# Standard Model Digital Force Gauge ZTS series

Feature 1 Clear display / Easy setting.
Feature 2 You can capture peak value precisely due to high sampling.
Feature 3 Easy data management on PC with included software, Force-Logger.
Feature 4 Various functions to improve usability in different environment.


Included Software Force Logger

[How to use]

Simply handheld use

High repeatability with a test stand

Make graphs to analyze force transition

Feature 1 Clear display / Easy setting

- Clear organic display has excellent readability and reduces misreading.
- Setting menu with multiple languages helps easy operation.

Program Menu
High Low Setpoints
Peak Functions →
Internal Memory
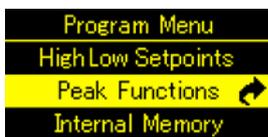
*Higher range of 2500N is different in shape

Press peak button once, so that it holds peak value.

Feature 2 You can capture peak value precisely at high sampling.

It reduces missing load value due to high sampling speed (2000 data / sec.).   Peak value can be accurately captured.

Breaking tests of the same sample

Sampling speed: 2000Hz
->High repeatability
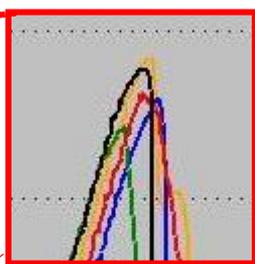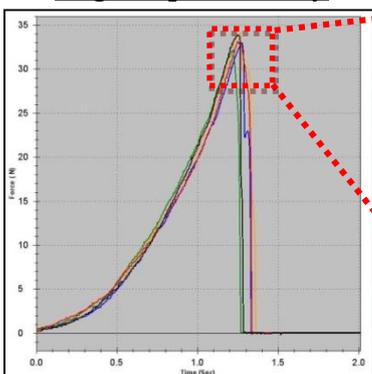
Data measured at 2000Hz

Ave. of peak : 33.2N
Nearly the same value

Sampling speed: 100Hz
->Dispersion of the measured data
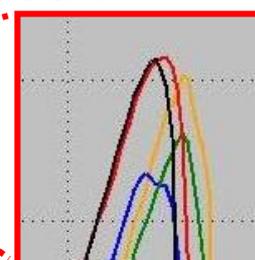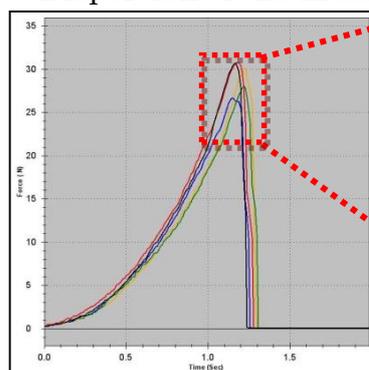
Data measured at 100Hz

Ave. of peak: 29.92N
Values vary.   Ave. is lower.

*Depending on sample or testing conditions, you may not get the same result.

*With optional software, Force Recorder, you can make graphs of force versus time. For further information, go to "Related products" on page5

Feature 3   Easy and reliable data management on PC with included software, Force Logger.

Included data logger software, Force-Logger can transfer data to PC by one click all at once.

- Displayed value at when you press SEND button
- Continuous data (10 data / sec) (You can make a graph with Excel later)
- Data saved in internal memory

Merits to Use
- You can connect ZTS to PC via USB, easy setup.
- Date and time are automatically recorded when you transfer data.
- It automatically calculates Maximum, Minimum, and Average values.
- You can register measurement conditions and measurer's name.
- Easy pass-fail judgement by the colored OK/NG
- Easy printing, saving (format image on the right) and management of data.

Load value   Date and time

OK/NG judgment
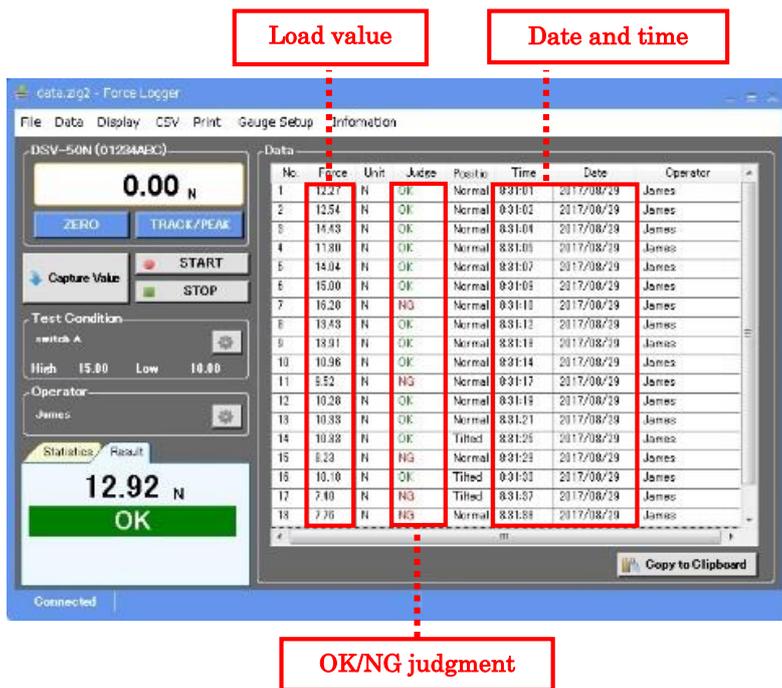
*With optional software, Force Recorder, you can graph and analyze the measurement in real time.   For further information, go to "Related products" on page 5.

Feature 4 Various functions to improve usability in different measurement environment

Bar graph of force

Force transition is clearly visible.

You can clearly see force transition, which is useful for overload (sensor break-down) prevention. *1

Overload (sensor break-down) warning *1

When load over its capacity is added, warning is indicated. Please stops measurement immediately when this indication show up.

Internal memory

Peak values can be saved in ZTS itself.

1000 data at maximum can be saved, and you can see the data on its display.

OK/NG judgment

LED light shows its judgment.
Alarm goes off when it detects +NG

You can set high/low points, and LED light tells you if measured value is between high and low points or not. Signal output is also possible and you can synchronize it with external equipment.

<u>Setting LOCK</u>

Locking the current settings

It prevents unintentional changes of settings.

<u>Saving measured Date and Time</u>

Easy data management

It has calendar and clock functions which enable saving measurement data with its time and date record.

<u>When you connect ZTS to a motorized test stand (External equipment) with a dedicated cable, more useful functions can be activated:</u>

   For example...   - Avoiding overload (sensor break-down) *2

                   - Operation control according to selected load values.

*1 It does NOT completely prevent overload. It may be overloaded before the warning indication shows up in the case when high load is added in a moment.

*2 A motorized test stand and a dedicated cable are necessary to activate this function.
    We cannot assure the perfect prevention against overload (sensor break-down).

[Specifications of ZTS series]

Model	ZTS
Feature	Standard model with high functionality and usability.
Accuracy	+/-0.2%F.S.+/-1digit
Unit of measurement(*1)	N, kgf, lbf (*2)
Display	4-digit Organic EL
Display update	16 / sec
Sampling rate	2000 data / sec at maximum
Battery	8 hours (2 hours charge)
Safe overload rating	Approx.200%F.S.
Operating environment	Temperature: 0 to +40 degree Celsius, Humidity: 20 to 80%RH
Function	Customized display (header and footer), Peak hold (tension and compression), Internal 1000 points data memory, Comparator (judgment of OK or NG), Reversible display, Sign inversion, Zero clear timer, +NG alarm, Off timer (auto power off), Dumping, Time display, Setting lock
Output	USB, RS232C, Mitutoyo digimatic (*3), 2 VDC analog output (D/A), Comparator 3 steps (-NG/OK/+NG), Overload alarm
Overload warning	Approx.110%F.S. (Warning message and alarm)
External connecting switch	SEND (a point of contact holding), Zero reset, Peak ON/OFF setting
Weight	From 2N to 1000N model: Approx.490g (*4) 2500N, 5000N: Approx.1100g (*4)
Dimensions	Please refer to dimensions.
Accessory	AC adapter, Inspection certificate, CD driver (including simple software for data logging), Attachments (The set of attachments varies according to range.), USB cable, Carrying case.

*1 These are the specifications for International model. Please note that this unit is different from Japanese domestic model and international one.

*2 [N indication] The indication of 2N and 5N models is mN or N. The indication of 1000N,2500N and 5000N model is N or kN.
    [kgf indication] The indication of 2N and 5N models is gf.
    [lbf indication] The indication of 2N and 5N models is ozf.

*3 Not always available for Mitutoyo digimatic products.

*4 Weight is slightly different according to range.

[ZTS series models]

Model	Capacity	Display	Resolution	Thread	Included attachment
ZTS-2N	2N	2.000N (2000mN)	0.001N (1mN)	M6	A1 to A8
ZTS-5N	5N	5.000N (5000mN)	0.001N (1mN)		
ZTS-20N	20N	20.00N	0.01N		
ZTS-50N	50N	50.00N	0.01N		
ZTS-100N	100N	100.0N	0.1N		
ZTS-200N	200N	200.0N	0.1N		S1 to S8
ZTS-500N	500N	500.0N	0.1N		
ZTS-1000N	1000N	1000N (1.000kN)	1N (0.001kN)		RS1, S2 to S8
ZTS-2500N	2500N	2500N (2.500kN)	1N (0.001kN)	M10	B1 to B8
ZTS-5000N	5000N	5000N (5.000kN)	1N (0.001kN)		

[Included Accessories]

Data logging software **Force Logger**	**Features**	- You can continuously transfer data to PC at 10Hz with ease. - It automatically calculates Maximum, Minimum, and Average values. - You can store data in CSV format. - You can register measurement conditions and measurer's name. - You can setup the force gauge's function.	
	Operating environment	- OS：7/8/8.1/10 (32/64bit version is available) - Hardware：CPU Pentium4(1GHz or more), Memory 2GB, Hard disk：10GB or more recommended - Plat form：.NET Framework4 or later - Execute environment：Internet Explorer 6.0, Windows Installer 3.1 or later - Connection port：USB1.1, USB2.0 connector	
Attachment	**Accessory attachment** >> Please refer to ZT series Range above. * The set of attachments varies according to range. * For more information, please refer to Standard attachment specifications.	Accessory attachments' shape.　（an excerpt） S-1 Small hook　S-2 Disk shaped　S-3 Conical shaped　S-6 Extension rod　S-7 Large hook	

[Option]

Option	Details	Model
Analog voltage (Sensor raw data)	To output sensor data as fast analog voltage without conversion. *The speed is higher than D/A (standard), but there are demerits at the same time that zero reset is not possible, and there are may be signal noise. *CB-118 cable is necessary.	-AN

* With CB-108, you can output analog voltage from standard ZTS series.

[Application of Force Gauge]

ZT series enable…

1. Controlling external equipment according to load value. (e.g. To stop or change operation of machine at a selected load value.)
2. Adding a certain load value. (e.g. To maintain sample pressed at a chosen load value.)
3. Producing inspection device synchronized with work process. (e.g. To improving efficiency of inspection process.)
4. Finding inferior goods earlier with OK/NG judgment function.(e.g. To do quality control thoroughly)
   >> Please contact us or our distributor in your country for further information.

[Related Products]

Graphing Software: Force Recorder Professional	
	Main functions - You can make graphs of force-displacement at real time via USB connection at 2000Hz. - 5 graphs at maximum can be overlaid. - You can write memo on each graph.　You may write down testing conditions such as testing speed. ∗　Please refer to each specification for further information.

Force gauge: ZTA series	Printer: DP-1VA	Linear scale: DMK series	Battery: BP-308
High functionality model.　It has more useful functions than ZTS series.	It prints out the display value. (*CB-308 cable is necessary.)	Using with a ZTA series to valid force-displacement measurement with your facility.	Battery for replacement.

Sensor-separate force gauge ZTS/ZTA series	
	External sensor (load cell), separated from the amplifier - Broad line-up of sensors enables installing into facilities and suitable measuring under special environments. - High accuracy and repeatability.

| eZ-Connect series Sensor-interchangeable Amplifier eZT	
	eZT is an amplifier which enables to connect to various eZ-Connect load cells of your choice. - Useful for different types of measurement; small and large force values, or compression and torque. *The amplifier and the load cell are not calibrated (actual loading calibration) together therefore the inspection certificate is not included. Please calibrate them or ask us for calibration service. *The accuracy of load cell is dependent on the model. Please refer to each specification sheet for details.

[Related Cable]

| Model	Explanation	Purpose of use
CB-108	Analog cable	To connect to a multi meter, oscilloscope.
CB-118	Analog cable (For -AN option)	To connect to a multi meter, oscilloscope.
CB-208	RS232C cable	To connect to a PC having its own system
CB-308	Digimatic cable	To connect to a printer DP-1VA
CB-508	Test stand option cable (For MX)	To connect to a test stand to enable force control or overload prevention functions.
CB-518	Test stand option cable (For MX2,EMX)	To connect to a test stand to enable force control or overload prevention functions.
CB-908	Open end connection cable	Output cable for loose wire 37 pin (Useful for connection with unique equipment.)

[Dimensions]

up to 1000N
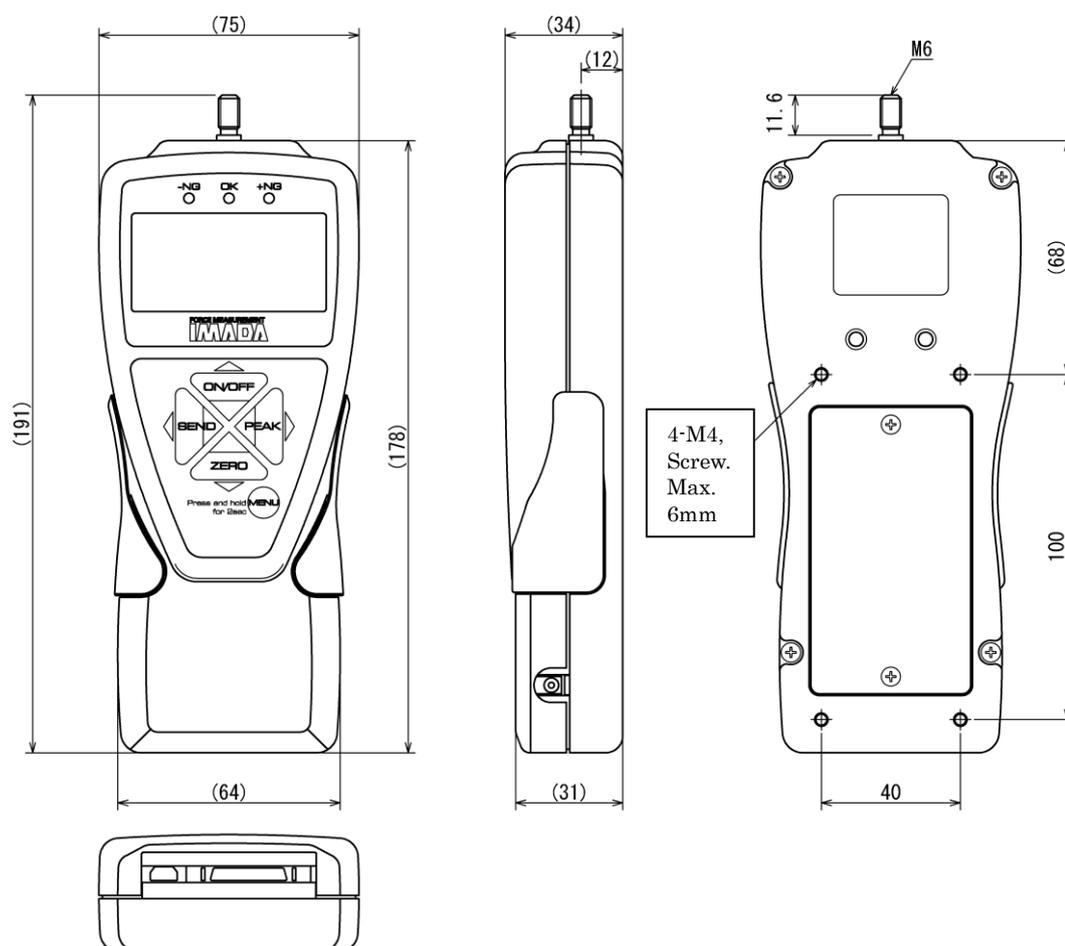
Unit: mm

from 2500N up to 5000N
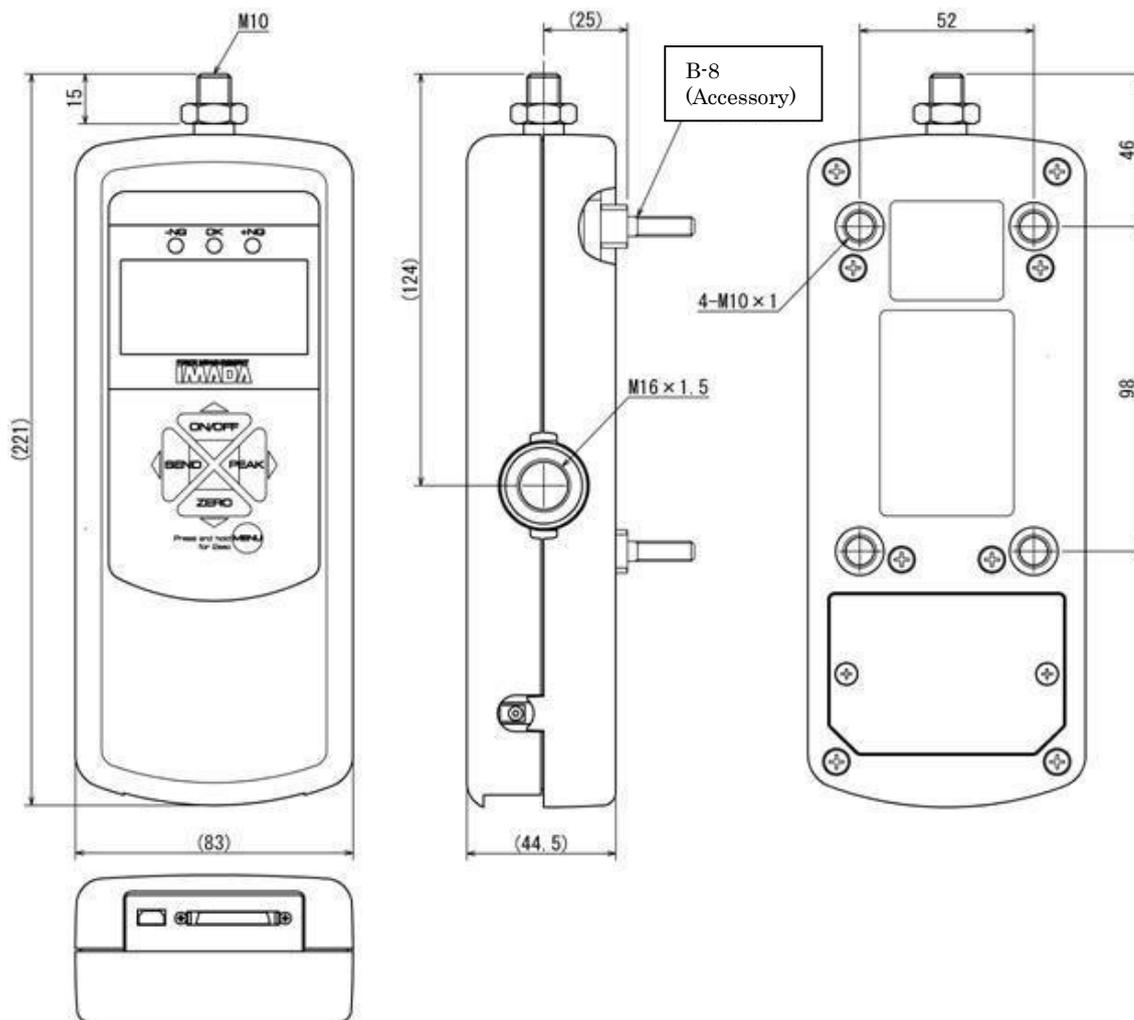
Unit: mm

[Calibration Certificate]
- We offer calibration certificate with extra charge.
- We also offer calibration services according to ISO/IEC17025: 2005
* Please contact us or our distributor in your country for further information.

[Cautions]
- The contents may be changed without previous notice.
- All of products are designed for measurement purpose only.
- Do not copy and use this content without authority.
- Please note if you add load over capacity, or add force from side or torsion, its sensor would be broken down.
- Please note that the capacity is dependent on the displayed unit. Please contact us for details.

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Visit our website for more information on wide product specifications, measurement applications and videos.