FORCE MEASUREMENT

IMADA

Product Catalog

Torque and Food Testers

TORQUE GAUGES
TEXTURE ANALYZER

2021-10

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.

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.

Torque Gauges

Turning / Twisting Force Testing

Screw cap torque tester P03

Handheld torque testers P06

Torque meter for motor screw drivers and torque drivers P08

Sensor interchangeable amplifiers P09

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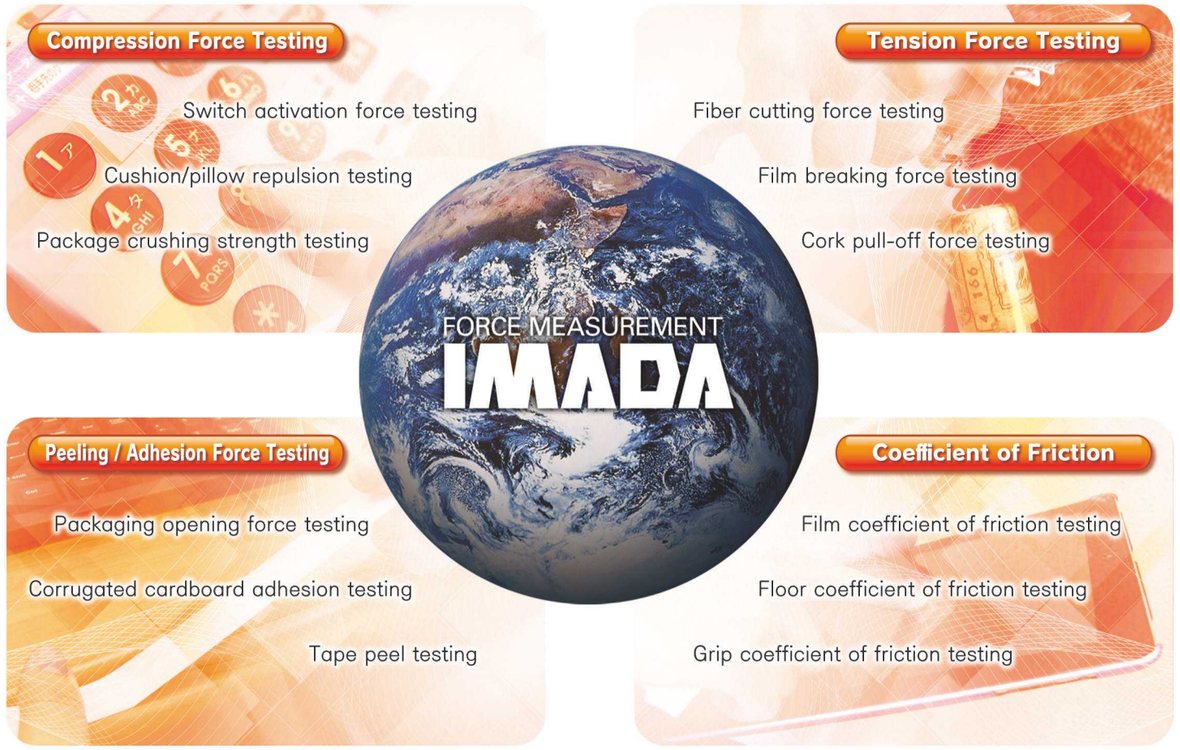
IMADA gauges can be used for a wide range of force testing applications.

IMADA force gauges have been used worldwide for more than 70 years to assess and ensure quality by professionals in every industries. We provide the best solutions from simple testing to professional testing.
For further information, please see another catalog “Catalog for Force Gauges and Associated Equipment” or our web page.



70 Years History of IMADA Force Gauge

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 accuratcly.

Screw Cap Torque Tester

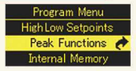
DTXS/DTXA series

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

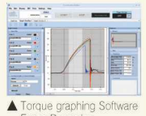
◎High working efficiency due to manual operation
◎Easily capture peak value using peak hold function.
◎Picks out defective products easily using OK/NG judgement function.

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.

▲Torque capturing software Force Logger(Included)

◎Graphing by optional force capturing software
The software shows torque vs time graphically on PC in real time (at Max. 2000Hz). Go to page 10 for further information.


▲Torque graphing Software Force Recorder (Separately sold)

DTXS
Standard Type

□Size:Approx.W233×D305×H87mm
(withiout the table and the pins.)
□Weight:Approx.4.5kg
(including Standard table and 4 pc Standard pins.)

CE

DTXA
High-functional type

DTXA series include all the functions of DTXS 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 13

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 10

Print the Results
Printer DP-1VR —— To page 11
+ Cable CB-308 —— To page 11

Transmit Data Wirelessly
Wireless Unit WL01-ADP/WL01-USB —— To Page 11

Improve Measuring Repeatability
Motorized Torque Test Stand —— To page 12

Analyze the Relation of Torque and Angle
Torque-Angle Analysis Unit TAA series — To page 13

Accuracy	±0.5%F.S.±1digit
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, Mitutoyo digimatic (※3), 2 VDC analog output (D/A),Comparator 3 steps (-NG/OK/+NG), Overload alarm Sub comparator 2 steps (output of large or small judgment)(only for DTXA), USB flash drive(only for DTXA), Angle(displacement)(only for DTXA) (※2)
Accessory	CD driver (including simple software for data logging), USB cable, AC adapter, Carrying case, Instruction manual, Inspection certificate,L wrench, Handles (10N-m range only) USB flash drive adapter(only for DTXA) (※4)

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

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.

Attachments for Torque Testers

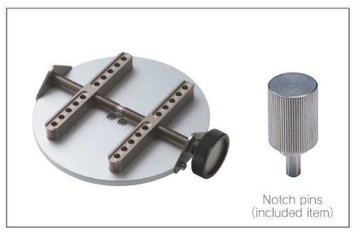
Attachments for DTXS/DTXA

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

This table grips PET bottles, aluminium cans, glass jars and the like whose diameters are ϕ20～160mm
Model:**DT-TB**
Capacity:10N-m
Allowable sample diameter:ϕ20～160mm

Standard table and Notch pins
(DTXS/DTXA-○○N-ST-01 when combining with DTXS/DTXA body.※1)



Ideal for slippery samples such as aluminum cans.
Model:**DT-TB-01**
Capacity:10N-m
Allowable sample diameter:ϕ20～160mm

Standard table and Long clamp pins
(DTXS/DTXA-○○N-ST-02 when combining with DTXS/DTXA body.※1)

Ideal for tall samples such as 2 liter PET bottles.
Model:**DT-TB-02**
Capacity:10N-m
Allowable sample diameter:ϕ20～160mm

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

Attachments for Torque Testers

Small table and Standard pins
(DTXS/DTXA-□N-ST when combining with DTXS/DTXA body.※1)

Ideal for measuring torque of small samples such as eye drop bottles.
Model:**DT-ST**
Capacity:2～5N-m
Allowable sample diameter:ϕ7～50mm

Small table and Notch pins
(DTXS/DTXA-□N-ST-01 when combining with DTXS/DTXA body.※1)

Ideal for gripping samples such as resin connectors and the like.
Model:**DT-ST-01**
Capacity:2～5N-m
Allowable sample diameter:ϕ7～50mm
※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)

Ideal for small and tall samples such as cosmetic bottles.
Model:**DT-ST-02**
Capacity:2～5N-m
Allowable sample diameter:ϕ7～50mm
※Image is for illustration purposes. Actual attached pin is Long clamp pins

Light weight small table and Standard pins

Suitable for measuring small samples such as plastic tubes.
Model:**DT-STL**
Available torque:0.5～2N-m
Allowable sample diameter:ϕ7～50mm

Light weight small table and Notch pins

Ideal for firmly fixing samples such as small motors.
Model:**DT-STL-01**
Available torque:0.5～2N-m
Allowable sample diameter:ϕ7～50mm
※Image is for illustration purposes. Actual attached pin is Notch pins

Light weight small table and Long clamp pins

Ideal for fixing slim samples such as cosmetic containers.
Model:**DT-STL-02**
Available torque:0.5～2N-m
Allowable sample diameter:ϕ7～50mm
※Image is for illustration purposes. Actual attached pin is Long clamp pins

Light weight wide table and Standard pins

Suitable for measuring samples such as volume dials.
Model:**DT-STLW**
Capacity:0.5～2N-m
Allowable sample diameter:ϕ10～100mm

Light weight wide table and Notch pins

Ideal for firmly fixing samples such as motors.
Model:**DT-STLW-01**
Capacity:0.5～2N-m
Allowable sample diameter:ϕ10～100mm
※Image is for illustration purposes. Actual attached pin is Notch pins

Light weight wide table and Long clamp pins

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:ϕ10～100mm
※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:
ϕ1.2～13mm

Standard pin chuck
Model:**DT-DC-6.5**
Capacity:2～10N-m
Opening width:
ϕ0.5～6.5mm

Model:**DT-DC-6.5SUS**※2 (Stainless)
Capacity:2～10N-m
Opening width:
ϕ0.5～6.5mm

Small pin chuck
Model:**DT-DC-4**
Capacity:2～5N-m
Opening width:
ϕ0.5～4mm

※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

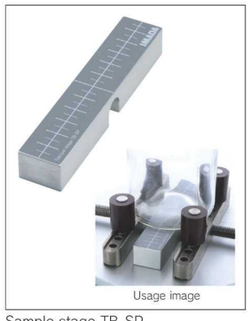
This is an optional turn handle for DTXS/DTXA. The turn handle enables applying small torque stably. Beside, the handle helps you turn very small sample more easily or turn a sample 360 degree or more. If required, an angle meter can be combined (RA option), allowing analysis of torque resistance-angle 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 (P09～10)					

※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.04)to stabilize the sample.
Model:**TB-SP**

Handheld Digital Torque Gauge

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.

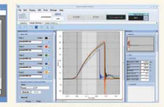
◎Connecting to / interlock external equipment

Varieties of Torque Can Be Measured

◎HTGS/HTGA can handle a wide range of torque testing applications using different attachments.
Go to page 07～08 for further information.

Easy data management on PC

▲Torque capturing software Force-Logger(Included)


▲Torque graphing Software Force Recorder (Separately sold)

◎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 10 for further information.

HTGS
Standard Type

□Size(The indicator):Approx.W75XD34XH187mm
(The sensor):Approx. ϕ39XL120
□Weight(The indicator):Approx.450g
(The sensor):Approx.450g

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 13

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 10**

Transmit Data Wirelessly
Wireless Unit WL01-ADP/WL01-USB ——— **To Page 11**

Print the Results
Printer DP-1VR ——— **To page 11**
+Cable CB-308 ——— **To page 11**

Analyze the Relation of Torque and Angle
Torque-Angle Analysis Unit TAA series – **To page 13**

Accuracy	±0.5%F.S.±1digit
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, Mitutoyo digimatic (※3), 2 VDC analog output (D/A),Comparator 3 steps (-NG/OK/+NG), Overload alarm Sub comparator 2 steps (output of large or small judgment) (only for HTGA), USB flash drive(only for HTGA), Angle(displacement)(only for HTGA) (※2)
Accessory	CD driver (including simple software for data logging), USB cable, AC adapter, Carrying case, Instruction manual, Inspection certificate, L wrench, Handles (10N-m range only) USB flash drive adapter(only for HTGA) (※4)

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"

※1 These are the specifications for International model. Please note that this unit is different from Japanese domestic model.
※2 Angle(displacement) scale is necessary to valid this function.
※3 Not always available for Mitutoyo digimatic products.
※4 USB flash drive is not included.
◎No attachments are included.

We provide a wide range of interchangeable attachments to handle a huge range of torque testing.

Lid of plastic container

Door knob

Screws

Rotary switch

Keys

How to Measure

Mount an attachment.

Fix a sample.

Turn the sensor to measure torque.

Attachments for Torque Testers

Attachments for HTGS/HTGA

We provide a wide range of interchangeable attachments to fit various testing needs.

Pin chuck

Ideal for gripping columnar samples.

Large pin chuck
Model:
HT-DC-13
Capacity:
5～10N-m
Opening width:
ϕ1.2～13mm
Weight:
approx.600g
※Cannot be used for 2N-m or 0.5N-m range

Standard pin chuck
Model:
HT-DC-6.5
Capacity:
2～10N-m
Opening width:
ϕ0.5～6.5mm
Weight:
approx.200g
※Cannot be used for 0.5N-m range

Model:
HT-DC-6.5SUS
Capacity:
2～10N-m
Opening width:
ϕ0.5～6.5mm
Weight:
approx.190g
※Cannot be used for 0.5N-m range

Small pin chuck
Model:
HT-DC-4
Capacity:
0.5～5N-m
Opening width:
ϕ0.5～4mm
Weight:
approx.100g

※HT-DC-6.5SUS (Stainless model) is recommended under easy-to-rust environment.

Torque driver

Ideal for measuring tightening / loosing torque.
Model:**HT-DBH**
Bit: ⊕1 ⊕2 ⊕3× ⊖6×45
Weight:approx. 100g
※Cannot be used for 0.5N-m range

For HTGS/HTGA-0.5N 6.35bit holder

#00 Screw tightening measurement with HT-DBH-P

For #00 Screw
Model:**HT-DBH-P**
Bit: ⊕00×50
Weight:approx.12g
※Cannot be used except 0.5N-m range

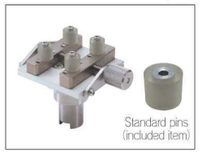
Socket holder

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

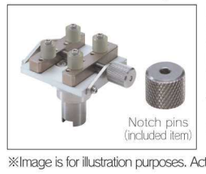
This adaptor is used to mount M10 attachment.
Model:**HT-AD-M10**
Screw:M10×L20
Weight:approx.50g

Small table and Standard pins


Standard pins (included item)

Designed for small samples.
Model:**HT-ST**
Capacity:2～5N-m
Allowable sample diameter:
ϕ7～50mm
※Can not be used for 0.5N-m range

Small table and Notch pins


Notch pins (included item)

Ideal for gripping samples such as resin connectors and the like.
Model:**HT-ST-01**
Capacity:2～5N-m
Allowable sample diameter:
ϕ7～50mm
※Can not be used for 0.5N-m range
※Image is for illustration purposes. Actual attached pin is Notch pins

Small table and Long clamp pins

Long clamp pins (included item)

Ideal for measuring torque of doorknobs, electric bulbs and so on.
Model:**HT-ST-02**
Capacity:2～5N-m
Allowable sample diameter:
ϕ7～50mm
※Can not be used for 0.5N-m range
※Image is for illustration purposes. Actual attached pin is Long clamp pins

Wide table and Standard pins

Standard pins (included item)

Suitable for measuring samples such as car air conditioner dials.
Model:**HT-STW**
Capacity:2～5N-m
Allowable sample diameter:
ϕ10～100mm
※Can not be used for 0.5N-m range

Wide table and Notch pins

Notch pins (included item)

Ideal for wide samples such as plastic medical bottles.
Model:**HT-STW-01**
Capacity:2～5N-m
Allowable sample diameter :
ϕ10～100mm
※Can not be used for 0.5N-m range
※Image is for illustration purposes. Actual attached pin is Notch pins

Wide table and Long clamp pins

Long clamp pins (included item)

Suitable for measuring samples such as tap or water shut off valve.
Model:**HT-STW-02**
Capacity:2～5N-m
Allowable sample diameter :
ϕ10～100mm
※Can not be used for 0.5N-m range
※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 volume dials.
Model:**HT-STL**
Available torque:0.5～2N-m
Allowable sample diameter:
ϕ7～50mm

Light weight small table and Notch pins

Notch pins (included item)

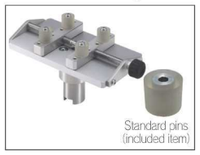
Ideal for firmly fixing samples such as small motors.
Model:**HT-STL-01**
Available torque:0.5～2N-m
Allowable sample diameter:
ϕ7～50mm
※Image is for illustration purposes. Actual attached pin is Notch pins

Light weight small table and Long clamp pins

Long clamp pins (included item)

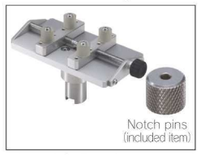
Ideal for fixing slim samples such as cosmetic containers.
Model:**HT-STL-02**
Available torque:0.5～2N-m
Allowable sample diameter:
ϕ7～50mm
※Image is for illustration purposes. Actual attached pin is Long clamp pins

Light weight wide table and Standard pins


Standard pins (included item)

Suitable for measuring samples such as volume dials.
Model:**HT-STLW**
Capacity:0.5～2N-m
Allowable sample diameter:
ϕ10～100mm

Light weight wide table and Notch pins


Notch pins (included item)

Ideal for firmly fixing samples such as motors.
Model:**HT-STLW-01**
Capacity:0.5～2N-m
Allowable sample diameter:
ϕ10～100mm
※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:**HT-STLW-02**
Capacity:0.5～2N-m
Allowable sample diameter:
ϕ10～100mm
※Image is for illustration purposes. Actual attached pin is Long clamp pins

Accessory

Sensor holder

Usage Image

The holder is used to fix sensor.
Model:**SHT-5N**
Capacity:5N-m

Angle Meter Unit AMK-360

・Angle Meter Unit for HTGA series(P06) and eHT Series(P09).
・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

Usage Image

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

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	0.020～7.860 N-m
	0.020～8.000 kgf-cm	0.20～80.00 kgf-cm
	0.020～6.970 lbf-in	0.20～69.70 lbf-in
		2.0～786.0 cN-m
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 (Detaching 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	ϕ28×44	ϕ32×51	ϕ32×51	ϕ32×69

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 10

Print The Results ※Not available for eFA Plus2
Printer DP-1VR To Page 11
+Cable CB-308 To Page 11

Connect with External Devices
Cable Using Applications To Page 11

Transmit Data Wirelessly
Wireless Unit WL01-ADP/WL01-USB To Page 11

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 08)

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 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	

For Compression (only for eZ connect)

Small Type eLM

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:±2.0%F.S. or less 20kN:±3.5%F.S. or less
Size	Approx. φ12XH4~φ21XH10mm
Cable Length	10N~2000N:Approx.2m 5000N~20kN:Approx.3m

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

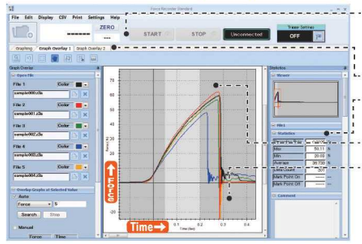
◎eZ-Connect series can be combined with various load cells.
Please see "Force Gauges & Associated Equipment catalog" for the details of load cells available.

Data Analysis Software Force Recorder series

Analyze data easily and accurately, and create report with ease

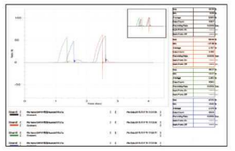
We offer 3 types(Light/Standard/Professional)to fit your needs.

■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



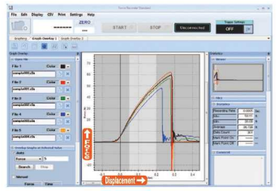
◎Data can be easily saved in Word, Excel, and PDF format, reducing the time to create reports.

◎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.

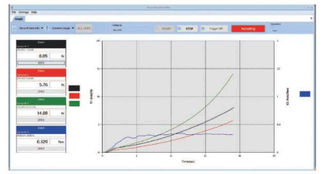
- For angle data acquisition, you need an angle meter in addition to DTXA/HTGA/eHT(eZT).
- TAA series (Page 13) come with this software.



■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, ZLINK4, Force Recorder Plus

【Operating Environment】

Model	Force Recorder Light/Standard/Professional	Force Recorder Plus	Force Logger Plus
OS	Windows 7 / 8 / 8.1 / 10	Windows 8 / 8.1 / 10	Windows 7(SP1) / 8.1 / 10
Hardware	CPU: Pentium4 (1GHz more)more recommended Memory: 2GB more recommended Hard disk: 10GB(Data storage area)more recommended	CPU: Core i3 (1.1GHz more)more recommended Memory: 4GB more recommended Hard disk: 10GB(Data storage area)more recommended	CPU: Pentium4 (1GHz more)more recommended Memory: 2GB more recommended Hard disk: 10GB(Data storage area)more recommended
Plat form	.NET Framework 4.6 later	.NET Framework4.8 later	.NET Framework4.8 later
Image size	Resolution: 1024×768 pixel more	Resolution: 1920×1080 pixel more	Resolution: 1280×768 pixel more
Connection port	USB1.1、USB2.0 connector ※1	USB2.0 connector ※1	USB2.0 connector ※1

※1 The operation with USB3.0 not guaranteed.

Cables/Printer

Cables expand the functionality of torque gauges.
We also provide a printer.

	HTGS/HTGA	DTXS/DTXA	eZT	eFA Plus2
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 Length:Approx.3m	CB-208 Length:Approx.3m	CB-208 Length:Approx.3m	CB-208 Length:Approx.3m
Digimatic cable Connects Mitutoyo Digimatic Mini Processor (a portable printer) to a torque gauge for printing the measurement.	CB-308 Length:Approx.3m	CB-308 Length:Approx.3m	CB-308 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
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
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

※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.

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 Data TransmissionSystem Unit

When connected to PC

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
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, Wireless Transmit BOX (WL01-BOX) is available.
※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 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.

Printer DP-1VA (Mitutoyo Digimatic Mini Processor)

◎It prints out force values indicated in the force gauge. (※)
Digimatic cable is required to print out.
※Contact us for the details of force gauge setting

Compatible models

HTGS/HTGA/DTXS/DTXA/eZT

※The actual product may difter from the picture.

The Cables for Old Models

If you need a cable for old model force gauges/torque gauges, please refer to the list below. 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 10**

Analyze the Relation of Torque and Angle
Torque-Angle Analysis Unit TAA series — **To Page 13**

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-518.
-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.

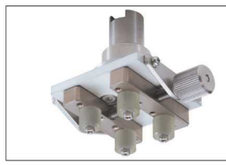
Attachments for MTS

Attachments for MTS (Upper Part)

Standard chuck

Model:**MT-TB**
Max. torque:10N-m
Sample diameter:φ20～90mm

Small chuck(※1)


Model:**MT-ST**(※1)
Max. torque:5N-m
Sample diameter:φ7～50mm

Pin chuck

Max. torque:10N-m

Model	Diameter
MT-DC-13	Large φ1.2～13mm
MT-DC-6.5	Medium φ0.5～6.5mm
MT-DC-6.5SUS	Medium(Stain less) φ0.5～6.5mm(※2)

Max. torque:5N-m

Model	Diameter
MT-DC-4	Small φ0.5～4mm

M10 adaptor

Model:**MT-AD-M10**
It helps you to mount attachment with a M10 female screw.

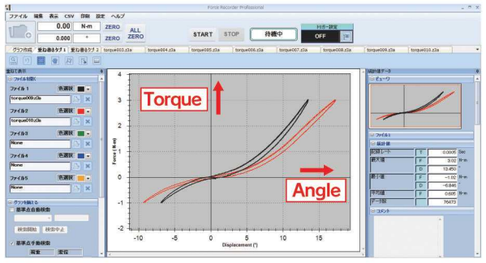
※1 We provide a few more kinds of pins to fit your test samples.
For more details, please refer to Page 05 of "Attachments for DTXS/DTXA"
※2 MT-DC-6.5sus (stainless model) is recommended under easy-to-rust environment.

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 calcuration (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.

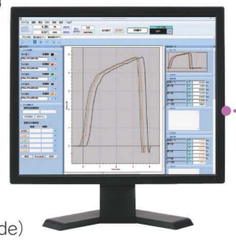
Software
It shows torque vs angle graphically. Torque and angle data can be taken into your PC at real time (Max.2000Hz), drawing a smooth graph. Trigger function enables automatic graph drawing.

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 infomation 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 rage 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 (8 hour using /2 hour full charge)	
	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.

Turing 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.

Other Examples
- Ease of key turning
- Operability of a motorcycle's accelerator
- Operatabilities of a dial and a switch

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
- Tactile of rotary switch
- Twist characteristics of underwear and a sanitary pads
- Sliding resistance of a camera-lens ring

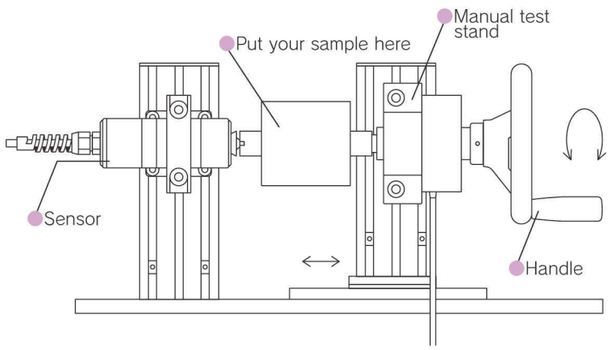
Example of TAA-HTG Series Application

◉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 presicely with ease.

For example…
◉torsion spring
◉a rotary switch etc.

Please contact us for further information.



IMADA's food testers handle texture analysis and package testing for food deliciousness and safety.

Food Texture analysis　　**Packaging** Strength/opening tests

IMADA' s testers are widely used in food/beverage industry.
IMADA testers, can digitalize food textures such as hardness, stickiness,
and more to ensure quality stably.
Besides, it can quantify the strength or operativity of packages to produce safe and stress-free ones.

at a Preparation Step

(Stickiness / toughness / cutting force etc.)

Texture Analyzer
FRTS ——— To page 16

Simple food texture analyzer
FCA ——— To page 20

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 16

Simple food texture analyzer
FCA ——— To page 20

at a Packaging Step

(opening / turning / pressing force etc.)

Bottle cap opening testers
DTXS/DTXA series — To page 04

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

Food Texture Analyzer

FRTS series can digitalize textures such as stiffness, viscosity, elasticity, and more, allowing for data management.

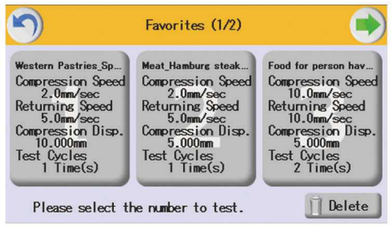
Ideal for Texture Analysis

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.

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: +/-0.2%F.S.+/-1digit ◎Sampling Speed: 1000Hz (Capture peak value accurately due to high followability.)
◎Testing conditions can be saved and recalled to uniformize testing condition.

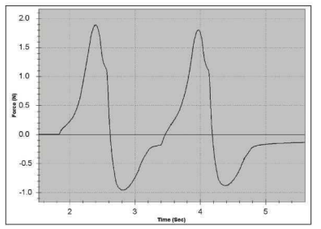
Easy Care

◎The measuring part can be easily cleaned up since it is made of stainless.

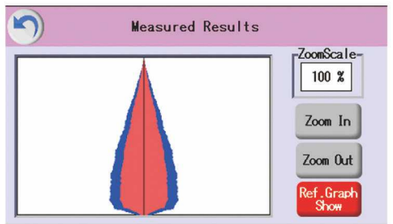
◎The tray can be readily detached.

Easy Data Management and Analysis

◎The data can be stored to included USB flash drive.



◎A graph can be drawn on PC with using included software.

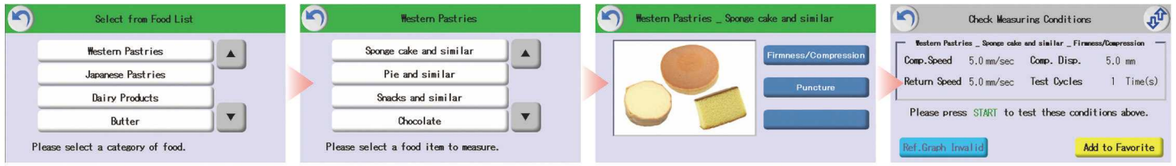


◎Load distributions can be confirmed, and compared very easily.

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.



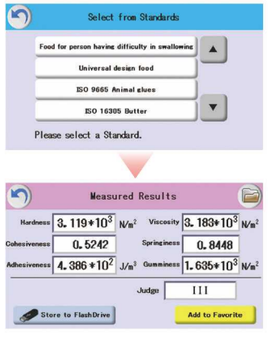
Food	Sweets	Japanese Sweets	Dairy Products	Butter	Noodles	Bread	Rice	Meat
Image								
Examples	Sponge cake Pie Snack Chocolate Candy Jelly Kneaded dough	Steamed bun Rice cracker Monaka skin Dorayaki and the like Dough	Processed cheese Yoghurt Ice cream	Butter	Uncooked noodle (a piece) Boiled noodle (a piece) Dried noodle (a piece) Noodle dough	Bread Donut Kneaded dough	Cooked rice (a piece) Clump of cooked rice Uncooked rice (a piece) Rice dumpling	Hamburg steak (Cooked meat) Hum (Processed meat) Kneaded raw meat Raw meat

Food	Fish and Seafood	Paste	Beans	Nuts	Eggs	Vegetables	Mushrooms	Fruits
Image								
Examples	Grilled Fish (Cooked fish) Raw fish	Fish sausage (Kamaboko) Paste	Cooked bean (a piece) Clump of cooked beans Tofu Uncooked bean (a piece)	Peanut	Egg shell Raw egg Boiled egg Omelet Custard pudding	Cut vegetables Carrot (Root vegetables) Cucumber (Stick-shaped vegetables) Pepper (Hollow vegetables) Lettuce (Leaf vegetables)	Mushroom	Cut fruit Jam Grape (a piece) Apple (Pome fruits)

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.

【Specifications for FRTS series】

Accuracy	Force	+/-0.2%F.S.+/-1 digit
	Displacement	0.1mm+/-1digit
Measurement unit	Force	N / Kgf / 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), Fuse, Instruction manual, 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)

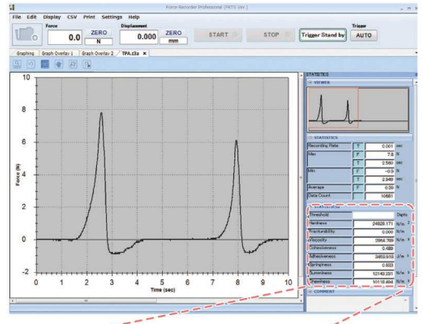
※1 The units are switchable. The units differs from Japanese domestic model.
※2 It is the maximum distance from its table surface to the part where an attachment is mounted.
※3 PC is required for measurement to comply with some standards.
※4 Not able to prevent overload in some cases.
※5 Not able to 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

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 overlayed for detailed analysis.



【Software operating environment】

Operating environment	Windows 7/8/8.1/10
Hardware	CPU: Pentium4 (more than or equal to 1GHz) recommended Memory: more than or equal to 2GB recommended Hard disk: more than or equal to 10GB (data storage area) needed
Plat form	.NET Framework 4.6 or later
Execute environment	Microsoft Internet Explorer 6.0 or later Windows installer 3.1 or later
Connection port	USB1.1, USB2.0 connector

Attachments can be changed according to your testing needs.

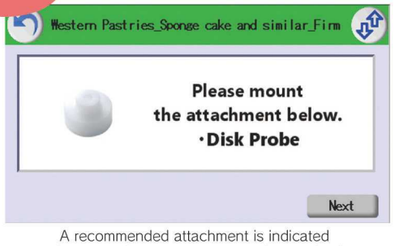
We offer a wide range of attachments to fit your measurement needs.

Change attachment

Mount shaft to attachment.

Turn the knob and mount attachment.

Tip



A recommended attachment is indicated when you choose preset measuring method.

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-D** ※1

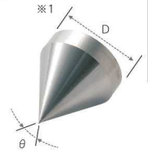
D	●
20	J,S
30	J
50	J

Cylindrical probe
Model:**FR-EC-D** ※1

D	●
3	J,S
5	J,S
8	J
10	J
12.7	J
15	J

Conical probe
Model:**FR-ES-θ-D** ※1

θ	D	●
45	20	J
	30	J
60	20	S
	30	J



Sphere probe
Model:**FR-SR-D** ※1

D
5
7
10
20

Stainless

Yogurt cutter
Model:**FR-YN-29**

Stainless

Vice pin for sticking
Model:**FR-CP-3**

Pin: Stainless
Pin Vise: Steel ※3

3 point bending fixture
Model:**FR-TP-60**

Aluminium ※3

Tension

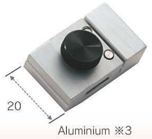
Special grip for noodle
Model:**FR-NP-25**

Stainless ※3

Small grip
Model:**FR-SC-3**

Aluminium ※3

Film grip (small)
Model:**FR-FC-21**



Aluminium ※3

Film grip (large)
Model:**FR-FC-41**

Aluminium ※3

Shearing

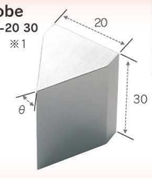
Cutter
Model:**FR-NB-80**

Stainless ※3

Wire-cutter
Model:**FR-WK-85**

Piano wire: Stainless

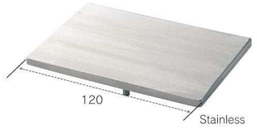
Wedge probe
Model:**FR-KS-θ-20 30** ※1



θ	●
45	J,S
60	J

Optional table

Wide table
Model:**FR-LT-120**



Stainless

Center lined table
Model:**FR-CT-80**

Stainless

Table with trench
Model:**FR-GT-W** ※1

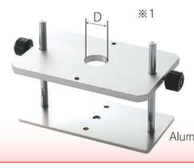
W
3
5
10

Stainless

Container holder table
Model:**FR-BG-60**

Stainless ※3

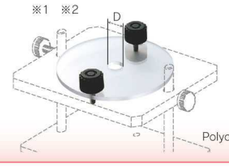
Sample holder table
Model:**FR-UP-D**



D
5
10
25
50

Aluminium ※3

Stick guide plate
Model:**FR-KP-D**
※1 ※2



D
3
5
10

Polycarbonate ※3

Stick holder
Model:**FR-ST-25**

Aluminium ※3

Anti-Scattering sheet
Model:**FR-DP-80**

Polycarbonate ※3

length:mm angle:degree(°)

We offer more kinds of probes and tables other than above-mentioned ones. We can custom design and manufacture to meet your particular rcquirement.

※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.

Food Firmness Measurement Unit

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

Simple measurement due to lever operation

Easy care due to stainless made

Easy set for travel distance by knob

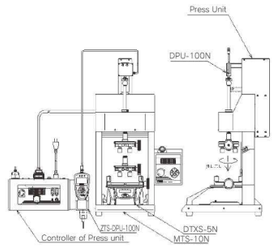
Type	Crush / Compress	Cut / Break
Features	It compresses food with disk probe to measure elasticity, firmness, softness etc.	Crispiness can be measured in a similar way to biting with teeth using a wedge probe.
Sample examples	Grain processed food (boiled bean, bread, tofu, rice cake) Dough (bread, noodle) Others (pudding, jam, cream cheese)	Meat processed food (Sausage) Sweets (cookie, chocolate, gum, rice crucker) 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	See details on Dimensions	
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.

Examples of measurement IMADA products used in the global food industry

Child-resistance cap
Opening force test



Available for

Child-lock container
Child resistance container, Bottle for medicines

Features

Simple Operation
- This testing system both presses and turns a cap of child-resistance container automatically.

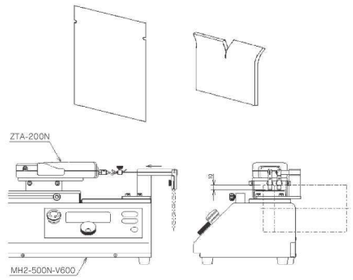
Accurate Measurement
- Pressing force is configurable as desired, and the system rotates the cap when the pressing force reaches the desired value (Force control function).

Easy Analysis of Results
- The testing system graphically visualizes measured torque, which can be utilized for detailed analysis.

Configuration

-Force gauge:ZTS-DPU-100N, DTXS-5N
-Test Stand:MTS-10N
-Software:Force Recorder Standard
-Other:Press Unit Controller (Custom-made)

Heat-sealed package
Tear test



Available for

Stick package, Packaging bag

Features

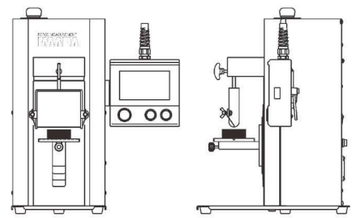
Accurate Measurement
- The fixture rotates to tear a package accurately.
- This testing system graphs force of the process from tear to open.

Standard-Compliant Measurement
- Comply with JIS S 0022 (2001)

Configuration

-Force gauge:ZTS-200N
-Test Stand:MH2-500N
-Attachment:tearing jig (custom-made)
-Cable:CB-518

Butter
Hardness test



Available for

Butter

Features

Improved Work Efficiency
- To set up measuring conditions, all you have to do is select a desired standard on the touch screen.

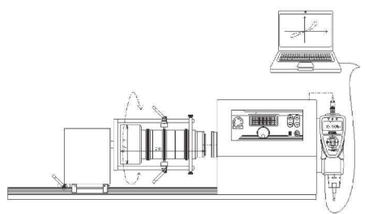
Easy Analysis of Results
- Force distributions are overlaid on the touch screen, and can be compared visually.
- Software and a USB flash drive are included, which allows data management and analysis.

Configuration

-Test Stand:FRTS Series
-Attachment:Wire-cutter (FR-WK-85)

Examples of torque measurement of IMADA products in a lot of countries

Camera lens' s ring
Operativity (torque and angle) test



Available for

Lens' s focus ring, Zoom ring, Aperture ring

Features

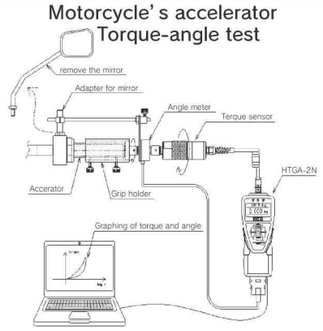
Versatile Measurement
- This testing system rotates a ring in both right and left directions.
- The testing system pauses at pre-set angle or torque (Force control function), which enables a wide range of measurement.
- For durability test, a repeat count is configurable.

Easy Analysis of Results
- Torque-angle relation can be graphed for analyzing rotation resistance.

Configuration

-Force gauge: torque tester (Custom-made)
-Test Stand: Torque Stand (Custom-made)
-Attachment: fixing jig for ring (Custom-made)
-Cable: CB-728
-Software: Force Recorder Professional

Motorcycle' s accelerator
Torque-angle test



Available for

Motorcycle' s accelerator

Features

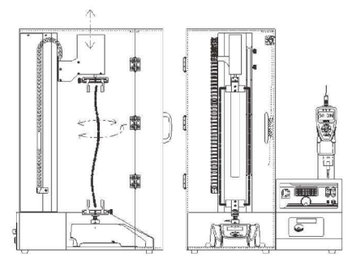
Easy Analysis of Results
- The testing system graphically visualizes torque and angle to rotate a handlebar.

High Convenience
- This testing system is portable, which allows measurement outside.

Configuration

-Force gauge: HTGA-2N
-Attachment: AMK-360, Accelerator fixing jig (Custom-made)
-Software: Force Recorder Professional

Diaper/Sanitary pad
Tension and torque test



Available for

Diaper, Sanitary pad

Features

Simple Operation
- This testing system both pulls and rotates a test sample at the same time.

Accurate Measurement
- The testing system regulates pulling force so as to offer more exact test results of torque.

Versatile Measurement
- For durability test, a repeat count is configurable.

Configuration

-Force gauge: DTXS-0.5N-Z, ZTS-LU-50N
-Test Stand: Custom-made
-Attachment: Custom-made
-Cable: CB-728
-Software: Force Recorder Professional

International Sales Area

IMADA offers the force measurement solution not only in Japan but also in many countries and regions around the world.

Europe

- France
- Germany
- Hungary
- Ireland
- Italy
- Poland
- Russia
- Spain
- Turkey
- England
- Slovenia
- Denmark
- Netherlands
- Sweden
- Bulgaria
- Lithuania
- Latvia
- Bosnia
- Macedonia
- Estonia
- Serbia
- Romania
- Austria
- Switzerland
- Portugal
- Czech Republic
- Other Europes

Asia

- China
- Hong Kong
- Taiwan
- South Korea
- Thailand
- Indonesia
- Malaysia
- Singapore
- The Philippines
- Vietnam
- India
- Pakistan
- Other Asias

America

- The U.S.
- Canada
- Mexico
- Brazil
- Argentina
- Chile
- Peru
- Other Americas

Africa

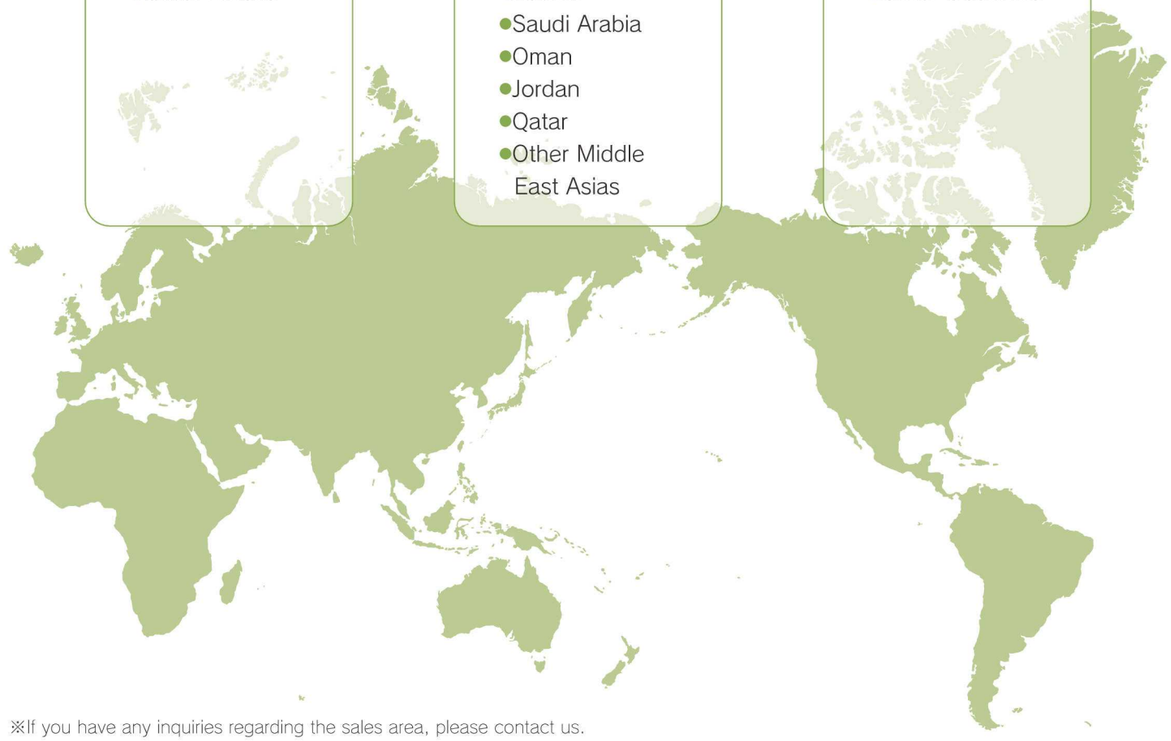
- South Africa
- Egypt
- Other Africas

Middle East

- Israel
- UAE
- Kuwait
- Saudi Arabia
- Oman
- Jordan
- Qatar
- Other Middle East Asias

Oceania

- Australia
- New Zealand
- Other Oceanias



※If you have any inquiries regarding the sales area, please contact us.

FORCE MEASUREMENT

IMADA

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The further product information is on our Product and Service Site.

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

Please visit our Corporate Site which introduce a wide range of information of force measurement.

https://force-channel.com/en/

- The contents will be changed without any notices.
- We can custom design and manufacture to meet your particular requirements.
- Please feel free to contact us or our distributor for further information of our products.
- The colors and shapes might be slightly different from the actuel products.
- We show specifications partially,so please see full specifications on our website or contact us before purchase.

Agency

CATALOG No.ST-2110E