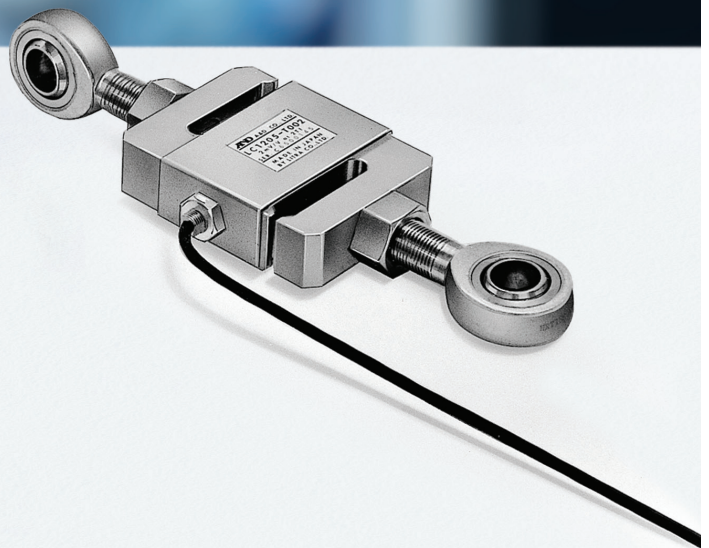


Load Cells

Catalog



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Structure and Composition of Load Cells

The general structure of a load cell consists of strain gauges, a spring element, a diaphragm, a base, a case, and a terminal box. The spring element can be broadly classified into the following shapes:

1. Beam
2. Column
3. Ring
4. Diaphragm

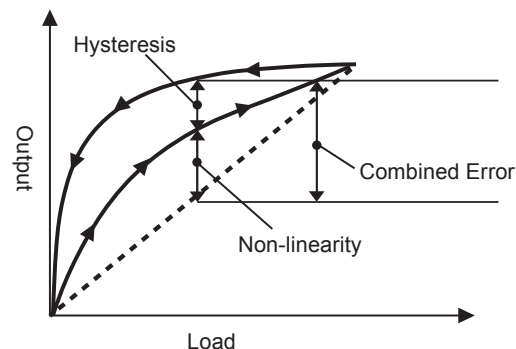
Materials suitable for low or high loads are used according to the application and structure.

Typically, four strain gauges are bonded to form a Wheatstone bridge, converting the "strain" proportional to the force applied to the spring element into an electrical output.

The protective case housing the spring element is welded with the diaphragm, base, and terminal box, and filled with inert gas to prevent internal insulation degradation. The output signal is extracted using a four-core shielded cable from the terminal box, and load calibration is performed using actual weights.

Load Cell Terminology

- **Rated Capacity:** The maximum load that a load cell can measure while maintaining its specifications.
- **Rated Output:** The value obtained by subtracting the no-load output from the load output at the rated capacity, usually expressed in output per 1 V of excitation voltage (mV/V). Also called Span.
- **Safe Overload:** The load that can be applied without causing permanent changes beyond the specifications, expressed as a percentage of the rated load.
- **Temperature Effect on Zero Point:** The change in zero point of the load cell due to changes in ambient temperature, expressed as a percentage of the rated output.
- **Temperature Effect on Span:** The change in rated output due to changes in ambient temperature.
- **Non-linearity:** The maximum deviation from the straight line connecting the no-load point and the rated capacity point (output) on the calibration curve, measured only during load increase, expressed as a percentage of the rated output.
- **Hysteresis:** The maximum difference in load cell output between increasing and decreasing loads.
- **Combined Error:** The maximum deviation from the straight line connecting the no-load point and the rated capacity point on the calibration curve, including both load increase and decrease.
- **Recommended Excitation Voltage:** The recommended voltage applied to the input terminals of the load cell.
- **Maximum Excitation Voltage:** The maximum voltage that can be applied to the input terminals of the load cell.



- **Zero Balance:** The output voltage of the load cell when no load is applied and the rated excitation voltage is applied, usually expressed as a percentage of the rated output.
- **Input Terminal Resistance:** The resistance of the input terminals of the load cell measured with no load and the output terminals open.
- **Output Terminal Resistance:** The resistance of the output terminals of the load cell measured with no load and the input terminals open.
- **Insulation Resistance:** The DC resistance between the load cell circuit and the load cell body.
- **Natural Frequency:** The frequency of free vibration of the load cell when no load is applied.
- **Allowable Moment:** The maximum bending moment that can be applied without causing permanent changes beyond the specifications.
- **Deflection Amount:** The amount of change when the rated load is applied to the load cell. (For single point load cells, this is the displacement amount at the tip when a load is applied to the center of the load cell.)

Load Cell Lineup

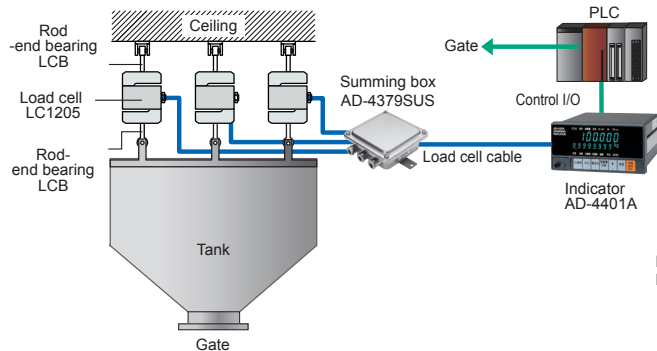
Type	Model	Product Page	Specifications							
			Rated Capacity	< 10 N (< 1 kg)	10 < 100 N (1 < 10 kg)	100 N < 1 kN (10 < 100 kg)	1 < 10 kN (100 kg < 1 t)	10 < 100 kN (1 < 10 t)	100 kN < 5 MN (10 < 500 t)	Material
Beam Type	LCB03	P 13	30 N to 600 N (3 kg to 60 kg)		✓	✓				Aluminum
	LCB04	P 14	600 N to 2.5k N (60 kg to 250 kg)			✓	✓			Aluminum
	LCB05	P 15	300 N to 1.5 kN (30 kg to 150 kg)			✓	✓			Stainless steel
	LCB22	P 16	58 N to 588 N (6 kg to 60 kg)		✓	✓				Aluminum
	LCB25	P 17	4.9 N to 29 N (500 g to 3 kg)	✓	✓					Aluminum
	LC4001 / LC4001A	P 18	1.2 N (120 g)	✓						Aluminum
	LC4101	P 19	6 N to 150 N (600 g to 15 kg)	✓	✓	✓				Aluminum
	LC4102	P 19	100 N to 1.5 kN (10 kg to 150 kg)			✓	✓			Aluminum
	LC4103	P 19	600 N to 1.5 kN (60 kg to 150 kg)			✓	✓			Aluminum
	LC4204	P 19	3k N to 6 kN (300 kg to 600 kg)				✓			Aluminum
	LC4221	P 21	100 N to 3 kN (10 kg to 300 kg)			✓	✓			Stainless steel
	LC4212	P 22	3 kN to 12 kN (300 kg to 1.2 t)				✓	✓		Aluminum
	LC5206	P 23	3 kN to 20 kN (300 kg to 2 t)				✓	✓		Tool steel
	U2Z1-A	P 24	10 N to 5 kN (1 kg to 500 kg)		✓	✓	✓			Tool steel and Aluminum
	LBP	P 25	100 N to 10 kN (10 kg to 1 t)			✓	✓	✓		Tool steel
	LCM13	P 26	1 kN to 50 kN (100 kg to 5 t)				✓	✓		Stainless steel
	LCM13-M	P 27	1 kN to 30 kN (100 kg to 3 t)				✓	✓		Load cell and mounting bracket: Stainless steel
	LCM19	P 28	5 kN to 20 kN (500 kg to 2 t)				✓	✓		Tool steel
	LCM19-M	P 29	5 kN to 20 kN (500 kg to 2 t)				✓	✓		Load cell: Tool steel Mounting bracket: Stainless steel
Tension /Compression Type	LC1122	P 30	500 N to 5 kN (50 kg to 500 kg)			✓	✓			Aluminum
	LC1205	P 31	200 N to 50 kN (20 kg to 5 t)			✓	✓	✓		Tool steel and Aluminum
	LC1205-USB	P 32	200 N to 50 kN (20 kg to 5 t)			✓	✓	✓		Load cell: Tool steel and Aluminum Conversion box: Polycarbonate
	LC1216	P 34	1 kN to 50 kN (100 kg to 5 t)				✓	✓		Tool steel
	LCS15	P 35	5 kN to 20 kN (500 kg to 2 t)				✓	✓		Stainless steel
	TM / UM	P 36	500 N to 20 kN (50 kg to 2 t)			✓	✓	✓		Tool steel
	TP	P 37	200 N to 1 MN (20 kg to 100 t)			✓	✓	✓	✓	Tool steel
	CP	P 37	200 N to 1 MN (20 kg to 100 t)			✓	✓	✓	✓	Tool steel
	C2Z1	P 38	5 kN to 200 kN (500 kg to 20 t)				✓	✓	✓	Tool steel
	C2X1	P 38	300 kN to 5 MN (30 t to 500 t)						✓	Tool steel
	CM	P 39	50 kN to 200 kN (5 t to 20 t)					✓	✓	Tool steel
	CMX	P 40	500 N to 20 kN (50 kg to 2 t)			✓	✓	✓		Stainless steel
	CMX-USB	P 41	500 N to 20 kN (50 kg to 2 t)			✓	✓	✓		Load cell: Stainless steel Conversion box: Polycarbonate
	LCC07	P 42	5 kN to 50 kN (500 kg to 5 t)				✓	✓		Stainless steel
	LCC11	P 43	100 kN to 300 kN (10 t to 30 t)						✓	Load cell: Stainless steel Mounting bracket: Tool steel
	LCC12	P 44	100 kN to 300 kN (10 t to 30 t)						✓	Stainless steel
	LCC20	P 45	300 kN (30 t)						✓	Load cell body: Tool steel Load cell case: Stainless steel
	LCCD20	P 46	100 kN to 300 kN (10 t to 30 t)						✓	Load cell body: Tool steel Load cell case: Stainless steel
Special Type	XY	P 47	X: 5 kN to 10 kN (500 kg to 1 t) Y: 2.5 kN to 5 kN (250 kg to 500 kg)				✓	✓		Tool steel
Button Type	LCC21	P 48	100 N to 1 kN (10 kg to 100 kg)			✓	✓			Stainless steel
	LCCA21	P 49	100 N to 1 kN (10 kg to 100 kg)			✓	✓			Stainless steel
	LCCU21	P 50	100 N to 1 kN (10 kg to 100 kg)			✓	✓			Load cell: Stainless steel
Complete Platform	SB	P 52	15 kg to 200 kg			✓	✓			Weighing pan: Stainless steel Base unit: Stainless steel & Aluminum
	SB-SW	P 52	6 kg to 150 kg		✓	✓	✓			Stainless steel

Specifications					Applications									Model	Type
Dustproof/ waterproof	Mounting bracket included	NTEP	OIML R60 certification / Class	CE compliant	Platform scale (single point)	Platform scale (multi-point)	Platform scale (pre-built platform)	Tank scale	Conveyor scale	Truck scale (weighbridge)	Checkweigher	Micro-dispensing device	Force measurement		
IP54				✓	✓						✓			LCB03	Beam Type
IP54				✓	✓						✓			LCB04	
IP67					✓			✓			✓			LCB05	
IP65/67					✓			✓	✓		✓			LCB22	
IP65					✓						✓			LCB25	
IP22					✓						✓			LC4001 / LC4001A	
IP22					✓						✓			LC4101	
IP54					✓						✓			LC4102	
IP54					✓						✓			LC4103	
IP54					✓	✓					✓			LC4204	
IP67						✓		✓					✓	LC4221	
IP54						✓	✓		✓		✓			LC4212	
IP67						✓		✓						LC5206	
IP67						✓		✓					✓	U221-A	
IP67						✓		✓	✓					LBP	
IP67			C3			✓		✓						LCM13	
IP67	✓					✓		✓						LCM13-M	
IP67						✓		✓						LCM19	
IP67	✓					✓		✓						LCM19-M	
IP54								✓					✓	LC1122	Tension / Compression Type
IP54								✓	✓				✓	LC1205	
Load Cell: IP54 Conversion Box: IP65								✓	✓				✓	LC1205-USB	
IP67								✓	✓				✓	LC1216	
IP67								✓	✓				✓	LCS15	
IP67								✓	✓				✓	TM / UM	
IP67								✓	✓				✓	TP	
IP67								✓	✓					CP	
IP67								✓	✓					C2Z1	
IP67								✓	✓					C2X1	
IP67								✓	✓				✓	CM	
IP67								✓	✓				✓	CMX	
Load Cell: IP67 Conversion Box: IP65													✓	CMX-USB	
IP67	✓							✓	✓					LCC07	
IP68	✓		C4					✓	✓	✓				LCC11	
IP68	✓							✓	✓					LCC12	
IP68	✓		C4	✓				✓	✓	✓				LCC20	
IP68	✓		C4/C6					✓	✓	✓				LCCD20	
IP54													✓	XY	Special Type
IP64				✓									✓	LCC21	Button Type
IP64													✓	LCCA21	
IP64				✓									✓	LCCU21	
IP65							✓				✓			SB	Complete Platform
IP69K				✓			✓				✓			SB-SW	

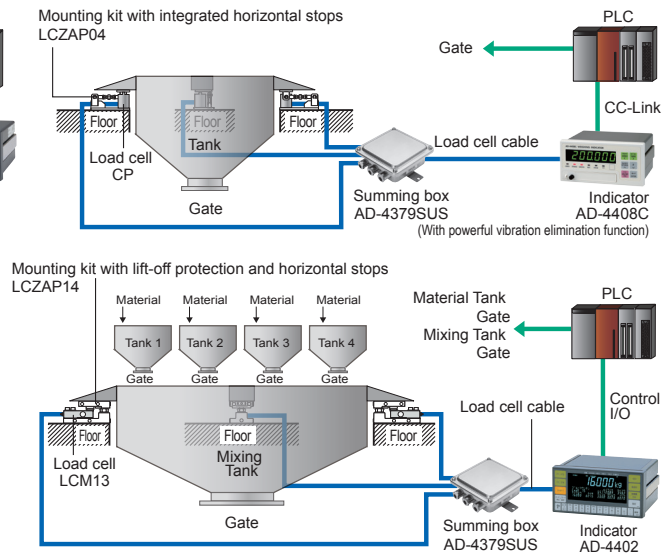
Examples of Measurement System Applications

Tank Weighing System

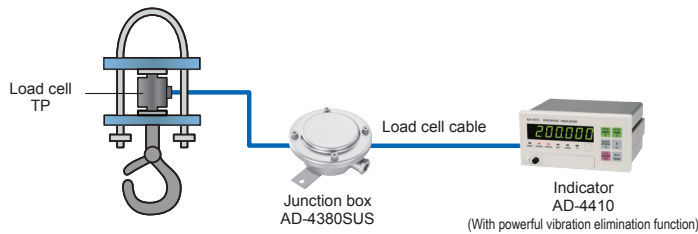
•Systems Using Tension Load Cells



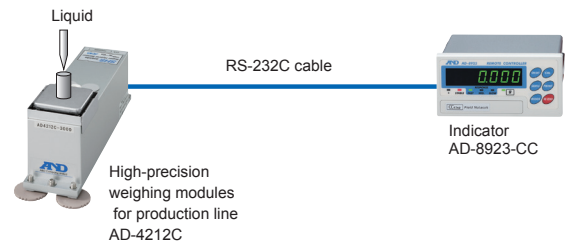
•Systems Using Compression Load Cells



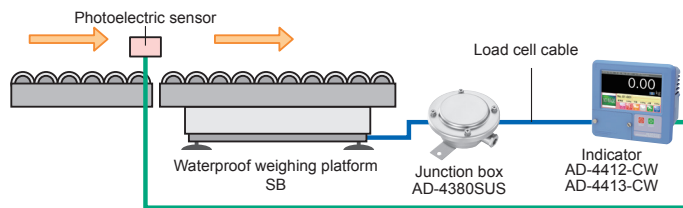
Crane Scale



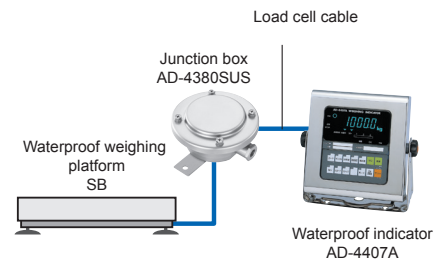
Liquid Filling System



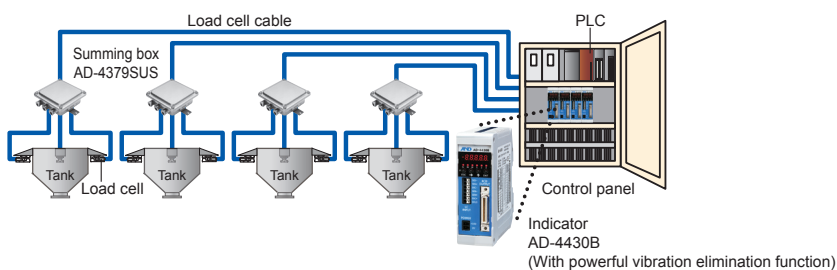
Conveyor Scale / Checkweigher



Waterproof Scale System



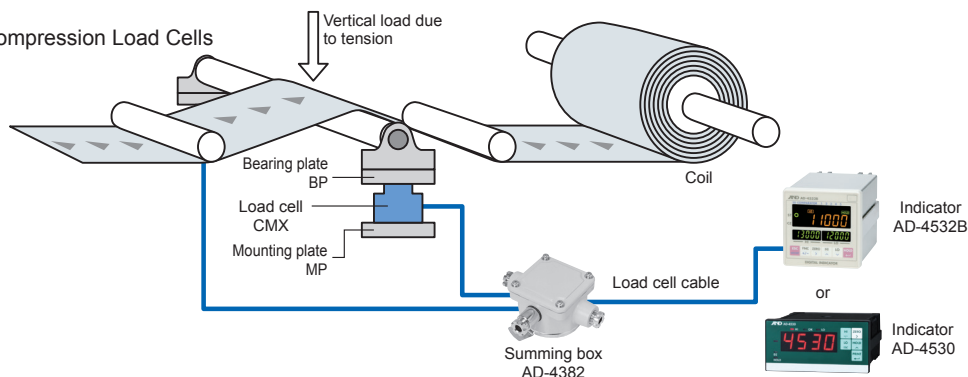
Multi-row Packaging Weighing System



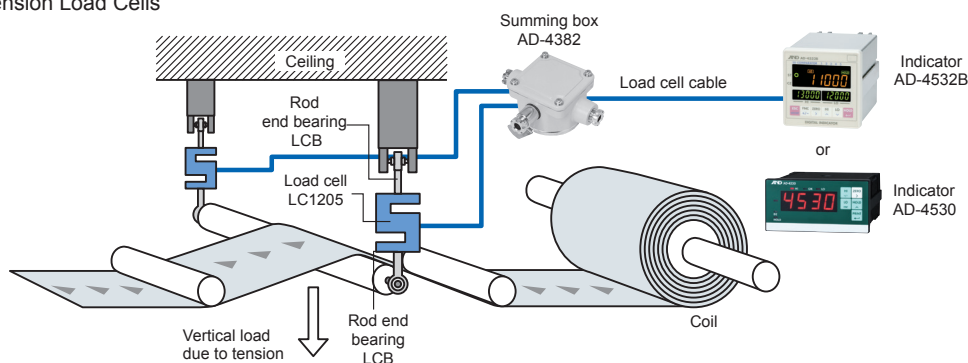
Examples of Measurement System Applications

Force Measuring System

•Systems Using Compression Load Cells



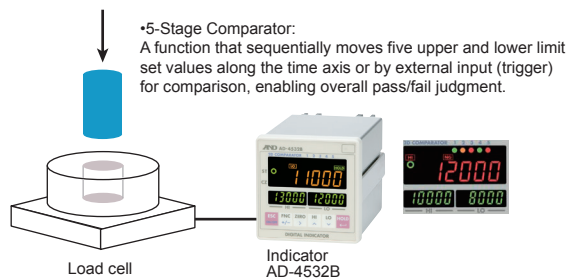
•Systems Using Tension Load Cells



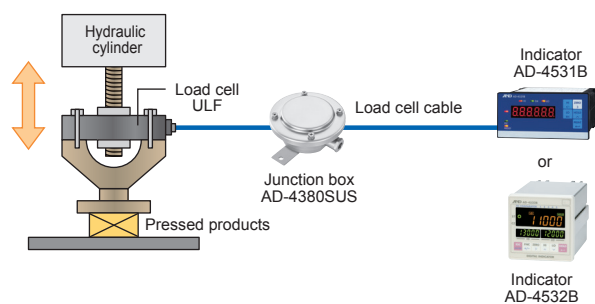
(NOTE) The applications in this catalog are expressed simply; mechanical safety is not taking into account.
Please examine mechanical safety measures in the actual system separately.

Press-Fit Quality Judgment System

•Pressure Monitoring in the Press-Fit Process

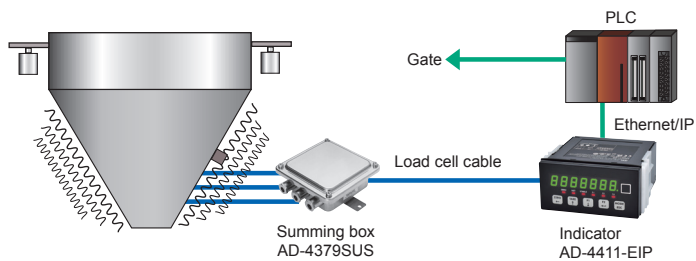


Pressure Measurement System for Press Machines

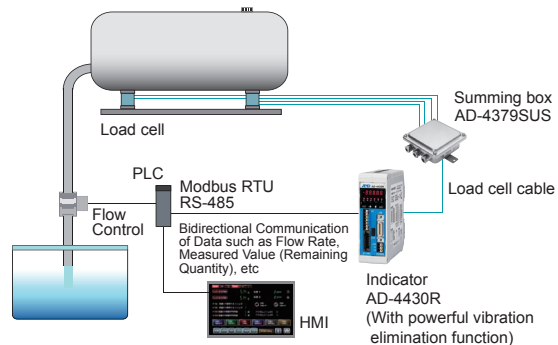


Examples of Measurement System Applications

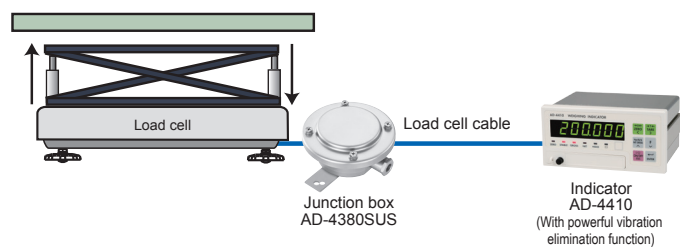
Weighing While Vibrating



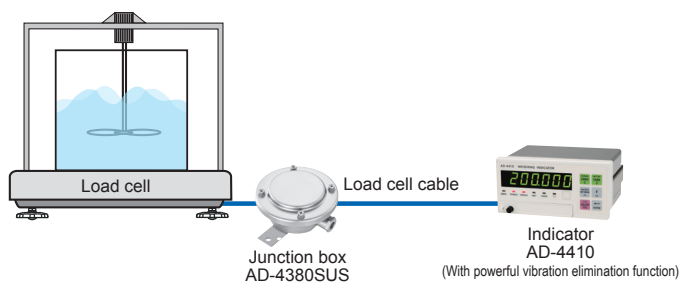
Flow Control



Weighing While Lifting and Lowering



Weighing While Stirring



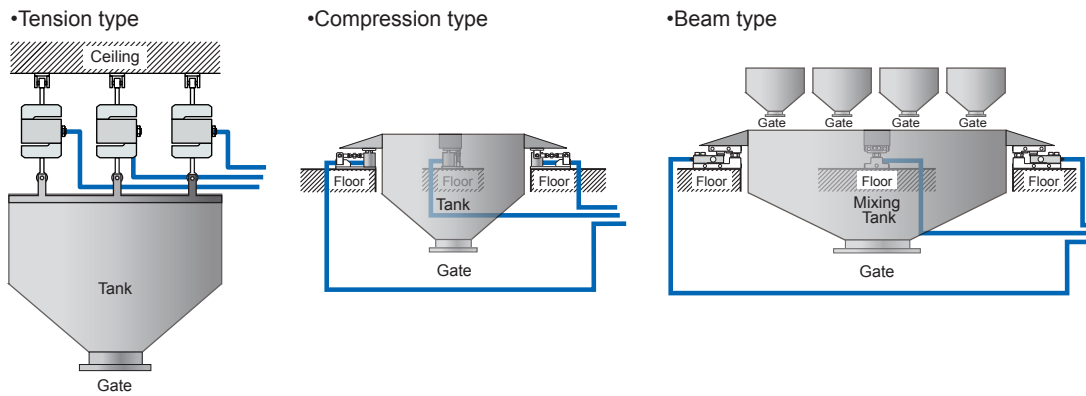
How to Choose a Load Cell

When building a weighing system, the first important step is choosing the right load cell. As an example, we'll look at "hopper scales," which are used to weigh the contents of a tank.

Choosing the Right Load Cell Type

Here are three examples of "hopper scales" using different types of load cells: from left to right, an example using "tension load cells," an example using "compression load cells," and an example using "beam load cells." Using "tension load cells" can make the structure simpler. Using "compression load cells" or "beam load cells" can make the weighing system shorter and allow use of the space above the tank. This allows for the addition of other weighing equipment, as shown in the example below for the "beam type."

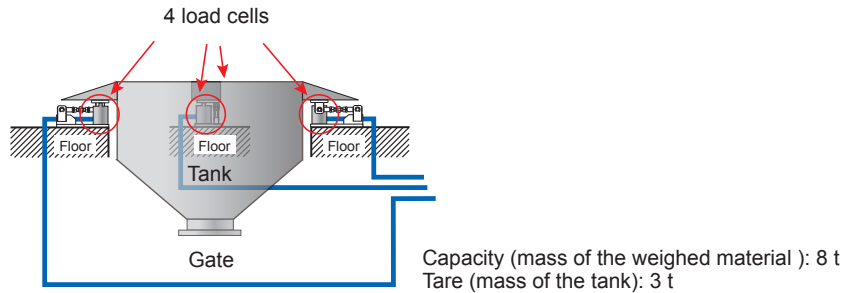
Please choose the type which best suits how the scale will be installed.



Selection of Rated Capacity (When Using Four Load Cells)

After selecting the type of load cell, the next step is to select the rated capacity. As a calculation example, we will introduce a case using a compression load cell.

Consider a scenario where the mass of the weighed material is 8 tons, the mass of the tank is 3 tons, and the total weight of 11 tons is supported by four load cells.



The calculation formula for selecting the rated capacity is as follows:

$$L > \frac{(f_1 \times W_1 + W_2) \times f_2 \times f_3}{N}$$

L : Rated capacity of the load cell to be determined

N : Number of load cells used

W_1 : Maximum mass of the weighed material (capacity)

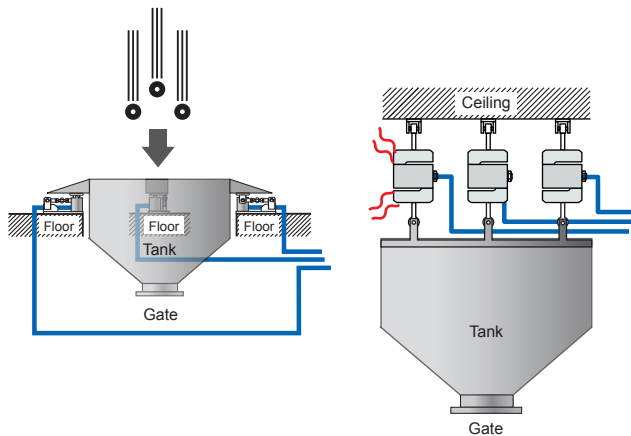
W_2 : Mass of the tank and other parts (tare)

f_1 : Dynamic coefficient (A coefficient that takes into account that a load greater than the input mass is applied due to a drop or other impact when weighing a material.)

f_2 : Eccentricity coefficient (a coefficient that accounts for the concentration of load on a particular load cell due to unbalanced loading of the weighed material in the tank)

f_3 : Unbalance coefficient (a coefficient that takes into account the fact that when supporting a device, it is stable when supported at 3 points but becomes unbalanced when supported at 4 or more points) 1.0 for $N \leq 3$, 1.2 for $N \geq 4$.

How to Choose a Load Cell



Now, let's substitute the values into the formula:

- | | |
|---|---|
| L : Rated capacity of the load cell to be determined | f_1 : Dynamic coefficient, usually 1.3 |
| N : Number of load cells used = 4 | f_2 : Eccentricity coefficient, usually 1.2 |
| W_1 : Maximum mass of the weighed material (capacity) = 8 t | f_3 : Unbalance coefficient, $f_3 = 1.2$ for $N \geq 4$ |
| W_2 : Mass of the tank and other parts (tare) = 3 t | |

Substituting these values:
$$L > \frac{(1.3 \times 8 + 3) \times 1.2 \times 1.2}{4} = 4.824t \approx 5t$$

Based on the result, the rated capacity of the load cell should be 5 tons.

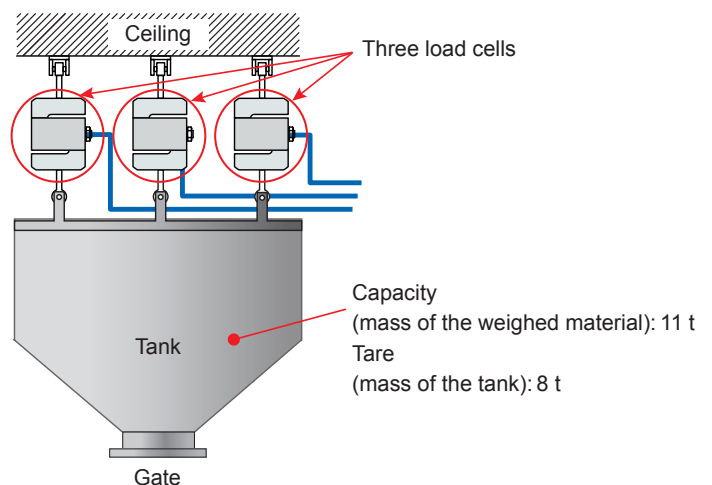
It is advisable to use four load cells with a rated capacity of 5 tons each.

Selection of Rated Capacity (When Using Three Load Cells)

Next, we will introduce the method for selecting rated capacity when using tension load cells. Consider a scenario where the mass of the weighed material is 11 tons, the mass of the tank is 8 tons, and the total weight of 19 tons is supported by three load cells.

Now, let's substitute the values into the formula.

- | |
|--|
| L : Rated capacity of the load cell to be determined |
| N : Number of load cells used = 3 |
| W_1 : Maximum mass of the weighed material (capacity) = 11 t |
| W_2 : Mass of the tank and other parts (tare) = 8 t |
| f_1 : Dynamic coefficient, usually 1.3 |
| f_2 : Eccentricity coefficient, usually 1.2 |
| f_3 : Unbalance coefficient $f_3 = 1.0$ for $N \leq 3$ |



Substituting these values:
$$L > \frac{(1.3 \times 11 + 8) \times 1.2 \times 1.0}{3} = 8.920t \approx 10t$$

Based on the result, the rated capacity of the load cell should be 10 tons.

It is advisable to use three load cells with a rated capacity of 10 tons each.

How to Choose a Load Cell

Consideration of Measurement Accuracy

After selecting the rated capacity of the load cell, the next step is to consider the measurement accuracy. Generally, the following formula is used to calculate accuracy, and the measurement accuracy is the value that takes into account the combined error, including the temperature effects on zero point and span.

$$\varepsilon > \sqrt{\underbrace{\varepsilon_C^2}_{\text{Combined error}} + \underbrace{\left(\frac{\varepsilon_Z \times L \times N}{W_1} \times t\right)^2}_{\text{Temperature effect on zero point}} + \underbrace{(\varepsilon_S \times t)^2}_{\text{Temperature effect on span}}}$$

ε : Measurement accuracy of the load cell (%F.S)
 ε_C : Combined error (%R.O.)
 ε_Z : Temperature effect on zero point (%R.O./°C)
 ε_S : Temperature effect on span (%Load/°C)
 L : Rated capacity of the load cell
 N : Number of load cells used
 W_1 : Maximum load to be measured
 t : Temperature variation range of the load cell (°C)

In the specifications of load cells, instead of "combined error," you may find terms such as linearity error, hysteresis error, and repeatability error. In such cases, use the following formula for the combined error calculation:

$$\varepsilon_C^2 = (\varepsilon_L^2 + \varepsilon_H^2 + \varepsilon_R^2)$$

ε_L : Linearity error (%R.O.)
 ε_H : Hysteresis error (%R.O.)
 ε_R : Repeatability error (%R.O.)

Now, let's use the formula to calculate the accuracy. The configuration and conditions of the scale to be considered are as follows:

Load cell used: LC4102-K010

Scale capacity: 10 kg

Operating temperature: 20 ±10 °C

Temperature effect on zero point: Not considered, as the [Zero] key on the indicator is pressed during weighing.

From the specifications of the load cell LC4102-K010:

ε_C : Combined error (%R.O.) = 0.015	L : Rated capacity of the load cell = 10
Temperature effect on zero point	N : Number of load cells used = 1
ε_Z : (%R.O./°C) = 0.004(per 1°C)	W_1 : Maximum load to be measured = 10
ε_S : Temperature effect on span	t : Temperature variation range of the load cell (°C) =
(%Load/°C) = 0.0014 (per 1°C)	0 for the effect on zero point (due to the [Zero] key), and
	20 for the effect on span (considering the ±10°C range).

Substituting these values into the formula:

$$\varepsilon = \sqrt{0.015^2 + \left(\frac{0.004 \times 10 \times 1}{10} \times 0\right)^2 + (0.0014 \times 20)^2} = 0.0318\% < 0.0333\% \quad (1/3,000)$$

The result is 0.0318%, which means **a scale with an accuracy of 1/3,000 would be sufficient.**

This concludes the selection of load cells. By following these three steps, you can select the appropriate load cell:

STEP 1 Choosing the Right Load Cell Type

STEP 2 Selection of Rated Capacity

STEP 3 Consideration of Measurement Accuracy

Load Cell Output and Indicator Input Sensitivity

The following calculations can be performed to determine whether the desired minimum scale division can be displayed with the selected combination of load cell and indicator:

Rated Capacity of Load Cell..... "A" (t, kg, g)

Maximum Capacity of Scale "D" (t, kg, g)

Rated Output of Load Cell..... "B" (mV/V)

Minimum Display Value of Scale..... "E" (t, kg, g)

Excitation Voltage of Load Cell..... "C" (V)

Input Sensitivity of Indicator..... "F" (μ V)

1. Output voltage at the rated capacity of the load cell (X) (mV):

$$X \text{ (mV)} = B \text{ (mV/V)} \times C \text{ (V)}$$

2. Output voltage at the maximum capacity of the scale (Y) (mV):

$$Y \text{ (mV)} = D / A \times X \text{ (mV)}$$

3. Output voltage at the minimum display value of the scale (Z) (μ V):

$$Z \text{ (}\mu\text{V)} = E / D \times Y \text{ (mV)} \times 1,000$$

(Note: The factor of 1,000 is for unit conversion from mV to μ V)

4. Comparison of the output voltage at the minimum display value of the scale with the input sensitivity of the indicator:

$$F \leq Z$$

If (Z) is greater than (F), the display is possible.

Example: Combination of Load Cell LC1205-K500 and Indicator AD-4408C

To determine if a minimum display value of 0.01 kg is possible for a scale with a maximum capacity of 150 kg:

A = 509.9 kg

$$1. 2.0394 \text{ (mV/V)} \times 5 \text{ (V)} = 10.197 \text{ (mV)}$$

B = 2.0394 mV/V

$$2. 150.00 \text{ (kg)} / 509.9 \text{ (kg)} \times 10.197 \text{ (mV)} \approx 3 \text{ (mV)}$$

C = 5 V

$$3. 0.01 \text{ (kg)} / 150.00 \text{ (kg)} \times 3 \text{ (mV)} \times 1,000 = 0.2 \text{ (}\mu\text{V)}$$

D = 150.00 kg

$$4. 0.15 \text{ (}\mu\text{V)} \leq 0.2 \text{ (}\mu\text{V)}$$

E = 0.01 kg

F = 0.15 μ V

Therefore, **0.01 kg is greater than the input sensitivity of the indicator** and can be displayed.

Note: When using three load cells, multiply (A) by three. Also, you can change the maximum capacity and minimum display value of the scale as needed for calculations.

Caution:

This calculation determines whether the minimum scale division can be displayed on the indicator based on electrical conditions. Whether a stable display can be obtained depends on mechanical conditions such as the structure of the equipment to which the load cell is attached, the method of attaching the load cell, the equipment environment, and measurement conditions. Additionally, the above does not consider accuracy.

Single-Point Aluminum Load Cell

LCB03 Series

30 N (3.059 kg) to 600 N (61.18 kg)

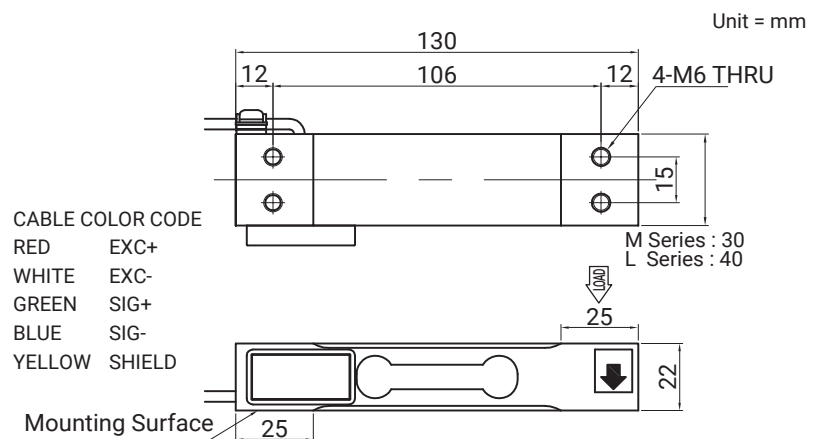
- Compact, lightweight, high-performance.
- Simplify system integration and scale fabrication, driving cost reduction.
- Versatile for use in both tension and compression applications.



Specifications

Model	Rated capacity (R.C.)	Deflection amount	Natural frequency	Allowable moment	Weight
LCB03-K003M	30 N (3.059 kg)	0.34 mm	142.5 Hz	1.061 N m	0.23 kg
LCB03-K006M	60 N (6.118 kg)		215 Hz	2.121 N m	
LCB03-K010M	100 N (10.20 kg)		285 Hz	3.606 N m	
LCB03-K015M	150 N (15.30 kg)		337 Hz	5.303 N m	
LCB03-K020M	200 N (20.39 kg)		387.5 Hz	7.106 N m	
LCB03-K025L	250 N (25.49 kg)	0.26 mm	397 Hz	8.910 N m	0.3 kg
LCB03-K030L	300 N (30.59 kg)		445 Hz	10.61 N m	
LCB03-K035L	350 N (35.69 kg)		452.5 Hz	12.41 N m	
LCB03-K060L	600 N (61.18 kg)		570 Hz	21.21 N m	

Rated output (R.O.)	2 mV/V $\pm$ 10%
Safe overload	150 % of R.C.
Ultimate overload	200 % of R.C.
Combined error	0.02 % of R.O.
Recommended excitation voltage	5 to 12 VDC
Maximum excitation voltage	15 VDC
Zero balance	$\pm$ 5 % of R.O.
Input terminal resistance	420 Ω $\pm$ 30 Ω
Output terminal resistance	350 $\pm$ 5 Ω
Insulation resistance	Greater than 2000 M Ω at 50 VDC
Temperature compensation range	-10 °C to 40 °C
Temperature effect on zero point	0.023 % of R.O./10 °C
Temperature effect on span	0.014 % of Load/10 °C Typ.
Cable thickness/length	ϕ 3.5/0.4 m
Maximum platform size	300 x 300 mm
Material	Aluminum
Dustproof/waterproof	IP54

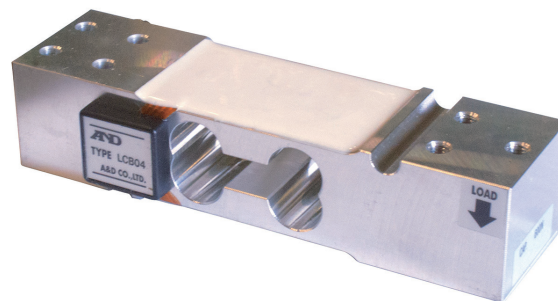


Single-Point Aluminum Load Cell

LCB04 Series

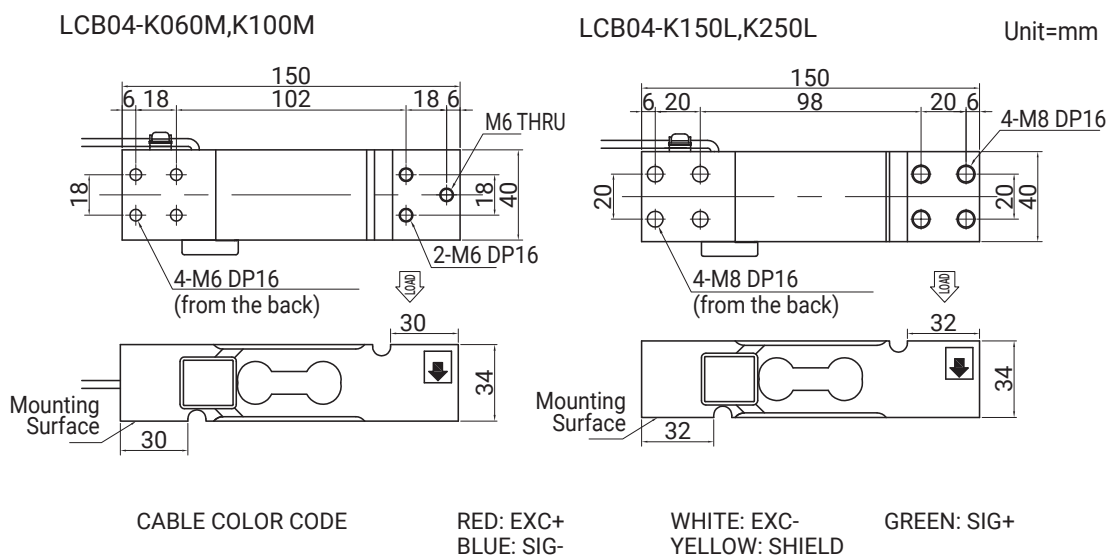
600 N (61.18 kg) to 2.5 kN (254.9 kg)

- Compact, lightweight, high-performance.
- Simplify system integration and scale fabrication, driving cost reduction.
- Versatile for use in both tension and compression applications.



Specifications

Model	Rated capacity (R.C.)	Deflection amount	Natural frequency	Allowable moment	Weight
LCB04-K060M	600 N (61.18 kg)	0.24 mm	447.5 Hz	28.28 N m	0.5 kg
LCB04-K100M	1 kN (102.0 kg)		525 Hz	47.23 N m	
LCB04-K150L	1.5 kN (153.0 kg)	0.18 mm	695 Hz	70.71 N m	
LCB04-K250L	2.5 kN (254.9 kg)		760 Hz	117.95 N m	



Rated output (R.O.)	2 mV/V $\pm$ 10%
Safe overload	150 % of R.C.
Ultimate overload	200 % of R.C.
Combined error	0.02 % of R.O.
Recommended excitation voltage	5 to 12 VDC
Maximum excitation voltage	15 VDC
Zero balance	$\pm$ 5 % of R.O.
Input terminal resistance	420 Ω $\pm$ 30 Ω
Output terminal resistance	350 $\pm$ 5 Ω

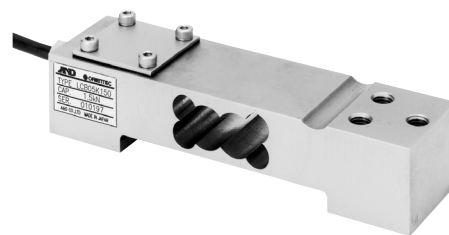
Insulation resistance	Greater than 2000 M Ω at 50 VDC
Temperature compensation range	-10 $^{\circ}$ C to 40 $^{\circ}$ C
Temperature effect on zero point	0.023 % of R.O./10 $^{\circ}$ C
Temperature effect on span	0.014 % of Load/10 $^{\circ}$ C Typ.
Cable thickness/length	ϕ 3.5/1.5 m
Maximum platform size	400 x 400 mm
Material	Aluminum
Dustproof/waterproof	IP54

Single-Point Stainless Steel Load Cell

LCB05 Series

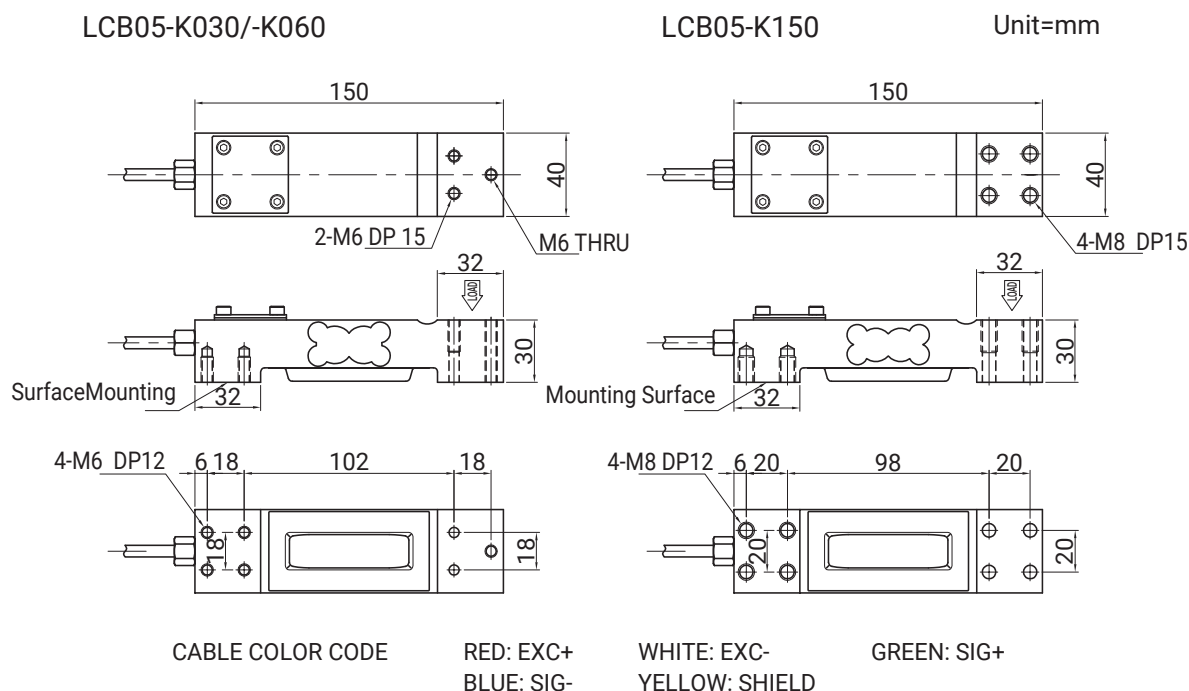
300 N (30.59 kg) to 1.5 kN (153.0 kg)

- Hermetically sealed stainless steel construction, pre-adjusted at four corners.
- Simplify fabrication of scales; suitable for harsh environments.
- Accommodates platforms up to 400 X 400 mm. Versatile for use in both tension and compression applications.



Specifications

Model	Rated capacity (R.C.)	Deflection amount	Natural frequency	Allowable moment	Weight
LCB05-K030	300 N (30.59 kg)	0.20 mm	240 Hz	14.14 N m	1.1 kg
LCB05-K060	600 N (61.18 kg)		340 Hz	28.28 N m	
LCB05-K150	1.5 kN (153.0 kg)		475 Hz	70.71 N m	



Rated output (R.O.)	2 mV/V+15 %-0 %
Safe overload	150 % of R.C.
Ultimate overload	200 % of R.C.
Combined error	0.03 % of R.O.
Recommended excitation voltage	5 to 12 VDC
Maximum excitation voltage	15 VDC
Zero balance	±5 % of R.O.
Input terminal resistance	Approx. 390 Ω
Output terminal resistance	350±5 Ω

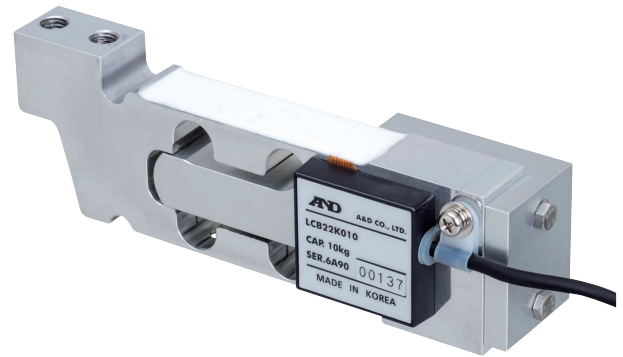
Insulation resistance	Greater than 500 MΩ at 50 VDC
Temperature compensation range	-10 °C to 40 °C
Temperature effect on zero point	0.04 % of R.O./10 °C
Temperature effect on span	0.014 % of Load/10 °C Typ.
Cable thickness/length	φ5.6/3 m
Maximum platform size	400 x 400 mm
Material	Stainless steel
Dustproof/waterproof	IP67

Single-Point Load Cell with Built-In Overload Stopper

LCB22 Series

58.84 N (6 kg) to 588.4 N (60 kg)

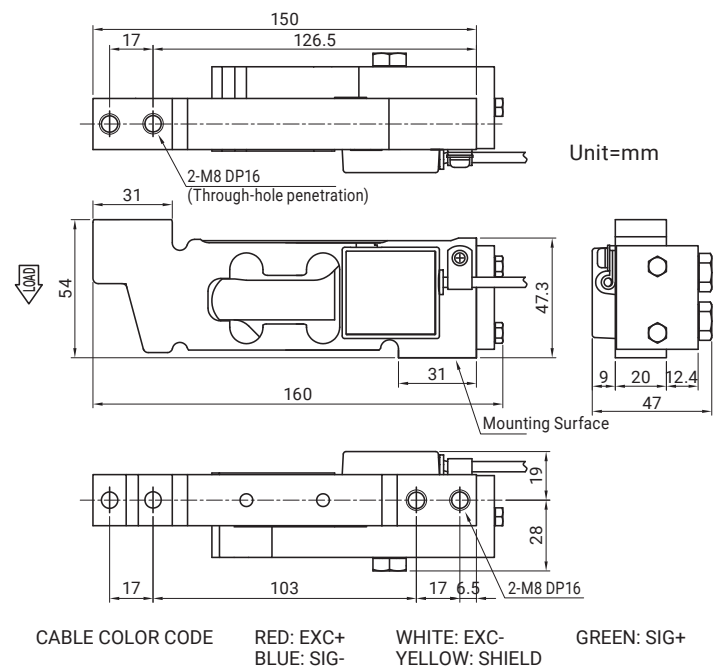
- Extremely durable structure built to withstand excessive loads and impacts.



Specifications

Model	Rated capacity (R.C.)	Deflection amount	Natural frequency	Allowable moment	Weight
LCB22-K006	58.84 N (6 kg)	0.17 mm	260 Hz	4.62 N m	0.5 kg
LCB22-K010	98.07 N (10 kg)		340 Hz	7.69 N m	
LCB22-K015	147.1 N (15 kg)		410 Hz	11.5 N m	
LCB22-K020	196.1 N (20 kg)		450 Hz	15.4 N m	
LCB22-K030	294.2 N (30 kg)		510 Hz	23.1 N m	
LCB22-K060	588.4 N (60 kg)		620 Hz	46.2 N m	

Rated output (R.O.)	1.5 mV/V±5 %
Safe overload	500 % of R.C.
Ultimate overload	1,000 % of R.C.
Combined error	0.02 % of R.O.
Recommended excitation voltage	5 to 12 VDC
Maximum excitation voltage	15 VDC
Zero balance	±5 % of R.O.
Input terminal resistance	1.13 kΩ±100 Ω
Output terminal resistance	1 kΩ±10 Ω
Insulation resistance	Greater than 2,000 MΩ at 50 VDC
Temperature compensation range	-10 °C to 40 °C
Temperature effect on zero point	0.014 % of R.O./10 °C Typ.
Temperature effect on span	0.011 % of Load/10 °C Typ.
Cable thickness/length	φ4/1.5 m
Maximum platform size	400 x 400 mm
Material	Aluminum
Dustproof/waterproof	IP65, IP67 (Cannot withstand strong water flow)



Single-Point Compact Load Cell/Stand Scale Type

LCB25 Series

4.903 N (500 g) to 29.42 N (3 kg)

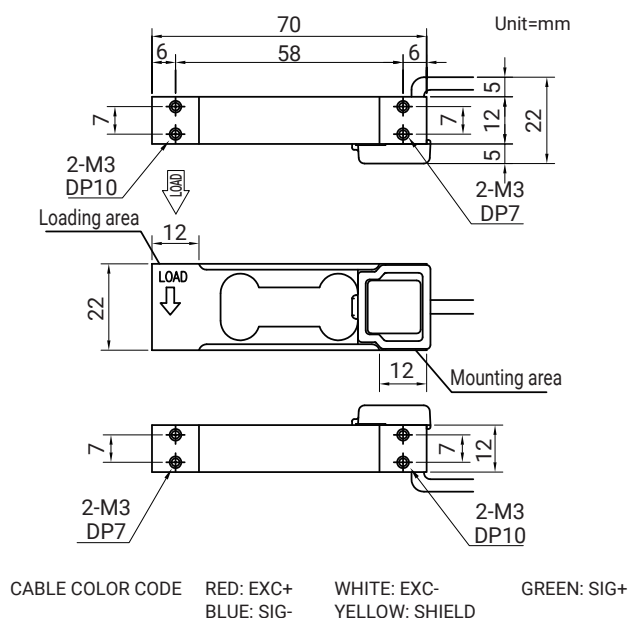
- Compact and light for installation in limited space
- Simple design for cost reduction, ideal for low capacity scales.
- Moisture-proof, four-corner adjusted, tension and compression load cell.



Specifications

Model	Rated capacity (R.C.)	Deflection amount	Natural frequency	Allowable moment
LCB25-G500	4.903 N (500 g)	0.14 mm	238 Hz	0.12 N m
LCB25-K001	9.807 N (1 kg)	0.28 mm		0.23 N m
LCB25-K002	19.61 N (2 kg)		356 Hz	0.46 N m
LCB25-K003	29.42 N (3 kg)		447 Hz	0.69 N m

Model	LCB25-G500	LCB25-K001, K002, K003
Rated output (R.O.)	1 mV/V $\pm 10\%$	2 mV/V $\pm 10\%$
Safe overload	300 % of R.C.	150 % of R.C.
Ultimate overload	400 % of R.C.	200 % of R.C.
Combined error	0.02 % of R.O.	
Recommended excitation voltage	Up to 12 VDC	
Maximum excitation voltage	25 VDC	
Zero balance	10 % of R.O.	
Input terminal resistance	1.17 k Ω $\pm 100\ \Omega$	
Output terminal resistance	1 k Ω $\pm 10\ \Omega$	
Insulation resistance	Greater than 2,000 M Ω at 50 VDC	
Temperature compensation range	-10 °C to 40 °C	
Temperature effect on zero point	0.023 % of R.O./10 °C	
Temperature effect on span	0.014 % of Load/10 °C Typ.	
Cable thickness/length	$\Phi 3.5/40$ cm	
Maximum platform size	200 x 200 mm	
Material	Aluminum	
Dustproof/waterproof	IP65	
Weight	40g	



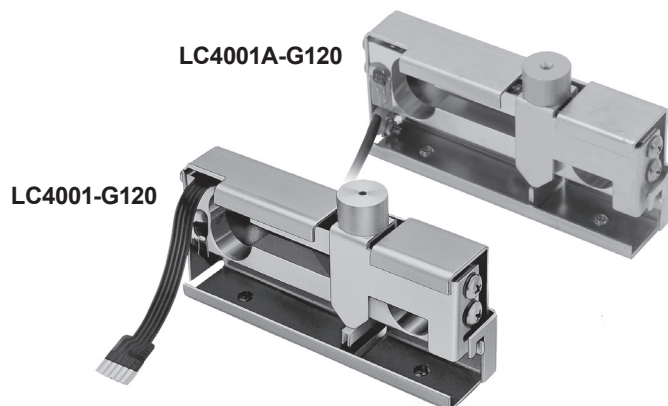
Single-Point Load Cell with Ultra-High Sensitivity for Small Scales

LC4001 / LC4001A

1.2 N (122.4 g)

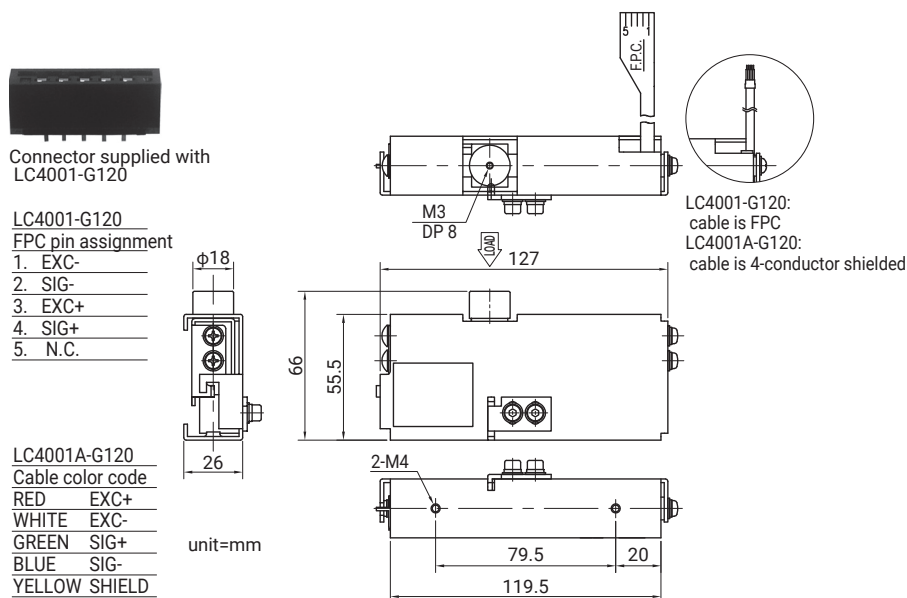
- Compact, lightweight; metal overload stopper built in.
- Ultra-high sensitivity; readability as high as 10 mg*

*The minimum display achievable when connected to an indicator whose input sensitivity is 0.15 $\mu\text{V/d}$ or less. (Instability due to the combined error is not considered)



Specifications

Model	Rated capacity (R.C.)	Deflection amount	Natural frequency	Allowable moment	Weight
LC4001-G120	1.2 N (122.4 g)	0.24 mm	50 Hz	0.017 N m	270 g
LC4001A-G120					300 g



Rated output (R.O.)	0.4079 mV/V or greater
Safe overload	300 % of R.C.
Ultimate overload	1,000 % of R.C.
Combined error	0.015 % of R.O.
Recommended excitation voltage	5 to 12 VDC
Maximum excitation voltage	15 VDC
Zero balance	40 $\pm$ 25 % of R.O.
Input terminal resistance	Approx. 400 Ω
Output terminal resistance	350 $\pm$ 5 Ω

Insulation resistance	Greater than 500 M Ω at 50 VDC
Temperature compensation range	-5 $^{\circ}\text{C}$ to 35 $^{\circ}\text{C}$
Temperature effect on zero point	0.14 % of R.O./10 $^{\circ}\text{C}$
Temperature effect on span	0.02 % of Load/10 $^{\circ}\text{C}$ Typ.
Cable thickness/length	F.P.C. 75 mm (LC4001-G120) Φ 4/1.5 m (LC4001A-G120)
Maximum platform size	120 x 120 mm
Material	Aluminum
Dustproof/waterproof	IP22

Single-Point Aluminum Load Cell

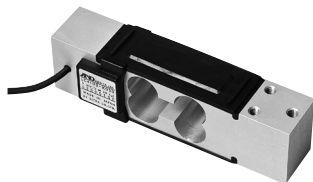
LC4101 / LC4102 / LC4103 / LC4204 Series

6 N (611.8 g) to 6 kN (611.8 kg)

- For making small to medium-sized scales
- For both tension and compression



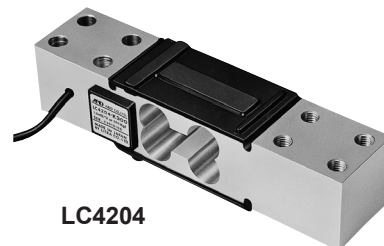
LC4101



LC4102

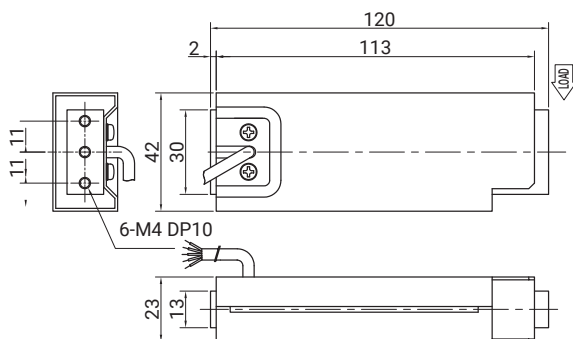


LC4103

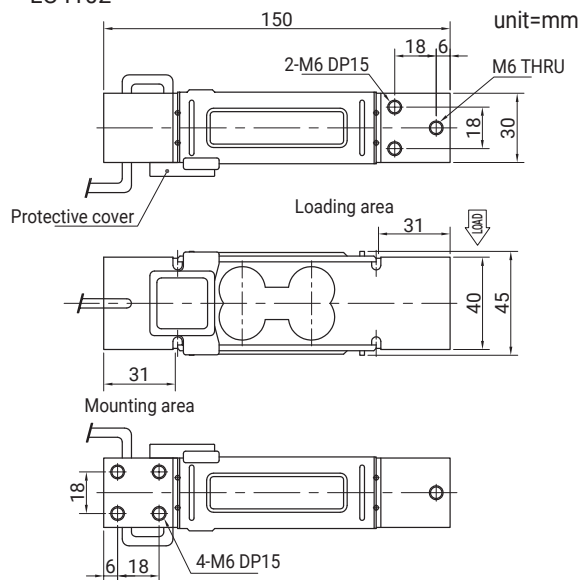


LC4204

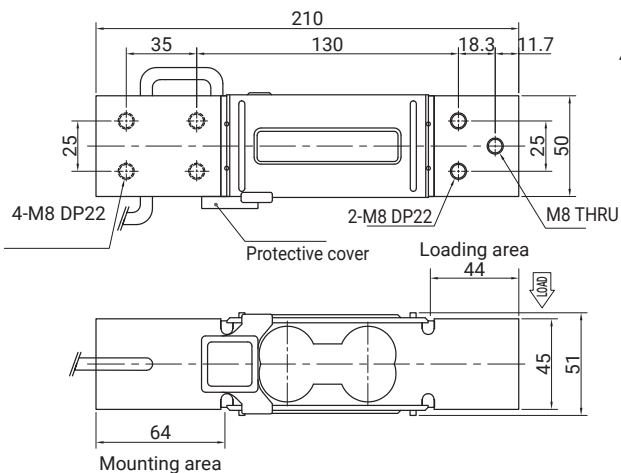
LC4101



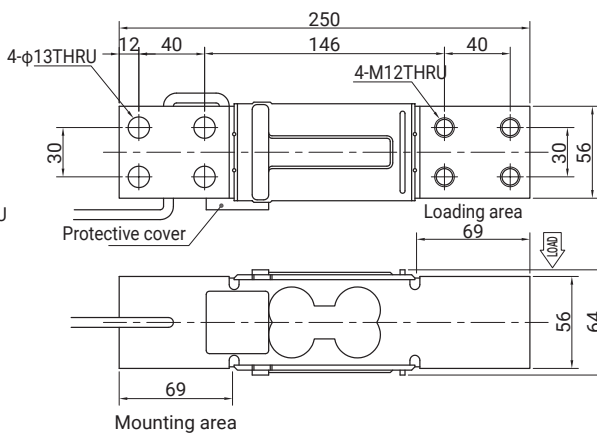
LC4102



LC4103



LC4204



CABLE COLOR CODE RED: EXC+
BLUE: SIG-

WHITE: EXC-
YELLOW: SHIELD

GREEN: SIG+

Single-Point Aluminum Load Cell

LC4101 / LC4102 / LC4103 / LC4204 Series (continued)

Specifications

Model	Rated capacity (R.C.)	Deflection amount	Natural frequency	Allowable moment
LC4101-G600	6 N (611.8 g)	0.24 mm	100 Hz	0.212 N m
LC4101-K1.5	15 N (1.530 kg)		175 Hz	0.530 N m
LC4101-K003	30 N (3.059 kg)		265 Hz	1.061 N m
LC4101-K006	60 N (6.118 kg)		390 Hz	2.121 N m
LC4101-K015	150 N (15.30 kg)		615 Hz	5.303 N m
LC4102-K010	100 N (10.20 kg)	0.17 mm	275 Hz	4.808 N m
LC4102-K015	150 N (15.30 kg)		320 Hz	7.071 N m
LC4102-K030	300 N (30.59 kg)		435 Hz	14.14 N m
LC4102-K060	600 N (61.18 kg)		540 Hz	28.28 N m
LC4102-K150	1.5 kN (153.0 kg)		665 Hz	70.71 N m
LC4103-K060	600 N (61.18 kg)	0.21 mm	385 Hz	36.06 N m
LC4103-K100	1 kN (102.0 kg)		480 Hz	60.21 N m
LC4103-K150	1.5 kN (153.0 kg)		550 Hz	90.14 N m
LC4204-K300	3 kN (305.9 kg)	0.33 mm	450 Hz	230.49 N m
LC4204-K600	6 kN (611.8 kg)		540 Hz	460.98 N m

Model	LC4101	LC4102	LC4103	LC4204
Rated output (R.O.)	1.0197 mV/V+15 %-0 %			1.5296 mV/V±0.2 %
Safe overload	300 % of R.C.			200 % of R.C.
Ultimate overload	400 % of R.C.			250 % of R.C.
Combined error	0.015 % of R.O.			
Recommended excitation voltage	5 to 12 VDC			
Maximum excitation voltage	15 VDC			
Zero balance	20±5 % of R.O.			
Input terminal resistance	Approx. 400 Ω			
Output terminal resistance	350±5 Ω			
Insulation resistance	Greater than 500 MΩ at 50 VDC			
Temperature compensation range	-10 °C to 40 °C			
Temperature effect on zero point	0.04 % of R.O./10 °C			
Temperature effect on span	0.014 % of Load/10 °C Typ.			
Cable thickness/length	φ4/1.5 m		φ6/2 m	φ6/5 m
Maximum platform size	300 x 300 mm	400 x 400 mm	400 x 600 mm	600 x 700 mm
Material	Aluminum			
Dustproof/waterproof	IP22	IP54		
Weight	0.12 kg	0.4 kg	1.2 kg	1.9 kg (-K300) 2.0 kg (-K600)

Hermetically Sealed, Beam Type Stainless Steel Load Cell

LC4221 Series

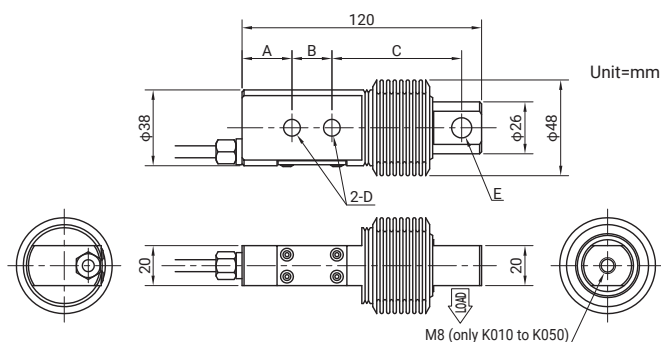
100 N (10.20 kg) to 3 kN (305.9 kg)

- Durable stainless steel, compact, lightweight.
- Reliable in tough conditions for both tension and compression.
- Ideal for scales and tanks.



Specifications

Model	Rated capacity (R.C.)
LC4221-K010	100 N (10.20 kg)
LC4221-K020	200 N (20.39 kg)
LC4221-K050	500 N (50.99 kg)
LC4221-K100	1 kN (102.0 kg)
LC4221-K200	2 kN (203.9 kg)
LC4221-K300	3 kN (305.9 kg)



CABLE COLOR CODE RED: EXC+ WHITE: EXC- GREEN: SIG+ BLUE: SIG- YELLOW: SHIELD

Rated output (R.O.)	2.0394 mV/V±0.2 %
Safe overload	200 % of R.C.
Ultimate overload	200 % of R.C.
Combined error	0.05 % of R.O.
Recommended excitation voltage	5 to 12 VDC
Maximum excitation voltage	15 VDC
Zero balance	±1 % of R.O.
Input terminal resistance	Approx. 400 Ω
Output terminal resistance	350±3.5 Ω
Insulation resistance	Greater than 5,000 MΩ at 50 VDC
Temperature compensation range	-10 °C to 60 °C
Temperature effect on zero point	0.07 % of R.O./10 °C
Temperature effect on span	0.02 % of Load/10 °C Typ.
Cable thickness/length	φ6/5 m
Material	Stainless steel
Dustproof/waterproof	IP67
Weight	0.7 kg
Options	Summing box (p.38), Junction box (p.38)

Model	A	B	C	D	E
LC4221-K010, K020, K050	27	18	65	φ6.6	φ8.1
LC4221-K100, K200, K300	25	20	65	φ8.4	φ10.1

Unit=mm

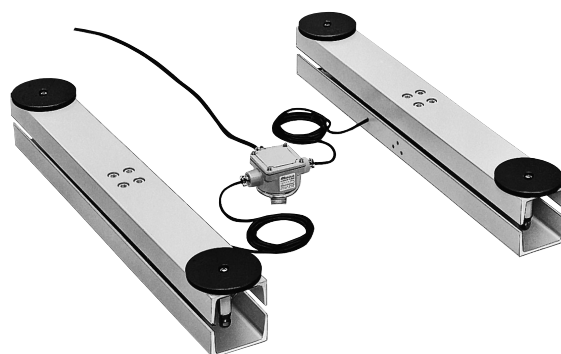
Bar-Type Load Cell Set

LC4212 Series

3 kN (305.9 kg) to 12 kN (1.224 t)

- 2 load cell system with a summing box included.
- Simply place the load platform on the load cells to create a platform scale.

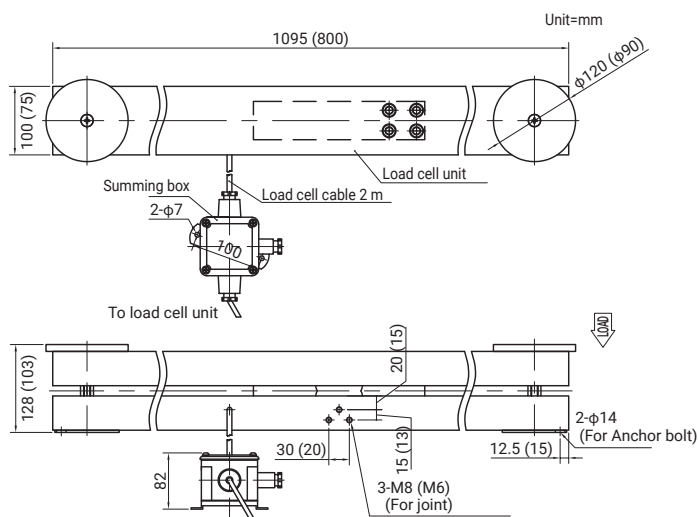
Note: The cable between the summing box and the indicator is sold separately.



Specifications

Model	Rated capacity (R.C.)	Weight
LC4212-K300	3 kN (305.9 kg)	35 kg
LC4212-K600	6 kN (611.8 kg)	58 kg
LC4212-T1.2	12 kN (1.224 t)	

Model	LC4212-K300	LC4212-K600, -T1.2
Rated output (R.O.)	1.0197 mV/V±15 % %-0 %	1.5296 mV/V±0.2 %
Safe overload	200 % of R.C.	
Ultimate overload	400 % of R.C.	250 % of R.C.
Combined error	0.015 % of R.O.	
Recommended excitation voltage	5 to 12 VDC	
Maximum excitation voltage	15 VDC	
Zero balance	25±10 % of R.O.	
Input terminal resistance	Approx. 200 Ω	
Output terminal resistance	175±5 Ω	
Insulation resistance	Greater than 500 MΩ at 50 VDC	
Temperature compensation range	-10 °C to 40 °C	
Temperature effect on zero point	0.04 % of R.O./10 °C	
Temperature effect on span	0.014 % of Load/10 °C Typ.	
Maximum platform size	900 x MAX2,000 mm (changeable)	1,200 x MAX2,000 mm (changeable)
Dustproof/waterproof	IP54	



(), Dimensions of LC4212-K300 only.

CABLE COLOR CODE RED: EXC+ WHITE: EXC- GREEN: SIG+
BLUE: SIG- YELLOW: SHIELD

Beam-Type Load Cells Ideal for Floor Scales and Tank Scales

LC5206 Series

3 kN (305.9 kg) to 20 kN (2.039 t)

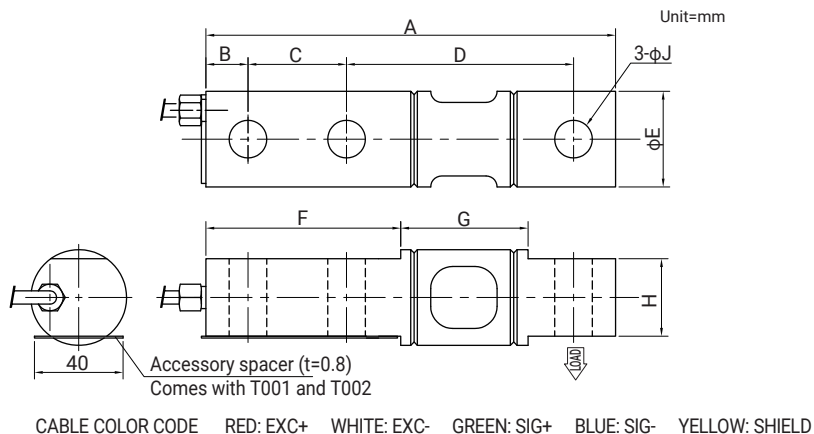
- Easy-to-install load cells suitable for floor scales and tank scales.
- Enhanced impact resistance. Versatile for use in both tension and compression applications.



Specifications

Model	Rated capacity (R.C.)
LC5206-K300	3 kN (305.9 kg)
LC5206-K500	5 kN (509.9 kg)
LC5206-T001	10 kN (1.020 t)
LC5206-T002	20 kN (2.039 t)

Rated output (R.O.)	2.0394 mV/V $\pm$ 0.2 %
Safe overload	200 % of R.C.
Ultimate overload	200 % of R.C.
Combined error	0.02 % of R.O.
Recommended excitation voltage	5 to 12 VDC
Maximum excitation voltage	15 VDC
Zero balance	$\pm$ 1 % of R.O.
Input terminal resistance	Approx. 400 Ω
Output terminal resistance	350 $\pm$ 3.5 Ω
Insulation resistance	Greater than 5,000 M Ω at 50 VDC
Temperature compensation range	-10 $^{\circ}$ C to 60 $^{\circ}$ C
Temperature effect on zero point	0.07 % of R.O./10 $^{\circ}$ C
Temperature effect on span	0.02 % of Load/10 $^{\circ}$ C Typ.
Cable thickness/length	ϕ 6/3 m (LC5206-K300,K500) ϕ 6/5 m (LC5206-T001,T002)
Material	Tool steel
Dustproof/waterproof	IP67
Weight	0.7 kg (LC5206-K300,K500) 1.7 kg (LC5206-T001,T002)
Options	Summing box (p.38), Junction box (p.38)



Model	A	B	C	D	ϕ E	F	G	H	ϕ J
LC5206-K300, K500	137	16	25	83	31	52	55	19	10.5
LC5206-T001, T002	185	19	44.5	102.5	43.2	88	57.5	35	17

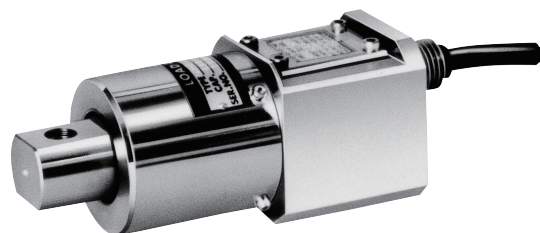
Unit=mm

Hermetically Sealed Beam-Type Load Cells

U2Z1-A Series

10 kN (1.020 kg) to 5 kN (509.9 kg)

- Hermetically sealed for complete protection from moisture and water (IP67).
- High resolution, compact size.
- Easy-to-mount: platform scale, tank and hopper.



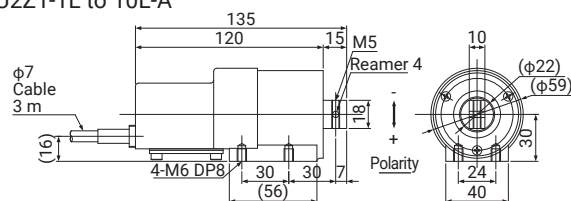
Specifications

Model	Rated capacity (R.C.)	Deflection amount	Natural frequency	Weight
U2Z1-1L-A*	10N (1.020 kg)	0.45 mm	135 Hz	1.4 kg
U2Z1-2L-A*	20N (2.039 kg)	0.41 mm	200 Hz	
U2Z1-5L-A*	50N (5.099 kg)	0.36 mm	250 Hz	
U2Z1-10L-A*	100N (10.20 kg)	0.34 mm	370 Hz	
U2Z1-20L-A*	200N (20.39 kg)	0.25 mm	500 Hz	1.7 kg
U2Z1-50L-A*	500N (50.99 kg)	0.23 mm	820 Hz	
U2Z1-100L-A*	1 kN (102.0 kg)	0.21 mm	1,210 Hz	
U2Z1-200L-A*	2 kN (203.9 kg)	0.20 mm	1,400 Hz	2.6 kg
U2Z1-500L-A*	5 kN (509.9 kg)	0.18 mm	2,000 Hz	

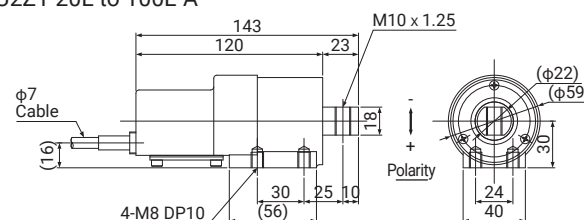
Rated output (R.O.)	2.0394 mV/V±0.15 %
Safe overload	500 % of R.C., 150 % of R.C. (-200L, -500L)
Ultimate overload	500 % of R.C., 250 % of R.C. (-200L, -500L)
Combined error	0.04 % of R.O., 0.07 % of R.O. (-1L to -10L)
Recommended excitation voltage	5 to 12 VDC
Maximum excitation voltage	20 VDC
Zero balance	±1 % of R.O.
Input terminal resistance	350±3.5 Ω
Output terminal resistance	350±5 Ω
Insulation resistance	Greater than 2,000 MΩ at 50 VDC
Temperature compensation range	-10 °C to 60 °C
Temperature effect on zero point	0.05 % of R.O./10 °C
Temperature effect on span	0.05 % of Load/10 °C
Cable thickness/length	φ7/3 m
Material	Tool steel /Aluminum
Dustproof/waterproof	IP67
Options	Summing box (p.38), Junction box (p.38), Rod end bearing (p.45)

U2Z1-1L to 10L-A

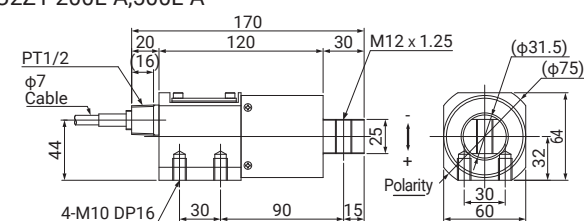
Unit=mm



U2Z1-20L to 100L-A



U2Z1-200L-A,500L-A



CABLE COLOR CODE RED: EXC+ WHITE: EXC- GREEN: SIG+ BLUE: SIG- YELLOW: SHIELD

Hermetically Sealed Beam-Type Load Cells

LBP Series

100 N (10.20 kg) to 100 kN (10.20 t)

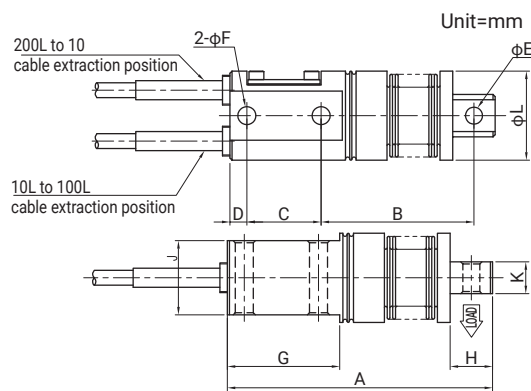
- Makes fabrication of platforms like scales or hoppers easy.
- Exceptional environmental resistance with a sealed structure using phosphor bronze bellows.
- Suitable for both tension and compression applications.



Specifications (*made-to-order item)

Model	Rated capacity (R.C.)	Deflection amount	Natural frequency
LBP-10L*	100 N (10.20 kg)	0.26 mm	620 Hz
LBP-20L	200 N (20.39 kg)	0.23 mm	900 Hz
LBP-30L	300 N (30.59 kg)	0.22 mm	1.15 kHz
LBP-50L	500 N (50.99 kg)	0.22 mm	1.5 kHz
LBP-100L	1 kN (102.0 kg)	0.28 mm	1.9 kHz
LBP-200L	2 kN (203.9 kg)	0.35 mm	3.4 kHz
LBP-300L	3 kN (305.9 kg)	0.37 mm	4.0 kHz
LBP-500L	5 kN (509.9 kg)	0.44 mm	4.7 kHz
LBP-1	10 kN (1.020 t)	0.54 mm	5.5 kHz
LBP-2*	20 kN (2.039 t)	-	-
LBP-5*	50 kN (5.099 t)	-	-
LBP-10*	100 kN (10.20 t)	-	-

Rated output (R.O.)	2.0394 mV/V+0.2 %-0 %
Safe overload	150 % of R.C.
Ultimate overload	200 % of R.C.
Combined error	0.04 % of R.O.
Recommended excitation voltage	5 to 12 VDC
Maximum excitation voltage	20 VDC
Zero balance	±1 % of R.O.
Input terminal resistance	420±40 Ω
Output terminal resistance	347.5±3 Ω
Insulation resistance	Greater than 2,000 MΩ at 50 VDC
Temperature compensation range	-10 °C to 75 °C
Temperature effect on zero point	0.02 % of R.O./10 °C
Temperature effect on span	0.02 % of Load/10 °C
Cable thickness/length	φ7/3 m
Material	Tool steel
Dustproof/waterproof	IP67
Options	Summing box (p.38), Junction box (p.38)



CABLE COLOR CODE RED: EXC+ WHITE: EXC- GREEN: SIG+ BLUE: SIG- YELLOW: SHIELD

Model	A	B	C	D	φE	φF	G	H	J	K	φL	Weight (kg)
LBP-10L, 20L, 30L, 50L, 100L	125	72	35	8	8	8.5	53	20	35	15	42	0.9
LBP-200L, 300L, 500L	200	120	45	15	12	14	80	40	40	25	52	2.0
LBP-1	210	125	50	15	16	18	90	40	40	30	68	2.8
LBP-2	215	125	50	20	20 CBOREΦ 26 DP3	22	95	40	50	34	68	4.0
LBP-5	300	135	120	20	26 CBOREΦ 32 DP3	22	170	50	60	50	92	8.0
LBP-10	300	118	135	22	20 CBOREΦ 38 DP10	32	187	52	70	56	108	12

Unit:mm

Stainless Steel Beam-Type Load Cell for Tank and Floor Scale Applications

LCM13 Series

1 kN (102.0 kg) to 50 kN (5.099 t)

- Ideal for constructing corrosion-resistant platforms and tank scales.
- Suitable for both tension and compression applications, with easy installation



Specifications (*made-to-order item)

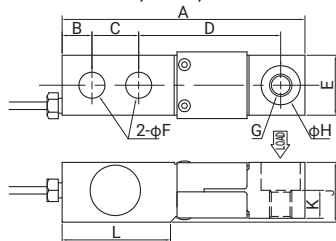
Model	Rated capacity (R.C.)	OIML Class
LCM13-K100	1 kN (102.0 kg)	C3
LCM13-K200	2 kN (203.9 kg)	
LCM13-K300	3 kN (305.9 kg)	
LCM13-K500	5 kN (509.9 kg)	
LCM13-T001	10 kN (1.020 t)	
LCM13-T1.5	15 kN (1.530 t)	
LCM13-T002	20 kN (2.039 t)	
LCM13-T003	30 kN (3.059 t)	
LCM13-T005	50 kN (5.099 t)	



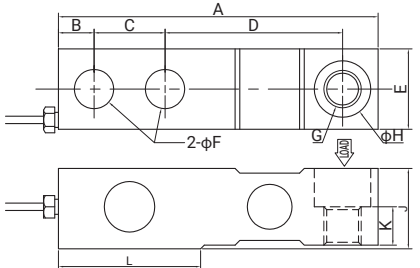
LCM13 and LCM13-M series specifications

Rated output (R.O.)	2 mV/V±0.1 %
Safe overload	150 % of R.C.
Ultimate overload	200 % of R.C.
Combined error	0.03 % of R.O.
Recommended excitation voltage	5 to 12 VDC
Maximum excitation voltage	15 VDC
Zero balance	±1 % of R.O.
Input terminal resistance	380 Ω±20 Ω
Output terminal resistance	350±3.5 Ω
Insulation resistance	Greater than 5,000 MΩ at 50 VDC
Temperature compensation range	-10 °C to 40 °C
Temperature effect on zero point	0.016 % of R.O./10 °C Typ.
Temperature effect on span	0.013 % of Load/10 °C Typ.
Cable thickness/length	φ4/3 m
Material	Stainless steel
Dustproof/waterproof	IP67
Options	Summing box (p.38), Junction box (p.38), Mounting kit with lift-off protection and horizontal stops (p.40), Swivel foot (p.40), Rocker pin (p.40)

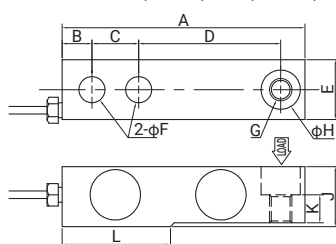
LCM13-K100, K200, K300



LCM13-T005



LCM13-K500, T001, T1.5, T002, T003



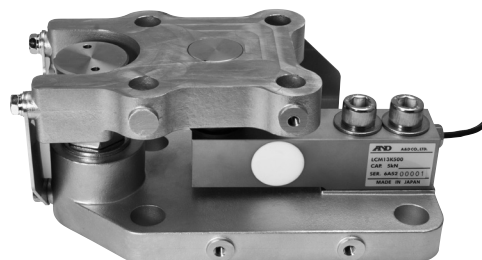
CABLE COLOR CODE
RED: EXC+ WHITE: EXC- GREEN: SIG+
BLUE: SIG- YELLOW: SHIELD

Model	A	B	C	D	E	φF	G	φH	J	K	L	Weight (kg)
LCM13-K100, K200, K300, K500, T001, T1.5	130	16	25	76	32	14	M12	21	32	15	58	1.0
LCM13-T002, T003	171	19	38	95	38	21	M20	30.2	38	18	76	1.5
LCM13-T005	171	19	38	95	43	21	M20	30.2	43	20.5	76	2.0

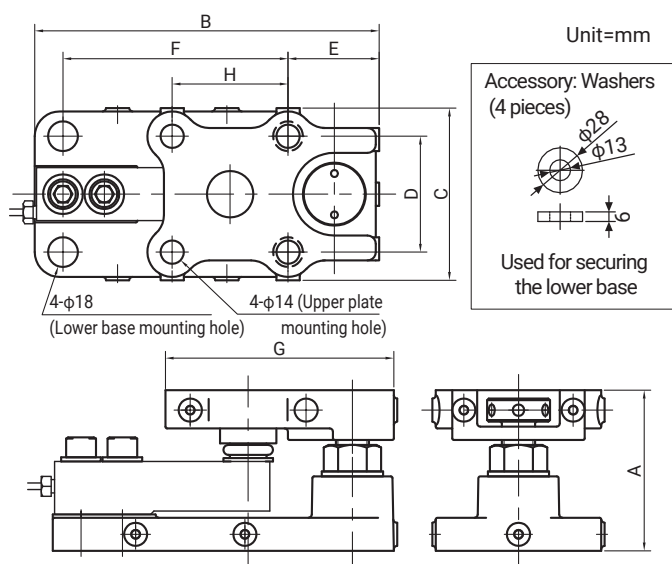
Unit:mm

LCM13-M Series

- Ideal for building corrosion-resistant tank and hopper scales. Compression type.
- Equipped with built-in stopper mechanism, with pre-adjusted stopper gaps for easy installation



Model	Rated capacity (R.C.)	OIML Class
LCM13-K100-M*	1 kN (102.0 kg)	C3
LCM13-K200-M*	2 kN (203.9 kg)	
LCM13-K300-M*	3 kN (305.9 kg)	
LCM13-K500-M*	5 kN (509.9 kg)	
LCM13-T001-M*	10 kN (1.020 t)	
LCM13-T1.5-M*	15 kN (1.530 t)	
LCM13-T002-M*	20 kN (2.039 t)	
LCM13-T003-M*	30 kN (3.059 t)	



CABLE COLOR CODE RED: EXC+ WHITE: EXC- GREEN: SIG+ BLUE: SIG- YELLOW: SHIELD

Model	A	B	C	D	E	F	G	H	Weight (kg)
LCM13-K100-M, K200-M, K300-M, K500-M, T001-M, T1.5-M	97	208	104	70	55	136	138	70	5.6
LCM13-T002-M, T003-M	116	242	118	84	48	175	145	84	8.6

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Beam-Type Load Cell for Tank and Floor Scale Applications

LCM19 Series

5 kN (509.9 kg) to 20 kN (2.039 t)

- Ideal for tank, hopper, and floor scale applications.
- Suitable for both tension and compression.

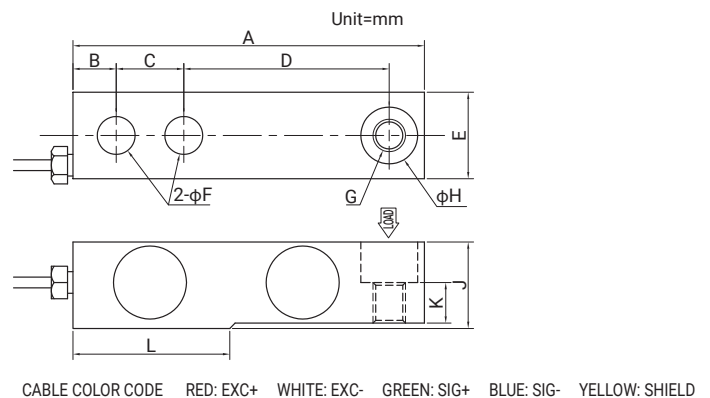
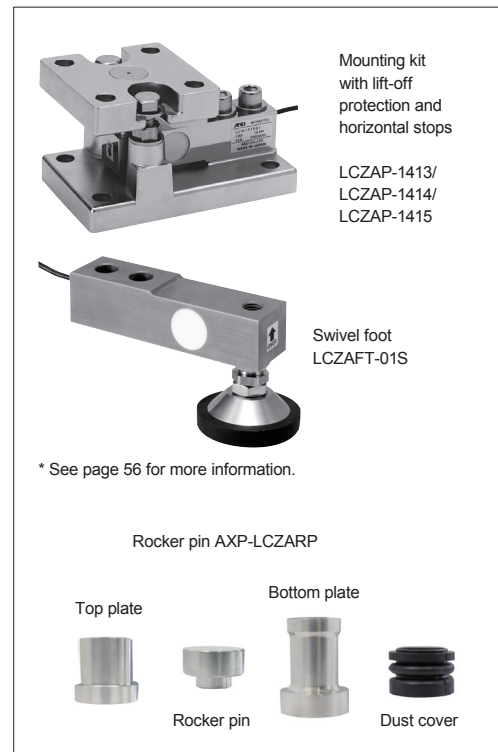


Specifications

Model	Rated capacity (R.C.)
LCM19-K500	5 kN (509.9 kg)
LCM19-T001	10 kN (1.020 t)
LCM19-T1.5	15 kN (1.530 t)
LCM19-T002	20 kN (2.039 t)

LCM19 and LCM19-M series specifications

Rated output (R.O.)	2.0394 mV/V $\pm$ 0.1 %
Safe overload	150 % of R.C.
Ultimate overload	200 % of R.C.
Combined error	0.03 % of R.O.
Recommended excitation voltage	5 to 12 VDC
Maximum excitation voltage	15 VDC
Zero balance	$\pm$ 1 % of R.O.
Input terminal resistance	380 $\pm$ 20 Ω
Output terminal resistance	350 $\pm$ 3.5 Ω
Insulation resistance	Greater than 5,000 M Ω at 50 VDC
Temperature compensation range	-10 $^{\circ}$ C to 40 $^{\circ}$ C
Temperature effect on zero point	0.016 % of R.O./10 $^{\circ}$ C Typ.
Temperature effect on span	0.013 % of Load/10 $^{\circ}$ C Typ.
Cable thickness/length	ϕ 4/3 m
Material	Tool steel
Dustproof/waterproof	IP67
Options	Summing box (p.38), Junction box (p.38), Mounting kit with lift-off protection and horizontal stops (p.40), Swivel foot (p.40), Rocker pin (p.40)



Model	A	B	C	D	E	ϕ F	G	ϕ H	J	K	L	Weight (kg)
LCM19-K500, T001, T1.5	130	16	25	76	32	14	M12	21	32	15	58	1.0
LCM19-T002	171	19	38	95	38	21	M20	30.2	38	18	76	1.5

Unit=mm

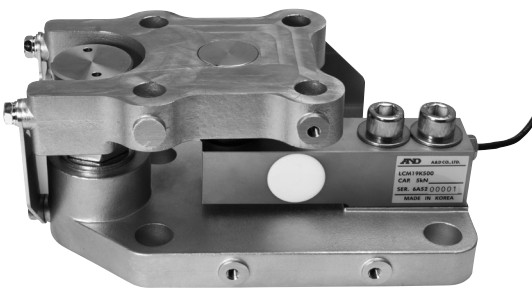
Beam-Type Load Cell

(with Lift-Off Protection and Horizontal Stops)

LCM19-M Series

5 kN (509.9 kg) to 20 kN (2.039 t)

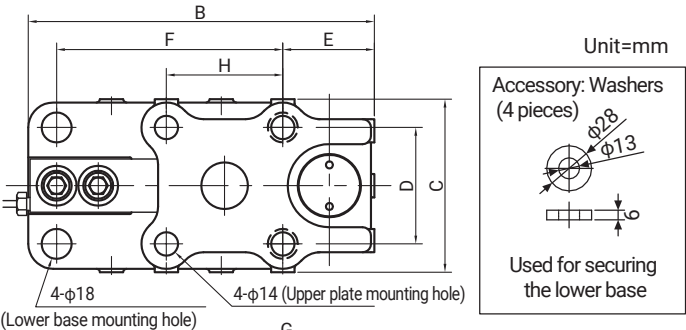
- Ideal for tank, hopper, and floor scale applications. Compression type.
- Equipped with built-in stopper mechanism, with pre-adjusted stopper gaps for easy installation.



Rated capacity and specifications

(Refer to LCM19 Series specifications)

Model	Rated capacity (R.C.)
LCM19-K500-M	5 kN (509.9 kg)
LCM19-T001-M	10 kN (1.020 t)
LCM19-T1.5-M	15 kN (1.530 t)
LCM19-T002-M	20 kN (2.039 t)



Materials - Load cell: Tool steel, Mounting bracket: Stainless steel

CABLE COLOR CODE RED: EXC+ WHITE: EXC- GREEN: SIG+
 BLUE: SIG- YELLOW: SHIELD

Model	A	B	C	D	E	F	G	H	Weight (kg)
LCM19-K500-M, T001-M, T1.5-M	97	208	104	70	55	136	138	70	5.6
LCM19-T002-M	116	242	118	84	48	175	145	84	8.6

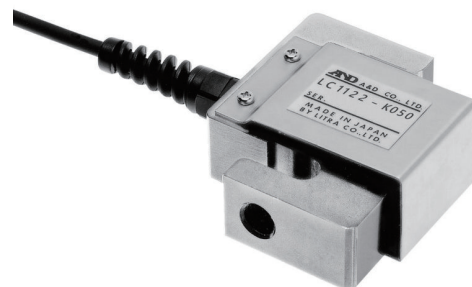
Unit=mm

S-Type Universal Compact Load Cell for Tank and Hopper Applications

LC1122 Series

500 N (50.99 kg) to 5 kN (509.9 kg)

- Aluminum material with white anodized coating for enhanced corrosion resistance.
- Features a structure less susceptible to eccentric loads, ideal for dynamic weighing.
- Suitable for both tension and compression.

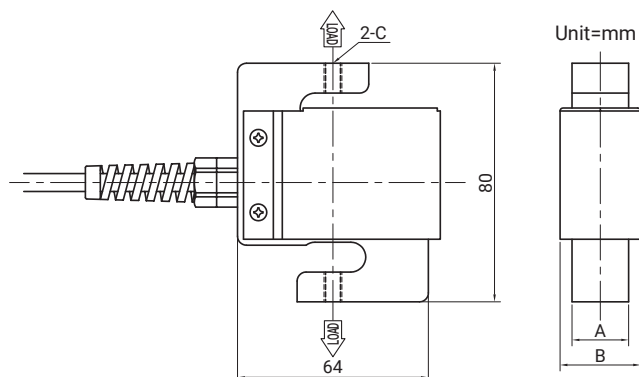


Specifications

Model	Rated capacity (R.C.)
LC1122-K050	500 N (50.99 kg)
LC1122-K100	1 kN (102.0 kg)
LC1122-K250	2.5 kN (254.9 kg)
LC1122-K500	5 kN (509.9 kg)

Rated output (R.O.)	1.0197 mV/V+20 %-0 %
Safe overload	150 % of R.C.
Ultimate overload	400 % of R.C.
Combined error	0.04 % of R.O.
Recommended excitation voltage	5 to 12 VDC
Maximum excitation voltage	15 VDC
Zero balance	±5 % of R.O.
Input terminal resistance	Approx. 400 Ω
Output terminal resistance	350±3.5 Ω
Insulation resistance	Greater than 5,000 MΩ at 50 VDC

Temperature compensation range	-10 °C to 50 °C
Temperature effect on zero point	0.1 % of R.O./10 °C
Temperature effect on span	0.03 % of Load/10 °C Typ.
Cable thickness/length	φ6/3 m
Material	Aluminum
Dustproof/waterproof	IP54
Deflection amount	0.13 mm
Options	Summing box (p.38), Junction box (p.38), Compression fittings (p.41), Rod end bearings (p.44)



CABLE COLOR CODE (TENSION) RED: EXC+ WHITE: EXC- GREEN: SIG+ BLUE: SIG- YELLOW: SHIELD
(COMPRESSION) RED: EXC+ WHITE: EXC- GREEN: SIG- BLUE: SIG+ YELLOW: SHIELD

Model	A	B	C	Weight (kg)
LC1122-K050, K100	19	27	M6 X 1, DP 10	0.4
LC1122-K250, K500	24	32	M12 X 1.75, DP10	0.5

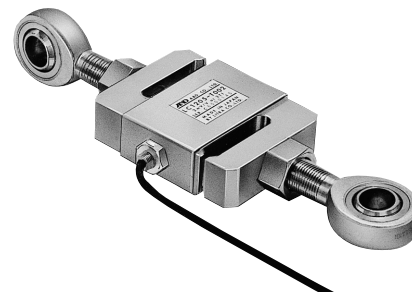
Unit=mm

S-Type Universal Compact Load Cell for Tank and Hopper Applications

LC1205 Series

200 N (20.39 kg) to 50 kN (5.099 t)

- Offering a wide range from 20 kg to 5 t with high precision of 1/5,000.
- Features a structure less susceptible to eccentric loads, ideal for dynamic weighing.
- Suitable for both tension and compression..

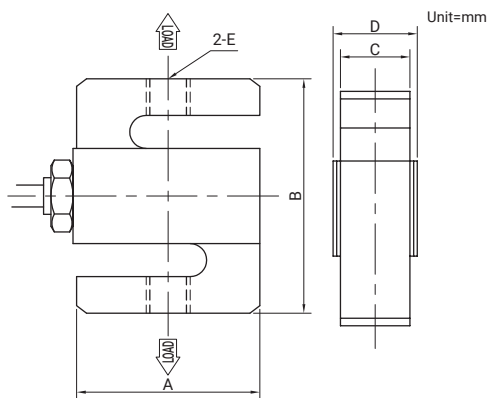


Note: The rod end bearing in the photo is optional

Specifications

Model	Rated capacity (R.C.)
LC1205-K020	200 N (20.39 kg)
LC1205-K050	500 N (50.99 kg)
LC1205-K100	1 kN (102.0 kg)
LC1205-K200	2 kN (203.9 kg)
LC1205-K500	5 kN (509.9 kg)
LC1205-T001A	10 kN (1.020 t)
LC1205-T002	20 kN (2.039 t)
LC1205-T005	50 kN (5.099 t)

Rated output (R.O.)	1.5296 mV/V $\pm$ 0.5 % (-K020, -K050)
	2.0394 mV/V $\pm$ 0.5 %
Safe overload	200 % of R.C.
Ultimate overload	250 % of R.C. (-K020, -K050)
	200 % of R.C.
Combined error	0.02 % of R.O.
Recommended excitation voltage	5 to 12 VDC
Maximum excitation voltage	15 VDC
Zero balance	$\pm$ 2 % of R.O.
Input terminal resistance	Approx. 400 Ω
Output terminal resistance	350 $\pm$ 3.5 Ω
Insulation resistance	Greater than 5,000 M Ω at 50 VDC
Temperature compensation range	-10 $^{\circ}$ C to 60 $^{\circ}$ C
Temperature effect on zero point	0.07 % of R.O./10 $^{\circ}$ C
Temperature effect on span	0.02 % of Load/10 $^{\circ}$ C Typ.
Cable thickness/length	ϕ 6/3 m
	ϕ 6/5 m (-T001A, -T002, -T005)
Material	Tool steel and Aluminum
Dustproof/waterproof	IP54
Deflection amount	0.12 mm (-K020, -K050, -K100, -K200)
Options	Summing box (p.38), Junction box (p.38), Compression fittings (p.41), Rod end bearings (p.44)



CABLE COLOR CODE (TENSION) RED: EXC+ WHITE: EXC- GREEN: SIG+ BLUE: SIG- YELLOW: SHIELD
(COMPRESSION) RED: EXC+ WHITE: EXC- GREEN: SIG- BLUE: SIG+ YELLOW: SHIELD

Model	A	B	C	D	E	Weight (kg)	Material
LC1205-K020, K050	50	64	19	23	M6 x 1, DP 11	0.3	Aluminum
LC1205-K100	50	64	12	16	M6 x 1, DP 10	0.4	Tool steel
LC1205-K200, K500	50	64	19	23	M12 x 1.75, DP 10	0.5	
LC1205-T001A	75	100	24	28	M18 x 1.5, DP 25	1.3	
LC1205-T002	75	100	24	28	M18 x 1.5, DP 22.5	1.3	
LC1205-T005	75	100	36	40	M24 x 2, DP 21	1.9	

Unit=mm

S-Type Universal Compact Load Cell with USB Output

LC1205-USB Series

200 N (20.39 kg) to 50 kN (5.099 t)

- Compression/Tension-type digital load cell for force measurement.
- Pre-calibrated, eliminating the need for an indicator - connects directly to a computer.
- Measurement data can be viewed/imported using the 'WinCT-DLC' measurement software.



Specifications

Model	LC1205-K020-USB	LC1205-K050-USB	LC1205-K100-USB	LC1205-K200-USB
Rated capacity	200 N (20.39 kg)	500 N (50.99 kg)	1 kN (102.0 kg)	2 kN (203.9 kg)
Rated output	200.000 ± 1.000[N]	500.000 ± 2.500[N]	1000.00 ± 5.00[N]	2000.00 ± 10.00[N]
Safe load limit	200 % of R.C.	200 % of R.C.	200 % of R.C.	200 % of R.C.
Ultimate safe overload	250 % of R.C.	250 % of R.C.	200 % of R.C.	200 % of R.C.
Load cell cable	Φ 6 mm / 3 m	Φ 6 mm / 3 m	Φ 6 mm / 3 m	Φ 6 mm / 3 m
Load cell material	Aluminum	Aluminum	Steel	Steel
Weight	0.7 kg	0.7 kg	0.8 kg	0.9 kg
Deflection amount	0.12 mm	0.12 mm	0.12 mm	0.12 mm

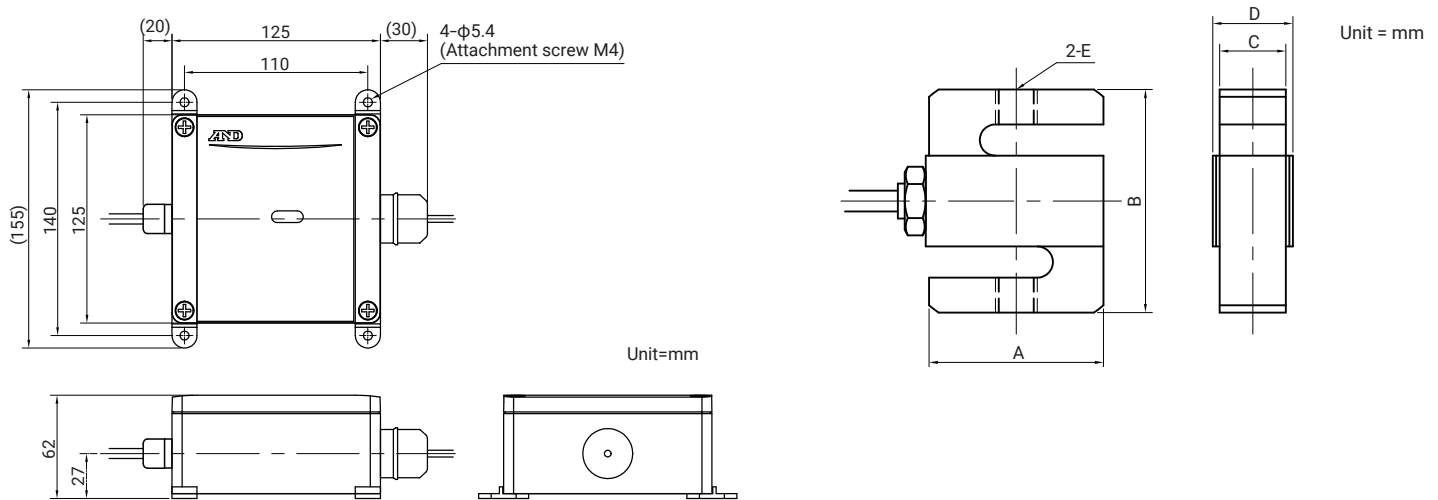
Model	LC1205-K500-USB	LC1205-T001A-USB	LC1205-T002-USB	LC1205-T005-USB
Rated capacity	5 kN (509.9 kg)	10 kN (1.020 t)	20 kN (2.039 t)	50 kN (5.099 t)
Rated output	5000.00 ± 25.00[N]	10000.0 ± 50.0[N]	20000.0 ± 100.0[N]	50.0000±0.250[0 kN]
Safe load limit	200 % of R.C.	200 % of R.C.	200 % of R.C.	200 % of R.C.
Ultimate safe overload	200 % of R.C.	200 % of R.C.	200 % of R.C.	200 % of R.C.
Load cell cable	Φ 6 mm / 3 m	Φ 6 mm / 5 m	Φ 6 mm / 5 m	Φ 6 mm / 5 m
Load cell material	Steel	Steel	Steel	Steel
Weight	0.9 kg	1.7 kg	1.7 kg	2.4 kg
Deflection amount	-	-	-	-

Output polarity	+: Tension, -: Compression
Combined error	0.02 % of R.O.
Power supply voltage	5 VDC (USB bus power)
Average current consumption	60 mA or less
Zero balance	±2 % of R.O.
Temperature effect on zero	0.08 % of R.O./10 °C
Temperature effect on span	0.05 % of Load/10°C
Temperature compensation range	-10 °C to 60 °C
USB cable	Φ4 mm / 1.2 m / Type-A
Conversion box material	Polycarbonate

Dustproof/waterproof	Load Cell: IP54 / Conversion Box: IP65
A/D conversion rate	100 times/s
Digital filter	Select from None, 0.7, 1.0, 1.4, 2.0, 2.8, 4.0, 5.6, 8.0, 11.0 Hz (Initial value 1.0 Hz)
Communications standard	Conformed to USB Ver.2.0 Full Speed
Baud rate	38400 bps
Character bit length	8 bits
Parity	Even
Stop bit length	1 bit
Terminator	CR LF
Code	ASCII

S-Type Universal Compact Load Cell with USB Output

LC1205-USB Series (continued)

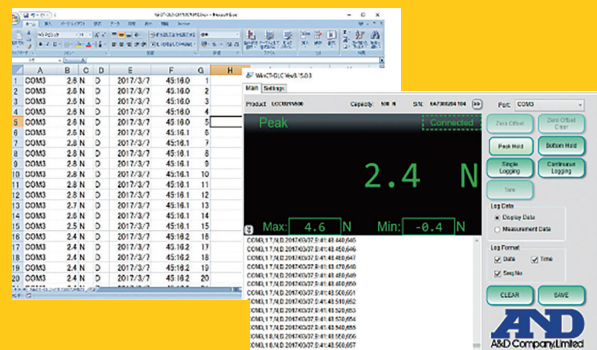


Model	A	B	C	D	E
LC1205-K020-USB	50	64	19	23	M6 x 1, DP 11
LC1205-K050-USB	50	64	19	23	M6 x 1, DP 11
LC1205-K100-USB	50	64	12	16	M6 x 1, DP 10
LC1205-K200-USB	50	64	19	23	M12 x 1.75, DP 10
LC1205-K500-USB	50	64	19	23	M12 x 1.75, DP 10
LC1205-T001A-USB	75	100	24	28	M18 x 1.5, DP 25
LC1205-T002-USB	75	100	24	28	M18 x 1.5, DP 22.5
LC1205-T005-USB	75	100	36	40	M24 x 2, DP 21

WinCT-DLC Windows Data Acquisition Software

WinCT-DLC is "Windows data communication software" designed to transfer measurement data from USB output load cells to a computer. The measurement results can be saved as CSV or Excel spreadsheet format.

[DOWNLOAD WINCT-DLC](#)



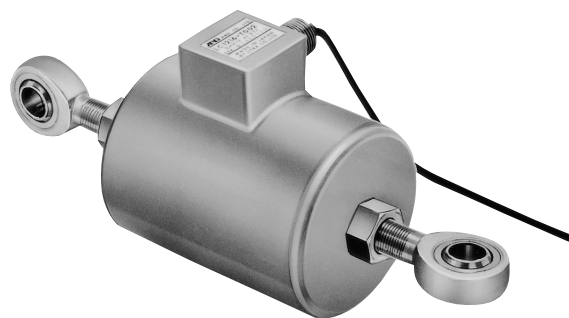
NOTE: This software is for acquiring measurement data and does not have control functions like an indicator.

Hermetically Sealed Load Cell for Tank and Hopper Applications

LC1216 Series

1 kN (102.0 kg) to 50 kN (5.099 t)

- Perfectly sealed type suitable for harsh conditions.
- Features a structure less susceptible to eccentric loads, ideal for dynamic weighing.
- Suitable for both tension and compression.

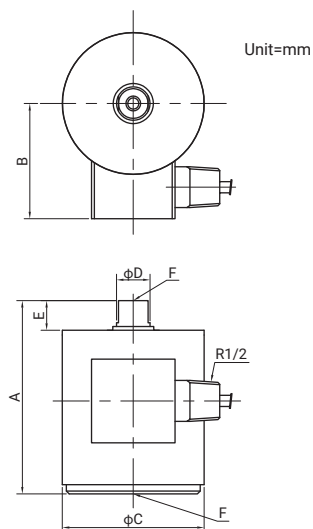


Note: The rod end bearing in the photo is optional

Specifications

Model	Rated capacity (R.C.)
LC1216-K100	1 kN (102.0 kg)
LC1216-K200	2 kN (203.9 kg)
LC1216-K500	5 kN (509.9 kg)
LC1216-T001A	10 kN (1.020 t)
LC1216-T002A	20 kN (2.039 t)
LC1216-T005	50 kN (5.099 t)

Rated output (R.O.)	2.0394 mV/V±0.5 %
Safe overload	200 % of R.C.
Ultimate overload	200 % of R.C.
Combined error	0.05 % of R.O.
Recommended excitation voltage	5 to 12 VDC
Maximum excitation voltage	15 VDC
Zero balance	±2 % of R.O.
Input terminal resistance	Approx. 400 Ω
Output terminal resistance	350±3.5 Ω
Insulation resistance	Greater than 5,000 MΩ at 50 VDC
Temperature compensation range	-10 °C to 60 °C
Temperature effect on zero point	0.07 % of R.O./10 °C
Temperature effect on span	0.02 % of Load/10 °C Typ.
Cable thickness/length	φ6/3 m, φ6/5 m (-T001A, -T002A, -T005)
Material	Tool steel
Dustproof/waterproof	IP67
Options	Summing box (p.38), Junction box (p.38), Compression fittings (p.41), Rod end bearings (p.44)



Unit=mm

CABLE COLOR CODE (TENSION) RED: EXC+ WHITE: EXC- GREEN: SIG+ BLUE: SIG- YELLOW: SHIELD
(COMPRESSION) RED: EXC+ WHITE: EXC- GREEN: SIG- BLUE: SIG+ YELLOW: SHIELD

Model	A	B	φC	φD	E	F	Weight (kg)
LC1216-K100	104	62	77	19	16	M6 x 1, DP9	1.7
LC1216-K200, K500	104	62	77	19	16	M12 X 1.75, DP10	1.8
LC1216-T001A	150	80	102	31	20	M18 X 1.5, DP 13	4.0
LC1216-T002A, T005	180	80	102	41	34	M24 X 2, DP 15	5.6

Unit=mm

Stainless Steel S-Type Load Cell for Tank and Hopper Applications

LCS15 Series

5 kN (509.9 kg) to 20 kN (2.039 t)

- Ideal for specifications requiring corrosion resistance due to stainless steel construction.
- Features a structure less susceptible to eccentric loads.
- Designed for tension.

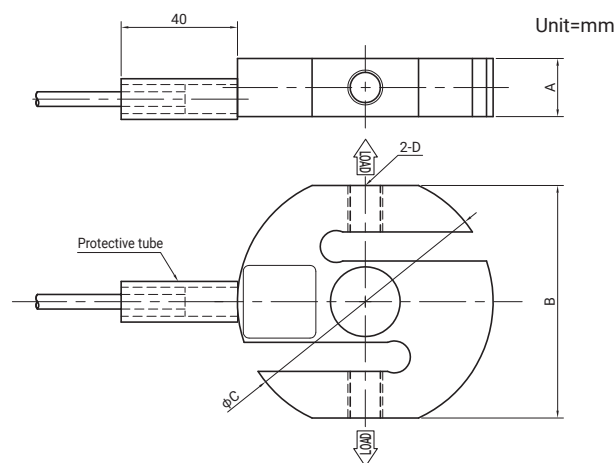


Specifications

Model	Rated capacity (R.C.)
LCS15-K500	5 kN (509.9 kg)
LCS15-T001	10 kN (1.020 t)
LCS15-T002	20 kN (2.039 t)

Note: When using stainless steel rod end bearings, please ensure that the applied load is less than half of the rated capacity.

Rated output (R.O.)	2 mV/V $\pm$ 0.1 %
Safe overload	150 % of R.C.
Ultimate overload	200 % of R.C.
Combined error	0.03 % of R.O.
Recommended excitation voltage	5 to 12 VDC
Maximum excitation voltage	15 VDC
Zero balance	$\pm$ 1 % of R.O.
Input terminal resistance	380 $\pm$ 20 Ω
Output terminal resistance	350 $\pm$ 3.5 Ω
Insulation resistance	Greater than 5,000 M Ω at 50 VDC
Temperature compensation range	-10 $^{\circ}$ C to 40 $^{\circ}$ C
Temperature effect on zero point	0.016 % of R.O./10 $^{\circ}$ C
Temperature effect on span	0.013 % of Load/10 $^{\circ}$ C Typ.
Cable thickness/length	ϕ 5/4.5 m
Material	Stainless steel
Dustproof/waterproof	IP67
Options	Summing box (p.38), Junction box (p.38), Rod end bearings (p.44)



CABLE COLOR CODE (TENSION)

RED: EXC+ WHITE: EXC- GREEN: SIG+ BLUE: SIG- YELLOW: SHIELD

Model	A	B	ϕ C	D	Weight (kg)
LCS15-K500	20	80	88	M12 X 1.75, DP 16	0.8
LCS15-T001	25	80	88	M18 X 1.5, DP 15	1.0
LCS15-T002	35	100	108	M24 X 2, DP 24	2.0

Unit=mm

Hermetically Sealed Compact Load Cell, Multipurpose Type

TM/UM Series

500 N (50.99 kg) to 20 kN (2.039 t)

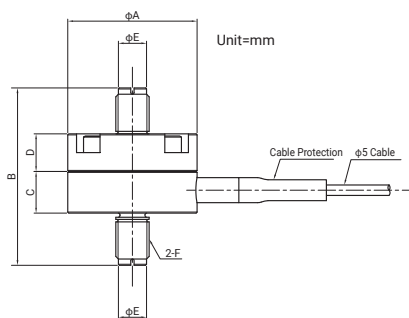
- Small and lightweight for easy handling; ideal for dynamic weighing.
- Hermetically sealed structure with inert gas sealed in.
- TM type is for tension; UM type is for both tension and compression.



Specifications

Model	Rated capacity (R.C.)
TM (UM) -50L-A	500 N (50.99 kg)
TM (UM) -100L-A	1 kN (102.0 kg)
TM (UM) -200L	2 kN (203.9 kg)
TM (UM) -500L	5 kN (509.9 kg)
TM (UM) -1	10 kN (1.020 t)
TM (UM) -2	20 kN (2.039 t)

Model	TM	UM
Rated output (R.O.)	2.0394 mV/V±0.5 %	2.0394 mV/V ±1 % (tension) 2.0394 mV/V ±3 % (compression)
Safe overload	150 % of R.C.	
Ultimate overload	200 % of R.C.	
Combined error	0.2 % of R.O.	0.3 % of R.O.
Recommended excitation voltage	5 to 12 VDC	
Maximum excitation voltage	18 VDC	
Zero balance	±10 % of R.O.	
Input terminal resistance	425±50 Ω	
Output terminal resistance	350±5 Ω	
Insulation resistance	Greater than 1,000 MΩ at 50 VDC	
Temperature compensation range	-10 °C to 60 °C	
Temperature effect on zero point	0.1 % of R.O./10 °C	
Temperature effect on span	0.1 % of Load/10 °C	
Cable thickness/length	φ5/3 m	
Material	Tool steel	
Dustproof/waterproof	IP67	
Options	Summing box (p.38), Junction box (p.38), Rod end bearings (p.45)	



CABLE COLOR CODE

TM Series (TENSION) RED: EXC+ WHITE: EXC- GREEN: SIG- BLUE: SIG+ YELLOW: SHIELD
 UM Series (COMPRESSION) RED: EXC+ WHITE: EXC- GREEN: SIG+ BLUE: SIG- YELLOW: SHIELD
 UM Series (TENSION) RED: EXC+ WHITE: EXC- GREEN: SIG- BLUE: SIG+ YELLOW: SHIELD

Model	A	B	C	D	E	F	Weight (kg)
TM (UM) -50L-A, 100L-A	50	70	23	10	10	M12 x 1.75	0.3
TM (UM) -200L	50	70	20	13	10	M12 x 1.75	0.5
TM (UM) -500L, 1, 2	62	85	20	18	13.5	M16 x 2	0.9

Unit:mm

Sealed Structure Load Cell for Tank and Hopper Applications

TP (for tension) /CP Series (for compression)

200 N (20.39 kg) to 1 MN (102.0 t)

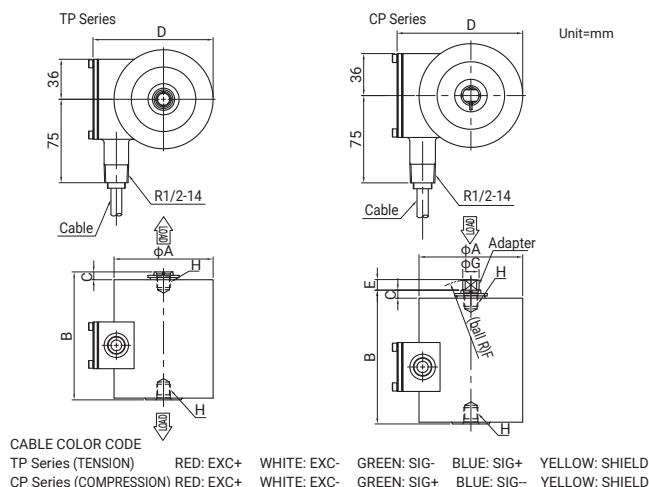
- Sealed structure designed to withstand harsh environments.
- Large electrical output of 3 mV/V, with minimal long-term drift for stable performance over time.

Specifications (*made-to-order item)

Model	Rated capacity (R.C.)	Deflection amount	Natural frequency
TP (CP) -20L*	200 N (20.39 kg)	0.33 mm	230 Hz
TP (CP) -50L*	500 N (50.99 kg)	0.28 mm	360 Hz
TP (CP) -100L*	1 kN (102.0 kg)	0.23 mm	580 Hz
TP (CP) -200L*	2 kN (203.9 kg)	0.18 mm	1.2 kHz
TP (CP) -300L*	3 kN (305.9 kg)	0.18 mm	1.2 kHz
TP (CP) -500L*	5 kN (509.9 kg)	0.15 mm	6.9 kHz
TP (CP) -1*	10 kN (1.020 t)	0.13 mm	2.8 kHz
TP (CP) -2*	20 kN (2.039 t)	0.17 mm	2.1 kHz
TP (CP) -3*	30 kN (3.059 t)	0.13 mm	2.4 kHz
TP (CP) -5*	50 kN (5.099 t)	0.13 mm	3.5 kHz
TP (CP) -10*	100 kN (10.20 t)	0.18 mm	2.5 kHz
TP (CP) -20*	200 kN (20.39 t)	0.24 mm	1.8 kHz
TP (CP) -30*	300 kN (30.59 t)	0.27 mm	1.6 kHz
TP (CP) -50*	500 kN (50.99 t)	0.32 mm	1.4 kHz
TP (CP) -100*	1 MN (102.0 t)	0.40 mm	1.1 kHz



Rated output (R.O.)	3.0592 mV/V±0.1 %
Safe overload	150 % of R.C., 500 % of R.C. (-20L to -100L)
Ultimate overload	300 % of R.C., 500 % of R.C. (-20L to -100L)
Combined error	0.05 % of R.O.
Recommended excitation voltage	5 to 12 VDC
Maximum excitation voltage	20 VDC
Zero balance	±1 % of R.O.
Input terminal resistance	350±3.5 Ω
Output terminal resistance	350±5 Ω
Insulation resistance	Greater than 5,000 MΩ at 50 VDC
Temperature compensation range	-10 °C to 75 °C
Temperature effect on zero point	0.03 % of R.O./10 °C
Temperature effect on span	0.03 % of Load/10 °C
Cable thickness/length	φ9.7/3 m
Material	Tool steel
Dustproof/waterproof	IP67
Options	Summing bo (p.38) , Junction box (p.38), Mounting kit with integrated horizontal stops for CP (p.40), Compression Fittings for CP (p.43), Rod end bearings for TP (p.45)



Model	φA	B	C	D	E	F	φG	H	Weight (kg)
TP (CP) -20L, 50L, 100L	89	115	6	108	7	50	12	M10 X 1.25, DP 14	3.1
TP (CP) -200L, 300L, 500L, 1	89	115	7	108	9	50	14	M12 X 1.25, DP 14	3.2
TP (CP) -2, 3, 5	89	150	10	108	17	100	26	M24 X 2, DP 30	4.8
TP (CP) -10	125	215	12	150	28	200	42	M39 X 2, DP 50	10.2
TP (CP) -20	165	290	15	194	28	200	58	M50 X 2, DP 65	27.0
TP (CP) -30	203	360	23	233	40	300	70	M64 X 3, DP 90	50.0
TP (CP) -50	232	452	30	263	48	300	82	M76 X 3, DP 115	88.0
TP (CP) -100	310	610	30	343	70	300	108	M100 X 3, DP 150	200.0

Unit:mm

Hermetically Sealed Load Cell for Tank and Hopper Applications

C2Z1/C2X1 Series

C2Z1: 5 kN (509.9 kg) to 200 kN (20.39 t)

C2X1: 300 kN (30.59 t) to 5 MN (509.9 t)

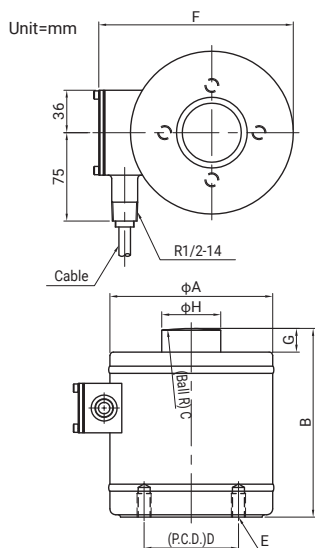
- Hermetically sealed compression type available in various capacities.

Specifications (*1: Custom-made item *2: Made-to-order item)

Model	Rated capacity (R.C.)	Deflection amount	Natural frequency
C2Z1-500L	5 kN (509.9 kg)	0.04 mm	4.0 kHz
C2Z1-1	10 kN (1.020 t)	0.05 mm	4.6 kHz
C2Z1-2	20 kN (2.039 t)	0.10 mm	4.7 kHz
C2Z1-5	50 kN (5.099 t)	0.09 mm	3.5 kHz
C2Z1-10	100 kN (10.20 t)	0.14 mm	4.0 kHz
C2Z1-20	200 kN (20.39 t)	0.17 mm	3.5 kHz
C2X1-30 ^{*2}	300 kN (30.59 t)	0.13 mm	4.2 kHz
C2X1-50 ^{*2}	500 kN (50.99 t)	0.16 mm	7.0 kHz
C2X1-100 ^{*2}	1 MN (102.0 t)	0.11 mm	8.0 kHz
C2X1-200 ^{*2}	2 MN (203.9 t)	0.16 mm	6.4 kHz
C2X1-300 ^{*2}	3 MN (305.9 t)	0.23 mm	5.4 kHz
C2X1-500 ^{*1}	5 MN (509.9 t)	0.28 mm	4.0 kHz



Model	C2Z1	C2X1
Rated output (R.O.)	2.0394 mV/V±0.4 %	2.0394 mV/V±1 %
Safe overload	500 % of R.C.	150 % of R.C.
Ultimate overload	1,000 % of R.C.	250 % of R.C.
Combined error	0.2 % of R.O.	0.4 % of R.O.
Recommended excitation voltage	5 to 12 VDC	
Maximum excitation voltage	20 VDC	
Zero balance	±1 % of R.O.	
Input terminal resistance	350±3.5 Ω	
Output terminal resistance	350±5 Ω	
Insulation resistance	Greater than 1,000 MΩ at 50 VDC	
Temperature compensation range	-10 °C to 75 °C	
Temperature effect on zero point	0.05 % of R.O./10 °C	
Temperature effect on span	0.1 % of Load/10 °C	
Cable thickness/length	φ9.7/3 m	
Material	Tool steel	
Dustproof/waterproof	IP67	
Options	Summing box (p.38), Junction box (p.38), Compression Fittings (p.43)	



CABLE COLOR CODE RED: EXC+ WHITE: EXC- GREEN: SIG+ BLUE: SIG- YELLOW: SHIELD

Model	φA	B	C	D	E	F	G	φH	Weight (kg)
C2Z1-500L, 1, 2	113	85	50	50	4-M6, DP 10	138	10	M16 x 1.5	4
C2Z1-5, 10	138	110	100	60	4-M8, DP 15	165	15	35	8
C2Z1-20	164	145	200	80	4-M12, DP 20	193	20	45	14
C2X1-30,50	138	160	200	80	4-M12, DP 20	165	20	50	10
C2X1-100	164	190	200	100	4-M16, DP 20	193	30	70	18
C2X1-200	214	230	300	130	4-M16, DP 20	245	30	95	34
C2X1-300	214	320	600	130	4-M24, DP 35	245	30	120	50

Unit=mm

Hermetically Sealed Load Cell for Tank and Hopper Applications

CM Series

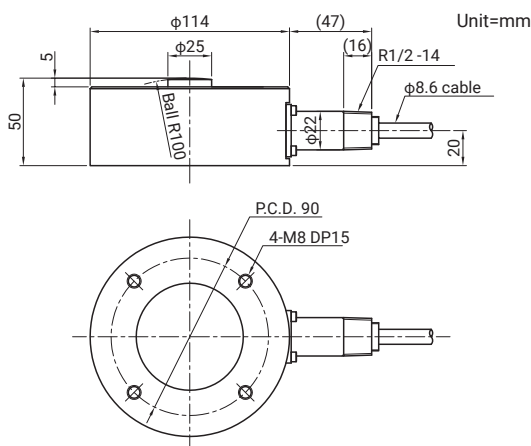
50 kN (5.099 t) to 200 kN (20.39 t)

- Hermetically sealed construction with inert gas sealed in. Compression type.
- Easy to install and maintain due to its compact and slim design.



Specifications

Model	Rated capacity (R.C.)	Deflection amount	Natural frequency
CM-5	50 kN (5.099 t)	0.06 mm	14 kHz
CM-10	100 kN (10.20 t)	0.04 mm	24 kHz
CM-20	200 kN (20.39 t)	0.03 mm	30 kHz



CABLE COLOR CODE RED: EXC+ WHITE: EXC- GREEN: SIG+ BLUE: SIG- YELLOW: SHIELD

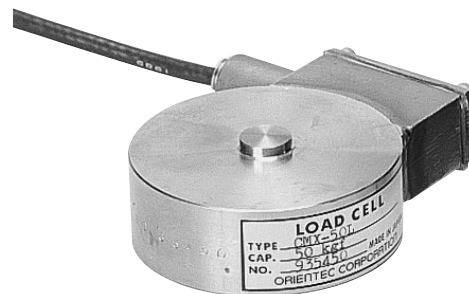
Rated output (R.O.)	2.0394 mV/V±0.5 %
Safe overload	150 % of R.C.
Ultimate overload	200 % of R.C.
Combined error	0.25 % of R.O.
Recommended excitation voltage	5 to 12 VDC
Maximum excitation voltage	18 VDC
Zero balance	±2 % of R.O.
Input terminal resistance	425±50 Ω
Output terminal resistance	350±5 Ω
Insulation resistance	Greater than 1,000 MΩ at 50 VDC
Temperature compensation range	-10 °C to 60 °C
Temperature effect on zero point	0.1 % of R.O./10 °C
Temperature effect on span	0.1 % of Load/10 °C
Cable thickness/length	φ8.6/3 m
Material	Tool steel
Dustproof/waterproof	IP67
Weight	3.3 kg
Options	Summing box (p.38), Junction box (p.38), Compression Fittings (p.43)

Hermetically Sealed Compact Load Cell for Tank and Hopper Applications

CMX Series

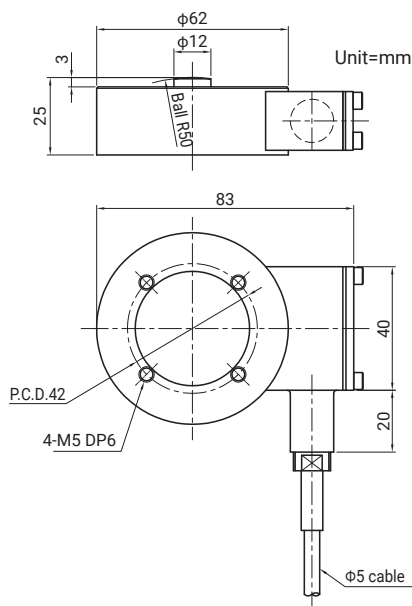
500 N (50.99 kg) to 20 kN (2.039 t)

- Inert gas-filled, sealed structure with all stainless steel construction.
 - Compact and slim design for easy installation and maintenance.
- Compression type.



Specifications

Model	Rated capacity (R.C.)	Deflection amount	Natural frequency
CMX-50L	500 N (50.99 kg)	0.06 mm	5.5 kHz
CMX-100L	1 kN (102.0 kg)	0.03 mm	8.1 kHz
CMX-200L	2 kN (203.9 kg)	0.03 mm	11.5 kHz
CMX-500L	5 kN (509.9 kg)	0.03 mm	18.5 kHz
CMX-1	10 kN (1.020 t)	0.04 mm	22.5 kHz
CMX-2	20 kN (2.039 t)	0.03 mm	20.0 kHz



Rated output (R.O.)	2.0394 mV/V±0.5 %
Safe overload	150 % of R.C.
Ultimate overload	200 % of R.C.
Combined error	0.2 % of R.O.
Recommended excitation voltage	5 to 12 VDC
Maximum excitation voltage	15 VDC
Zero balance	±2 % of R.O.
Input terminal resistance	425±50 Ω
Output terminal resistance	350±5 Ω
Insulation resistance	Greater than 1,000 MΩ at 50 VDC
Temperature compensation range	-10 °C to 60 °C
Temperature effect on zero point	0.1 % of R.O./10 °C
Temperature effect on span	0.1 % of Load/10 °C
Cable thickness/length	φ5/3 m
Material	Stainless steel
Dustproof/waterproof	IP67
Weight	0.6 kg
Options	Summing box (p.38), Junction box (p.38), Compression Fittings (p.43)

CABLE COLOR CODE RED: EXC+ WHITE: EXC- GREEN: SIG+ BLUE: SIG- YELLOW: SHIELD

Hermetically Sealed Compact Load Cell with USB Output

CMX-USB Series

500 N (50.99 kg) to 20 kN (2.039 t)

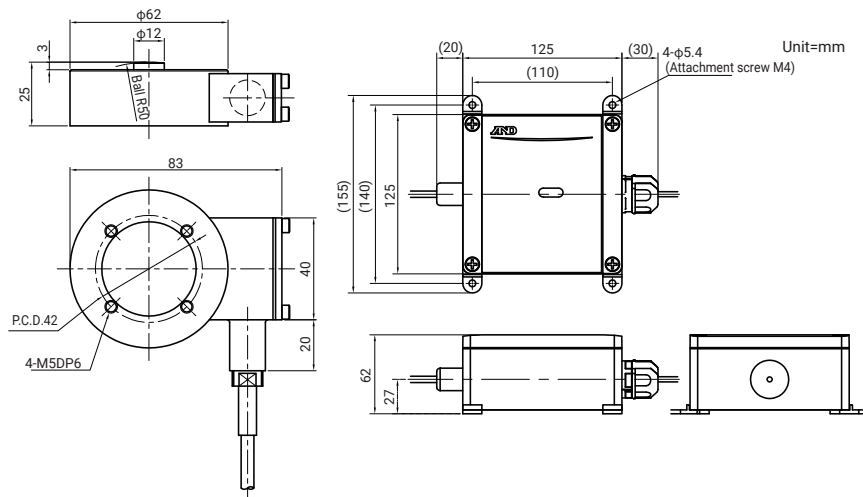
- Compression-type digital load cell for force measurement. Pre-calibrated, eliminating the need for an indicator - connects directly to a computer.
- Measurement data can be viewed/imported using the 'WinCT-DLC' measurement software (see page 51)



Specifications

Model	Rated capacity (R.C.)	Deflection amount	Natural frequency* ¹
CMX-50L-USB	500 N (50.99 kg)	0.06 mm	5.5 kHz
CMX-100L-USB	1 kN (102.0 kg)	0.03 mm	8.1 kHz
CMX-200L-USB	2 kN (203.9 kg)	0.03 mm	11.5 kHz
CMX-500L-USB	5 kN (509.9 kg)	0.03 mm	18.5 kHz
CMX-1-USB	10 kN (1.020 t)	0.04 mm	22.5 kHz
CMX-2-USB	20 kN (2.039 t)	0.03 mm	20.0 kHz

*1 Load cell only



Combined error	0.2 % of R.O.
Power supply voltage	5 VDC (USB bus power)
Average current consumption* ²	60 mA or less
Zero balance	±2 % of R.O.
Temperature effect on zero point	0.2% of R.O./10 °C
Temperature effect on span	0.2 % of Load/10 °C
Temperature compensation range	-10 °C to 60 °C
Safe overload	150 % of R.C.
Ultimate overload	200 % of R.C.
Cable	Load cell cable: φ5 mm / 3 m USB cable: φ4 mm / 1.2 m / Type-A

Material	Load Cell: Stainless steel Conversion Box: Polycarbonate
Dustproof/waterproof	Load Cell: IP67, Conversion Box: IP65
Weight	1 kg
A/D conversion rate	100 times/s
Digital filter	Select from None, 0.7, 1.0, 1.4, 2.0, 2.8, 4.0, 5.6, 8.0, 11.0 Hz (Initial value 1.0 Hz)
Communications standard	USB Ver.2.0 Full Speed
Communication Settings	Baud rate: 38400 bps Character bit length: 8 bit Parity: Even Stop bit length: 1 bit Terminator: CR LF Code: ASCII

Hermetically Sealed Stainless Steel Load Cell for Tank and Hopper Application

LCC07 Series

5 kN (509.9 kg) to 50 kN (5.099 t)

- Hermetically sealed stainless steel welded construction with transverse load stopper*.
- Ideal for hopper and tank scales in the food and pharmaceutical markets.
- Designed for compression applications.

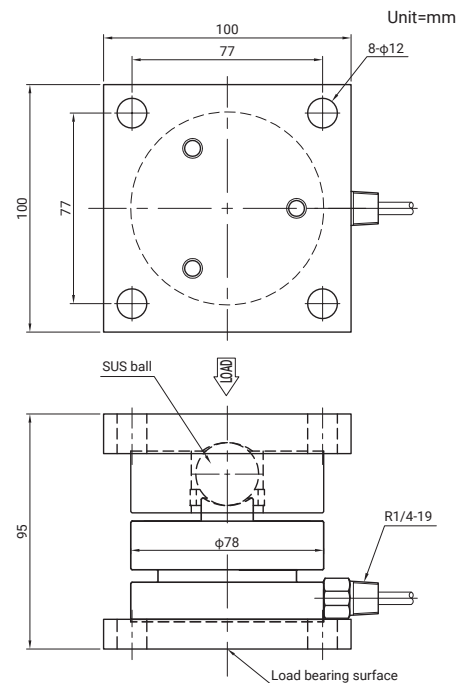
*This mechanism provides restorative force when subjected to lateral loads, using a ball bearing mechanism.



Specifications

Model	Rated capacity (R.C.)
LCC07-K500	5 kN (509.9 kg)
LCC07-T001	10 kN (1.020 t)
LCC07-T002	20 kN (2.039 t)
LCC07-T003	30 kN (3.059 t)
LCC07-T005	50 kN (5.099 t)

Rated output (R.O.)	2 mV/V $\pm$ 0.1 %
Safe overload	150 % of R.C.
Ultimate overload	200 % of R.C.
Combined error	0.03 % of R.O.
Recommended excitation voltage	5 to 12 VDC
Maximum excitation voltage	15 VDC
Zero balance	$\pm$ 1 % of R.O.
Input terminal resistance	780 $\pm$ 20 Ω
Output terminal resistance	700 $\pm$ 10 Ω
Insulation resistance	Greater than 500 M Ω at 50 VDC
Temperature compensation range	-10 °C to 40 °C
Temperature effect on zero point	0.04 % of R.O./10 °C
Temperature effect on span	0.014 % of Load/10 °C Typ.
Cable thickness/length	ϕ 5.6/5 m
Material	Stainless steel
Dustproof/waterproof	IP67
Weight	4 kg
Options	Summing box (p.38), Junction box (p.38)



CABLE COLOR CODE RED: EXC+ WHITE: EXC- GREEN: SIG+ BLUE: SIG- YELLOW: SHIELD

Stainless Steel Column-Type Load Cell for Truck Scale Applications

LCC11 Series

100 kN (10.20 t) to 300 kN (30.59 t)

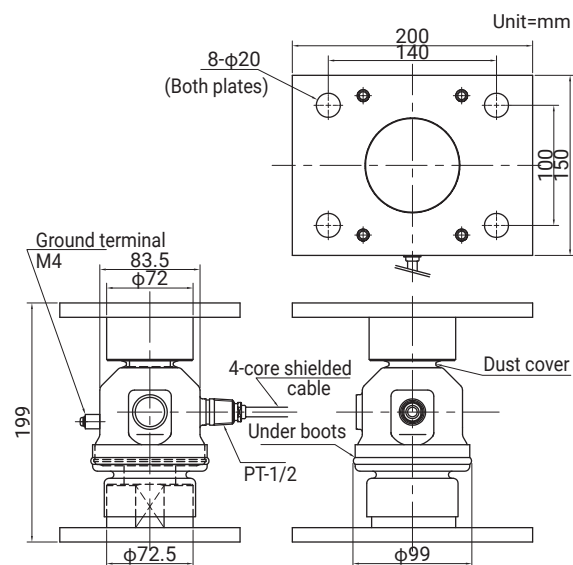
- The sealed stainless steel construction ensures excellent corrosion resistance and environmental durability.
- Ideal for large-capacity applications such as hopper scales and truck scales.
- Designed for compression.



Specifications

Model	Rated capacity (R.C.)	Mounting kit? (Y/N)
LCC11-T010-K	100 kN (10.20 t)	Yes
LCC11-T020-K	200 kN (20.39 t)	
LCC11-T030-K	300 kN (30.59 t)	
LCC11-T010N-K	100 kN (10.20 t)	No
LCC11-T020N-K	200 kN (20.39 t)	
LCC11-T030N-K	300 kN (30.59 t)	

Rated output (R.O.)	2 mV/V±0.1%
Safe overload	200 % of R.C.
Ultimate overload	300 % of R.C.
Combined error	0.016 % of R.O.
Recommended excitation voltage	5 to 12 VDC
Maximum excitation voltage	15 VDC
Zero balance	±1 % of R.O.
Input terminal resistance	800±80 Ω
Output terminal resistance	2,200±10 Ω
Insulation resistance	5,000 MΩ or more at 50 VDC
Temperature compensation range	-20 °C to 60 °C
Temperature effect on zero point	0.019 % of R.O./10 °C Typ.
Temperature effect on span	0.010 % of Load/10 °C Typ.
Cable thickness/length	φ8/12 m
Material	Load cell: Stainless steel Mounting kit: Tool steel
Dustproof/waterproof	IP68 (Water depth 1.5 m/100 hours)
Weight	7.5 kg
Options	Summing box (p.38), Junction box (p.38)



CABLE COLOR CODE RED: EXC+ WHITE: EXC- GREEN: SIG+ BLUE: SIG- YELLOW: SHIELD

Hermetically Sealed Stainless Steel Load Cell for Tank and Hopper Application

LCC12 Series

100 kN (10.20 t) to 300 kN (30.59 t)

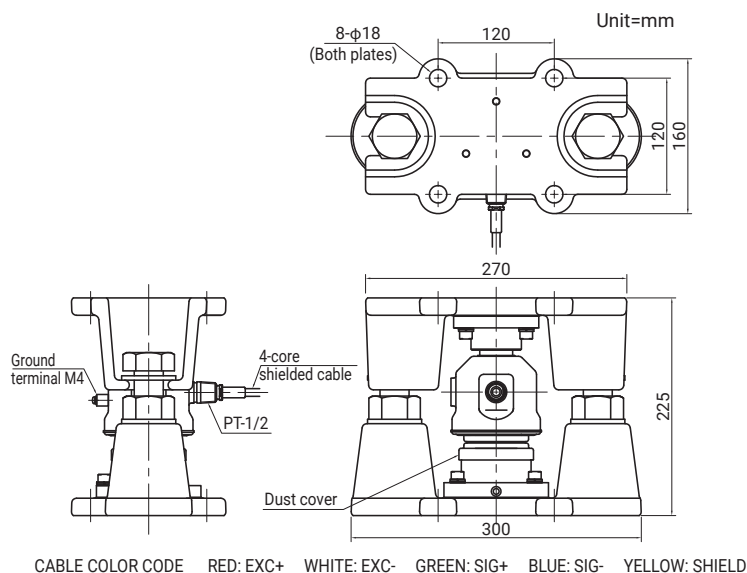
- Hermetically sealed stainless steel welded construction enables use outdoors and in harsh environments.
- Easy installation with built-in transverse movement control and lift-off prevention mechanisms.
- High accuracy with a total error of 0.03 % R.O. Designed for compression.



Specifications

Model	Rated capacity (R.C.)
LCC12-T010	100 kN (10.20 t)
LCC12-T020	200 kN (20.39 t)
LCC12-T030	300 kN (30.59 t)

Rated output (R.O.)	2 mV/V $\pm$ 0.1 %
Safe overload	150 % of R.C.
Ultimate overload	200 % of R.C.
Combined error	0.03 % of R.O.
Recommended excitation voltage	5 to 12 VDC
Maximum excitation voltage	15 VDC
Zero balance	$\pm$ 1 % of R.O.
Input terminal resistance	800 Ω $\pm$ 80 Ω
Output terminal resistance	2,200 Ω $\pm$ 10 Ω
Insulation resistance	Greater than 5,000 M Ω at 50 VDC
Temperature compensation range	-20 °C to 60 °C
Temperature effect on zero point	0.019 % of R.O./10 °C Typ.
Temperature effect on span	0.010 % of Load/10 °C Typ.
Cable thickness/length	ϕ 8/12 m
Material	Stainless steel
Dustproof/waterproof	IP68 (Water depth 1.5 m / 100 hours)
Weight	22 kg
Mounting bracket	Allowable horizontal force 75 kN Allowable buoyant force 80 kN
Options	Summing box (p.38), Junction box (p.38)



Stainless Steel Column-Type Load Cell for Truck Scale Applications

LCC20 Series

98.07 kN (10 t) to 294.2 kN (30 t)

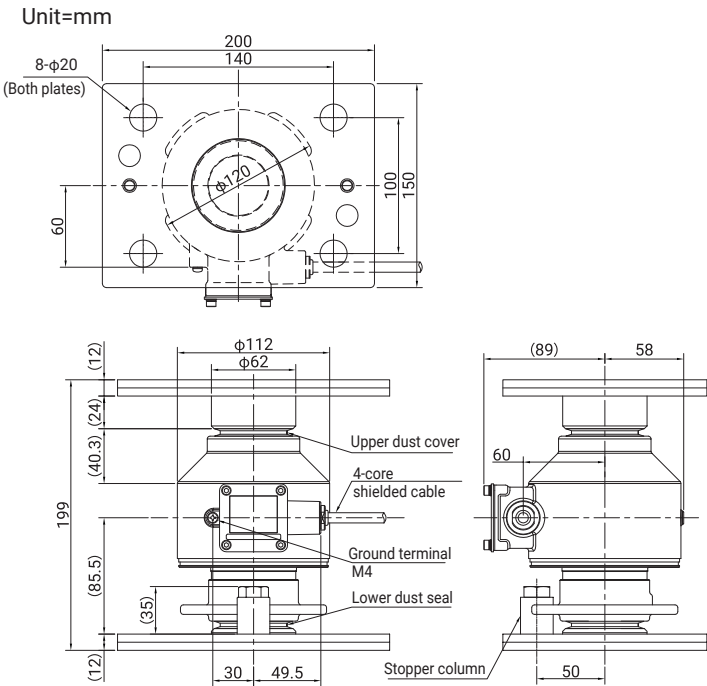
- Featuring a sealed structure with an IP68 protection rating (submersible to 1.5 m depth for 100 hours), this high-performance compression double convex type load cell is ideal for large hopper and truck scales.
- Mounting bracket option with anti-rotation function available.



Specifications

Model	Rated capacity (R.C.)	Mounting kit? (Y/N)
LCC20-T030-K	294.2 kN (30 t)	Yes
LCC20-T030N-K	294.2 kN (30 t)	No

Rated output (R.O.)	2 mV/V±0.1 %
Safe overload	150 % of R.C.
Combined error	0.025 % of R.O.
Recommended excitation voltage	5 to 12 VDC
Maximum excitation voltage	15 VDC
Zero balance	±1 % of R.O.
Input terminal resistance	800±80 Ω
Output terminal resistance	700±10 Ω
Insulation resistance	5000 MΩ or more at 50 VDC
Temperature compensation range	-10 °C to 40 °C
Temperature effect on zero point	0.019 % of R.O./10 °C Typ.
Temperature effect on span	0.010 % of Load/10 °C Typ.
Cable thickness/length	6-core shielded cable φ 8 / 12 m
Material	Load cell body: Alloy steel Load cell case: Stainless steel
Dustproof/waterproof	IP68 (Water depth 1.5 m/100 hours)
Weight	Approx. 11 kg (w/ mounting plate) Approx. 6 kg (w/o mounting plate)



CABLE COLOR CODE RED: EXC+ WHITE: EXC- GREEN: SIG+ BLUE: SIG- ORANGE: SENSING+ BLACK: SENSING- YELLOW: SHIELD

Column-Type Digital Load Cell for Truck Scale Applications

LCCD20 Series

98.07 kN (10 t) to 294.2 kN (30 t)

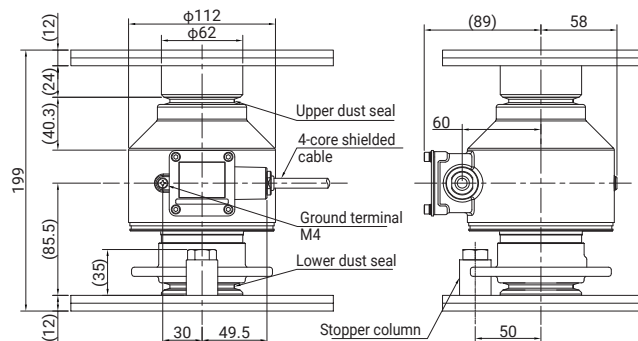
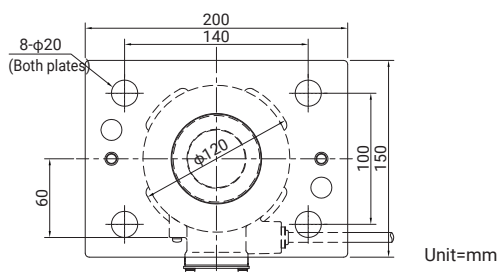
- Featuring a sealed structure with an IP68 protection rating (submersible to 1.5 m depth for 100 hours), this high-performance compression double convex type load cell is ideal for large hopper and truck scales.
- Comes with a mounting bracket equipped with anti-rotation function.



Specifications (*made-to-order item)

Model	Rated capacity (R.C.)	OIML Class	Mounting kit? (Y/N)
LCCD20-T010-K	98.07 kN (10 t)	C4	Yes
LCCD20-T020-K	196.1 kN (20 t)		
LCCD20-T030-K	294.2 kN (30 t)		
LCCD20-T010-KC6*	98.07 kN (10 t)	C6	
LCCD20-T020-KC6*	196.1 kN (20 t)		
LCCD20-T030-KC6*	294.2 kN (30 t)		
LCCD20-T010N-K*	98.07 kN (10 t)	C4	No
LCCD20-T020N-K*	196.1 kN (20 t)		
LCCD20-T030N-K*	294.2 kN (30 t)		
LCCD20-T010N-KC6*	98.07 kN (10 t)	C6	
LCCD20-T020N-KC6*	196.1 kN (20 t)		
LCCD20-T030N-KC6*	294.2 kN (30 t)		

Rated output (R.O.)	10,000±5: LCCD20-T010x-xx 20,000±10: LCCD20-T020x-xx 30,000±15: LCCD20-T030x-xx
Safe overload	150 % of R.C.
Combined error	C4: 0.025 % of R.O. C6: 0.016 % of R.O.
Recommended excitation voltage	8 VDC
Maximum excitation voltage	12 VDC
Temperature compensation range	-10 °C to 40 °C
Temperature effect on zero point	0.019 % of R.O./10 °C Typ.
Temperature effect on span	0.010 % of Load/10 °C Typ.
Cable thickness/length	4-core shielded cable φ8 / 12 m
Output signal	RS-485 2-wire type
Material	Load cell body: Alloy steel Load cell case: Stainless steel
Dustproof/waterproof	IP68 (Water depth 1.5 m/100 hours)
Weight	Approx. 11 kg (with mounting brackets), approx. 6 kg (load cell)
Surge countermeasures	Built-in gas tube arrester etc.
Options	Digital load cell indicator (p.52), Accessories (p.39)



CABLE COLOR CODE RED: EXC+ WHITE: EXC- GREEN: DATA+ BLUE: DATA- YELLOW: SHIELD
The data polarity is defined as positive logic for '+' and negative logic for '-'.

X-Y Force Type Load Cells

X-Y Series

98.07 kN (10 t) to 294.2 kN (30 t)

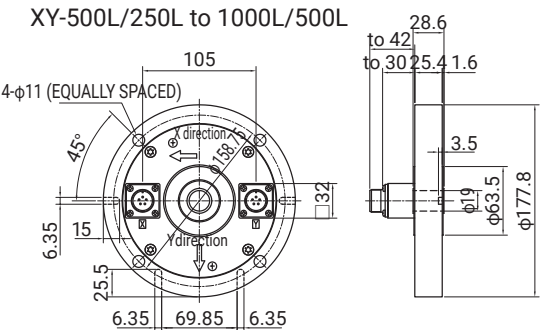
- Simultaneous measurement of forces in the X and Y axes.



Specifications

Model	Rated capacity (R.C.)	Weight
XY-500L/250L	X: 5 kN (509.9 kg)	Approx. 3.5 kg
	Y: 2.5 kN (254.9 kg)	
XY-750L/250L	X: 7.5 kN (764.8 kg)	
	Y: 2.5 kN (254.9 kg)	
XY-1000L/500L	X: 10 kN (1,020 kg)	
	Y: 5 kN (509.9 kg)	

Rated output (R.O.)	2.0394 mV/V±0.2%
Safe overload	150 % of R.C.
Combined error	0.2 % of R.O.
Recommended excitation voltage	5 to 12 VDC
Temperature compensation range	-10 °C to 70 °C
Temperature effect on zero point	0.05 % of R.O./10 °C
Temperature effect on span	0.05 % of Load/10 °C Typ.
Cable thickness/length	φ7/10 m
Material	Tool steel
Dustproof/waterproof	IP54
Options	Summing box (p.38)



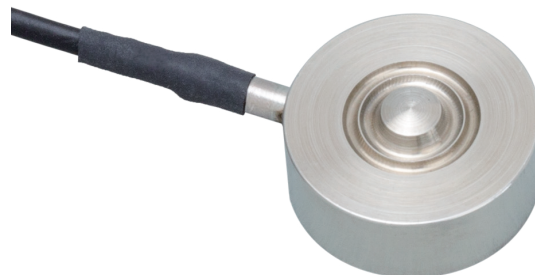
CABLE COLOR CODE RED: EXC+ WHITE: EXC- GREEN: SIG+ BLUE: SIG- YELLOW: SHIELD

Stainless Steel Button Load Cell

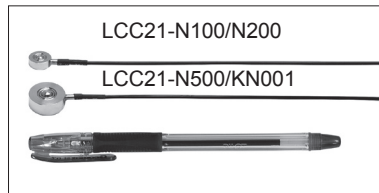
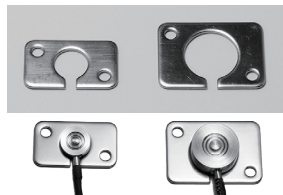
LCC21 Series

100 N (10.20 kg) to 1 kN (102.0 kg)

- Ideal for measuring load distribution and monitoring pressure changes during press fitting or press molding.



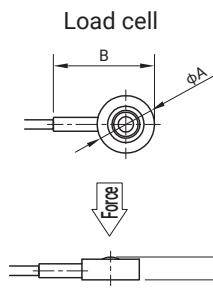
Mounting holder
(standard accessory)



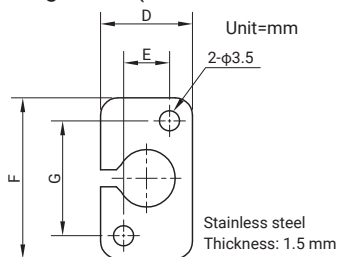
Specifications

Model	Rated capacity (R.C.)	Natural frequency
LCC21-N100	100 N (10.20 kg)	45 kHz
LCC21-N200	200 N (20.39 kg)	55 kHz
LCC21-N500	500 N (50.99 kg)	30 kHz
LCC21-KN001	1 kN (102.0 kg)	35 kHz

Rated output (R.O.)	1 mV/V or greater
Safe overload	150 % of R.C.
Combined error	0.5 % of R.O.
Recommended excitation voltage	5 VDC
Maximum excitation voltage	5 VDC
Zero balance	±100 % of R.O.
Input terminal resistance	1 kΩ±0.1 kΩ
Output terminal resistance	1 kΩ±0.01 kΩ
Insulation resistance	500 MΩ or more at 50 VDC
Temperature compensation range	0 °C to 70 °C
Permissible temperature range	-10 °C to 80 °C
Temperature effect on zero point	0.5 % of R.O./10 °C Typ.
Temperature effect on span	0.5 % of Load/10 °C Typ.
Cable thickness/length	φ2 mm/2 m
Material	Stainless steel
Dustproof/waterproof	IP64
Accessories	1 x Mounting holder AXP-4036220 (for N100 and N200) AXP-4036221 (for N500 and KN001)



Mounting holder (standard accessory)



CABLE COLOR CODE RED: EXC+ WHITE: EXC- GREEN: SIG+ BLUE: SIG- YELLOW: SHIELD

Model	A	B	C	D	E	F	G	Weight (g)
LCC21-N100, N200	10	18	4	16	8	28	20	15
LCC21-N500, KN001	16	24	7	22	14	32	24	20

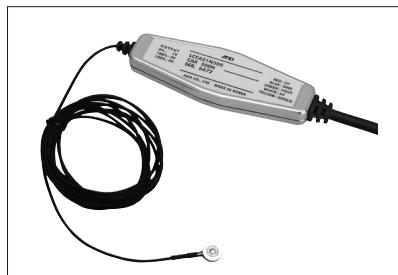
Unit=mm

Stainless Steel Button Load Cell with Analog Output

LCCA21 Series

100 N (10.20 kg) to 1 kN (102.0 kg)

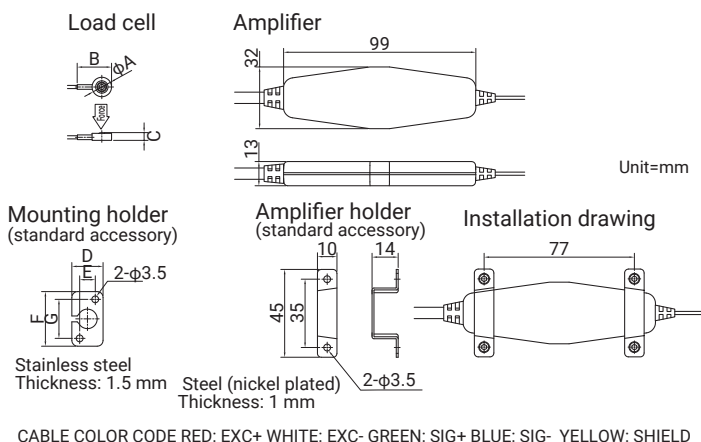
- Equipped with amplifier for analog output, eliminating the need for calibration with weights.
- Ideal for measuring load distribution and monitoring pressure changes during press fitting or press molding.



Specifications

Model	Rated capacity (R.C.)	Natural frequency (Load cell only)
LCCA21-N100	100 N (10.20 kg)	45 kHz
LCCA21-N200	200 N (20.39 kg)	55 kHz
LCCA21-N500	500 N (50.99 kg)	30 kHz
LCCA21-KN001	1 kN (102.0 kg)	35 kHz

Safe overload	150 % of R.C.
Combined error	0.5 % of R.O.
Power supply voltage	5 VDC±0.25 V
Power consumption current	Less than 16 mA
Load resistance	More than 5 kΩ
Output voltage	1 V to 4 V*1
Zero voltage	1 V±0.04 V*1
Span voltage	2 V±0.01 V*1
Insulation resistance	500 MΩ or more at 50 VDC (The power supply and output are non-isolated)
Temperature compensation range	0 °C to 70 °C
Permissible temperature range	-10 °C to 80 °C
Temperature effect on zero point	0.6 % of R.O./10 °C Typ.
Temperature effect on span	0.6 % of Load/10 °C Typ.
Frequency characteristics	100 Hz (-3 dB)
Cable thickness/length	From load cell to amplifier: φ2 mm, 2 m From amplifier: φ6 mm, 0.5 m
Material	Stainless steel
Dustproof/waterproof	IP64 (Load cell)
Accessories	1 x Mounting holder AXP-4036220 (for N100 and N200) AXP-4036221 (for N500 and KN001) 2 x Amplifier holder



* 1. RELATIONSHIP OF OUTPUT VOLTAGE TO LOAD

Load [% of R.C.]	0	100	150
Output voltage	1 V	3 V	4 V

Model	φA	B	C	D	E	F	G	Weight (g)
LCCA21-N100, N200	10	18	4	16	8	28	20	65
LCCA21-N500, KN001	16	24	7	22	14	32	24	70

Unit=mm

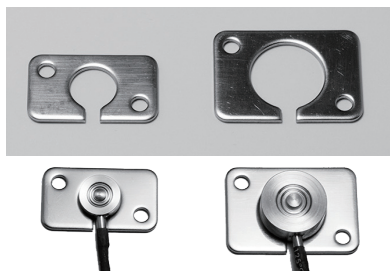
Stainless Steel Button Load Cell with USB Output

LCCU21 Series

100 N (10.20 kg) to 1 kN (102.0 kg)

- Easy measurements without the need for a power supply or calibration; just connect to a computer.
- Ideal for measuring load distribution and monitoring pressure changes during press fitting or press molding.

Mounting holder
(standard accessory)



Specifications

Model	Rated capacity (R.C.)	Rated output (R.O.)	Natural frequency (Load cell only)
LCCU21-N100	100 N (10.20 kg)	100.00±0.50 (0.5 %)	45 kHz
LCCU21-N200	200 N (20.39 kg)	200.00±1.00 (0.5 %)	55 kHz
LCCU21-N500	500 N (50.99 kg)	500.00±2.50 (0.5 %)	30 kHz
LCCU21-KN001	1 kN (102.0 kg)	1000.0±5.0 (0.5 %)	35 kHz

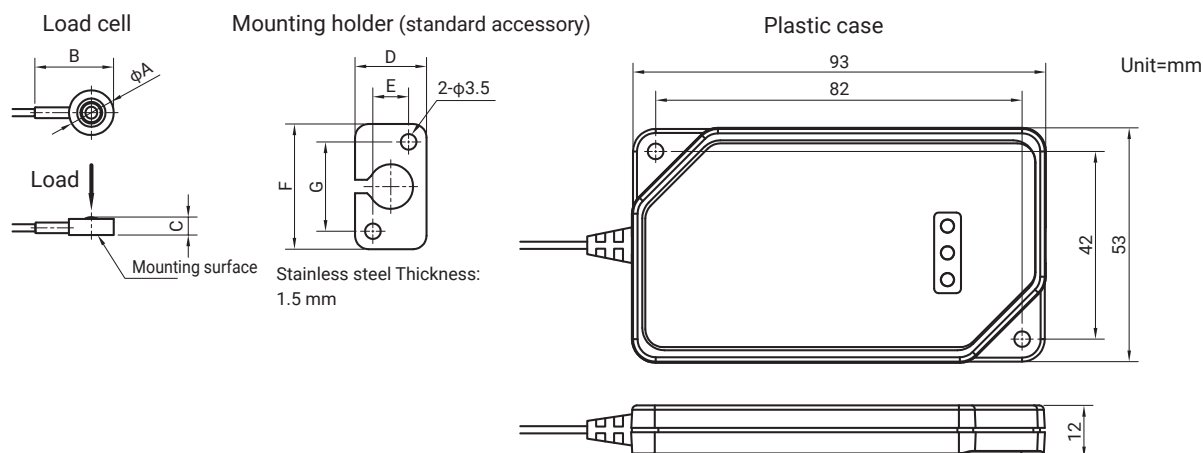
Safe overload	150 % of R.C.
Combined error	0.5 % of R.O.
Power supply voltage	5 VDC (USB bus power)
Power consumption current	50 mA or less* ¹
Zero balance	±2 % of R.O.
Temperature compensation range	0 °C to 70 °C
Permissible temperature range	-10 °C to 80 °C
Temperature effect on zero point	0.6 % of R.O./10 °C Typ.
Temperature effect on span	0.6 % of Load/10 °C Typ.
A/D conversion rate	100 times/s

Digital filter	Select from None, 0.7, 1.0, 1.4, 2.0, 2.8, 4.0, 5.6, 8.0, 11.0 Hz (Initial value 1.0 Hz)
Communications standard	USB Ver. 2.0 Full Speed
USB Connector type	micro-B
Cable thickness/length	From load cell to case: φ2 mm, 2 m length USB cable (accessory): φ4 mm, 1.5 m length
Material	Stainless steel (Load cell)
Dustproof/waterproof	IP64 (Load cell)
Accessories	1 x Mounting holder USB cable (φ4 mm / 1.5 m)
Measurement software	WinCT-DLC Available for free download from our company's website

*1: Reference value

Stainless Steel Button Load Cell with USB Output

LCCU21 Series (continued)

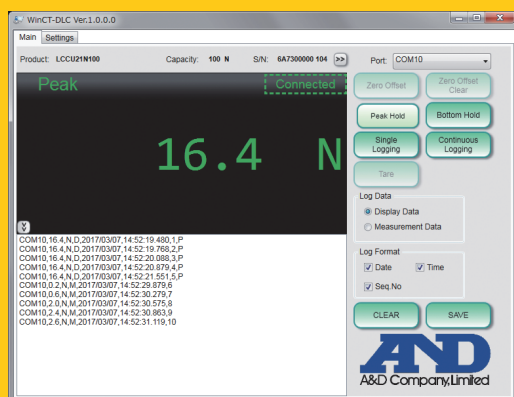


Model	φA	B	C	D	E	F	G	Weight (g)
LCCU21-N100, N200	10	18	4	16	8	28	20	50
LCCU21-N500, KN001	16	24	7	22	14	32	24	60

Unit=mm

WinCT-DLC Windows Data Acquisition Software

WinCT-DLC is "Windows data communication software" designed to transfer measurement data from USB output load cells to a computer. The measurement results can be saved as CSV or Excel spreadsheet format.



Supported Products	USB load cells made by A&D. (LCCU21/CMX-USB/LC1205-USB)
Sensor settings	Digital filter (cutoff frequency) settings Sensor output rewrites
Offset setting	Available
Display	Peak Hold: Displays the maximum value during operation Bottom Hold: Displays the minimum value during operation Tare: Displays the tare value
Selection of the value to be recorded	Display Data: This mode records the display data into measurement value display. Measurement Data: This mode records the value of set by [Zero Offset] subtracted from the output of the product.
Logging operation	Single Logging (Record when button is pressed) Continuous Logging
Continuous logging settings	Logging timer Limit the number of logging data Max: 1,048,576 points
Data format	csv, xlsx

OS	Windows 7/8.1/10 (64-bit) *1
USB port	One free port (USB 2.0 or higher)
Memory	4 GB or more
Hard disk	20 GB or more
Remarks	.NET Framework 4.5 or higher must be installed

*1) The 32-bit version also works, but it is out of the guaranteed range. (Operation may stop during measurement.)

[DOWNLOAD WINCT-DLC](#)

Dustproof and Waterproof Weighing Platforms

SB Series

15 kg to 220 kg

- A weighing platform that allows easy construction of a dustproof and waterproof (IP65 equivalent) weighing system.



Specifications

Model	Rated capacity	Dimensions (W x D x H mm)	Weight
SB-15K10	5 kg	250 x 250 x 102 to 112	4.5 kg
SB-60K11	60 kg	424 x 330 x 105 to 115	8 kg
SB-100K12	100 kg	530 x 390 x 129 to 139	14 kg
SB-200K12	220 kg		

Cable length: 3 m

Linearity & hysteresis: 0.03 % of R.O.

SB-SW Series

6 kg to 150 kg

- High-pressure (up to 100 MPa) and high-temperature (80 °C) washable weighing platform.
- IP69K rated, stainless steel frame for easy cleaning and debris prevention.



Specifications

Model	Rated capacity	Dimensions (W x D x H mm)	Weight
SB-6K13-SW	6 kg	250 x 250 x 98 to 103	3.7 kg
SB-15K13-SW	15 kg		
SB-15K14-SW	15 kg	300 x 380 x 117.5 to 122.5	8.2 kg
SB-30K14-SW	30 kg		
SB-60K14-SW	60 kg		
SB-150K14-SW	150 kg		
SB-60K15-SW	60 kg	390 x 530 x 126.5 to 131.5	11.2 kg
SB-150K15-SW	150 kg		

Cable length: 1.5 m

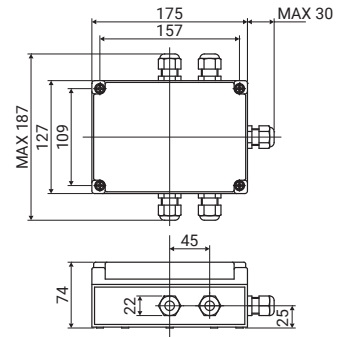
Linearity & hysteresis: 0.03 % of R.O.

Pan material: Stainless steel (SUS304)

6-Wire/4-Wire Load Cell Compatible Summing Box

AD-4390-6

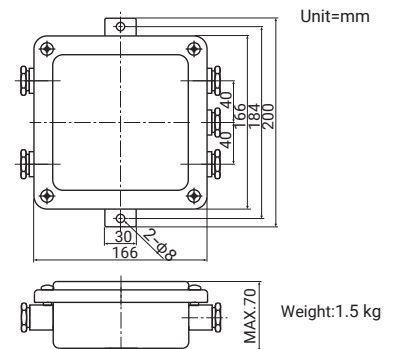
- Equipped with load cell output adjustment function
- Compatible with both 6-wire and 4-wire load cells
- Connects up to 6 load cells
- Compatible load cell output resistance: 350 Ω to 2000 Ω
- Easy wiring with push-in terminal blocks
- Dust and waterproof: Equivalent to IP67
- Suitable load cell cable diameter: $\phi 5$ to $\phi 10$ mm
- Material - Body: Polyester; Cable gland: Polyamide
- Weight: Approx. 550 g
- Accessories: 3 sealing plugs



Stainless Steel Summing Box

AD-4379SUS

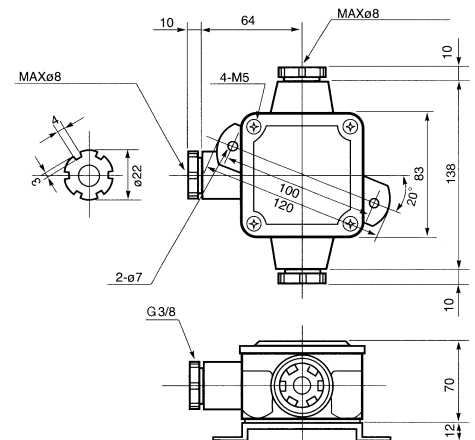
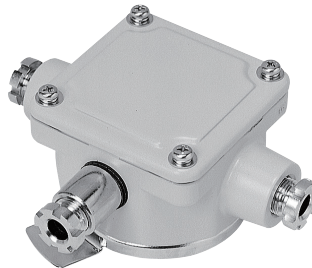
- Equipped with load cell output adjustment function
- Connects up to 4 load cells
- Dust and waterproof: IP67
- Suitable load cell cable diameter: $\phi 4$ to $\phi 12$ mm
- Material: Stainless steel (SUS304)
- Weight: Approx. 1.5 kg
- Accessories: Rubber bush



Summing Box

AD-4382

- Equipped with load cell output adjustment function
- Connects up to 2 load cells
- Dust and waterproof: IP56
- Suitable load cell cable diameter: $\phi 4$ to $\phi 8$ mm
- Material: Stainless steel (SUS304)
- Weight: Approx. 0.7 kg
- Accessories: Rubber bush



Junction Box

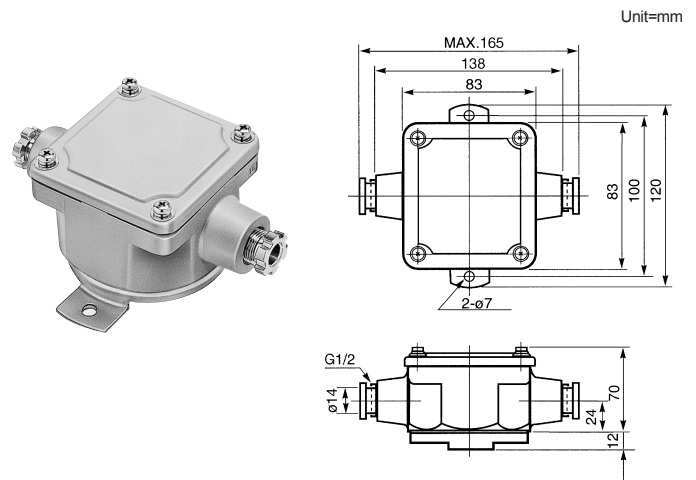
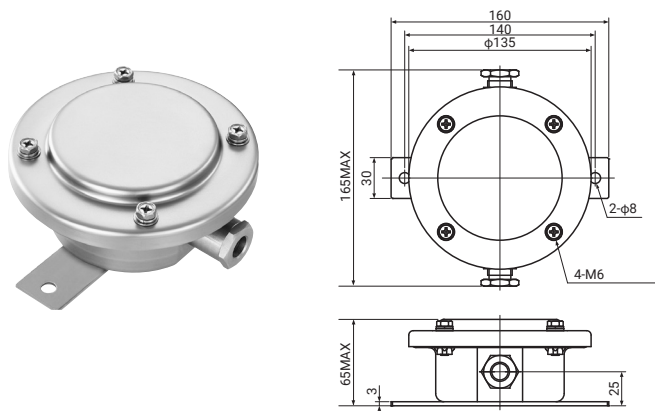
AD-4380SUS/AD-4380

AD-4380SUS

- Junction box for extending load cell cables
- Material: Stainless steel (SUS304)
- Dust and waterproof: IP67
- Accessories: Rubber bush

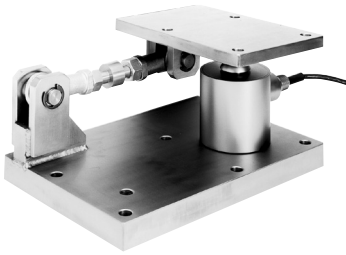
AD-4380

- Junction box for extending load cell cables
- Dust and waterproof: IP56
- Accessories: Rubber bush



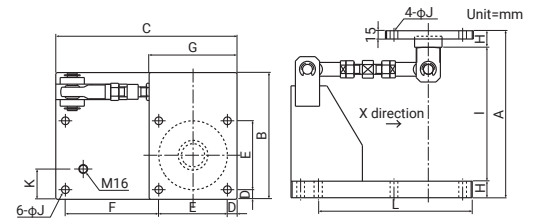
Mounting Kit with Integrated Horizontal Stops for CP Series

LCZAP-0405 / LCZAP-0408 / LCZAP-0411



Model	Applicable CP/ CP-F model	Allowable lateral load
LCZAP-0405	200L to 1	20 kN (X direction)
LCZAP-0408	2 to 5	
LCZAP-0411*	10	

*Special order model. Please contact us for a quotation.



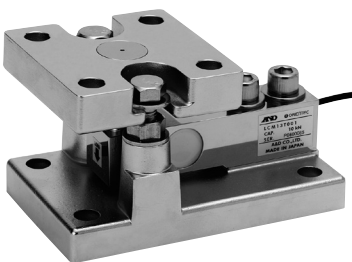
Model	A	B	C	D	E	F	G	H	I	J	K	L	Weight (kg)
LCZAP-0405	154	170	300	11.5	77	200	100	15	124	8	25	250	12
LCZAP-0408	213	200	315	12.5	105	185	130	23	167	12	40	265	20
LCZAP-0411	303	230	330	17.5	125	170	160	30	243	14	55	280	30

Unit=mm

Weights exclude load cells.

Mounting Kit with Lift-off Protection and Horizontal Stops for LCM13 / LCM19 Series

LCZAP-1413 / LCZAP-1414 / LCZAP-1415

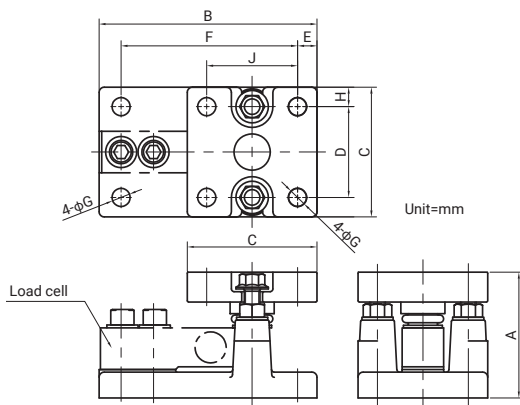


Model	Applicable model	Allowable lateral load	Allowable lifting force	Allowable movement
LCZAP-1413	LCM13-K100, K200, K300, K500, T001, T1.5, LCM19-K500, T001, T1.5	6 kN	20 kN	2 mm (all directions)
LCZAP-1414	LCM13-T002, T003, LCM19-T002	12 kN	30 kN	2 mm (all directions)
LCZAP-1415	LCM13-T005	20 kN	40 kN	2 mm (all directions)

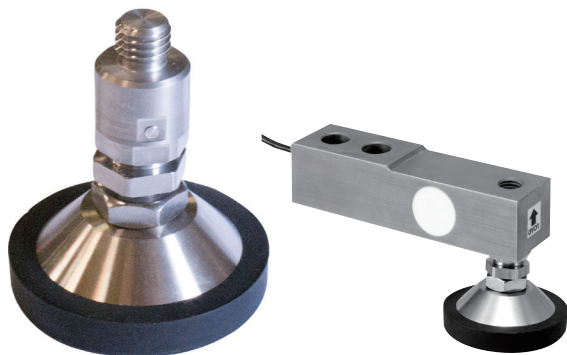
Model	A	B	C	D	E	F	φG	H	J	Weight (kg)
LCZAP-1413	97	168	100	70	15	136	14	15	70	3.4
LCZAP-1414	116	212	120	84	18	175	14	18	84	6.0
LCZAP-1415	121	227	150	100	18	190	14	25	114	12.0

Unit=mm

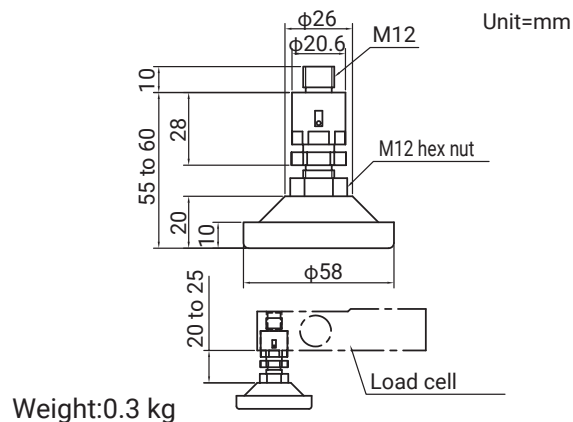
Weights exclude load cells.



LCZAFT-01S



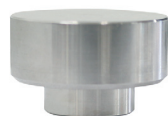
LCM13-K100, K200, K300, K500, T001, T1.5, LCM19-K500, T001, T1.5



AXP-LCZARP



Top plate



Bottom plate



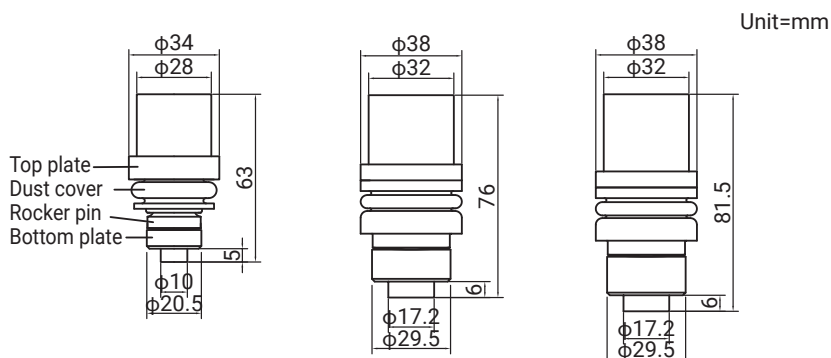
Rocker pin



Dust cover

Model	Applicable load cell	Weight (g)
AXP-LCZARP-01S	LCM13-K100, K200, K300, K500, T001, T1.5, LCM19-K500, T001, T1.5	240
AXP-LCZARP-02S	LCM13-T002, T003, LCM19-T002	400
AXP-LCZARP-03S	LCM13-T005	430

AXP-LCZARP-01S AXP-LCZARP-02S AXP-LCZARP-03S



Load Cell Mounting Accessories

Compression Fittings for LC1205 / LC1216 / LC1122

Bearing plate LCBP

LCBP-1

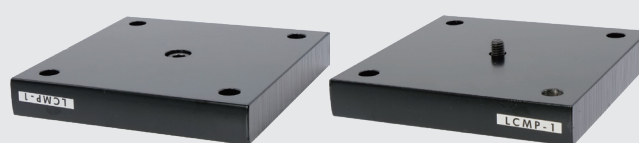


External Equipment
Installation Side

Load Cell Side

Mounting plate LCMP

LCMP-1



External Equipment
Installation Side

Load Cell Side

Load button LCLB

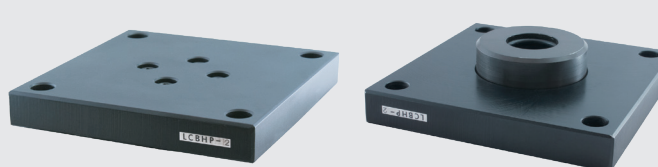
LCLB-4

LCLB-5



Buttonhole plate LCBHP

LCBHP-2



External Equipment
Installation Side

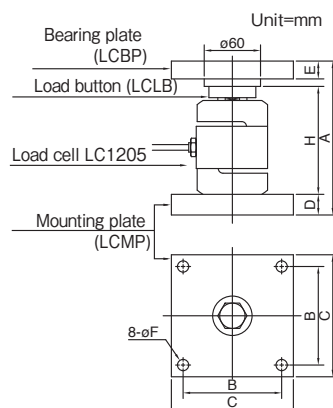
Load Cell Side

When mounted on LC1205

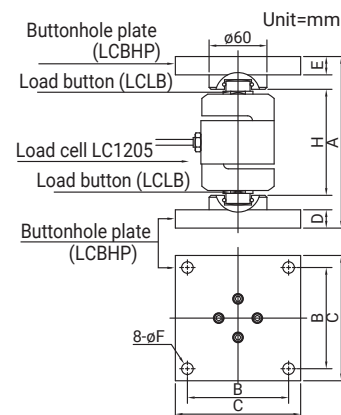
Model	Single convex fitting				Double convex fitting		
	Bearing plate	Mounting plate	Load button	Bolt size	Buttonhole plate	Load button	Bolt size
LC1205-K020, K050, K100	LCBP-1	LCMP-1	LCLB-1	M6	LCBHP-1	LCLB-1	M6
LC1205-K200, K500	LCBP-1	LCMP-2	LCLB-2	M6	LCBHP-1	LCLB-2	M6
LC1205-T001A, T002	LCBP-2	LCMP-4	LCLB-4	M10	LCBHP-2	LCLB-4	M10
LC1205-T005	LCBP-2	LCMP-5	LCLB-5	M10	LCBHP-3	LCLB-5	M10

*The mounting plate comes with load cell mounting bolts.

• Single Convex Installation



• Double Convex Installation



Model	A	B	C	D	E	φF	H
LC1205-K020, K050, K100	115	77	100	16	16	8	72
LC1205-K200, K500	115	77	100	16	16	8	72
LC1205-T001A, T002	164	105	130	22	19	12	115
LC1205-T005	167	105	130	22	19	12	118

Unit=mm

Model	A	B	C	D	E	φF	H
LC1205-K020, K050, K100	120	77	100	16	16	8	72
LC1205-K200, K500	120	77	100	16	16	8	72
LC1205-T001A, T002	178	105	130	19	19	12	110
LC1205-T005	190	105	130	19	19	12	116

Unit=mm

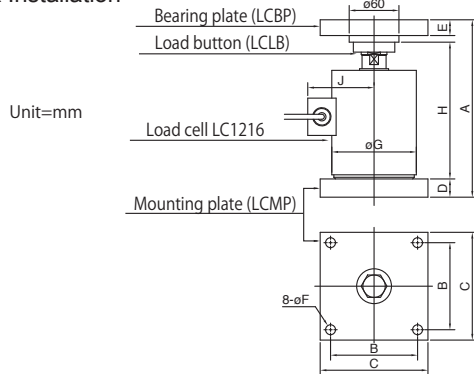
Load Cell Mounting Accessories

When mounted on LC1216

Model	Single convex fitting				Double convex fitting		
	Bearing plate	Mounting plate	Load button	Bolt size	Buttonhole plate	Load button	Bolt size
LC1216-K100	LCBP-1	LCMP-1	LCLB-1	M6	LCBHP-1	LCLB-1	M6
LC1216-K200, K500	LCBP-1	LCMP-2	LCLB-2	M6	LCBHP-1	LCLB-2	M6
LC1216-T001A	LCBP-2	LCMP-4	LCLB-4	M10	LCBHP-2	LCLB-4	M10
LC1216-T002A, T005	LCBP-2	LCMP-5	LCLB-5	M10	LCBHP-3	LCLB-5	M10

*The mounting plate comes with load cell mounting bolts.

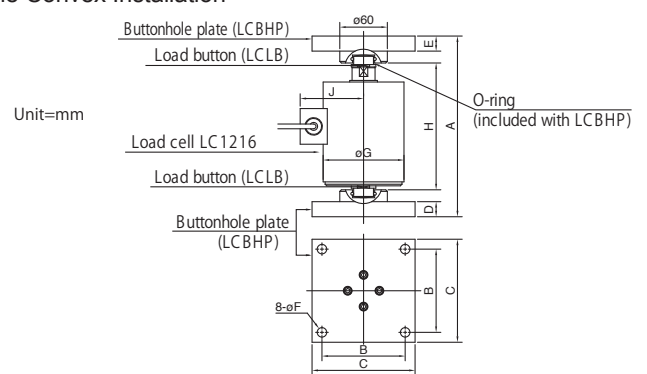
• Single Convex Installation



Model	A	B	C	D	E	øF	øG	H	J
LC1216-K100	155	77	100	16	16	8	77	114	62
LC1216-K200, K500	155	77	100	16	16	8	77	114	62
LC1216-T001A	214	105	130	22	19	12	102	165	80
LC1216-T002A, T005	247	105	130	22	19	12	102	198	80

Unit=mm

• Double Convex Installation



Model	A	B	C	D	E	øF	øG	H	J
LC1216-K100	160	77	100	16	16	8	77	110	62
LC1216-K200, K500	160	77	100	16	16	8	77	110	62
LC1216-T001A	228	105	130	19	19	12	102	160	80
LC1216-T002A, T005	270	105	130	19	19	12	102	196	80

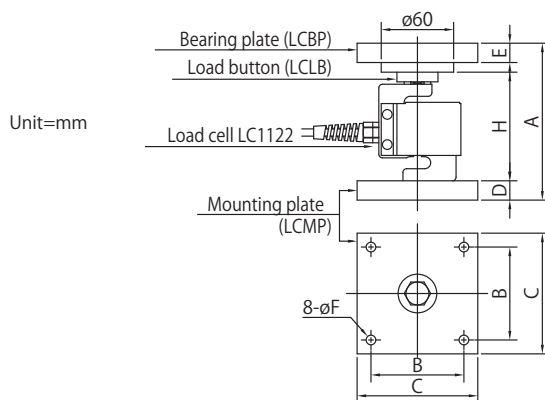
Unit=mm

When mounted on LC1122

Model	Single convex fitting				Double convex fitting		
	Bearing plate	Mounting plate	Load button	Bolt size	Buttonhole plate	Load button	Bolt size
LC1122-K050, K100	LCBP-1	LCMP-1	LCLB-1	M6	LCBHP-1	LCLB-1	M6
LC1122-K250, K500	LCBP-1	LCMP-2	LCLB-2	M6	LCBHP-1	LCLB-2	M6

*The mounting plate comes with load cell mounting bolts.

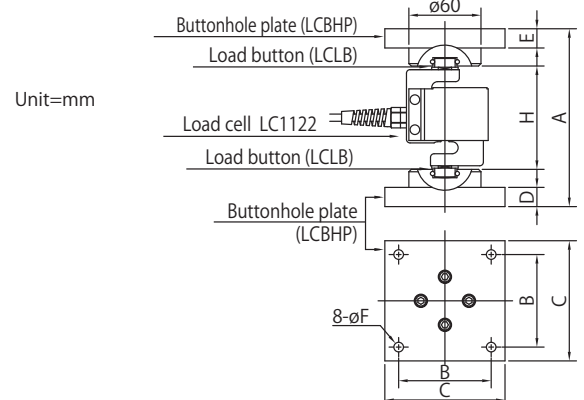
• Single Convex Installation



Model	A	B	C	D	E	øF	H
LC1122-K050, K100	131	77	100	16	16	8	90
LC1122-K250, K500	131	77	100	16	16	8	90

Unit=mm

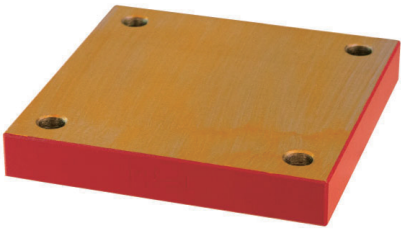
• Double Convex Installation



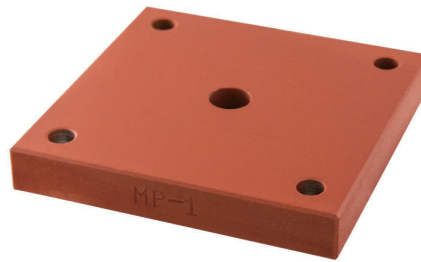
Model	A	B	C	D	E	øF	H
LC1122-K050, K100	136	77	100	16	16	8	86
LC1122-K250, K500	136	77	100	16	16	8	86

Unit=mm

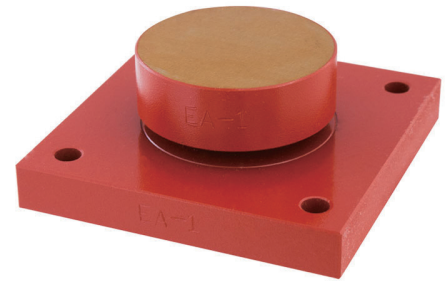
Compression Fittings for CP, C2Z1, C2F1, C2X1, CMX, CM



Bearing plate
BP



Mounting plate
MP

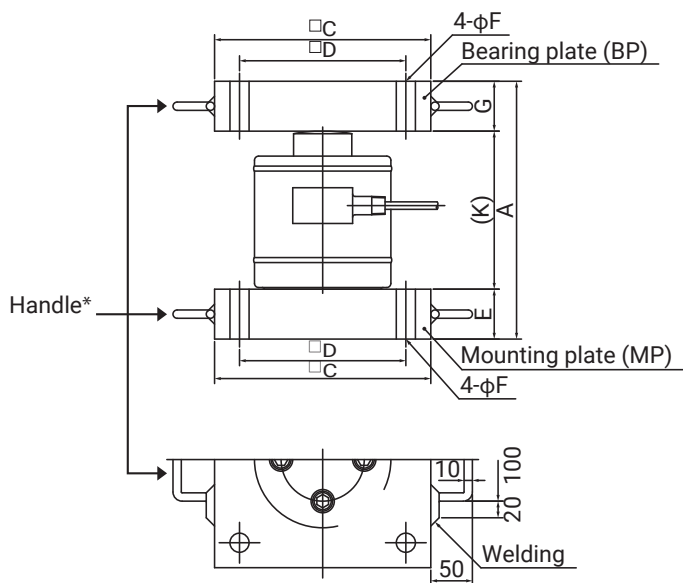


Expansion relief plate
EA

When mounting the load cell, please use the bearing plate and mounting plate.
If bending loads on the load cell are expected due to thermal expansion, please use the expansion relief plate.

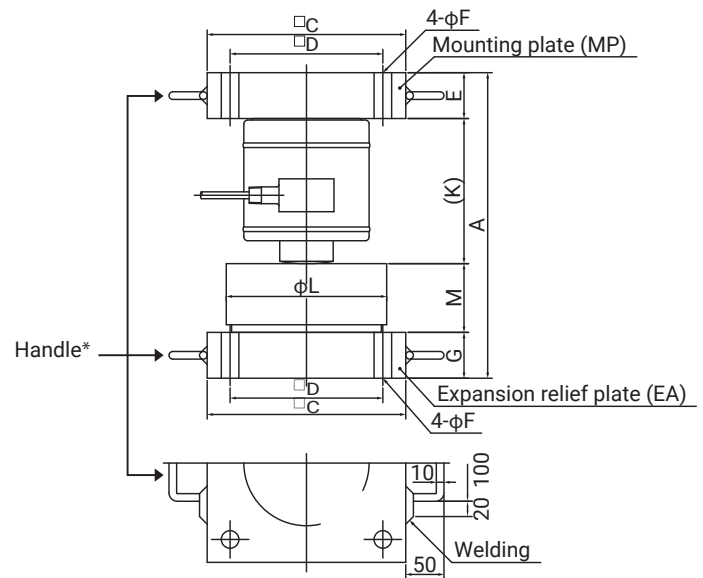
- Mounting Diagram for Bearing Plate and Mounting Plate for CP, C2Z1, C2F1, C2X1, CMX, CM

Unit=mm



- Mounting Diagram for Expansion Relief Plate and Mounting Plate for CP, C2Z1, C2F1, C2X1, CMX, CM

Unit=mm



*BP-30, MP-30, and EA-30 and above come with handles

Compression Fittings for CP, C2Z1, C2F1, C2X1, CMX, CM

Applicable load cell	Bearing Plate & Mounting Plate Dimension Table								
	Model	A	C	D	E	φF	G	K	Weight (kg)
CP-20L to 100L	BP-1, MP-1	152	100	77	15	8	15	122	3
CP-200L to 1	BP-1, MP-1	154	100	77	15	8	15	124	3
CP-2 to 5	BP-2, MP-2	213	130	105	23	12	23	167	6
CP-10	BP-10, MP-10	303	160	125	30	14	30	243	12
CP-20	BP-20, MP-20	378	200	150	30	14	30	318	18
CP-30	BP-30, MP-30	480	240	180	40	19	40	400	36
CP-50	BP-100, MP-110	620	260	200	60	23	60	500	65
CP-100	BP-210, MP-210	800	360	280	60	27	60	680	130
C2Z1-500L to 2	BP-2, MP-2	131	130	105	23	12	23	85	6
C2F1-500L to 2	BP-2, MP-2	151	130	105	23	12	23	105	6
C2Z1-5, 10	BP-10, MP-10	170	160	125	30	14	30	110	12
C2F1-5, 10	BP-10, MP-10	160	160	125	30	14	30	100	12
C2Z1-20	BP-20, MP-20	205	200	150	30	14	30	145	18
C2F1-20	BP-20, MP-20	180	200	150	30	14	30	120	18
C2X1-30, 50	BP-50, MP-50	240	220	160	40	19	40	160	30
C2X1-100	BP-100, MP-100	310	260	200	60	23	60	190	64
C2X1-200	BP-200, MP-200	390	280	200	80	27	80	230	100
C2X1-300	BP-300, MP-300	500	280	200	80	35	100	320	110
C2X1-500	BP-500, MP-500	630	380	280	100	40	130	400	260
CMX-50L to 2	BP-2-A, MP-2-A	55	130	105	15	12	15	25	4
CM-5 to 20	BP-10, MP-10-A	110	160	125	30	14	30	50	12

Applicable load cell	Expansion Relief Plate & Mounting Plate Dimension Table											
	Model	A	C	D	E	φF	G	φL	K	M	N	Weight (kg)
CP-20L to 100L	EA-1, MP-1	177	100	77	15	8	15	60	122	25	±8	4
CP-200L to 1	EA-1, MP-1	179	100	77	15	8	15	60	124	25	±8	4
CP-2 to 5	EA-2, MP-2	248	130	105	23	12	23	90	167	35	±8	8
CP-10	EA-10, MP-10	348	160	125	30	14	30	110	243	45	±10	16
CP-20	EA-20, MP-20	443	200	150	30	14	30	130	318	65	±10	26
CP-30	EA-30, MP-30	545	240	180	40	19	40	160	400	65	±15	46
CP-50	EA-100, MP-110	710	260	200	60	23	60	210	500	90	±15	96
CP-100	EA-200, MP-210	905	360	280	60	27	60	300	680	105	±15	180
C2Z1-500L to 2	EA-2, MP-2	166	130	105	23	12	23	90	85	35	±8	8
C2F1-500L to 2	EA-2, MP-2	186	130	105	23	12	23	90	105	35	±8	8
C2Z1-5, 10	EA-10, MP-10	215	160	125	30	14	30	110	110	45	±10	16
C2F1-5, 10	EA-10, MP-10	205	160	125	30	14	30	110	100	45	±10	16
C2Z1-20	EA-20, MP-20	270	200	150	30	14	30	130	145	65	±10	26
C2F1-20	EA-20, MP-20	245	200	150	30	14	30	130	120	65	±10	26
C2X1-30,50	EA-50, MP-50	305	220	160	40	19	40	160	160	65	±15	40
C2X1-100	EA-100, MP-100	400	260	200	60	23	60	210	190	90	±15	86
C2X1-200	EA-200, MP-200	475	360 (EA) / 280 (MP)	280 (EA) / 200 (MP)	80	27	60	300	230	105	±15	170
C2X1-300	EA-300, MP-300	585	400 (EA) / 280 (MP)	320 (EA) / 200 (MP)	80	35	60	350	320	125	±15	222
C2X1-500	EA-500, MP-500	745	500 (EA) / 380 (MP)	400 (EA) / 280 (MP)	100	40	80	430	400	165	±15	457
CMX-50L to 2	EA-2, MP-2-A	98	130	105	15	12	23	90	25	35	±8	7
CM-5 to 20	EA-10, MP-10-A	155	160	125	30	14	30	110	50	45	±10	16

Unit=mm

N: Allowable movement range

Rod End Bearing LCB / LCZARE



Model	Compatible model	Material	G	H	Screw (l)	Weight(g)
LCB-A6	LC1205-K020, K050, K100, LC1216-K100, LC1122-K050, K100	Tool steel	38	24	M6 x 1	17
LCB-A12	LC1205-K200, K500, LC1216-K200, K500, LC1122-K250, K500		56	35	M12 x 1.75	85
LCB-A18	LC1205-T001A, LC1216-T001A		76	46	M18 x 1.5	250
LCB-18	LC1205-T002		79.5	46	M18 x 1.5	250
LCB-24-2T	LC1216-T002A		94	57	M24 x 2	575
LCB-24-5T	LC1205-T005, LC1216-T005		105	59	M24 x 2	1,150

Model	Compatible model	Material	Screw	Radial Static Breaking Load (kN)	Radial Limit Load (kN)	Weight (g)
LCZARE-12S	LCS15-K500	Stainless steel	M12 x 1.75	19.1	12.74	75
LCZARE-18S	LCS15-T001	Stainless steel	M18 x 1.5	37.2	24.99	225
LCZARE-24S	LCS15-T002	Stainless steel	M24 x 2	69.6	44.1	523

*When using stainless steel rod end bearings, please keep the working load below half of the rated capacity.
 *One standard stainless steel nut is included.

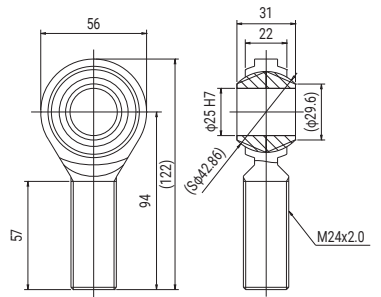
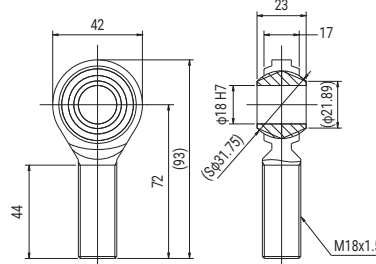
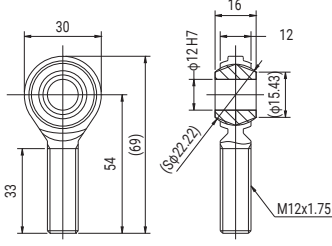
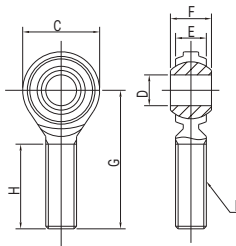
LCB

LCZARE-12S

LCZARE-18S

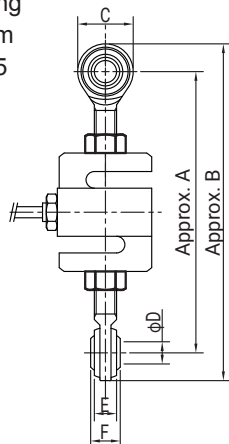
LCZARE-24S

Unit=mm

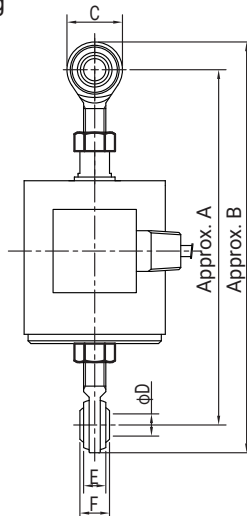


One standard nut is included.

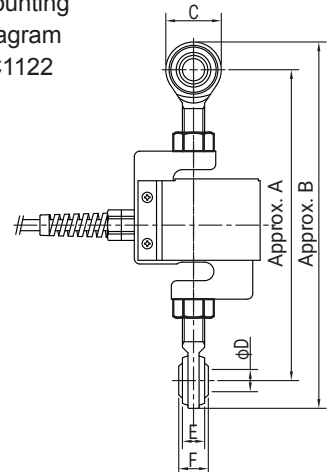
- Mounting Diagram LC1205



- Mounting Diagram LC1206



- Mounting Diagram LC1122



Unit=mm

Rod End Bearing LCB / LCZARE

LC1205

Model	Rod End Bearing	A	B	C	φDH7	E	F
LC1205-K020, K050, K100	LCB-A6	116	134	19	6	6	9
LC1205-K200, K500	LCB-A12	152	182	32	12	11	16
LC1205-T001A	LCB-A18	194	236	44	18	15	23
LC1205-T002	LCB-18	214	257	43	18	16.3	20
LC1205-T005	LCB-24-5T	268	338	70	25	25.3	35

Unit=mm

LC1216

Model	Rod End Bearing	A	B	C	φDH7	E	F
LC1216-K100	LCB-A6	160	178	18	6	7	9
LC1216-K200, K500	LCB-A12	194	224	30	12	12	16
LC1216-T001A	LCB-A18	270	312	42	18	17	23
(LC1216-T002)	LCB-18	285	328	43	18	16.3	20
LC1216-T002A	LCB-24-2T	320	376	56	25	22	31
LC1216-T005	LCB-24-5T	342	412	70	25	25.3	35

Unit=mm

LC1122

Model	Rod End Bearing	A	B	C	φDH7	E	F
LC1122-K050, K100	LCB-A6	132	150	18	6	7	9
LC1122-K250, K500	LCB-A12	168	198	30	12	12	16

Unit=mm

Rod End Bearing SM / S

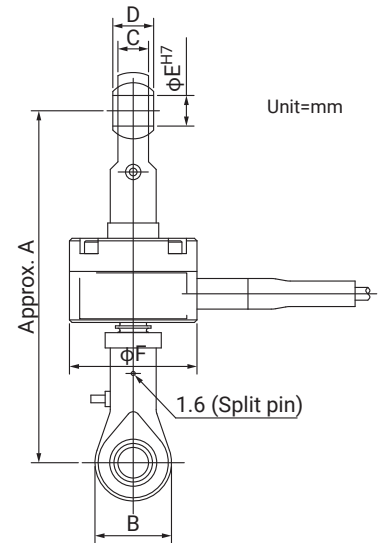
• Mounting Diagram UM

Model	Rod End Bearing	A	B	C	D	ϕE	ϕF	Weight (kg)
UM (TM) -50L-A, 100L-A, 200L	SM-1	138	30	12	16	12	50	0.2
UM (TM) -500L to 1	SM-2A	170	38	15	21	16	62	0.4

(NOTE)

When using TM, it is recommended to use rod end bearings (tension-only) to prevent bending loads on the load cell.

Unit=mm



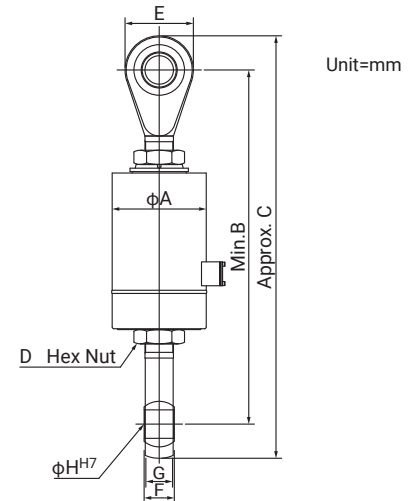
• Mounting Diagram TP

Model	Rod End Bearing	ϕA	Min. B	C	D	E	F	G	ϕH	Weight (kg)
TP-20L to 100L	S-1	89	183	209	M10 x 1.25	26	14	10.5	10	0.2
TP-200L to 1	S-2	89	195	229	M10 x 1.25	34	16	13.3	12	0.3
TP-2 to 5	S-3A	89	280	342	M24 x 2	62	28	19.3	22	1.4
TP-10	S-4	125	461	561	M39 x 2	100	43	39	40	9
TP-20	S-5	165	622	742	M50 x 2	120	53	49	50	17

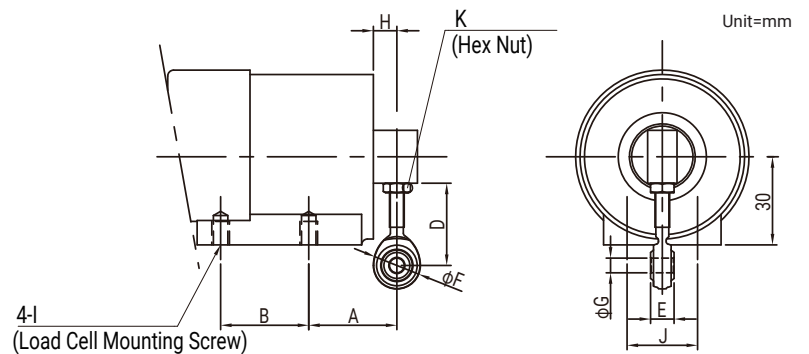
(NOTE)

The Min.B dimension is the minimum installation dimension when the shackle is fully screwed in. The installation should be within the range of Min.B+2, -0 (adjust the shackle position by unscrewing the shackle approximately 1/2 turn).

Unit=mm



• Mounting Diagram U2Z1



Model	Rod End Bearing	A	B	D	E	F	ϕG	H	I	J	K	Weight (kg)
U2Z1-1L to 10L-A	S-0.5	30	30	28-24	8	16	5	8	M6 DP8	24	M5	0.3
U2Z1-20L to 100L-A	S-1	25	30	36-31	14	26	10	13	M8 DP10	24	M10 x 1.25	0.4
U2Z1-200L,500L-A	S-2	90	30	39.5-29.5	16	34	12	15	M10 DP16	30	M12 x 1.25	0.5

(NOTE)

1. Allowable tilt angle: $\pm 5^\circ$
2. Tighten the hex nut while applying the specified load.

Unit=mm

Don't Forget About Our Product Inspection Systems!

Product Inspection protects consumers and brands through 100% inspection. By identifying contaminants, deformities and ensuring product quality and weight with our In-motion Checkweighers, Metal Detectors, and X-ray Systems companies can save on rework, recall, and wasted product and packaging materials. can be programmed to work specifically for your products. Features like masking, missing components and misshaped product detection and identify a variety of contaminants including bone, plastic, metal and glass come standard.



In-motion Checkweighers

If product giveaway and fill is of concern, checkweighers are an excellent solution. Our line of checkweighers are modular, easy to incorporate into your existing line, have a small footprint, and are efficient with the ability to process up to 400 pieces per minute! Pair with a rejector to automate the rejection process.



Metal Detectors

In facilities with metal machinery and risk of metal contamination, our metal detectors can detect ferrous, non-ferrous and stainless steel pieces as small as 0.2 millimeters that's smaller than a grain of sand! These metal detectors are stainless steel and wash down rated for easy cleaning and maintenance.



X-ray Systems

The ProteX X-ray series is a smart inspection system that can be programmed to work specifically for your products. Features like masking, missing components and misshaped product detection and identify a variety of contaminants including bone, plastic, metal and glass come standard.

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4622 Runway Blvd.
Ann Arbor, MI 48108
(800) 726-3364
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