This unit enables you to easily analyze the relation between torque and angle.

TAA series can measure angle according to rotation, drawing a torque-angle graph. This system is ideal for functionality assessment according to constant angle of rotation.



It shows torque vs angle graphically at real time (Max. 2000Hz)



Basic Performance for Torque-Angle Measurement

- Easy connection to PC by USB
- Smooth graphing performance at 2000Hz
- Graph zooming function
- Possible to insert comment insertion on graphs
- Quick data export to WORD, EXCEL, PDF

Useful Functions for Measurements and Analysis

- Graph comparing function
Max 5 graphs
- Reference line function
- Statistical calculation
(maximum/ minimum/ average values)
- Test trigger function
(when the torque reaches to the the set displacement value)

Configuration

TAA-MTS-TB Series

This is a desktop type offering automatic rotation at set speed.

A Torque Stand

Upper side rotates at a set speed. Test requirements such as a starting speed, a returning speed, pause at set torque value, and more can be set up.

Included Attachments

It comes with 2 attachments; MT-TB for upper side, and DT-TB for lower side. Other optional attachments can be replaced instead to fit your test samples.

A Torque Measurement Instrument

It displays torque and angle. It can be taken on/off by screws when required.



A Connection Cable

It connects a torque tester with a torque stand for control.

Software

It shows torque vs angle graphically. Torque and angle data can be taken into your PC at real time (Max.2000Hz), drawing a smooth graph. Trigger function enables automatic graph drawing.



TAA-HTG Series

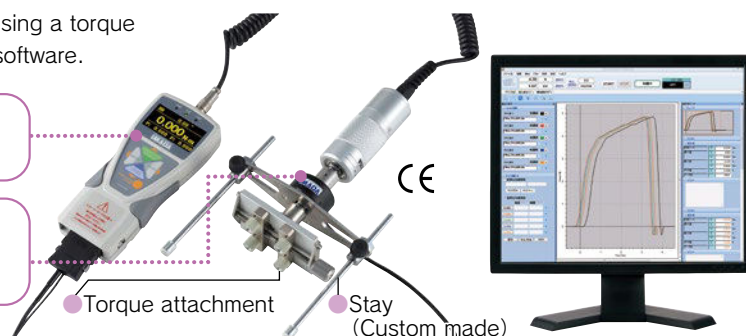
This is handheld type, comprising a torque gauge, an angle meter, and software.

Torque Gauge

It displays torque and angle.

Angle Meter Unit

It measures the angle and output to torque gauge.



※ An optional torque attachment and an optional stay(custom-made)are required to complete the testing system but they are not included. Contact us for further information of the chuck and the stay.

Specifications for Torque-Angle Analysis Unit TAA series

Model		TAA-MTS-□□N-TB (※1)	TAA-HTG-□□N (※1)
Unit	Torque	N-m/N-cm, kgf-m/kgf-cm, lbf-in/ozf-in(switchable)※	
	Angle	° (degree)	
Range		2N-m (200N-cm), 5N-m (500N-cm), 10N-m (1000N-cm)	
Resolution	Torque	4 digit (Ex: The resolution of TAA-MTS-5N 0.001N-m[0.1N-cm])	
	Angle	0.001° (on Force Recorder Professional) 0.01° (on Torque gauge display)	0.1° (on Force Recorder Professional) 0.1° (on Torque gauge display)
Accuracy	Torque	±0.5%F.S. +/-1 digit	
	Angle	±0.1° +/-1 digit	
Model: Allowable sample height		TAA-MTS-□□N-TB:140mm TAA-MTS-□□N-L-TB:240mm TAA-MTS-□□N-2L-TB:340mm ※We can extend the height as custom-made. Please contact us. ※We can handle a wide range of sample's height other than above-mentioned height. ※Please use extension shaft(page 12) as required.	—
Torque data sampling rate		2000 data /sec	
Torque display upgrade		16 data/sec	
Output		USB, Serial(RS232C), Analogue (Approx. ±2V), Comparator, Overload, Sub comparator, USB flash drive ※USB flash drive is not included.	
Function	Torque gauge	Customized display(header and footer) / Peak Hold mode(CW/CWW) / Internal memory (1000 data) / Comparator(OK/NG judgment) / Reversible display / Sign inversion / Zero clear timer / +NG alarm/Off timer(Auto power off)/Damping / Time display / 1st 2nd peak / Setting lock	
	Test Stand	Manual mode, JOG mode, Speed adjustment	—
	Link function(※2)	Angle detection at torque peak / Angle zero reset at the selected torque /Automatic mode (CONTINUOUS, ONE WAY), Torque control, Overload prevention	—
Power supply	Torque gauge	Rechargeable battery (approx. 6.5 hours for using, approx. 2 hours for re-charging)	
	Test stand	AC100V~240V	—
Operating environment		Temperature: 0 - 40 degree Celsius Humidity: 20 -80%RH	
Accessory		Graphing software Force-Recorder Professional, Driver CD-ROM (with data logger simple software), Power cable, AC adapter, Torque gauge connecting cable(CB-728), USB cable, Spare fuse, Instruction manual, Inspection certificate, tool, packing cardboard box.	Handle (only for 10N-m range)
Included attachments(※3)		Lower side: DT-TB (refer to 04), Upper side: MT-TB (refer to P12)	—

※Japanese domestic model does not indicate kgf (kgf-m, kgf-cm) and lbf (lbf-in, ozf-in).

※1 Please select one from 2N, 5N, or 10N

※2 A torque gauge is needed to connect with the included connecting cable to activate this function.

※3 We provide a model without any attachments (TAA-MTS+□□N-Z). The model is recommended when you use other IMADA optional ones, or your own chuck.

Examples of TAA-HTG Series Application

This is a handheld and manual-twist type, which allows torque-angle analysis even in environments where a large device cannot be brought in.

Turning the door-knobs

Turning test which analyze the relationship between the Max. force value and the angle.



Tuning dials of the air conditioner and audio systems

Operability test which analyze the relationship between the resistance of click feeling and the angle of turning.



Examples of TAA-MTS-TB Series Application

This is a desk top type, offering highly repeatable measurement by automatic rotation at constant speed.

Opening the bottle caps

Opening tests for the bottle caps to analyze the relationship between the resistances of clicking feeling and the angle.



Twisting durability tests for the PCB and nonwoven fabrics

Durability test for twisting the PCB for a set number of repetitions at a constant load value.



Other Examples

- Ease of key turning
- Operability of a motorcycle's accelerator
- Operabilities of a dial and a switch

Other Examples

- Tactile of rotary switch
- Twist characteristics of underwear and a sanitary pads
- Sliding resistance of a camera-lens ring

Example of TAA-HTG Series Application

●Measurement by Handle Operation

How to measure:

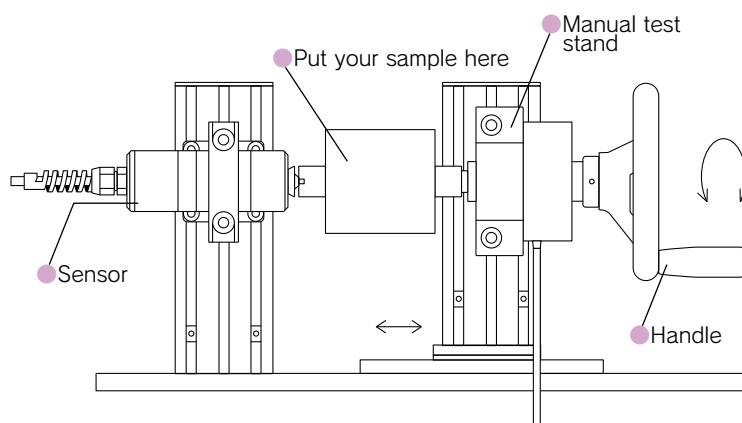
- 1.Set your sample on the fixed sensor
- 2.Rotate the handle

A torque vs angle graph can be drawn precisely with ease.

For example...

- torsion spring
- a rotary switch etc.

Please contact us for further information.



Food Texture Analyzer & Related

IMADA texture analyzers realize stable product quality management by quantifying food characters such as hardness or stickiness which used to be defined by artisans. These devices are also suitable for measurement of packaging materials to design safe and easy-to-use food packages.



Food Texture analysis

Packaging Strength/opening tests

Meat toughness



Cheese stickiness



Bread dough softness



at a Preparation Step

(Stickiness / toughness / cutting force etc.)

Asparagus bending force



Egg elastic force



Texture Analyzer

FRTS ————— To page 18

Simple food texture analyzer

FCA ————— To page 21

Sausage texture



Piecrust elastic force



Pasta elasticity



Rice stickiness



at a Cooking Step

(Elasticity / Texture)

Available for measurement complying with standards

- Food for person having difficulty in swallowing
- Universal design food

Texture Analyzer

FRTS ————— To page 18

Simple food texture analyzer

FCA ————— To page 21

package durability



Force to open a lid of a canned food container



Force to open a lid of a cup container



at a Packaging Step

(opening / turning / pressing force etc.)

Force to open a lid of a jar



Force to peel heat-seal



Bottle cap opening testers

DTXS/DTXA series — To page 05

Other tension/compression/peel testers

For other compression/tension/peel tests including lid opening test for cup container or food canned container, please refer to another catalog "Force Gauges & Associated Equipment."



Texture Analyzer FRTS series

FRTS series can digitalize textures such as stiffness, viscosity, elasticity, and more, allowing for data management. Palatability (deliciousness) is the most important factor of food. "Palatability" is composed of taste, flavor, and texture. Texture represents chewability, firmness (sensation against the teeth), feeling on the tongue, feeling to the throat, and so on. The texture is expressed with food material characteristic and human sensation characteristic. The food material characteristic is categorized into mechanical characteristic, geometry characteristic, and others. FRTS series can measure the mechanical characteristic such as stiffness, elasticity, stickiness, and more.

FRTS series

Excellent Operability

- User friendly touch screen enables you to operate intuitively.
- Testing requirement can be setup very easily.
- Maximum 6 testing conditions can be added to "Favorites" to recall them quickly.

Great Precision

- High accuracy: $\pm 0.2\% \text{F.S.} \pm 1 \text{ digit}$
- Capture peak value accurately due to high sampling rate (1000Hz).
- Testing conditions can be saved and recalled to uniformize testing condition.

Varieties of Textures Can Be Measured

- A wide range of attachments is available.



◀ A recommended attachment is indicated when you choose preset measuring method.

Easy Care

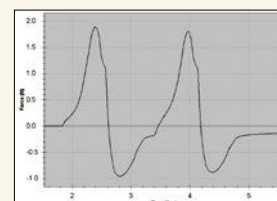
- The measuring part can be easily cleaned up since it is made of stainless.
- The tray can be readily detached.

Easy Data Management and Analysis

- The data can be stored to include USB flash drive.
- A graph can be drawn on PC with using included software.
- Load distributions can be confirmed, and compared very easily.



▲ USB flash drive (Included)



▲ Graphing software (Included)

[Specifications for FRTS series]

Accuracy	Force	$\pm 0.2\% \text{F.S.} \pm 1 \text{ digit}$
	Displacement	$0.1 \text{ mm} \pm 1 \text{ digit}$
Measurement unit	Force	N / Kg / lbf (※1)
	Displacement	mm / inch (※1)
Indication	Force	4-digit
	Displacement	0.001mm (as the minimum resolution)
Sampling speed		1000Hz
Sample's maximum height		70mm (※2)
Table travel distance		Max. 100mm
Speed		0.1 ~ 10.0mm/sec
Functions		3 types of measuring method (Food/Standard (※3), Program, Manual), Add-a-favorites for measuring conditions (Max.6 conditions), Start-trigger function, Overload preventing function (※4)
Output		USB, USB flash drive
Accessory		Graphing software, Power cable, USB cable, USB flash drive, Attachment (4 kinds), FR-HN (screw for mounting lower tension attachments), FR-JS-50/100 (2 type shafts for mounting upper attachments), Fuse, Inspection certificate
Operating environment (※5)		Temperature: 0 to 40 degree Celsius Humidity: 20 to 80 %RH
Weight		Body: 7.7kg Control Panel: 0.8kg
Size		185 x 300 x 400 mm (except its control panel)

※1 The units are switchable. The units differs from Japanese domestic model.
 ※2 It is the maximum distance from its table surface to the part where an attachment is mounted.
 ※3 PC is required for measurement to comply with some standards.
 ※4 Not able to prevent overload in some cases.
 ※5 Not able to use this product under a vibratile environment.

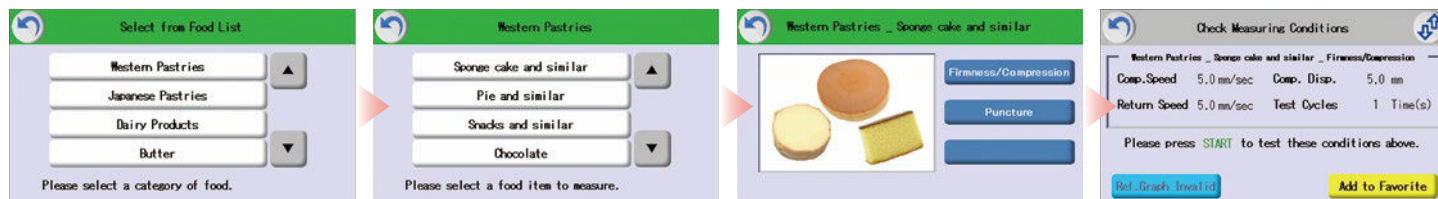
[Model]

Model	Capacity	Resolution
FRTS-5N	5N	5.000N
FRTS-50N	50N	50.00N
FRTS-100N	100N	100.0N

How to Start Measurement

Choose a food to confirm a measuring method

- There are 2 ways to decide a measuring method according to types of food;
1. Use preset testing conditions without any changes. 2. Use preset conditions with some changes.



○ Food categories in pre-installed "Food List" & samples

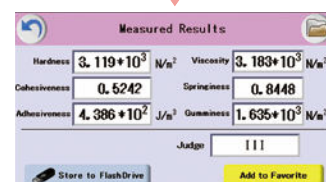
Sweets	Japanese sweets	Dairy products	Butter	Noodles	Bread	Rice	Meat
Cake, Pie Jelly, Snack	Manju Rice cracker	Cheese Yoghurt	Butter	Boiled noodles Noodle dough	Bread, Donut Kneaded dough	Uncooled rice Cooked rice	Raw meat Cooked meat
Fish and seafood	Paste	Beans	Nuts	Eggs	Vegetables	Mushrooms	Fruits
Cooked fish Raw fish	Fish sausage Paste	Cooked bean Tofu	Peanut	Egg shell, Raw egg Boiled egg	Carrot, Cucumber Pepper, Potato	Mushrooms	Apple, Grape, Jam

※ We can add 1 program according to your request (some measuring conditions are not acceptable). Please make sure to tell us before you order (Free of charge up to 1 program).

Choose a test standard to confirm a measuring method

○ Measuring conditions complying with standards are preset.

Standard	Outline	Measured Result
Food for person having difficulty in swallowing	Complying with required measuring method, it measures softness, cohesive property, and adherability using included software.	3-step judgement method (Permission Criteria I / II / III)
Universal design food	It measures firmness according to required measuring method.	4-steps judgement (Able to chew easily / able to smash with gum / able to smash with tongue / able to swallow without chew)
JIS K6503 Animal glues and gelatins	It measures firmness according to required measuring method.	Force value (N)
ISO 16035 Butter	It measures firmness according to required measuring method.	Force value (N)
ISO 9665 Animal glues	It measures firmness according to required measuring method.	Force value (N)
Former JAS Special packaging for Kamaboko and the like	It measures firmness according to required measuring method.	Force value (N)



Set measuring conditions by yourself

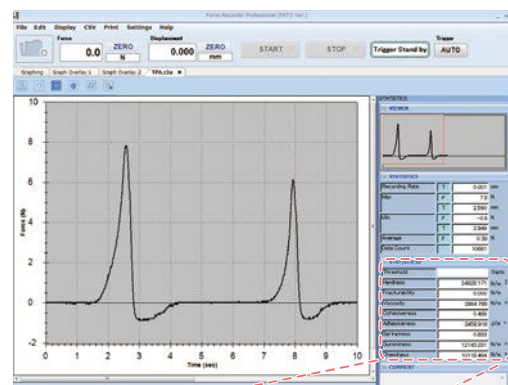
- Measuring conditions such as displacement, test speed, number of tests can be set by yourself.

Included Software

- FRTS can be connected to PC via USB cable easily.
○ It automatically starts graphing when measurement starts. It can draw force-time or force-displacement graph, calculating characteristics such as firmness, adhesion, cohesive property, adherability, elasticity, gumminess. Besides, graphs can be overlaid for detailed analysis.

[Software operating environment] ※FRTS series

Operating environment	Windows 8.1 / 10 / 11
Hardware	CPU: 1GHz or higher/Memory: 2GB or more Hard disk: 10GB(Data storage area) more
Plat form	.NET Framework 4.8 later



STATISTICS2	
Threshold	
Hardness	24928.171 N/m ²
Fracturability	0.000 N/m
Viscosity	2964.799 N/m ²
Cohesiveness	0.489
Adhesiveness	3458.918 J/m ³
Springiness	0.833
Gumminess	12143.231 N/m ²
Chewiness	10118.494 N/m ²

Attachments for Food Tests

Attachments exclusive for Food testers

We offer a wide range of attachments to fit your testing needs.



Optional probes and tables can handle various measurement.

Please select the specified dimensions for □, and J or S for ● to order. J: Resin, S: Stainless

Compression

Disk probe
Model: FR-HA-□
※1

D	●
20	J, S
30	J
50	J

D

Cylindrical probe
Model: FR-EC-□
※1

D	●
3	J, S
5	J, S
8	J
10	J
12.7	J
15	J

D

Conical probe
Model: FR-ES-□-□-□
※1

θ	D	●
45	20	J
	30	J
60	20	S
	30	J

θ

Sphere probe
Model: FR-SR-□
※1

D
5
7
10
20

D

Stainless

Yogurt cutter
Model: FR-YN-29

Stainless

Vice pin for sticking
Model: FR-CP-3

Pin: Stainless
Pin Vice: Steel ※3

3 point bending fixture
Model: FR-TP-60

Aluminium ※3

Tension

Special grip for noodle
Model: FR-NP-25

Stainless ※3

Small grip
Model: FR-SC-3

Aluminium ※3

Film grip (small)
Model: FR-FC-21

20
Aluminium ※3

Film grip (large)
Model: FR-FC-41

40
Aluminium ※3

Shearing

Cutter
Model: FR-NB-80

Stainless ※3

Wire-cutter
Model: FR-WK-85

Piano wire: Stainless

Wedge probe
Model: FR-KS-□-20 30[□]
※1

θ	●
45	J, S
60	J, S

θ

20
30

Optional table

Wide table
Model: FR-LT-120

120
Stainless

Center lined table
Model: FR-CT-80

Stainless

Table with trench
Model: FR-GT-□
※1

W
3
5
10

W
Stainless

Container holder table
Model: FR-BG-60

Stainless ※3

Sample holder table
Model: FR-UP-□
※1

D
5
10
25
50

D
Aluminium ※3

Stick guide plate
Model: FR-KP-□
※1 ※2

D
3
5
10

D
Polycarbonate ※3

Stick holder
Model: FR-ST-25

25
Aluminium ※3

Anti-Scattering sheet
Model: FR-DP-80

Polycarbonate ※3

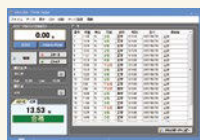
We offer more kinds of probes and tables other than above-mentioned ones. We can custom design and manufacture to meet your particular requirement.

※1 Only FR-ES60-20S is stainless steel conical probe. ※2 Attachments for tension test is available only for Manual mode of FRTS series. ※3 The material of main part. Screw part probably has different material.

length:mm angle:degree(°)

FCA-DSV-50N

Travel distance can be adjusted to move a force gauge and easily measure firmness or force to crush food. Moreover, data can be easily managed using a supplied software.



Supplied software
Force Logger

Easy care due to stainless made



Simple measurement due to lever operation



Easy set for travel distance by knob



Type	Crush / Compress	Cut / Break
Features	It compresses food with disk probe to measure elasticity, firmness, softness etc.	Crispiness can be measured in a similar way to biting with teeth using a wedge probe.
Sample examples	Grain processed food (boiled bean, bread, tofu, rice cake) Dough (bread, noodle) Others (pudding, jam, cream cheese)	Meat processed food (Sausage) Sweets (cookie, chocolate, gum, rice cracker) Others (processed cheese, pasta)

Model	FCA-DSV-50N-1	FCA-DSV-50N-2
Capacity	50N	
Display	50.00	
Accuracy	+/- 0.2% F.S. +/- 1 digit	
Unit	N,kgf,lbf ※1	
Stroke	0 to 45 mm (Adjustable with the limit knob)	
Maximum Space	50 to 80 mm ※2	
Overload	Approx. 200% F.S.	
Power	Nickel-Metal Hydride battery (NiMH battery), USB charge(AC adapter)	
Operating Environment	Temperature: 0 to +40 degree Celsius / Humidity: 20 to 80% RH	
Functions	Peak hold(Tensile or compression)/Comparator(OK Judgement)/Sensitivity(3 steps)/Sign inversion/Setting lock/Date & Time/ Off timer (Auto power-off)/Reminder for calibration schedule/Overload alarm/Tilt-sensing alarm/Continuity peak mode/Internal memory (1000 point)	
Output	USB/RS232C	
Overload alarm	Previous warning: It alarms if the force exceeding up to 90% of capacity is applied. Overloading alarm: It alarms and the overload sign is indicated if the force exceeding 110% of capacity is applied.	
Weight	Approx. 3kg	
Dimensions	Approx. W175×D178×H296mm	
Unit	Force gauge DSV-50N-M4 (※3) 	Lever type test stand FCA-50N  Others (Manual, mounting screws, tool, inspection certificate) 
Supplied attachment	Disk probe 	Wedge probe 
Accessories	Force Logger(Data logging Software)/USB cable/AC adaptor/Carrying case/Instruction manual/Inspection certificate	

※1 Japanese domestic model does not indicate kgf and lbf (ozf).

※2 It is the distance between the table and top point of an attachment. The distance may become short depending on the force gauge's position and a kind of attachment.

※3 This force gauge differs from DSV series. It carries M4 measuring thread for FCA.

FORCE MEASUREMENT
IMADA
IMADA CO.,LTD

FOR MORE INFORMATION PLEASE CONTACT:



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