# LCC33-USB series USB Button Load Cell for Force Measurement



## A&D Company, Limited

1WMPD4005366

LCC33-USB series website:

https://link.aandd.jp/Product LCC33USB EN



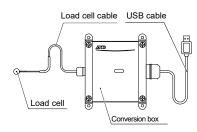
## 1. OUTLINE

- ☐ The LCC33-USB series is load cell of small type and compression type load cell.
- ☐ The load cell of the LCC33-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.

### 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 LCC33-USB series website.

#### 5 SDECIEICATIONS

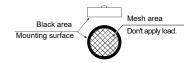
Model   LCC33- N005-USB   N010-USB N020-USB N050-USB   N005-USB   N005-USB N0010-USB N005-USB   N005-USB N005-USB N005-USB   N005-USB N005-USB N005-USB   N005-USB N005-USB N005-USB   N005-USB N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005-USB   N005	5. SPE	CIFIC	ATIONS					
Note-USB	Mod	lel						
Rated capacities								
Rated capacities   (0.5099 kg)   (1.020 kg)   (2.039 kg)   (5.099 kg)	Item	CD	LCC33N005-U	LCC33N010-U	LCC33N020-U	LCC33N050-U		
Rated output	Rated ca	nacities	5 N	10 N	20 N	50 N		
\$\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	nateu capacities		(0.5099 kg)	(1.020 kg)	(2.039 kg)	(5.099 kg)		
±0.02500 [N] ±0.0500 [N] ±0.1000 [N] ±0.2500 [N]     Nonlinearity	Pated (	Dated output		10.0000	20.0000	50.0000		
Hysteresis	- Nateu (	Juipui	±0.02500 [N]			±0.2500 [N]		
Repeatability Power supply voltage Average current consumption #1  Zero balance Temperature effect on zero Temperature effect on span Compensated temperature range Safe overload  Cables  Load cell material Conversion box material Resonance frequency #2  Weight  A/D conversion rate  Digital filter  Communication standard  Reard  Baud rate Data bits Conder  Bard Communication settings  Polycarbo  A/D conversion settings  Baud Communication settings  Parity Stop bit Termin ator COde  AVEROM  COM MA or R.O.  DOS OR  CAD MA OF R.O.  1.1 % of R.O. / 10 °C  2.1 % of R.O. / 10 °C  Cables  Load cell cable: \$3 mm length 0.9 m USB cable: \$4 mm length 1.2 m A type connector  Aluminum Stainless  Polycarbonate  116 kHz 115 kHz 115 kHz 116 kHz 115 kHz 115 kHz 116 kHz 116 kHz 116 kHz 117 kHz 116 kHz 116 kHz 117 kHz 116 kHz 117 kHz 116 kHz 117 kHz 116 kHz 117	Nonlin	earity	1 % of R.O.					
Power supply voltage								
Voltage			1 % of R.O.					
Average current consumption #1   2ero balance			DC5 V(USB bus power)					
Zero balance			, , ,					
Temperature effect on zero			60 mA or less					
Temperature effect on zero			+10 % of R O					
## 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  ### Baud rate Data bits bits bits strings.  ### Code ### CR LF  #### CR LF  ##### CR LF  ##### CR LF  ##### CR LF  ###################################								
O			2.1 % of R.O. / 10 °C					
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   Baud rate   Data bits   Data bits   Data bits   Data bits   Cr.   C	Tempe	rature	1.1.0/ of Lc1.1.10.00					
temperature range         0~50 °C           Safe overload         150 % of R.C.           Cables         Load cell cable: \$3 mm length 0.9 m USB cable: \$4 mm length 1.2 m A type connector           Load cell material         Aluminum Stainless           Conversion box material         Polycarbonate           Resonance frequency #2         2.3 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           Baud rate Data bits         38400 bps           Data bits         8 bits           Parity         Even           Stop bit         1 bit           Termin ator         CR LF           Code         ASCII		effect on span		1.1 % Of Load / TU C				
temperature range           Safe overload         150 % of R.C.           Cables         Load cell cable: ∮3 mm length 0.9 m USB cable: ∮4 mm length 1.2 m A type connector           Load cell material         Aluminum         Stainless           Conversion box material         Polycarbonate           Resonance frequency #2         2.3 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 standard         8 bits           Data bits         8 bits           Data bits         8 bits           Stop bit         1 bit           Termin ator         CR LF           Code         ASCII			0~50 °C					
Cables  Load cell cable: \$3 mm length 0.9 m USB cable: \$4 mm length 1.2 m A type connector  A type connector  Aluminum Stainless  Conversion box material Resonance frequency #2 Weight  A/D conversion rate  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  Baud rate Data bits Communication settings  Parity Even Stop bit 1 bit  Termin ator Code ASCII								
Cables         USB cable: ∳4 mm length 1.2 m A type connector           Load cell material Conversion box material         Aluminum         Stainless           Resonance frequency #2         Polycarbonate           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         Salud rate           Data bits         38400 bps           Data bits         8 bits           Parity         Even Stop bit           Termin ator         CR LF           Code         ASCII	Safe ov	Safe overload		150 % of R.C.				
Load cell material			Load cell cable: ∮3 mm length 0.9 m					
Load cell material	Cab	Cables		USB cable: 64 mm length 1.2 m				
Conversion box material         Polycarbonate           Resonance frequency #2         2.3 kHz         116 kHz         115 kHz           Weight         0.5 kg         100 times/s           A/D conversion rate         100 times/s         5           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 standard         Baud rate Data Data Dits         38400 bps         8 bits           Communication settings         Parity         Even           Stop bit Termin ator Code         ASCII			7.					
Material   Polycarbonate			Aluminum Stainless					
Resonance   frequency #2	1			Polycarl	oonate			
Termin   Code						I		
Weight	1		2.3 1	kHz	116 kHz	115 kHz		
A/D conversion rate				0.5	ka			
Digital filter			-					
Communication standard	rat	е						
S.0, 11.0 HZ (Initial value 1.0 HZ)   Communication standard	Digital	filter						
Standard   Conformed to USB Ver.2.0 Full Speed			8.0, 11.0 Hz (Initial value 1.0 Hz)					
Baud rate   38400 bps			Conformed to USB Ver.2.0 Full Speed					
Communi			20.400.4					
Communication settings         bits bits         8 bits           Parity         Even           Stop bit         1 bit           Terminator         CR LF           Code         ASCII	cation	rate	38400 bps					
Communi		Data	0.1.7					
Settings         Stop bit         1 bit           Termin ator         CR LF           Code         ASCII		bits	8 bits					
Termin ator CR LF Code ASCII								
ator CR LF Code ASCII			1 bit					
ator Code ASCII		l	CR LF					
#1: Peference value #2: Load cell only					ااز			

#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. In this document, only major commands are described. Concerning accuracy.
- 2 The mounting surface is black area on the bottom of the load cell in

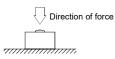
Do not apply load to the concavity of the center of the bottom ( mesh area).



- 3 When using adhesive to secure the load cell, pay attention to the following points.
  - · Use the cvanoacrylate 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 11. DIMENSIONS 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 LCC33-USB series for "USB load cell computer connection communication manual" and "USB connection manual".
- 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

# 8. COMMAND LIST

of others, refer to "USB load cell computer connection communication manual" from the LCC33-USB series website.

	Items Transmission command of host side		Response command of load cell side	
	Floating point type			
	measurement	RFMV <cr><lf></lf></cr>	RFMVXXXXXXXX <cr><lf></lf></cr>	
	value reading			
	Floating point type			
	measurement	RCFM <cr><lf></lf></cr>	RCFMXXXXXXXX <cr><lf></lf></cr>	
	value sequential			
	reading			
Э	Fixed point type	RLMV <cr><lf></lf></cr>		
r	measurement		US,YYYYYYYYZZZ <cr><lf></lf></cr>	
9	value reading			
Э	Fixed point type			
	measurement	RCLM <cr><lf></lf></cr>	US,YYYYYYYYZZZ <cr><lf></lf></cr>	
b	value sequential			
b	reading			
	Stop sequential	STOP <cr><lf></lf></cr>	STOP <cr><lf></lf></cr>	
	reading	2101 -01/-	3101 000 117	

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></lf></cr>
Setting value error	v <cr><lf></lf></cr>

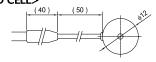
## 9. LED DISPLAY

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.

# <LOAD CELL>





#### <CONVERSION BOX>

