

USB BUTTON LOAD CELL FOR FORCE MEASUREMENT

LCCU21 Series

LCCU21N100 / LCCU21N200 / LCCU21N500 / LCCU21KN001



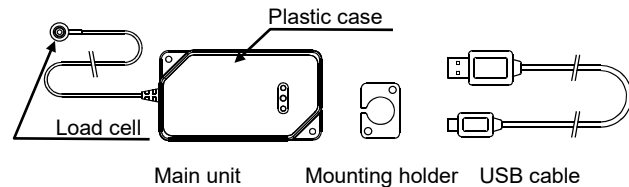
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1. OUTLINE

Check the following packing contents before use.

- Main unit (load cell, cable and plastic case) 1
- Mounting holder { APX-4036220: For LCCU21N100 or LCCU21N200 } 1
- { APX-4036221: For LCCU21N500 or LCCU21KN001 }
- USB cable 1
- Instruction manual (this sheet) 1



2. INTRODUCTION

The LCCU21 series is a compact and light compression digital load cell for force measurement. These can be used for the load distribution measurement, compression measurement and etc. Also, connecting the load cell to a computer using the USB cable allows for easy measurement.

3. SOFTWARE FOR MEASUREMENT

By using the "WinCT-DLC" software for measurement, the measurement data can easily be confirmed on a computer.

"WinCT-DLC" can be downloaded from A&D's website (<https://www.aandd.jp>).

4. SPECIFICATIONS

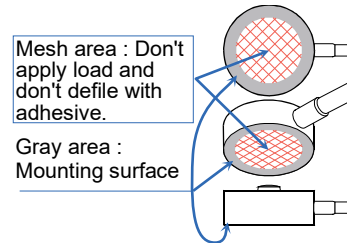
Model No.	LCCU21N100	LCCU21N200	LCCU21N500	LCCU21KN001
Rated capacities	100 N (10.20 kg)	200 N (20.39 kg)	500 N (50.99 kg)	1 kN (102.0 kg)
Rated output	100.00 ±0.50 (0.5%)	200.00 ±1.00 (0.5%)	500.00 ±2.50 (0.5%)	1000.0 ±5.0 (0.5%)
Combined error	0.5 % of R.O.			
Power	Supply voltage	DC 5 V (USB bus power)		
	Average current consumption ^{*1}	Less than 50 mA		
Zero balance	±2 % of R.O.			
Temperature effect on zero	0.6% of R.O. / 10°C			
Temperature effect on span	0.6% of LOAD / 10°C			
Compensated temperature range	0 °C to 70 °C			
Permissible temperature range	-10 °C to 80 °C			
Maximum safe overload	150 % of R.C.			
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 (default value: 1.0 Hz)			
Resonance frequency ^{*1, *2}	45 kHz	55 kHz	30 kHz	35 kHz
Cables	From load cell to case: φ2 mm, 2 m length USB cable (accessory): φ4 mm, 1.5 m length			
Dustproof / waterproof ^{*2}	IP64 compliant			
Weight ^{*3}	Approx. 50 g		Approx. 55 g	
Communications standard	Conformant to USB Ver. 2.0 Full Speed			
USB connector	micro-B type			
Communication settings	Baud rate	38400 bps		
	Character bit length	8 bit		
	Parity	Even		
	Stop bit length	1 bit		
	Terminator	CR LF		
Code	ASCII			

*1: Reference value *2: Load cell only *3: Main unit (load cell, cable, plastic case)

5. INSTALLATION

5.1. ATTACHING THE LOAD CELL

- Attach the load cell to a rigid and flat base (the fixed surface). If there is slope or distortion on a part of the base, it affects the measurement accuracy.
- The mounting surface is gray area on the bottom of the load cell in the figure.
Do not apply load to the concavity of the center of the bottom (mesh area).
Don't defile with adhesive on mesh area.



- Clean the mounting surface before attaching the load cell.
- Fix the position of the load cell using adhesive or the mounting holder.

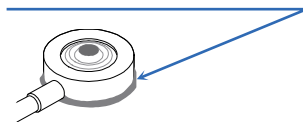
Adhesive used

- Use the cyanoacrylate adhesive.
- Push gently the load cell so as to keep the position. Paste the adhesive to the place contacting the fixed surface and outer circumference of the load cell. Hold the load cell until maintaining the position. Do not apply excessive load and don't defile with adhesive on mesh area.
- Peel and shave adhesive using cutter and etc. when removing the load cell. Don't hit and shock to the load cell when removing it. Note injury and damage of the load cell in removing it.

Example of the load cell installation

Adhesive used

Paste the adhesive to the place contacting the fixed surface and outer circumference of the load cell.

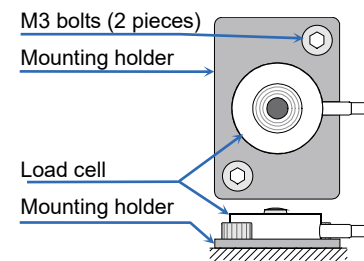


Mounting holder used

- Put the load cell into the mounting holder. Fix them.
Note M3 bolts are not included in accessories.

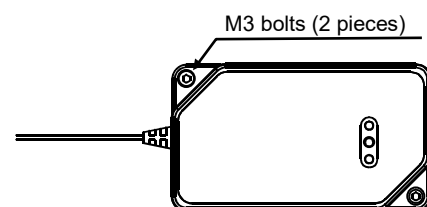
Example of the load cell installation

Mounting holder used



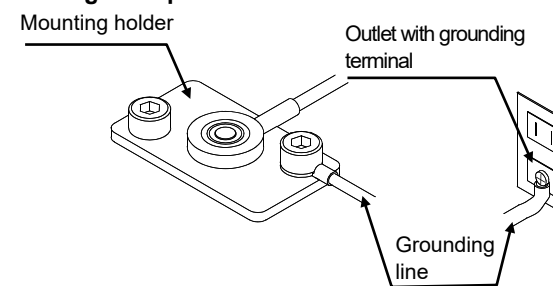
- When using the load cell by securing the plastic case, secure it as shown in the figure below using the two installation holes.

Note M3 bolts are not included in accessories.



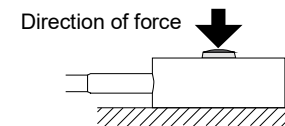
- Use the load cell with the load cell and computer at the same potential. Charging with the load cell may cause malfunctions. Specifically, take measures such as grounding the load cell.

Grounding example



5.2. LOADING TO THE LOAD CELL

- Load a vertical load to the load cell indicated in the figure below. Avoid eccentric load, horizontal force and moment.



- Apply load to the load cell through a rigid surface.

5.3. CAUTIONS

- Avoid a shock and excessive force to the load cell.
- Keep a constant temperature using insulation, when the load cell is installed in a place exposed to direct sunlight or radiant heat.
- Handle the load cell cable gently. Do not pull it when using the load cell.
- Prevent the plastic case from getting wet.
- Only the provided USB cable should be used with this load cell. Using a USB cable other than the provided USB cable may prevent the load cell from making proper measurement due to the effect of noise.

6. COMPUTER CONNECTION PROCEDURE

- 1) Connect the device to the computer using the provided USB cable.
 - 2) Select the device manager on the computer.
 - 3) Click the "Ports (COM & LPT)".
 - 4) Confirm the COM Port number displayed. The numerical value indicated by x in "USB Serial Port (COM x)" indicates the COM Port number. If multiple load cells are simultaneously connected to the computer without confirming the COM Port number, COM Port identification becomes difficult. Confirm the COM Port number one by one beforehand when connecting. *4
 - 5) Select the "Port Settings" tab in the "USB Serial Port (COM x) Properties", then select "Advanced".
 - 6) In the "BM options", set the "Latency Timer (msec)" under 10 (recommended value is 3). If it is not to set, a communication delay may result.
- *4 If the COM Port number cannot be displayed due to failure in installing the driver, refer to the website of Future Technology Devices International. Ltd. to install the driver.

7. COMMAND LIST

In this document, only typical commands are described. To reference other commands and details of those commands, download the "LCCU21 WEB INSTRUCTION MANUAL" from A&D's website.

Items	Host side transmission command	LCCU21 side response command
Floating point type measurement value reading	RFMV<CR><LF>	RFMVXXXXXXXX<CR><LF> (XXXXXXXX is the floating point type measurement value)
Floating point type measurement value sequential reading	RCFM<CR><LF>	RCFMXXXXXXXX<CR><LF> (XXXXXXXX is the floating point type measurement value)
Fixed point type measurement value reading	RLMV<CR><LF>	US,XXXXXXXX□□N<CR><LF> (XXXXXXXX is the fixed point type measurement value) (□ is a space (0x20))

Items	Host side transmission command	LCCU21 side response command
Fixed point type measurement value sequential reading	RCLM<CR><LF>	US,XXXXXXXX□□N<CR><LF> (XXXXXXXX is the fixed point type measurement value.) (□ is a space (0x20))
Stop sequential reading	STOP<CR><LF>	STOP<CR><LF>

Response when command error occurs

Items	LCCU21 side response command
Format error	? <CR><LF>
Setting value error	V<CR><LF>

8. LED DISPLAY

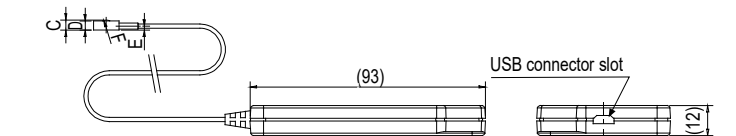
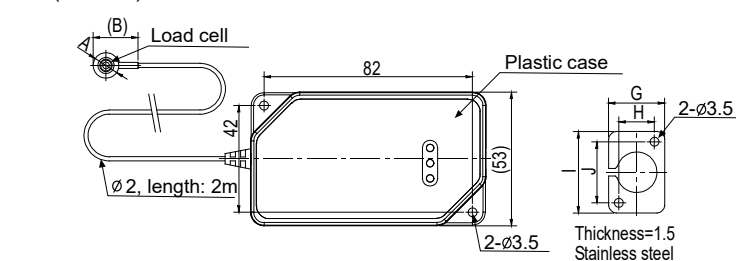
Orange.....TX (sending), Yellow.....RX (receiving), Blue.....Power (power supply)

9. MAINTENANCE

- Remove all dirt and dust from the load cell, and always use it in a clean environment.
- When cleaning, use an air blower.

10. DIMENSION

(Number) : Reference value.



Unit: mm

Model No.	A	B	C	D	E	F	G	H	I	J
LCCU21N100	φ10	18	4	3.6	1.6	SR3	16	8	28	20
LCCU21N200										
LCCU21N500	φ16	24	7	6	3	SR6	22	14	32	24
LCCU21KN001										