

Simplified Instruction Manual

Refer to the instruction manual on the A&D home page URL: https://www.aandd.co.jp/

1WMPD4002677E

#### This Manual

- This manual describes how the product works and how to get the most out of it in terms of performance. Read this manual thoroughly before using the product and keep it at hand for future reference.
- Product specifications are subject to change without any obligation on the part of the manufacturer to notify of changes.
- D This manual is subject to change without notice at any time to improve the product. No part of this manual may be photocopied, reproduced, or translated into another language without the prior written consent of the A&D Company limited
- Do not attempt to repair, modify or disassemble the product. Doing so will void the warranty.

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# 1. Cautions

### 1.1. Installation and Precautions

- Before use, confirm the following articles for safe operation.
- Avoid vibration, shock, extremely high temperature and humidity, direct sunlight, dust, splashing water, air containing salt or corrosive gases, places where inflammable gases are present.
- The operating temperature is -10°C to +50°C (14°F to 122°F).
- Ground the module
- Keep cables away from power cables and other sources of electrical noise. Use a stable DC24 V power source that does not include step down voltage and noise
- Do not share the earth ground line and power line with other electrical power equipment
- When extending the load cell cable, separate it from the power cable and electrical cables with much noise
- Do not turn on the module until installation is complete. The module is not equipped with a switch to turn off.
- After the installation is complete, take off the protective cover prior to turning on the AD-4430B.
- Lise a shielded load cell cable
- Do not connect more sensors than the allowable number noted in the specifications.

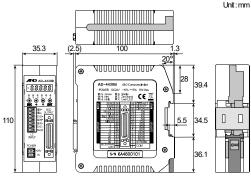
## 1.2. Cautions During Use

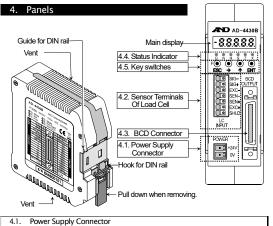
The AD-4430B is a precision instrument that measures microvolt output from load cell. Prevent noise sources such as power lines, radios, electric welders or motors from affecting the instrument.

Do not disassemble the AD-4430B.

2. General Spe	ecifications
Voltage requirement	DC 24 V +10%, -15%
Power requirement	6 W Max.
Load cell excitation voltage	5V 350 $\Omega$ sensor. Up to four sensors can be connected.
Operating conditions	-10 °C to +50 °C, Max 85 %RH (no condensation)
External dimensions	35.3 × 110.0 × 101.3 mm (W×H×D)
Mass	Approximately 180 g
Main display	The monitor displays measurement data and settings with 7 segments of 5 digits and negative sign. The decimal point is specified at the function table.
Accessory	Power connector FMC 1.5/2-ST-3.5

# 3. External Dimensions





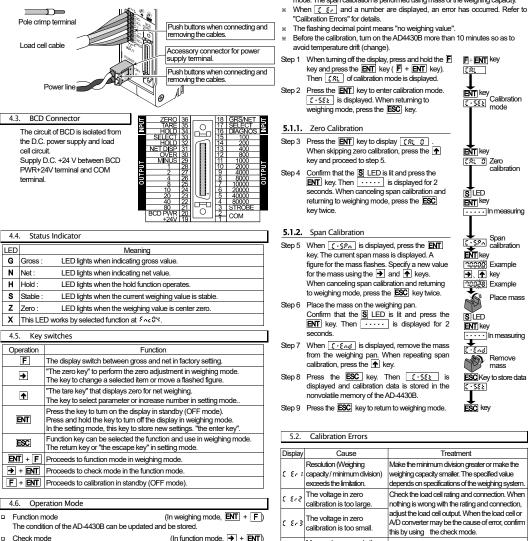
..... DC +24 V terminal.

+24 V 0 V DC 0 V terminal.

#### 4.2. Sensor Terminals Of Load Cell

- SIG-The (-) input terminal of signal that is outputted from load cell.
- SIG+ The (+) input terminal of signal that is outputted from load cell. EXC- ..... The (-) output terminal to load cell excitation voltage (-).
- SFN-...... The (-) input terminal for sensing input (-). (When performing the
- 4-wire connection, connect between EXC- and SEN-.) SEN+ ..... . The (+) input terminal for sensing input (+). (When performing the
- 4-wire connection, connect between EXC+ and SEN+.) EXC+ ..... The (+) output terminal for load cell excitation voltage (+).
- SHLD ...... Connect shield of load cell cable.

Connections When connecting and removing the cables, push the buttons with a driver etc. We recommend use of pole crimp terminals for the tips of cables.



- The mode to check the AD-4430B.
- Calibration mode (When display is turned off, F + ENT) The mode to calibrate zero point and span of the AD-4430B using span mass.

#### Calibration

- The AD-4430B measures the voltage of the load cell and displays it. Calibration is the function used to adjust the AD-4430B so that the signal from the load cell is properly converted to mass. Specify decimal point (C+F02), minimum division (C+F03) and weighing capacity  $(f \cdot f \hat{u} \cdot f)$  in function mode
- "input voltage at zero calibration (C+F+3)", " input voltage at span calibration (C+F+8)" and "mass value against input voltage at span calibration (C+F+3)" can be changed by the "span calibration using mass ([ \$22 ]" in calibration mode. These items can be also inputted using "digital span" in function mode.
- \* Perform stable measurement in the calibration to prevent measurement error.
- \* During a stable measurement, the S LED lights.
- \* The decimal point flashes in calibration mode.

\* The flashing decimal point means "no weighing value". Before the calibration, turn on the AD4430B more than 10 minutes so as to avoid temperature drift (change). Step 1 When turning off the display, press and hold the F+ENT key key and press the ENT key ( F + ENT key). Then (8) of calibration mode is displayed. key Calibration Step 2 Press the ENT key to enter calibration mode. [+SEE is displayed. When returning to C-SEE mode weighing mode, press the ESC key. 5.1.1. Zero Calibration Step 3 Press the ENT key to display (8: 0) When skipping zero calibration, press the ENT key key and proceed to step 5. [8: 0 Zero calibration Step 4 Confirm that the S LED is lit and press the ENT key. Then .... is displayed for 2 seconds. When canceling span calibration and SLED returning to weighing mode, press the ESC ENT key kev twice. ..... In measuring 5.1.2. Span Calibration Span key. The current span mass is displayed. A ENT key figure for the mass flashes. Specify a new value 10000 Example for the mass using the > and A keys. → key When canceling span calibration and returning CCC28 Example to weighing mode, press the ESC key twice. Place mass Step 6 Place the mass on the weighing pan. Confirm that the S LED is lit and press the SLED ENT key. Then .... is displayed for 2 ENT key seconds. · · · · · In measuring Step 7 When C. End is displayed, remove the mass E-End Remove from the weighing pan. When repeating span calibration, press the 1 key. Step 8 Press the ESC key. Then (-SEE is ESC Key to store data displayed and calibration data is stored in the 2 - 588 nonvolatile memory of the AD-4430B.

Preset a unit. decimal point, minimum division and weighing capacity in function

mode. The span calibration is performed using mass of the weighing capacity.

Step 9 Press the ESC key to return to weighing mode.

# 5.2. Calibration Errors

5.1. Span Calibration using Mass

"Calibration Errors" for details.

Display	Cause	Treatment
	Resolution (Weighing capacity / minimum division) exceeds the limitation.	Make the minimum division greater or make the weighing capacity smaller. The specified value depends on specifications of the weighing system.
5 843	The voltage in zero calibration is too large.	Check the load cell rating and connection. When nothing is wrong with the rating and connection,
C E73	The voltage in zero calibration is too small.	adjust the load cell output. When the load cell or A/D converter may be the cause of error, confirm this by using the check mode.
C 874	Mass value exceeds the weighing capacity.	Use an appropriate calibration weight and
E ErS	Mass value is too light for calibration.	calibrate again.
5 878	too small.	Use a load cell with higher sensitivity or make the minimum division greater.
	The polarity of the load cell output is reversed.	Check the load cell connection.
C Er8	The output of the weighing capacity is out of range.	Use a load cell with a greater rating or make the weighing capacity smaller.

ESC key

-1-

	. Digital Linearization (Lor)	unation that age
	ital linearization is the non-linearity compensation fi	
	luce linearity deviation between zero point and weig to four points can be specified except zero. (Refer	
	lationship of points : Zero = Lor 0 < Lor / < Lor	
	e high-order correction curve is used so that zero p	
	arranged in a straight line.	
🗆 Dig	ital linearization includes span calibration.	
	nen <u>{</u> <u>{</u> <u>and</u> a number are displayed, an err	or has occurred. Refer to
	alibration Error" for details.	
	ashing decimal point means "no weighing value".	minutos so as to avoid
	fore calibration, turn on the AD4430B more than 10 nperature drift (change).	minutes so as to avoid
	When turning off the display, press and hold	
Sieh I	the <b>F</b> key and press the <b>ENT</b> key ( <b>F</b> +	<b>F</b> + <b>ENT</b> key [38]
	ENT key). Then [32] of calibration mode	ENT key
	is displayed. Press the <b>ENT</b> key to display	<u>[-58</u> ]
	C + 582 .	
Step 2	Press the 🛧 key to select 🗜 🔢 and	Ugital
	press the <b>ENT</b> key to enter digital	ENT key linearization
	linearization.	Lor D Zero point
Step 3	tor 3 of the zero point is displayed.	T
Step 4	Place nothing on the pan.	SLED Stable
	While <b>S</b> LED is displayed, press the <b>ENT</b>	ENT key
	key to store the weighing value.	In measuring
0	Then is displayed for 2 seconds.	Input No.
Step 5	When displaying <u>tor</u> , press the <b>ENT</b> key to select	<b>ENT</b> key
	a manage starburg. On a sife site starburg.	20000 Example
	the → and ↑ key. At each poir	
Step 6	Place the mass on the pap same	Example
2000	While <b>S</b> LED is displayed, measureme	
	press the ENT key to store	S LED Stable
	the weighing value.	ENT key
	Then is displayed	In measuring
~ -	for 2 seconds.	,⊥
Step 7	tor 2 is displayed. Repeat the same	Loc 2 Input No.
	operation as Step 5 and Step 6 at the second point.	The same as step 5,6
Ston 8		The same as stop 5.6
orch q	t nr 3 is displayed. Repeat the same operation as Step 5 and Step 6 at the third	The same as step 5,6
	point.	The same as step 5.6
Step 9	is displayed. Repeat the same	The same as step 5,6
	operation as Step 5 and Step 6 at the fourth	E-End
	point.	ESC Key to store data
Step 10	) <u></u>	Feel kay
	to store new parameters into FRAM and	ESC key
	display <u>L-SEE</u> .	mass
Step 11	Press the <b>ESC</b> key to return to weighing mode.	v
	Remove all of mass from the pan.	
C.	Function Mode (Function List)	
6.		
	e function mode stores parameters to control the w	
The	e parameters are stored even without power suppli	ea.
6	1. Outline	
	bes of Functions	
	Calibration function Linearity adjustment function	
	Ac	
	La	
	edBCD output function	
6.2.	Operation	
6.2.1	Select Modes Under Function Mode	
	Selects a type of select mode (3 upper figu	ires)
	Enters a selected mode.	
	······Selects an item under the selected mode (	2 lower figures)
	······Enters the item.	

- ENT ...Enters the item.
  - ·····Stores parameters and returns to weighing mode.

- 6.2.2. Parameters Selection And Digital Parameters
- P Type of parameter select Type of parameter selection ( all figures flashing)
- ENT ..... Activates (store) parameter and returns to select mode. **ESC** ..... Deactivates parameter and returns to select mode.
- D The type to change value (figure flashing)
- → ..... Moves the flashing figure.
- ♠ ······· Changes the value of the flashing figure.
- ENT ..... Activates (store) value and returns to select mode.
- ESC ..... Deactivates value and returns to select mode.

# Decimal point depends on [ - F @2.

Function Table

- The input voltage of the zero point ( $\zeta \cdot \mathcal{E} : \hat{\gamma}$ ), the span input voltage ( $\zeta \cdot \mathcal{E} : \hat{s}$ ), mass for span input voltage ( $\zeta \cdot \mathcal{E} : \hat{s}$ ) are revised in calibration mode.
- If pressing the I key while displaying the digital filter ( $\checkmark \sim 35$ ), the current weighing value can be monitored. Press the I key again to return function mode.

6.3.1.	Calibration Function (	(·Fne)
ltem Range	Item Name	Descriptions

C • F 02 0 to 0.0000	Decimal point position	Decimal point position of value. 0 0.0 0.00 0.000 0.0000	0 P
C - F 03 1 to 50	Minimum division (A scale / digit)	Minimum division of value. 1 2 5 10 20 50	1 P
2 - £04 1 to 99999	Weighing capacity	Measurement can be displayed up to +8 digits (8 scales) from capacity. Decimal point depends on C+602.	70000 D
C • F 0 S 0 to 100	Zero range	The range that the  → key (zero key) works. Deviation from the calibrated zero point [%].	2 D
C • F 08 0.0 to 5.0	Zero tracking time	Used with [+f0] for zero tracking [sec.]	0.0 D
0.0 to 9.9	Zero tracking width	Used with C+F08 for zero tracking [digit]	0.0 D
C • F 08 0.0 to 9.9	Stability detection time	Used with C+FO9 for stability detection [sec.]	1.0 D
(~£03 0 to 9	Stability detection width	Used with C+F08 for stability detection [digit]	2 P
۲۰۶، ۱۵ 0 to 1	Tare and zero adjustment when unstable	The adjustment when value is unstable. 0: Disables both functions. 1: Enables both functions.	1 P
۲-۶:: 0 to 1	Tare when the gross weight is negative	Tare when the gross weight is negative. 0: Disables tare. 1: Enables tare.	1 P
۲۰۶ <i>۱2</i> 0 to 1	Output when overflow and unstable	Serial output when overflow and unstable. 0: Disables output. 1: Enables output.	1 P
۲۰۶،3 1 to 3	Exceeding negative gross weight	Judgment when the negative gross is exceeded. 1: Gross < -99999 2: Gross < -capacity 3: Gross < -19 digit	1 P
[-⊱ ⊮ 1 to 2	Exceeding negative net weight	Judgment when the negative net is exceeded. 1: Net < -99999 2: Net < -Capacity	1 P
0 to 1	Clear the zero value	Select to clear the zero value. 0: Disable 1: Enable	1 P
0 to 1	Zero setting when power is turned on	When turning power on, 0: Disable 1: Enable	0 P
-7.0000 to 7.0000	Input voltage at zero	Input voltage of the zero point [mV/V]	0.0000 D
0.0001 to 9.9999	Input voltage at span	Input voltage of the full scale [mV/V]	3.2000 D
[-5 /3 1 to 99999	Calibration weight corresponding to input voltage at span	Mass value to equivalent to span input voltage. ( $\zeta \cdot \xi : (8)$ ) Decimal point depends on $\zeta \cdot \xi : (2, 2)$	32000 D
2 • 5 28 9.7500 to 9.8500	Gravity acceleration of place of calibration	Gravity acceleration of the place where calibrating the module. [m/s²]	9.8000 D
9.7500 to 9.8500	Gravity acceleration of place of use	Gravity acceleration of the place where using the module. [m/s <sup>2</sup> ]	9.8000 D
0 to 1	Disable hold	0: Enable 1: Disable	0 P

6.3.2.	Linearity Adjustment Function ( : )
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ltem Range	Item Name	Descriptions	Default Type
L ~~ 8 1	Number of input	Number of adjustment point. If 0, 1 or 2 is	0
0 to 5	points	selected, digital linearization is not used.	P
7.0000 to 7.0000	Linear-zero	Input voltage for linear-zero input. [mV/V]	0.0000 D
L Ar 03	Linear 1	The mass value for linear 1 input.	0
0 to 99999	Mass value	Decimal point depends on <i>C+F02</i> .	D
0.0000 to	Linear 1	The span voltage between linear-zero and linear	0.0000
9.9999	Span voltage	1 input. [mV/V]	D
L Ar 05	Linear 2	The mass value for linear 2 input.	0
0 to 99999	Mass value	Decimal point depends on [+f02.	D
Lor 08 0.0000 to 9.9999	Linear 2 Span voltage	The span voltage between linear-zero and linear 2 input. [mV/V]	0.0000 D
0 to 99999	Linear 3	The mass value for linear 3 input.	0
	Mass value	Decimal point depends on <i>C+F02</i> .	D
Lor 08 0.0000 to 9.9999	Linear 3 Span voltage	The span voltage between linear-zero and linear 3 input. [mV/V]	0.0000 D
2 Ar 03	Linear 4	The mass value for linear 4 input (Full scale).	0
0 to 99999	Mass value	Decimal point depends on <i>C+F02</i> .	D
Lor 10 0.0000 to 9.9999	Linear 4 Span voltage	The span voltage between linear-zero and linear 4 input (Full scale). [mV/V]	0.0000 D

# 6.3.3. Basic Function ( Forc )

Default

Туре

ltem Range	Item Name	Descriptions	Default Type
Foc 8 : 0000 to 1111	Key switch disable	Figure corresponds to each key (switch). These are enabled at weighing mode. Figure <u>4 fig.</u> 3 fig. 2 fig. 1 fig. <b>ESC</b> → <b>↑ ENT</b> Parameter 0: Enable 1: Disable	0000 Binary number
Fnc 82 0 to 7	<b>F</b> key function	0: None 4: Momentary switch   1: Print command 5: Display exchange   2: Hold 6: Tare clear   3: Alternative switch 7: Zero clear   (depends on \$ + 5 !S)	5 P
۶ مد 30 5 to 20	Display refresh rate	20 times/s 10 times/s 5 times/s	20 P
Fac OM O to 9	X display	0: None 1: Zero tracking in progress 2: Alarm (Zero range setting error, over) 3: F key status 4: Zero band 5: HI output (Over the upper limit value) 6: OK output (Below the lower limit value) 7: LO output (Below the lower limit value) 8: User input 1	o P
Fac 85 0 to 16	Digital filter	Selects a cutoff frequency.       0: None     6: 20.0 Hz     12: 2.8 Hz       1: 100.0 Hz     7: 14.0 Hz     13: 2.0 Hz       2: 70.0 Hz     8: 10.0 Hz     14: 1.4 Hz       3: 56.0 Hz     9: 7.0 Hz     15: 1.0 Hz       4: 40.0 Hz     10: 5.6 Hz     16: 0.7 Hz       5: 28.0 Hz     11: 4.0 Hz	15 P
Fnc 87 1 to 3	Hold function	1: Hold immediately 2: Peak hold 3: Averaging hold	1 P
Find 08 -99999 to 99999	Near-zero	The reference value for near-zero. Decimal point depends on $C \cdot S \partial C$ .	10 D
۶nc 03 1 to 2	Comparison mass at near-zero	1: Gross weight 2: Net weight	1 P
Fine 10 -99999 to 99999	Upper limit value	Reference value for the upper limit. Decimal point depends on $C \cdot S \partial c$ .	10 D
-99999 to 99999	Lower limit value	Reference value for the lower limit. Decimal point depends on $C + S \partial C$ .	-10 D
۶ <sub>مد</sub> (2 1 to 2	Comparison mass of upper and lower limit	1: Gross weight 2: Net weight	1 P
۶ <sub>лс</sub> (3 1 to 2	Output logic of upper and lower limit	The logic of the comparator function output. 1: Positive logic 2: Negative logic	1 P

### **6.3.4.** Hold Function ( s: a )

0.3.4.	Hold Function	(XL3)	
ltem Range	Item Name	Descriptions	Default Type
XL 30 1 0.00 to9.99	Average time	Time to calculate the average. [sec.] 0.00 : Not used	0.00 D
XL 802 0.00 to9.99	Start wait time	Time to wait before commencing hold or averaging. [sec.]	0.00 D
xt 303 0 to 2	Condition of automatic start	Condition for starting the hold or averaging. 0: Not used 2: Above the near-zero range 1: Above the near-zero range, and stable	0 P
xt.304 01o1		Release when control input is falling. 0: Do not release 1: Release *2	1 P
XL 305 0.00 to9.99	Release time	Release after a set amount of time has passed. [sec.] 0.00 : Continue	0.00 D
xt 805 0 to 99999	Release using fluctuation range	Release when fluctuation from the holding value exceeds a set value. Decimal point depends on $\mathcal{E} + \mathcal{E} \partial \mathcal{E}$ . 0 : Continue	0 D
xt 301 0 to 1	Release at near-zero	Release when the weighing value is in the near-zero range. 0: Do not release. 1: Release.	0 P

#### 6.3.5. BCD Output Function ( bed )

ltem Range	Item Name	Descriptions	Default Type
ბიძმ:	Data	1: Weighing value 3: Net weight ×1	1
11o4	outputting	2: Gross weight 4: Data specified at BCD input	P
ა <i>ლი</i> 3	Data transfer	1: Stream 3: Manual printing	1
1 ლ3	mode	2: Automatic printing	P
აიძმპ 5 to 1000	Data transfer rate	5 times/sec. 10 times/sec. 20 times/sec. 100 times/sec. 1000 times/sec.	20 P
ა <i>ლი</i> ეკ	Output logic of	1: Negative logic 2: Positive logic	2
1to2	data transfer		P
ბიძმ5	Output logic of	1: Negative logic 2: Positive logic	2
1 to 2	negative sign		P
ბიძ08	Output logic	1: Negative logic 2: Positive logic	2
11o2	of status		P
აკვე	Output logic	1: Negative logic 2: Positive logic	2
1 to 2	of strobe		P
ა <i>ლი</i> 08 01ი5	Input selection Input(17)	0:     None       1:     Clear zero       2:     Clear tare       3:     Changing between gross and net       4:     Print command       5:     [F] key	3 P
ა <i>ა ა</i> 03 0 დ 12	Output selection Output(33)	None Stabilization Zouring tare Zouring tare Zero band Hold busy state Houtput (Over upper limit) OK output (Within upper and lower limit) During operating weighing (On) During operating weighing (1 Hz) During operating weighing (50 Hz) Li Alam (Zero correction error and tare error) Busy F key	1

#### \*1: GRS/NET(18) for input \*2: HOLD(34) for input