FORCE MEASUREMENT
IMADA
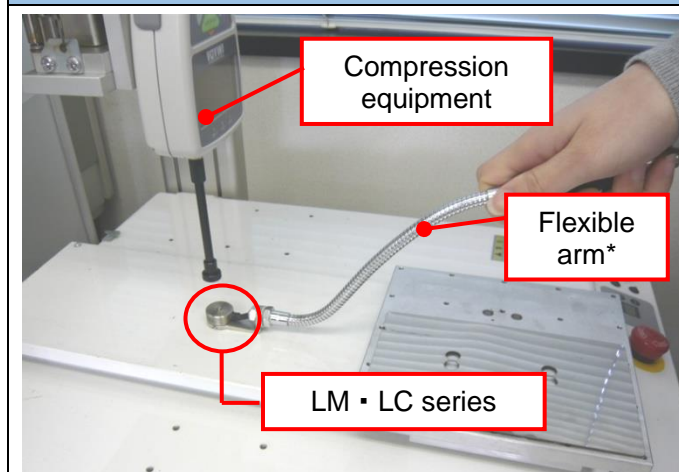
Load cells for compression LM/LC/DD2/LMT series

- **Load cells exclusively for compression**
- **Ideal for a narrow space due to their slim shapes**
- **Designed to mount or bond it on pressing machine and the like.**

Model	Coin shaped type : LM series	Standard type: LC series	High capacity type: DD2 series	For a wide range of temperature: LMT series
Capacity	10N~20kN	500N~20kN	5000N~20kN	1000N
Photos			Approved IP67	
Features	-Extra small and silm type	-High accuracy (+/-0.5%F.S. or less) -High stability and reliability due to airtight structure -Corrosion resistance due to stainless steel body	-Designed for high load measurements.	-Usable for wide range of temprature -40 degree Celsius ~ +150　degree Celsius
How to fix	Mounting or gluing on equipment			

An indicator is required to read force values. Please refer page 3-4 for the details.

[Application]

Compression testing for a pressing machine, a robot arm, and the like.

Compression equipment

Flexible arm*

LM・LC series

Attach the sensor part to a flexible arm, then you can move the sensor as required safely and certainly.

Even at a narrow or unstable place, you can smoothly conduct a measurement.

*The flexible arm is the custom-made option. Besides, we can provide the equipment including thermostat oven, and so on. Please contact us our service group +81-(0)532-33-3288 or your local distributor if necessary.

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[Specification]

Model	LM series	LC series	DD2 series	LMT series
Capacity	Refer the model list.	Refer the model list.	Refer the model list.	Refer the model list.
Rated output	10N~2000N：1.0mV/V±20% 5000N,10kN：1.0mV/V±30% 20kN：1.5mV/V±20%	2.0mV/V±0.25%	2mV/V	2.0mV/V±20%
Nonlinearity	10N~2000N：0.5%R.O 5000N,10kN：1.0%R.O 20kN：2.0%R.O	0.15%R.O	0.25%R.O	0.5%R.O.
Hysteresis	10N~2000N：0.5%R.O 5000N and 10kN：1.0%R.O 20kN：2.0%R.O	0.1%R.O	-	0.5%R.O.
Recommended voltage (allowable voltage)	10N~2000N：1~3V AC or DC (5V AC or DC) 5000N~20kN：5V or less AC or DC (7V AC or DC)	Lower or equal to 8V AC or DC (12V AC or DC)	10V DC or less	1~3V AC/DC (5V AC/DC)
Safe overload rating	10N~2000N：200%R.O 5000N~20kN：120%R.O	150%	120%	120%
Working environment (allowable temperature)	10N~2000N： 0~+50 degree Celsius (-10~60 degree Celsius) 5000N~20kN： -5~+50 degree Celsius (-10~60 degree Celsius)	-10~+70 degree Celsius (-15~80 degree Celsius)	-10~+50 degree Celsius (-30~+50 degree Celsius)	-40~+150 degree Celsius (-40~+160 degree Celsius)
Temperature influence for 0 point	0.05%/ degree Celsius	0.005%/ degree Celsius	0.005%/ degree Celsius	0.01%/ degree Celsius
Temperature influence for output	0.05%/ degree Celsius	0.01%/ degree Celsius	0.005%/ degree Celsius	0.01%/ degree Celsius
Cable	10N~2000N：Approx.2m 5000N~20kN：Approx.3m	Approx. 5m	Approx.5m	Approx.2m
Dimensions	Refer the dimension.	Refer the dimension.	Refer the dimension.	Refer the dimension.
International Protection	-	-	IP67	-

*Only a load cell itself secure protection grade IP. An amplifier (an indicator)/ the connecting part/ the connector part are not secured.

[eZ-Connect series load cell specification]

Model	eLM series	eLC series	eDD2 series
Capacity	Refer the model list	Refer the model list	Refer the model list
Accuracy	10N~10kN：±2.0%F.S. or less 20kN：±3.5%F.S. or less	+/-0.5%F.S. or less	+/-0.5%F.S. or less
Safe overload rating	10N~2000N：200%R.O 5000N~20kN：120%R.O	150%	120%
Working environment (allowable temperature)	10N~2000N： 0~50 degree Celsius (-10~60 degree Celsius) 5000N~20kN： -5~50 degree Celsius (-10~60 degree Celsius)	-10~70 degree Celsius (-15~80 degree Celsius)	-10~+50 degree Celsius (-30~+50 degree Celsius)
Cable	10N~2000N：Approx.2m 5000N~20kN：Approx.3m	Approx.5m	Approx.5m
Dimensions	Refer to the dimension	Refer to the dimension	Refer to the dimension
International Protection	-	-	IP67*1

* Please refer to the Page 4 for eZ-Connect series details.
*1 Only a load cell itself secure protection grade IP. An amplifier (an indicator)/ its connecting part/ its connector part are not secured.

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1. For those who have a specific measurement / purpose

[Connect to an amplifier]

■ If you do not need to change load cells basically, we recommend the combination of a load cell and an indicator mentioned below.

Model	ZTA/ZTS Sensor separate type force gauge	FA Plus Desk top amplifier
Image		
Feature	● You can operate it apart from a load cell. ● Easy data management on PC ● Various outputs for controlling external devices	● You can easily install on a desk or in equipment due to its box shape. ● The sampling rate is 2000Hz. ● You can change load cells if you adjust it.
When you want to change sensor	・You do not basically change load cells. ・If you need to change load cells, adjustment and calibration are required.	・When you change load cells, you need to adjust and calibrate it.
Accuracy assurance	・An inspection certificate by force data is attached. ・Please request us the calibration certificate if necessary.	・We offer an inspection certificate by force data only when you order the models below. ・We do not offer the inspection certificate when you order a FA Plus or a load cell separately. ・Please request us the calibration certificate if necessary.

- Models of sensors combined with indicators (Sensor separate models)

Model			Range	Accuracy (*1)	Display	Resolution
ZTA	ZTS	FA Plus				
LM						
ZTA-LM-10N	ZTS-LM-10N	FAP-LM-10N	10N	±2.0%F.S or less	10.00N	0.01N
ZTA-LM-20N	ZTS-LM-20N	FAP-LM-20N	20N		20.00N	0.01N
ZTA-LM-50N	ZTS-LM-50N	FAP-LM-50N	50N		50.00N	0.01N
ZTA-LM-100N	ZTS-LM-100N	FAP-LM-100N	100N		100.0N	0.1N
ZTA-LM-200N	ZTS-LM-200N	FAP-LM-200N	200N		200.0N	0.1N
ZTA-LM-500N	ZTS-LM-500N	FAP-LM-500N	500N		500.0N	0.1N
ZTA-LM-1000N	ZTS-LM-1000N	FAP-LM-1000N	1000N		1000N(1.000kN)	1N(0.001kN)
ZTA-LM-2000N	ZTS-LM-2000N	FAP-LM-2000N	2000N		2000N(2.000kN)	1N(0.001kN)
ZTA-LM-5000N	ZTS-LM-5000N	FAP-LM-5000N	5000N		5000N(5.000kN)	1N(0.001kN)
ZTA-LM-10kN	ZTS-LM-10kN	FAP-LM-10kN	10kN		10.00kN	0.01kN
ZTA-LM-20kN	ZTS-LM-20kN	FAP-LM-20kN	20kN	±3.5%F.S or less	20.00kN	0.01kN
LC						
ZTA-LC-500N	ZTS-LC-500N	FAP-LC-500N	500N	±0.5%F.S or less	500.0N	0.1N
ZTA-LC-1000N	ZTS-LC-1000N	FAP-LC-1000N	1000N		1000N(1.000kN)	1N(0.001kN)
ZTA-LC-2000N	ZTS-LC-2000N	FAP-LC-2000N	2000N		2000N(2.000kN)	1N(0.001kN)
ZTA-LC-5000N	ZTS-LC-5000N	FAP-LC-5000N	5000N		5000N(5.000kN)	1N(0.001kN)
ZTA-LC-10kN	ZTS-LC-10kN	FAP-LC-10kN	10kN		10.00kN	0.01kN
ZTA-LC-20kN	ZTS-LC-20kN	FAP-LC-20kN	20kN		20.00kN	0.01kN
DD2						
ZTA-DD2-5000N	ZTS-DD2-5000N	FAP-DD2-5000N	5000N	±0.5%F.S. or less	5000N(5.000kN)	1N(0.001kN)
ZTA-DD2-10kN	ZTS-DD2-10kN	FAP-DD2-10kN	10kN		10kN	0.01kN
ZTA-DD2-20kN	ZTS-DD2-20kN	FAP-DD2-20kN	20kN		20kN	0.01kN
LMT	ZTA-LMT-1000N	ZTS-LMT-1000N	FAP-LMT-1000N	1000N	±1.0%F.S. or less	1000N(1.000kN)	1N(0.001kN)

*For further information about indicators, please refer to each specifications.
*1 Accuracy here is calculated after sensor is combined with an indicator.

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[Load cell by itself]

■ If you need a load cell by itself, please refer to the models below.

Capacity	Load cell model			
	LM series	**LC series**	**DD2 series**	**LMT series**
10N	LM-10N	–	–	–
20N	LM-20N	–	–	–
50N	LM-50N	–	–	–
100N	LM-100N	–	–	–
200N	LM-200N	–	–	–
500N	LM-500N	LC-500N	–	–
1000N	LM-1000N	LC-1000N	–	LMT-1000N
2000N	LM-2000N	LC-2000N	–	–
5000N	LM-5000N	LC-5000N	DD2-5000N	–
10kN	LM-10kN	LC-10kN	DD2-10kN	–
20kN	LM-20kN	LC-20kN	DD2-20kN	–

*We cannot undertake that our load cell can be combined with your equipment.
Even though you could combine it, we cannot guarantee accuracy of force value.

◎When you order a load cell without indicators, please choose one from 3 of connector types.

*Please feel free to contact us if the shape is not identified. +81-(0)532-33-3288

Connector shape	① 5 pin	② 6 pin	③ Without Connector
Connect to	ZT series, FA Plus,etc.	Some discontinued IMADA products	For installing in equipment
	*Please check the connector shape of your equipment to connect.		

2. For those who have a wide range of measurement purposes

[eZT series (Sensor interchangeable model)]

■ If you need 2 or more different load cells, we recommend eZ-Connect series below since it can change load cells according to your purposes.

- eZ-Connect load cell models

Capacity	Load cell model			
	eLM series	**eLC series**	**eDD2 series**	**eLMT series**
10N	eLM-10N	–	–	
20N	eLM-20N	–	–	
50N	eLM-50N	–	–	
100N	eLM-100N	–	–	
200N	eLM-200N	–	–	*You cannot use LMT series as eZ-Connect series.
500N	eLM-500N	eLC-500N	–	
1000N	eLM-1000N	eLC-1000N	–	
2000N	eLM-2000N	eLC-2000N	–	
5000N	eLM-5000N	eLC-5000N	eDD2-5000N	
10kN	eLM-10kN	eLC-10kN	eDD2-10kN	
20kN	eLM-20kN	eLC-20kN	eDD2-20kN	

*Accuracy here is the total of load cell's accuracy (page 2) and indicator's one (+/-0.2%F.S.).
Display and resolutions are the same as separate types's one.   Please refer to model list in page 3 for detail.

- Indicator eZT   *Please combine a load cell exclusive for eZ-Connect.

Image	Feature	Accuracy
	● No adjustment is needed when you change load cells. ● You can measure different force range. ● You can measure different types of force. ● You can reduce risks in operation	*Accuracy here is the total of load cell's accuracy (refer to each specifications) and indicator's one (+/-0.2%F.S.). We offer higher accuracy models; ZT series (sensor separate type) and FA plus. For detail, please refer to page 3.

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[Related products]

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-1VR
CB-908	Open end connection cable	Output cable for loose wire 37 pin (Useful for connection with unique equipment.)

Image	Feature
	- You can draw graphs of force-displacement at real time via USB connection at 2000Hz. - 5 graphs at maximum can be overlaid. (Standard / Professional only) - You can write memo on each graph.　For instance, you may write down testing conditions such as testing speed, attachment etc. *　3 models (Light/Standard/Professional) are available.

[Other load cell line-up]

Please choose the suitable one matching your needs from our varieties of load cell.

Standard type DPU series	Extra small type LMU series	Pen type PN-50N	For automatic doors DM-2000N
Compression & Tension	Compression & Tension	Compression	Compression
General type load cell with a shaft. Easy to install.	Sensor diameter is only 18mm.	Pen-shaped to fit for measuring control force of small samples.	Fit to measure automatic door closing force.

*please refer to each load cell specification for the detail.

Do you have any requests like mentioned below?

➢　You need flexible cable.
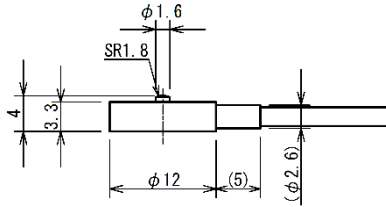
➢　You need to extend the length of cable.

We can custom design and manufacture to meet your particular requirements.

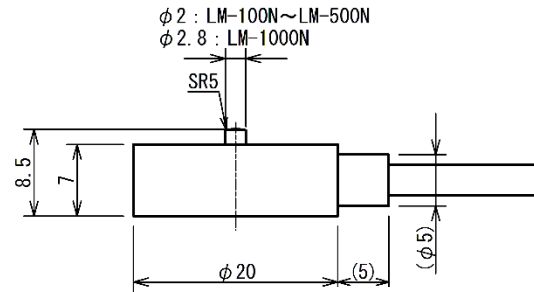Please contact us for detail.　Our service gr: +81-(0)532-33-3288
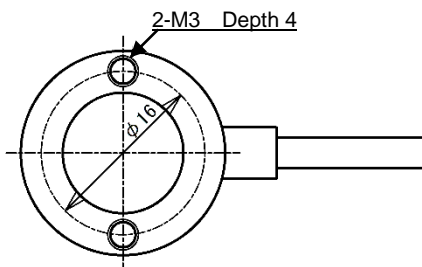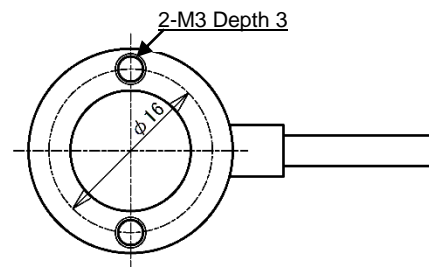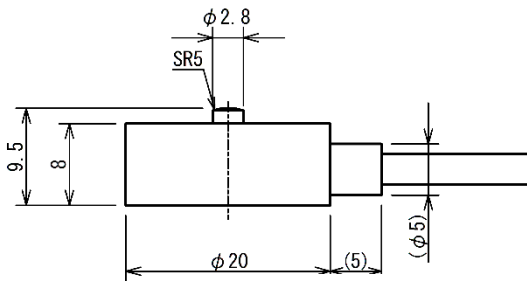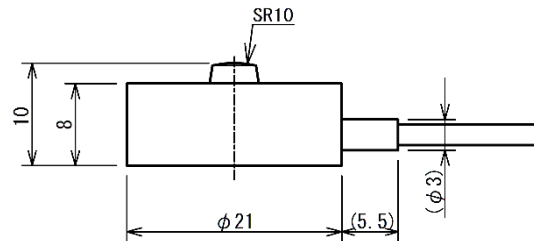
[Dimensions]

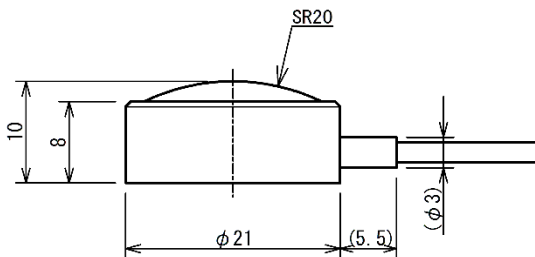・LM series

LM-10N~50N

LM-100N~1000N
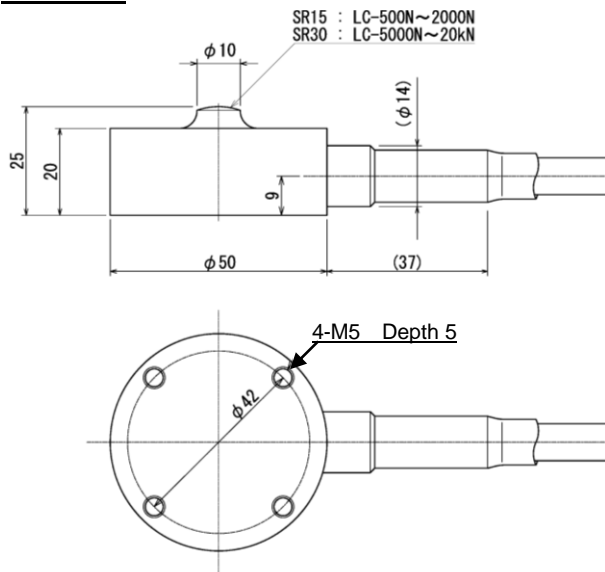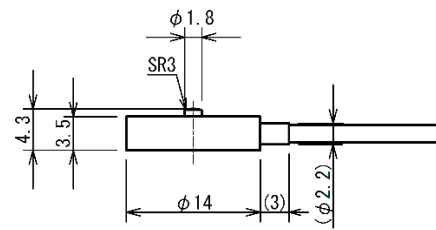

LM-2000N

LM-5000N

LM-10kN,20kN

The value in ( ) is only advisory.
It could be larger depending on quantity for
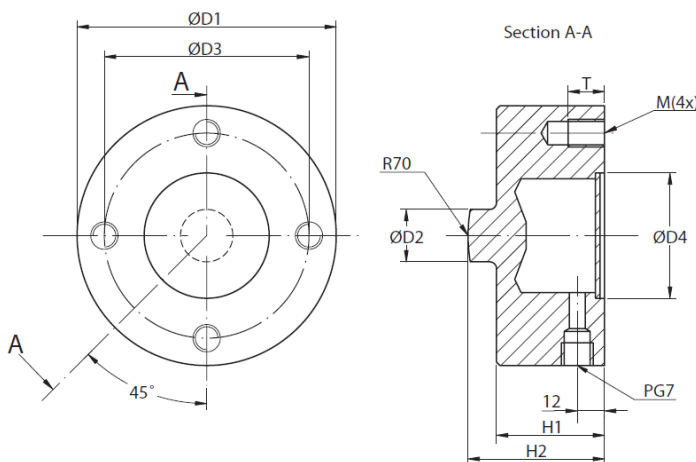application of glue or due to protective
tube for cable.

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・LC series

SR15 : LC-500N~2000N
SR30 : LC-5000N~20kN

4-M5　Depth 5

・LMT series

・DD2 series

Section A-A

The value in ( ) is only advisory.
It could be larger depending on quantity for application of glue or due to protective tube for cable.

Model	D1	H1	D2	H2	D3	M	T
DD2-5000N							
DD2-10kN	φ94	35.5	φ23	48	φ80	M5	12
DD2-20kN							

[Caution]
- This product is designed for force measurement only. Do not use it for other purposes.
- Please pay close attention to install this products.
  - Never apply strong force or impact especially on the sensing direction.
  - Do not apply bending or torsion stress when setting up the sensing shaft to a measuring object.
- Do not use under the environment such as high temperature, high humidity, near water, dusty place, and rapid temperature changes,.
- The contents may be changed without notice in advance.
- Please note that a load cell's capacity differs slightly depending on a selected unit of the indicators. Please contact us for detail.

Please feel free to contact us (+81-(0)-532-33-3288) for your measurement.

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