

CMX-USB series USB Compact Load Cell for Force Measurement



A&D Company, Limited

3-23-14 Higashi-Ikebukuro, Toshima-ku, Tokyo 170-0013, JAPAN
Telephone: [81] (3) 5391-6132

1WMPD4004793

CMX-USB series homepage https://link.aandd.jp/cm-x-usb_en



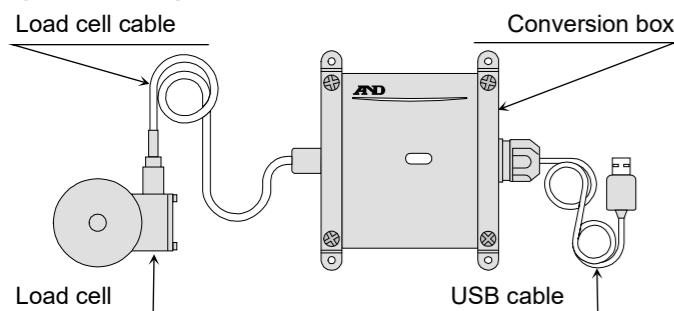
1. OUTLINE

- The CMX-USB series is load cell of small type and compression type load cell with air-tight structure.
- The load cell of the CMX-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 CMX series (bridge output) and our weighing indicator when precision measurement is required in built-in system etc.

2. CAUTIONS

- Attach the load cell on the fixed surface that is an enough rigidity and flatness.
- Clean the installing surface so as not to leave dust before attaching the load cell.
- Avoid unbalanced load, lateral load and twist force to the load cell when installing the load cell and loading to the load cell.
- If the load cell is installed in the place that is exposed direct sunshine and radiation heat, take measures using heat insulation material so as not to occur temperature gradient.
- Do not disassemble the conversion box to prevent malfunction.

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 CMX-USB series homepage.

5. SPECIFICATIONS

| Model | CMX-50L-USB | CMX-100L-USB | CMX-200L-USB |
|------------------------|-----------------------|----------------------|-----------------------|
| Item CD | CMX-50L-U | CMX-100L-U | CMX-200L-U |
| Rated capacities | 500 N (50.99 kg) | 1 kN (102.0 kg) | 2 kN (203.9 kg) |
| Rated output | 500.000 ±2.500 [N] | 1000.00 ±5.00 [N] | 2000.00 ±10.00 [N] |
| Resonance frequency #1 | 5.5 kHz | 8.1 kHz | 11.5 kHz |

| Model | CMX-500L-USB | CMX-1-USB | CMX-2-USB |
|------------------------|--------------------------|-------------------------|-------------------------|
| Item CD | CMX-500L-U | CMX-1-U | CMX-2-U |
| Rated capacities | 5 kN (509.9 kg) | 10 kN (1.020 t) | 20 kN (2.039 t) |
| Rated output | 5.00000 ±0.02500 [kN] | 10.0000 ±0.0500 [kN] | 20.0000 ±0.1000 [kN] |
| Resonance frequency #1 | 18.5 kHz | 22.5 kHz | 20.0 kHz |

COMMON SPECIFICATIONS

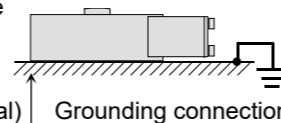
| | | |
|--------------------------------|------------------------------------------------------------------------------------------------|-----------|
| Combined error | 0.2 % of R.O. | |
| Power supply voltage | DC 5V (USB bus power) | |
| Average current consumption #2 | 60 mA or less | |
| Zero balance | ±2 % of R.O. | |
| Temperature effect on zero | 0.2 % of R.O. / 10 °C | |
| Temperature effect on span | 0.2 % of Load / 10 °C | |
| Compensated temperature range | -10 to 60 °C | |
| Maximum safe overload | 150 % of R.C. | |
| Tolerance overload | 200 % of R.C. | |
| Cables | Load cell cable : φ5 mm length 3 m, USB cable : φ4 mm length 1.2 m, A type connector | |
| Material | Load cell : Stainless, Conversion box : Polycarbonate | |
| Dustproof / Waterproof | Load cell : IP67, Conversion box : IP65 | |
| Mass | 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 | Conformed to 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 | |

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

6. PROCEDURE OF INSTALLATION

6.1. INSTALLING THE LOAD CELL

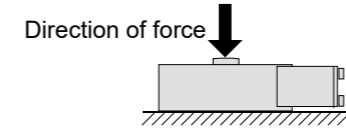
- Make surface roughness to Ra25 or less for installing the load cell.
- Use allen head socket cap bolts or hexagonal bolt of M5, strength 8.8 class for installing the load cell. Recommended tightening torque is 5 Nm.
- Construct the grounding connection so that load cell and computer is the same voltage potential. If the load cell is charged static electricity, it may cause of malfunction.



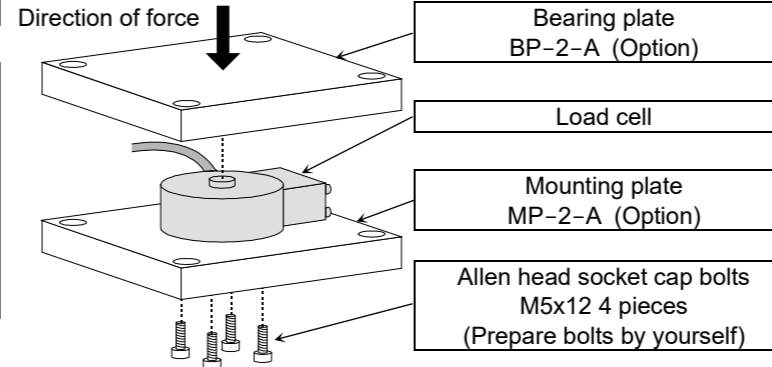
Mounting plate (Metal) Grounding connection

6.2. LOADING TO LOAD CELL

- 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.



6.3. EXAMPLE OF INSTALLATION WITH OPTIONAL PLATE



7. PROCEDURE OF CONNECTING COMPUTER

- Connect the USB cable to the computer.
- Select the device manager at control panel in the computer.
- Select "Ports (COM & LPT)".
- 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 homepage of "Future Technology Devices International Limited" and retry installation of driver software. Refer to homepage of the CMX-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".
- 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 CMX-USB series homepage.

| 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

YYYYYYYY : 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

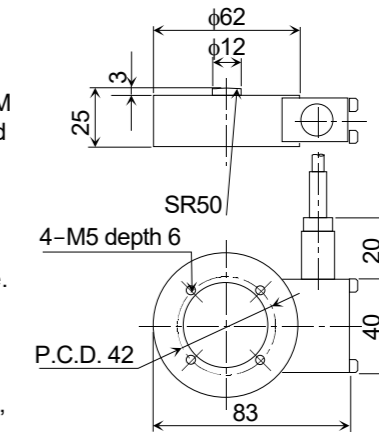
Orange TX (Sending)
Yellow RX (Receiving)
Blue Power (Power supply)

10. MAINTENANCE

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

11. DIMENSIONS

<LOAD CELL>



<CONVERSION BOX>

