Load cells for compression LM/LC series

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

Model	Standard type: LM series	High Accuracy type: LC series
Capacity	10N to 20kN	500N to 20kN
Photos		Approved IP64 
Features	-Extra small and slim type	-High accuracy (+/-0.5%F.S. or lower) -High stability and reliability due to airtight structure -Corrosion resistance due to stainless steel body -Flexible cable
How to fix	Mounting or gluing on equipment	

*An indicator is required to read force values. Refer page 3 for the details.

What is IP?

IP (International Protection) is a standard which is based on IEC Standard 529 for solid foreign materials, electric devices for water and cabinet.

IP▲△
▲ : Protection rating against solid foreign objects
△ : Protection rating against water

IP 6[4]—Protected against water splashed from any direction.
IP 6[7]—Protected from immersion in water under the specified time and water pressure (depth).
No ingress of dust.

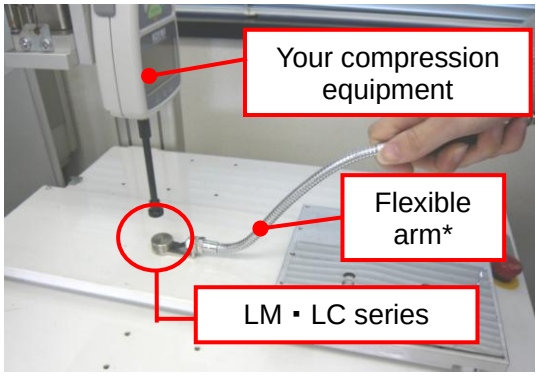
(Refers to IEC 60529; 2001)

: eZ-Connect series

eZ-Connect is composed of an amplifier and load cells.
-Allows easy replacement of load cells without additional adjustment
-Suits different types of tests such as tension and torque, measuring from low load to high load etc.

Available load cells have a mark

[Application]

Compression testing for a pressing machine, a robot arm, and the like.	
	・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 custom-made flexible arm up to 5000N capacity is available. The shape of the flexible arm is different from the above image for 10kN and 20kN.
*Custom-made products are available (e.g. combined with constant temperature water tank).

Specifications		
Model	**LM series**	**LC series**
Capacity	10N to 20kN	10N to 20kN
Rated output	10N: 0.7mV/V or more 50N to 2000N: 1.0mV/V+/-20% 5000N,10kN: 1.0mV/V+/-30% 20kN: 1.5mV/V+/-20%	2.0mV/V+/-0.25%
Nonlinearity	10N to 2000N: 0.5%R.O. 5000N,10kN: 1.0%R.O. 20kN: 2.0%R.O.	0.15%R.O.
Hysteresis	10N to 2000N: 0.5%R.O. 5000N and 10kN: 1.0%R.O. 20kN: 2.0%R.O	0.1%R.O.
Recommended voltage (allowable voltage)	10N to 2000N: 1 to 3V AC or DC (5V AC or DC) 5000N to 20kN: 5V or lower AC or DC (7V AC or DC)	1～10V AC or DC (15V AC or DC)
Safe overload rating	10N: 150%R.O. 50N to 2000N: 200%R.O. 5000N to 20kN: 120%R.O.	150%
Working environment (allowable temperature)	10N: -10 to 50 degree Celsius (-20 to 60 degree Celsius) 20N to 2000N: 0 to +50 degree Celsius (-10 to 60 degree Celsius) 5000N to 20kN: -5 to +50 degree Celsius (-10 to 60 degree Celsius)	-10 to +70 degree Celsius (-15 to 80 degree Celsius)
Temperature influence for 0 point	0.05%/degree Celsius	0.005%/degree Celsius
Temperature influence for output	0.05%/degree Celsius	0.01%/degree Celsius
Cable(*2)	10N to 2000N: Approx. 2m 5000N to 20kN: Approx. 3m	Approx. 5m
Dimensions	Refer to [Dimensions]	Refer to [Dimensions]
Weight	10N to 50N: Approx. 40g 100N to 2000N: Approx. 60g 5000N to 20kN: Approx. 70g	Approx. 500g
International Protection	-	IP64 (*1)

* An amplifier (indicator) is required to read values. Refer to below “Available amplifiers (indicators)” for the detail.
* For purchasing only loadcell, select the types of connector. Refer to the table below (Page. 3).
* The load cells are not guaranteed either for the operability with your own amplifier (indicator) or for the accuracy as a result of such use.
*1 IP64/67 is only approved for the load cell itself. The amplifier (indicator) and the connector parts are not secured.
*2 Refer to specification of [Options Available for Load cell Cable] to change cable length or so.

Specifications (eZ-Connect series)		
Model	**eLM series**	**eLC series**
Capacity	10N to 20kN	500N to 20kN
Accuracy (*2)	10N to 10kN: +/-2.0%F.S. or lower 20kN: +/-3.5%F.S. or lower	+/-0.5%F.S. or lower
Safe overload rating	10N: 150%R.O. 50N to 2000N: 200%R.O 5000N to 20kN: 20%R.O	150%
Working environment (allowable temperature)	10N: -10 to 50 degree Celsius (-20 to 60 degree Celsius) 50N to 2000N: 0 to 50 degree Celsius (-10 to 60 degree Celsius) 5000N to 20kN: -5 to 50 degree Celsius (-10 to 60 degree Celsius)	-10 to 70 degree Celsius (-15 to 80 degree Celsius)
Cable	10N to 2000N: Approx. 2m 5000N to 20kN: Approx. 3m	Approx. 5m
Dimensions	Refer to [Dimensions]	Refer to [Dimensions]
Weight	10N to 50N: Approx. 40g 100N to 2000N: Approx. 60g 5000N to 20kN: Approx. 70g	Approx. 500g
International Protection	-	IP64 (*1)

* Refer to the page 5 for eZ-Connect series details.
*1 IP64/67 is only approved for the load cell itself. The amplifier (indicator) and the connector parts are not secured.
*2 Refer to specification of [Options Available for Load cell Cable] to change cable length or so.

[Available Amplifiers (Indicators)]

Separated Sensor Model		
Handheld type ZTS series	**Handheld type ZTA series**	**Desktop type FA Plus2**
		
- Handheld use - Higher accuracy	- Handheld use - Higher accuracy - I/O displacement - Data saving to USB	- Desktop use - Higher accuracy
eZ-Connect series Sensor Interchangeable Amplifier		
Desktop type eFA Plus2	**Handheld type eZT**	**Quad Sensor Measuring Amplifier QSMA-400**
		
- Desktop use - Load cell interchangeable (such as measurement of tension and torque, or low and high load)	- Handheld use - Load cell interchangeable (such as measurement of tension and torque, or low and high load)	- Up to 4 different load cells can be connected Simultaneously. (Load cell interchangeable) - To use QSMA-400, the graphing Software Quad Graph Drawer is required to be downloaded.

* Refer to the specification sheet of each amplifier (indicator) for details.

[Models of Load Cell Only]

	Model	Capacity
LM series	LM-10N	10N
	LM-50N	50N
	LM-200N	200N
	LM-500N	500N
	LM-1000N	1000N
	LM-2000N	2000N
	LM-5000N	5000N
	LM-10kN	10kN
	LM-20kN	20kN
LC series	LC-500N	500N
	LC-1000N	1000N
	LC-2000N	2000N
	LC-5000N	5000N
	LC-10kN	10kN
	LC-20kN	20kN

[Connector Type]

Code	-5P	-6P	-OC
Connector shape	 5pins	 6pins	Without Connector
Connect to	ZT series, FA Plus2, etc.	Some discontinued IMADA products	For installing in equipment
	*Please check the connector shape of your equipment to connect.		

* When purchasing, select the connector shape and add the code to the end of the load cell mode.
e.g. For selecting 5pins: LM-10N-5P

[Models of sensors combined with indicators (Sensor separate models)]
-LM series

Model			Range	Accuracy (*1)	Display	Resolution
ZTA	ZTS	FA Plus2				
ZTA-LM-10N	ZTS-LM-10N	FAP2-LM-10N	10N	+/-2.0%F.S or lower	10.00N	0.01N
ZTA-LM-50N	ZTS-LM-50N	FAP2-LM-50N	50N		50.00N	0.01N
ZTA-LM-200N	ZTS-LM-200N	FAP2-LM-200N	200N		200.0N	0.1N
ZTA-LM-500N	ZTS-LM-500N	FAP2-LM-500N	500N		500.0N	0.1N
ZTA-LM-1000N	ZTS-LM-1000N	FAP2-LM-1000N	1000N		1000N (1.000kN)	1N (0.001kN)
ZTA-LM-2000N	ZTS-LM-2000N	FAP2-LM-2000N	2000N		2000N (2.000kN)	1N (0.001kN)
ZTA-LM-5000N	ZTS-LM-5000N	FAP2-LM-5000N	5000N		5000N (5.000kN)	1N (0.001kN)
ZTA-LM-10kN	ZTS-LM-10kN	FAP2-LM-10kN	10kN		10.00kN	0.01kN
ZTA-LM-20kN	ZTS-LM-20kN	FAP2-LM-20kN	20kN	+/-3.5%F.S or lower	20.00kN	0.01kN

-LC series

Model			Range	Accuracy (*1)	Display	Resolution
ZTA	ZTS	FA Plus2				
ZTA-LC-500N	ZTS-LC-500N	FAP2-LC-500N	500N	+/-0.5%F.S or lower	500.0N	0.1N
ZTA-LC-1000N	ZTS-LC-1000N	FAP2-LC-1000N	1000N		1000N (1.000kN)	1N (0.001kN)
ZTA-LC-2000N	ZTS-LC-2000N	FAP2-LC-2000N	2000N		2000N (2.000kN)	1N (0.001kN)
ZTA-LC-5000N	ZTS-LC-5000N	FAP2-LC-5000N	5000N		5000N (5.000kN)	1N (0.001kN)
ZTA-LC-10kN	ZTS-LC-10kN	FAP2-LC-10kN	10kN		10.00kN	0.01kN
ZTA-LC-20kN	ZTS-LC-20kN	FAP2-LC-20kN	20kN		20.00kN	0.01kN

* Refer to the specification of indicator for details.
*1 It is the accuracy of the sensor and indicator combined.

-eZ-Connect load cell models

Load cell model		Range	Accuracy (*1)	Display	Resolution
eLM series	eLC series				
eLM-10N	-	10N	Accuracy of sensor + Accuracy of amplifier	10.00N	0.01N
eLM-50N	-	50N		50.00N	0.01N
eLM-200N	-	200N		200.0N	0.1N
eLM-500N	eLC-500N	500N		500.0N	0.1N
eLM-1000N	eLC-1000N	1000N		1000N (1.000kN)	1N (0.001kN)
eLM-2000N	eLC-2000N	2000N		2000N (2.000kN)	1N (0.001kN)
eLM-5000N	eLC-5000N	5000N		5000N (5.000kN)	1N (0.001kN)
eLM-10kN	eLC-10kN	10kN		10.00kN	0.01kN
eLM-20kN	eLC-20kN	20kN		20.00kN	0.01kN

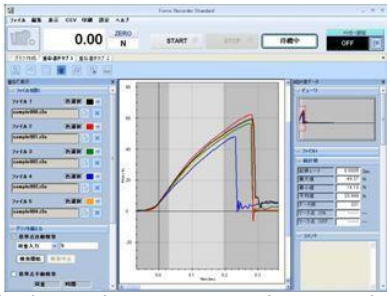
*1 Total accuracy when combined with the eZ-Connect series amplifier.
e.g. Total accuracy of eCLFX and eZT ➞ +/-1.2%F.S. or less (Load cell: +/-1.0%F.S. or less + Amplifier: +/-0.2%F.S. or less)
* Please refer to the accuracy of the sensor of eZ-Connect in Specifications (eZ-Connect series) table.

[Related products]

-Cables

Model	Explanation	Purpose of use
CB-108	Analog cable (3m)	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 (3m)	To connect to a PC having its own system
CB-308	Digimatic cable(3m)	To connect to a printer DP-1VA (ZTS/ZTA/eZT)
CB-908	Open end cable (3m)	Output cable for loose wire 37 pin (Useful for connection with unique equipment.)

-Data analysis software Force Recorder

Image	Purpose of use
 *The image is Force Recorders Standard.	- You can make graphs of force-displacement at real time via USB connection at 2000Hz. - You can write memo on each graph. You may write down testing conditions such as testing speed. - Up to 5 graphs can be overlaid. (Standard, Professional edition) - It enables to analyze force-displacement relationships. (Professional edition) * Refer to each specification for further information.

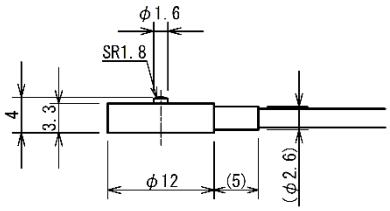
-Other load cell line-up

Standard type **DPU series**	Coin shaped type **LMU series**	Pen type **PN-50N**	For automatic doors **DM-2000N**
High accuracy built-in type load cell for general use	Coin size load cell for compression and tension	Pen-shaped to fit for measuring control force of small samples	Fits to measure automatic door closing force
			

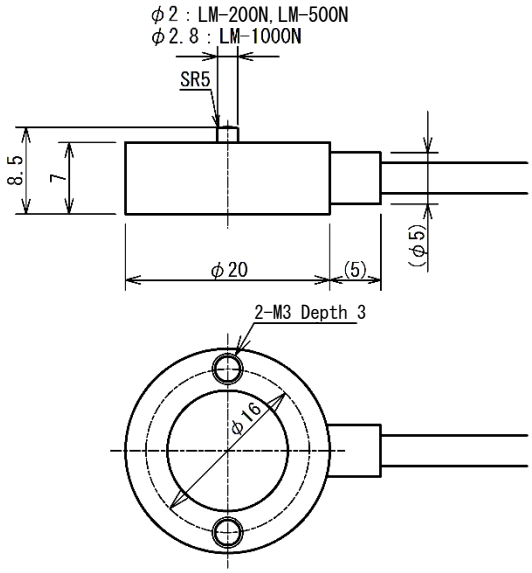
[Dimensions]

-LM series

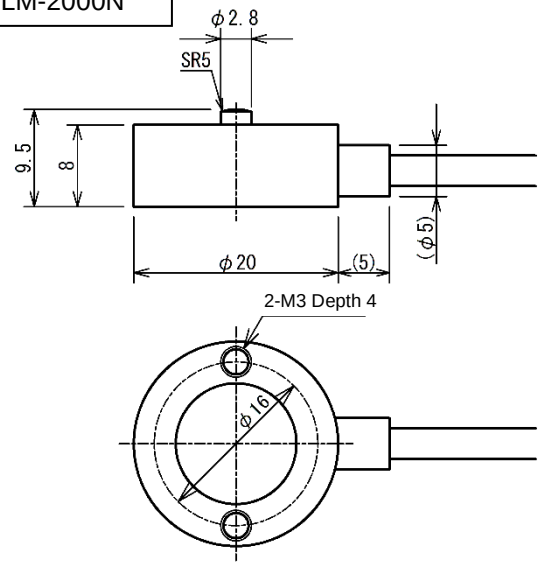
LM-10N and 50N



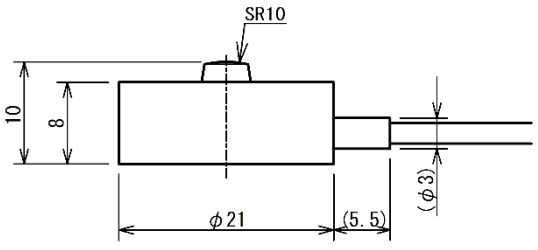
LM-200N to 1000N



LM-2000N



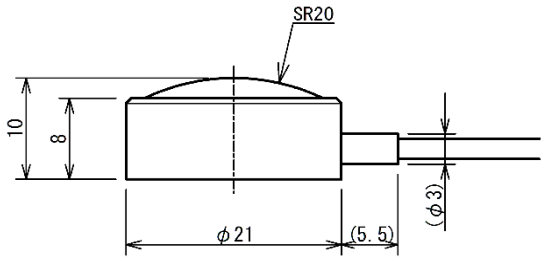
LM-5000N



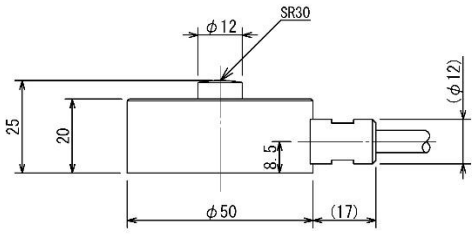
The value in ( ) is only advisory.
It could be larger depending on the thickness of glue or protective tube.

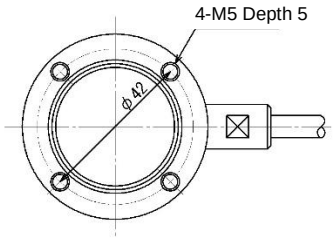
Unit:mm

LM-10kN,20kN



-LC series





The value in ( ) is only advisory.
It could be larger depending on the thickness of glue or protective tube.

Unit:mm

[Cautions]
- Information in this document is subject to change without prior notice.
- This document is product descriptions and handling precautions, and do not guarantee various characteristics or safety.
- This product is designed for force measurement purpose only.
- Do not copy and use this content without authorization.
- Do not apply force more than its capacity or from incorrect direction to the measuring shaft.
- Do not use this product in the environments including fierce temperature changes, high temperature, high humidity, near water, dusty place.