

AD-4411-EIP/PRT/ECT-DIN

Weighing Indicator

Simplified Instruction Manual

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1WMPD4005441

Detailed instruction manual

This manual provides simplified precautions and operating instructions for AD-4411. For further information about the AD-4411, please refer to the “AD-4411 Instruction Manual” which is available for download from the A&D website (<https://www.aandd.jp>).

Introduction

The AD-4411 is a weighing indicator that can convert signals from strain gauge load cells and connect them to an Ethernet-based field network. It contributes to an efficient system by connecting weighing instruments to industrial control systems in plants and factories.

- Daisy-chain connection is possible without a switching hub, thanks to two communication ports.
- 7-segment green LED display with a character height of 10mm and display resolution of ± 999999 .
- High-speed AD conversion of 1200 times/second and digital filter enable high speed and accuracy weighing.
- PC can update the settings via USB port.

Safety precaution

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Read the following precautions carefully before using the indicator for safe and correct usage.

WARNING

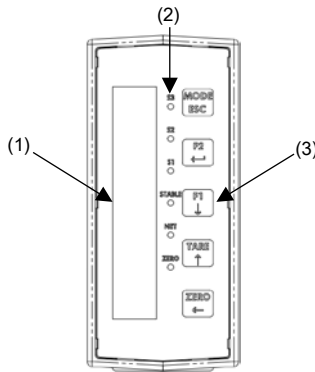
- Provide an external safety circuit to the indicator so that the safety of the whole system can be secured even if errors occur in the external power supply or the indicator.
- This indicator must be used indoors. DIN rail mount type must be used inside the control panel. Do not use the indicator in the following environment:
 - where the temperature and the humidity exceed the specifications
 - where corrosive gases or flammable gases exist
 - where the indicator gets wet with oil, chemicals, or water
 - where the indicator is exposed to direct sunlight
- Turn off all the external power supplies used in the system before installing or removing the indicator.
- Turn off all the external power supplies used in the system before wiring.
- Be sure to ground the indicator.

CAUTION

- Do not clamp control wires or communication cables with power lines, or do not place them close to power lines.
- Place the load cell cable sufficiently away from high frequency circuits such as high voltage power lines and inverter load circuit.
- When the front cover have dirt, wipe them with wet soft cloth. Do not use organic solvent such like benzine, thinner and alcohol. Doing so may result in deformation or discoloration of the unit.
- Suitable for use at pollution degree of 2 or less.
- Use within an altitude of 0 to 2000m
- This equipment shall be supplied from a 24V dc power source that meets the limited energy circuit requirements or LPS or NEC/CEC Class 2 (US/Canada), isolated from mains by reinforced or double insulation.

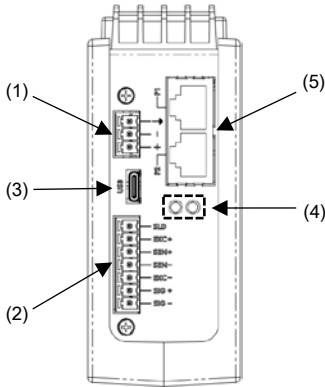
Part names

Front panel



No.	Name	Description
(1)	Main display	Displays measured value or various settings.
(2)	ZERO status	The LED is ON when the measured value is within 1/4 the minimum division.
	NET status	The LED is ON when the net value is displayed.
	STABLE status	The LED is ON when the measured value is stable.
	S1 / S2 / S3	The LED is ON when the S1 / S2 / S3 status ON condition (FncF07 / 08 / 09) is met.
(3)	[ZERO/←] key	Zeros the gross value. Moves the flashing digit to the left when not in measurement mode.
	[TARE/↑] key	Performs tare. Increases the flashing digit by one when not in measurement mode.
	[F1/↓] key	Performs the function set for the F1 key function (FncF05). Decreases the flashing digit by one when not in measurement mode.
	[F2/→] key	Performs the function set for the F2 key function (FncF06). Updates the setting value entered when not in measurement mode.
	[MODE/ESC] key	Changes the operation mode. Cancels the setting value entered when not in measurement mode.

Top panel



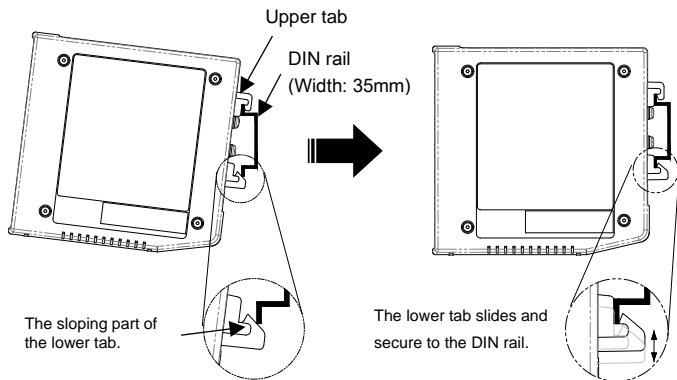
No.	Name	Description
(1)	DC power input terminals	Terminals for connection of a DC24V power supply.
(2)	Load cell input terminals	Terminals for connection of load cells.
(3)	USB connector	Connector for connection with setting PC. (Type-C)
(4)	Field network status LEDs	Notifies field network status.
(5)	Field network connector	Connector for connection of PLC via field network. Dual ports can be used for daisy chain wiring (RJ-45).

Accessories

Name	A&D Part Number	Qty
Power connector,	1JIMC1.5/3-ST	1
Load cell connector.	1JIMC1.5/7-ST	1

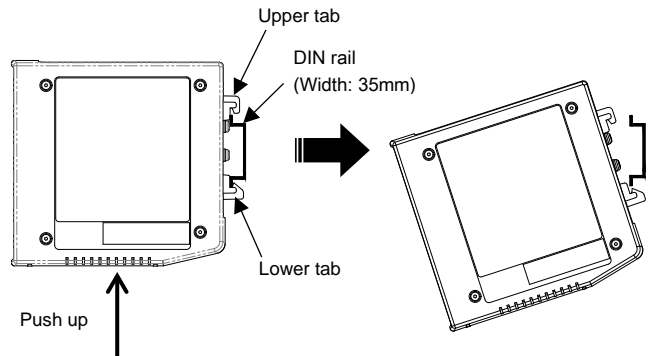
Installing the indicator to the control panel

Hook the upper tab of the DIN rail mount part to the DIN rail and press the sloping part of the lower tab to the DIN rail. Push the main unit toward the DIN rail then slide the lower tab to secure it to the DIN rail.



Removing the indicator from the control panel

Push up the bottom of the enclosure and detach the upper tab from the DIN rail. Then, detach the lower tab from the DIN rail as well.

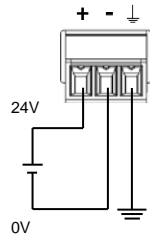


Connection to power supply and connection to load cell

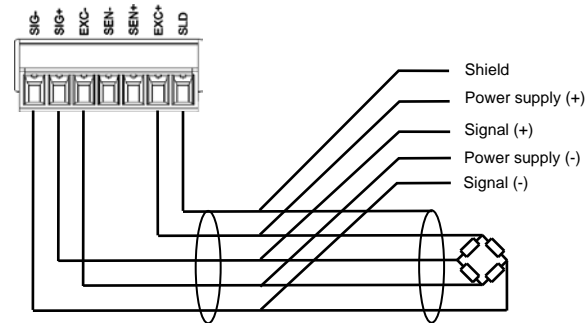
Attach the accessory power connector and wire as shown in the figure below.

Applicable wire

Item	Specifications
Wire size	0.14 to 1.5 mm ² (AWG 26 to 16)
Wire strip length	7 mm
Tightening torque	0.22 to 0.25 Nm



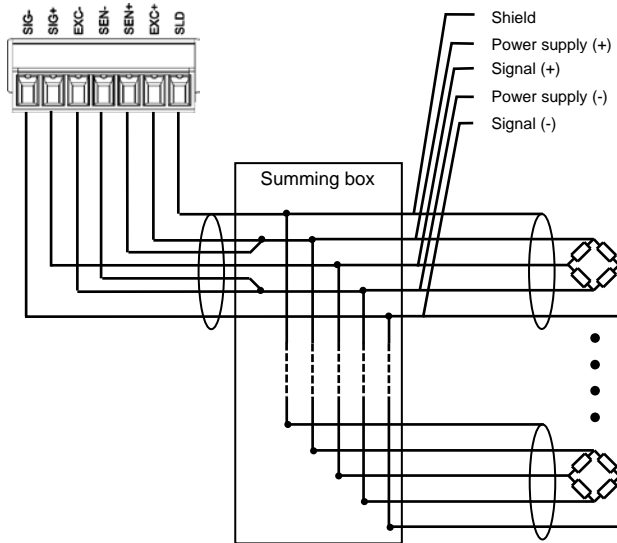
In the case of the 4-wire connection type, attach the accessory load cell connector and wire as shown below. Change the load cell connection type (CALF17) in the calibration function to 0: 4-wire type (default value = 1: 6-wire type).



6-wire connection

Set load cell connection type (CALF17) to 1: 6 wire type (Default).

When you connect the load cells in parallel, use a summing box. Attach the accessory load cell connector and wire as shown below.



Calibration

Calibrate the AD-4411 to properly convert the signal from the load cell to a load value. Please prepare a calibration weight.

After Power-On, press the [MODE/ESC] key more than 3s.

Press the [F1/↓] key twice.

Press the [F2/→] key.

Press the [F1/↓] key.

Actual load calibration

Press the [F2/→] key.

Press the [F2/→] key.

The current load cell input signal (mV/V) will be displayed. Press the [F2/→] key to execute Zero calibration.

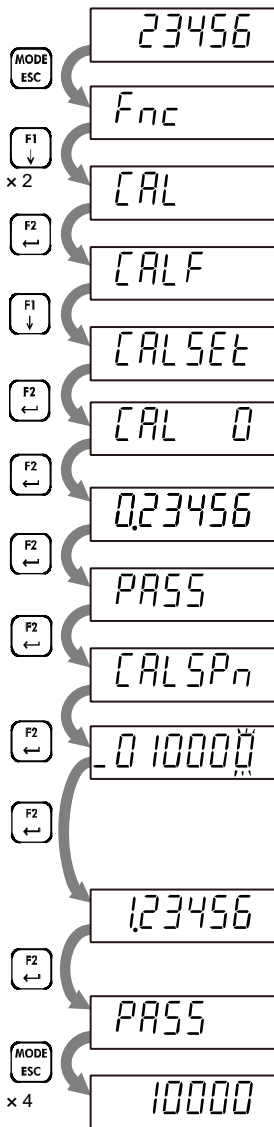
If Zero calibration is successful, "PASS" will be displayed, and zero calibration will be completed. Press the [F2/→] key.

Press the [F2/→] key.

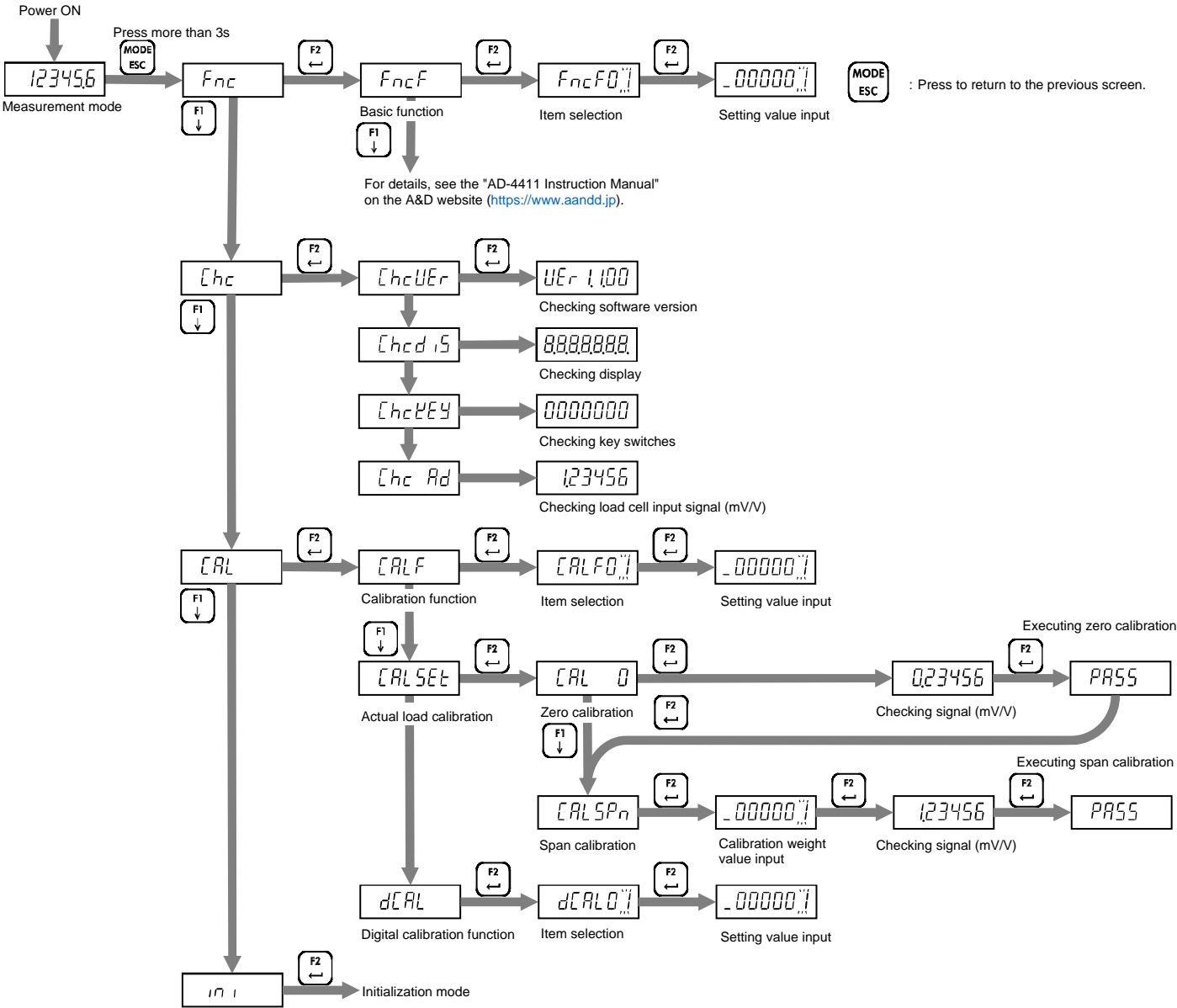
Set a calibration weight value by the following key operations.
[ZERO/←] key: Moves the flashing digit to the left.
[TARE/↑] key: Increases the flashing digit by one.
[F1/↓] key: Decreases the flashing digit by one.
[F2/→] key: Confirm the setting value.

The current load cell input signal (mV/V) will be displayed. Place the calibration weight or apply a load on the load cell. Press the [F2/→] to execute Span calibration.

If span calibration is successful, "PASS" will be displayed, and span calibration will be completed. Press the [MODE/ESC] key four times to return to the measurement mode.



Operation mode



Function list

Calibration function list			
CALF	Setting item	Setting value	Default
01	Unit	0: None / 1: g / 2: kg / 3: t	2
02	Decimal point position	0: 0 (No decimal point) / 1: 0.0 / 2: 0.00 / 3: 0.000 / 4: 0.0000 / 5: 0.00000	0
03	Minimum division d	1: 1 d / 2: 2 d / 3: 5 d / 4: 10 d / 5: 20 d / 6: 50 d	1
04	Maximum capacity	1 to 999999	999999
05	Zero setting range	0 to 100 %	100
06	Zero tracking time	0.0 to 5.0 s	0.0
07	Zero tracking width	0: Disable / 1: 0.5 d / 2: 1.0 d / 3: 1.5 d / 4: 2.0 d / 5: 2.5 d / 6: 3.0 d / 7: 3.5 d / 8: 4.0 d / 9: 4.5 d	0
08	Stability detection time	0.0 to 9.9 s	1.0
09	Stability detection width	0 to 100 d	2
10	Zero-setting when unstable	0: Disable / 1: Enable	1
11	Taring when unstable	0: Disable / 1: Enable	1
12	Taring when the gross is negative	0: Disable / 1: Enable	1
13	Zero clear	0: Disable / 1: Enable	1
14	Power-on zero	0: Disable / 1: Enable	0
15	Condition of negative overload	0: Gross < -(Maximum capacity + 8d) / 1: Gross < -19d	0
16	NTEP	0: Disable / 1: Enable	0
17	Load cell connection type	0: 4-wire type / 1: 6-wire type	1

Digital calibration function list			
dCAL	Setting item	Setting value	Default
01	Load cell input signal at Zero Calibration	-7.00000 to 7.00000 mV/V	0.00000
02	Load cell input signal (at Span Calibration – at Zero Calibration)	0.00001 to 7.00000 mV/V	2.00000
03	Weight value at Span Calibration	1 to 999999	20000

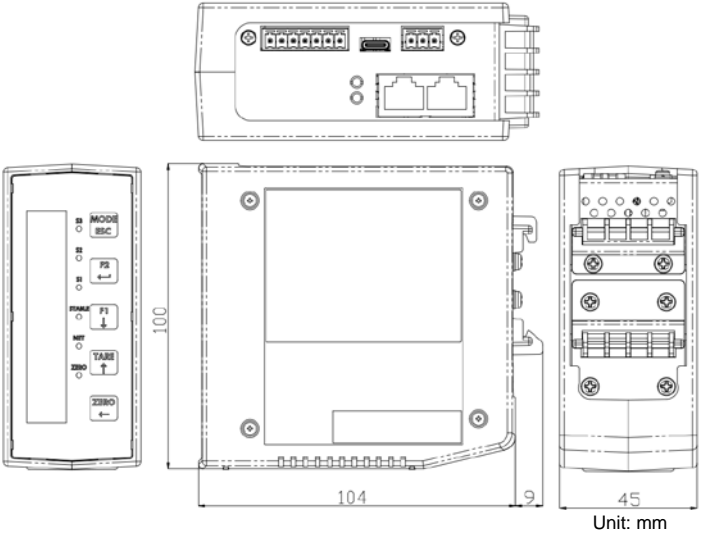
Basic function list			
FncF	Setting item	Setting value	Default
01	Locking [ZERO/←] key	0: Disable / 1: Enable	0
02	Locking [TARE/↑] key	0: Disable / 1: Enable	0
03	Locking [F1/↓] key	0: Disable / 1: Enable	0
04	Locking [F2/←] key	0: Disable / 1: Enable	0
05	Function of [F1/↓] key	0: None / 1: Tare clear / 2: Zero clear / 3: Gross / net display selection	0
06	Function of [F2/←] key	4: High-resolution display selection	0
07	Condition to turn S1 status ON	0: None / 1: Hi / 2: OK / 3: Lo /	0
08	Condition to turn S2 status ON	4: Zero setting error / 5: Taring error /	0
09	Condition to turn S3 status ON	6: High resolution display	0
10	Digital filter cut-off frequency [Hz]	0: 273.0 12: 20.0 24: 2.8 36: 0.40 1: 120.0 13: 17.0 25: 2.4 37: 0.34 2: 100.0 14: 14.0 26: 2.0 38: 0.28 3: 84.0 15: 12.0 27: 1.7 39: 0.24 4: 70.0 16: 10.0 28: 1.4 40: 0.20 5: 68.0 17: 8.4 29: 1.2 41: 0.17 6: 56.0 18: 7.0 30: 1.0 42: 0.14 7: 48.0 19: 6.8 31: 0.84 43: 0.12 8: 40.0 20: 5.6 32: 0.70 44: 0.10 9: 34.0 21: 4.8 33: 0.68 45: 0.08 10: 28.0 22: 4.0 34: 0.56 46: 0.07 11: 24.0 23: 3.4 35: 0.48	30
11	Upper limit value	-999999 to 999999	10
12	Lower limit value	-999999 to 999999	-10
13	Comparison target for Upper limit value / Lower limit value	1: Gross / 2: Net	1

For functions other than those listed above, see the "AD-4411 Instruction Manual" on the A&D website (<https://www.aandd.jp>).

Specifications

Dimension	45(W) x 100(H) x 113(D) mm	
Installation method	DIN rail mount	
Operating temperature and humidity range	-10°C to +40°C Less than 85%RH, non-condensing	
Power supply	DC24V -15% to +10%, 4.5W max.	
Load cell input		
Excitation voltage	DC5V ±5% 90 mA Up to six 350 Ω load cells can be connected in parallel. 6-wire type with remote sensing	
Signal input range	-7.0 mV/V to +7.0 mV/V	
Minimum input sensitivity	0.15 μV/d or more (d=minimum division)	
Nonlinearity	0.005% of F.S. max.	
Temperature coefficient	Zero drift: ±0.02 μV/°C typ. ±0.1 μV/°C max. Span drift: ±3 ppm/°C typ. ±15 ppm/°C max.	
Sampling rate	1200 times / second	
Display		
Main display	7-digit LED (green) with a character height of 10 mm	
Status display	LED (red) x 6	
Key switches	x 5	
External interface		
Interface	-EIP	EtherNet/IP
	-PRT	PROFINET
	-ECT	EtherCAT
USB	Type-C connector, USB 2.0 (Full-speed)	

External dimension



FCC - Supplier's Declaration of Conformity
47 CFR § 2.1077 Compliance Information
Model: AD-4411
Responsible Party: A&D ENGINEERING, INC.
Address: 4622 Runway Boulevard Ann Arbor, MI 48108, U.S.A.
Tel: [1] (888) 726-5931
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.