LCC28-USB series
USB Button Load Cell for Force Measurement

A&D Company, Ltd.

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1WMPD4005365

LCC28-USB series website:
https://link.aandd.jp/Product_LCC28USB_EN

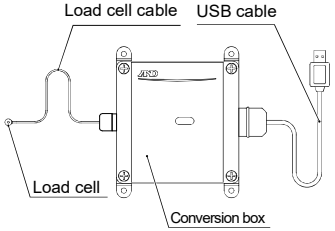
1. OUTLINE

- The LCC28-USB series is load cell of small type and compression type load cell.
- The load cell of the LCC28-USB series is calibrated by physical value of force, is connected to the computer using the USB cable and can measure it.
- We recommend to use for simplified measurement of experiment and evaluation.
- We recommend to corroborate the LCC28 series (bridge output) and our weighing indicator when precision measurement is required in built-in system etc.

2. CAUTIONS

- Mount the load cell on a secure surface that is rigid and flat.
- Clean the surface to ensure there is no residual dust or dirt before mounting the load cell.
- Avoid applying unbalanced load, lateral load, bending moment to the load cell when mounting or applying load to the load cell.
- When mounting the load cell in a location that is exposed to direct sunlight or radiant heat, use heat insulating materials or take other measures to prevent temperature gradient.
- To prevent malfunction, do not disassemble the conversion box.

3. NAMES



4. MEASUREMENT SOFTWARE

The measurement data can be confirmed on the computer when using the measurement software "WinCT-DLC". The "WinCT-DLC" can download from the LCC28-USB series website.

5. SPECIFICATIONS

Model		LCC28-N050-USB	LCC28-N100-USB	LCC28-N200-USB	LCC28-N500-USB
Item CD		LCC28N050-U	LCC28N100-U	LCC28N200-U	LCC28N500-U
Rated capacities		50 N (5.099 kg)	100 N (10.20 kg)	200 N (20.39 kg)	500 N (50.99 kg)
Rated output		50.0000 ±0.2500 [N]	100.000 ±0.500 [N]	200.000 ±1.000 [N]	500.000 ±2.500 [N]
Nonlinearity		0.5 % of R.O.			
Hysteresis		0.5 % of R.O.			
Repeatability		0.5 % of R.O.			
Power supply voltage		DC5 V(USB bus power)			
Average current consumption #1		60 mA or less			
Zero balance		±10 % of R.O.			
Temperature effect on zero		1.1 % of R.O. / 10 °C			
Temperature effect on span		1.1 % of Load / 10 °C			
Compensated temperature range		5～50 °C			
Safe overload		120% of R.C.			
Cables		Load cell cable: ϕ1.6 mm length 0.4 m USB cable: ϕ4 mm length 1.2 m A type connector			
Load cell material		Beryllium copper	Stainless		
Conversion box material		Polycarbonate			
Resonance frequency #2		80 kHz	100 kHz	116 kHz	115 kHz
Weight		0.5 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)			
Communication standard		Conformed to USB Ver.2.0 Full Speed			
Communication settings	Baud rate	38400 bps			
	Data bits	8 bits			
	Parity	Even			
	Stop bit	1 bit			
	Terminator	CR LF			
	Code	ASCII			

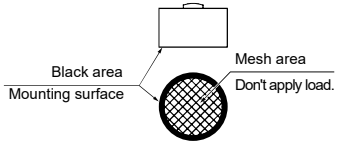
#1: Reference value. #2: Load cell only.

6. PROCEDURE OF INSTALLATION

6.1. ATTACHING THE LOAD CELL

1 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.

2 The mounting surface is black 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).

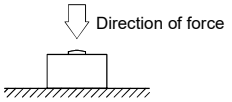


3 When using adhesive to secure the load cell, pay attention to the following points.
- Use the cyanoacrylate adhesive.
- Push gently the load cell so as to keep the position. Paste the adhesive to the place contacting the fixed surface and outer circumference of the load cell. Hold the load cell until 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.

4 Construct the grounding connection so that load cell and computer is the same voltage potential. If the load cell is charged static electricity, it may cause of malfunction.

6.2. LOADING TO LOAD CELL

1 Load a vertical load to the load cell such as figure indicated below.Avoid unbalanced load, lateral load and twist force to the load cell when loading to the load cell.



7. PROCEDURE OF CONNECTING COMPUTER

1 Connect the USB cable to the computer.

2 Select the device manager at control panel in the computer.

3 Select "Ports (COM & LPT)".

4 Confirm the displayed COM Port number. x of "USB Serial Port (COM x)" is COM Port number. If COM Port numbers are not confirmed and are connected, identification of COM Port cannot recognize. Therefore, confirm COM Port number each time when connecting it. Additionally, when installation of driver software fails and COM Port number isn't displayed, refer to website of "Future Technology Devices International Limited" and retry installation of driver software. Refer to website of the LCC28-USB series for "USB load cell computer connection communication manual" and "USB connection manual".

5 Select the "Port Settings" tab in property of USB Serial Port (COM x), 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.

8. COMMAND LIST

In this document, only major commands are described. Concerning of others, refer to "USB load cell computer connection communication manual" from the LCC28-USB series website.

Items	Transmission command of host side	Response command of load cell side
Floating point type measurement value reading	`RFMV` <CR><LF>	`RFMVXXXXXXXX` <CR><LF>
Floating point type measurement value sequential reading	`RCFM` <CR><LF>	`RCFMXXXXXXXX` <CR><LF>
Fixed point type measurement value reading	`RLMV` <CR><LF>	`US,YYYYYYYYYZZZ` <CR><LF>
Fixed point type measurement value sequential reading	`RCLM` <CR><LF>	`US,YYYYYYYYYZZZ` <CR><LF>
Stop sequential reading	`STOP` <CR><LF>	`STOP` <CR><LF>

`XXXXXXXX` : The floating point type measurement value, `ZZZ` : Unit
`YYYYYYYYY` : The fixed point type measurement value

Response of command error

Items	Response command of load cell side
Format error	`?` <CR><LF>
Setting value error	`V` <CR><LF>

9. LED DISPLAY

Orange ····· TX (Sending)
Yellow ····· RX (Receiving)
Blue ····· Power (Power supply)

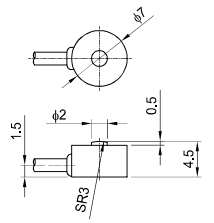
10. MAINTENENCE

1 Remove all dirt and dust from the load cell, and always use it in a clean environment.

2 When cleaning, use an air blower.

11. DIMENSIONS

<LOAD CELL>



<CONVERSION BOX>