Weighing Indicator VI 170 Manual

2009 Feb.

● Please read this Manual before operation

● Please well keep it for future reference

Catalogue

（Notes：There may be slight differences between printed version descriptions and actual products due to improvement in functions. Please contact manufacturer for latest electronic version.）

                                         Ver1.00   02/16/09

1.0 General

VI 170 weighing indicator，is fixed with high anti-jamming single chip MPU and high-precision △-∑ A/D conversion technique. It is used in platform scale、bench scale, ect.

Main functions：

Weighing、counting、accumulating、livestock scales、power-saving mode

Technical parameters

◆ A/D Conversion： Δ－Σ technique, 80 times per second at most

◆ Input Sensitivity ≥1.5uV/e

◆ Supply bridge Voltage of load cell： DC 3.3V.

Suggest connecting a 1000Ω strain gauge load cell；

6 pcs 350Ω strain gauge load cell can be connected at most；

◆ Signal Input Range： -16mV～+18mV

◆ Connection with load cell： 4-wire for standard connection

（6-wire long line auto-compensation can be customized; Compensation distance ≤30 meters）

◆ Division value: 1/2/5/10/20/50 optional

◆ Power Supply： 2 pcs AA batteries；used for about 80 hours.

◆ （power-saving mode: connect 1 pcs 1000Ω strain gauge load cell）

◆ Operation Temperature： 0ºC~40ºC，relative humidity≤85％RH。

◆ Storage Temperature： -20ºC~60ºC， relative humidity≤95％RH。

2.0 Assembly

2.1 Sketch map of indicator

VI 170   Front sight

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sealed screw

hand tighten screw

battery box

battery cover

Load cell
(bendix bayonet connector)

Communication
(waterproof connector)

Spare connector
(waterproof connector)
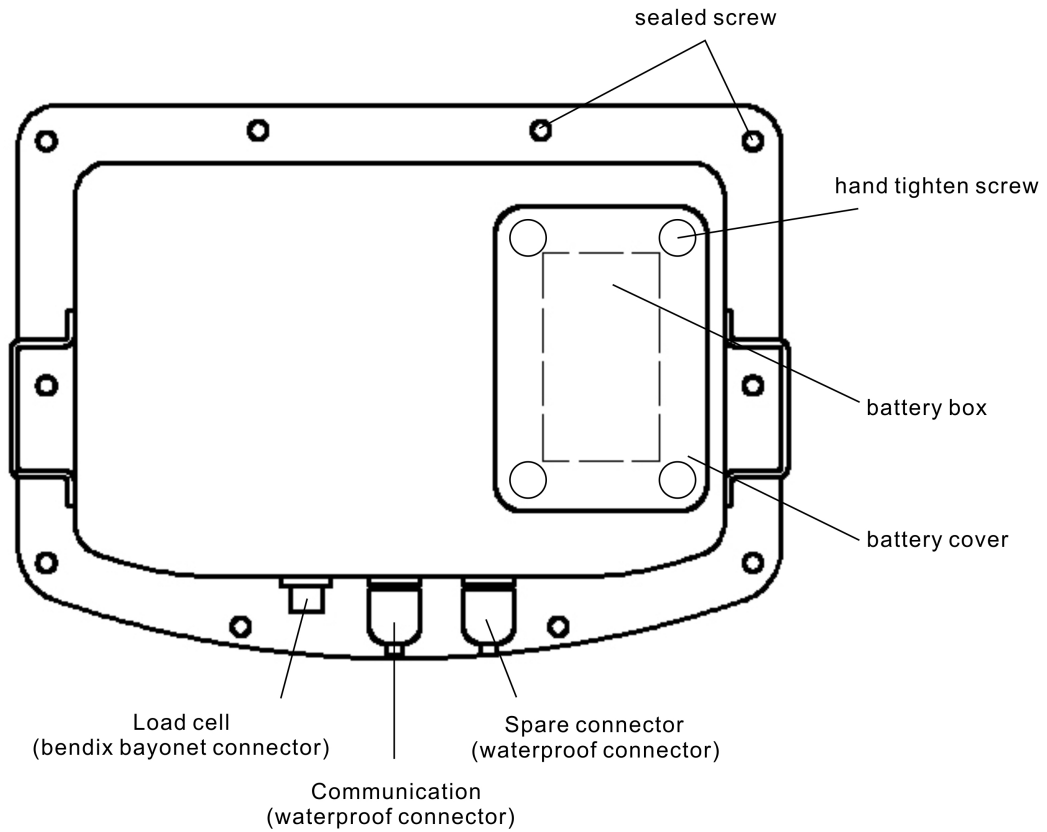
VI 170 Backsight

2.2 Connection of load cell and indicator

	Description	
	Description	
①	Load cell positive excitation	
②	Load cell negative excitation	
④	Load cell signal input +	
⑤	Load cell signal input -	

▲！The connection of load cell and indicator should be credible. It is not allowed to connect

or disconnect with power supply. Avoid damage to indicator or load cell by static

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electricity.

▲ ！Load cell and indicator are static sensitive devices，so static-proof measures should be adopted. It is forbidden to do any electric welding or intense current field actions. In the season of thunder, credible thunder-proof measures should be adopted, in order to avoid devices' damage and operators' physical injury.

3.0 Operation

3.1 Keys

⏻ ： Indicator on-off

Key	Function 1： **Press slightly in normal weighing conditions**	Function 2： **Press longer in normal weighing conditions**	Function 2： **After setting parameters**
Fn	Animal scale or counting function; Realize by setting parameters. Refer to Chapter 3.7	Start setting parameters; Refer to Chapter 3.7	Exit from Parameter Set

[Σ↑]	Accumulating; Refer to 3.5	Check adding sum; Check adding sum; Refer to 3.5	Change parameters
[→T←→]	Tare; Refer to 3.4	No	Move digits right forward
[→0←↵]	Zero	No	Settle current parameters
[#]	Delete adding sum	No	It becomes sample key after entering into counting mode.

3.2 Power on and auto-zero

Indicator power supply is controlled by on-off key. After power-on, the indicator will first self-check automatically. Even if the platform departs zero, It will be zero as long as it is within the zero range. The indicator will show zero and the light of →0← will shine. If it departs over zero range, it will show current reading.

If the zero range is set to be "--", ie, zero of last power-off, the indicator will not carry out any zero operation. The indicator will automatically read zero of last power-off and show present weight.

Re-start after 5 seconds of last power-off.

3.3 Manual zero

If the indicator gross weight is in the manual zero range and it is stable, it will be zero by pressing the key →0←. No function in the condition of "net weight";

3.4 Tare

If gross weight and net weight are over 0 and stable, tare can be done. Indicator will show "0" after pressing →T←. Tare is present gross weight. Enter into "Net weight" mode and light "NET" will shine.

If gross weight is "0" and in the "net weight" mode，press "→T←" to exit from "net weight" mode.

3.5 Adding、Accumulating display and accumulating deletion

When net weight is over min capacity（5 division values）and stable, press "Σ" to add present net weights. The light of "AUTO" will shine, and show total value. 3 seconds later, it will show accumulated times【n ***】，another 3 seconds later, it will exit from accumulation status. Next operation should be done when net weight is less than min weighing capacity;

Press "Σ" for a long time in the status of weighing, and stop until the buzzer rings. At this time, "AUTO" will shines and you can see total accumulating value. Press ""to check the accumulating time, then press ""to exit；

In the status of weighing, press "#", the indicator will show【CLRAr-】，which means to delete the accumulating values or not. Press ""to delete. Press "Fn" to exit, but not delete.

3.6 Counting Function

After setting "Fn" for counting function, press "Fn" to enter counting status. If sampling already adopted last time, it will display the sampling numbers. If new sampling is required, then press "#". Use the "↑" "→" to amend the sampling number. Press " ↵ " to confirm.

Press "Fn" again for exit after entering the counting status.

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3.7 Other Parameter Setting and Function

Keep pressing "Fn" in the weighing status until the buzzer alarming to enter the parameter setting. Detailed steps are as follows:

Steps	Operation	Display	Note
1	Keep Pressing "Fn" "⏎"to Confirm	【Fn　SET】	**Enter Parameter Setting**
2	"↑"to Switch "⏎"to Confirm	【Fn　**】	**"Function" Setting：** 【ANL】：Animal Scale, One key total and lock display. Detailed Specifications followed 【Cot】：Counting Function； 【　--】：No Function
3	"↑"to Switch "⏎"to Confirm	【PS　**】	**Power Save Setting：** 【oFF】：Power save mode off 【　oN】：Open power save mode. The power save mode will be entered 30 Seconds after weight stable. The indicator will only display 【—】 in last digit 【onP】：Enhanced power save mode which will automatically turn off the indicator after 2 minutes power save mode.
4	"↑"to Switch "⏎"to Confirm	【BL　**】	**Backlight Mode Selection：** 【oFF】：Turn off backlight； 【　oN】：Turn on backlight； 【Aut】：　Auto backlight mode. Backlight will be turned on when the reading is not stable and turned off 5 seconds after the reading stable. When entering parameter setting, the backlights will be turned on.
5	"↑"to Switch "⏎"to Confirm	【br****】	**Baud Rate Setting：**600～9600bps Optional
6	"↑"to Switch "⏎"to Confirm	【Co　*】	**Communicate Mode Setting：**1～6 Optional，　Detailed format followed

★Press "Fn" for quickly exit after Parameter Setting is Completed

Animal Scale Introduction：

In some weighing applications, it maybe required to weigh some creatures like pig, cow, sheep etc. Because they may walk around which makes the reading not stable and can not get the required data. This function is specially developed for this kind of applications.

After pressing "Fn", the indicator will enter data processing status. It will automatically accumulate the processed data and locked display the result after 5 seconds for easy reading. It

will unlock the display after the weight is lower than the minimum. And "Fn" can be used again.

COMMUNICATION MODE FORMAT:

Serial	Number of each frame	Note
1	8	Reversely send the Net Weight date. For example if the net weight is 23.45kg, ASCII code 54.3200 will be sent. And if the net weight is –23.45kg, ASCII code 54.320- will be sent.
2	8	Reversely send Gross Weight date. The format is same as serial 1
3	14	Positively send the Net Weight date with unit. For example if the netweightis 23.45kg, ASCII code =0023.45（kg）will be sent. End with Hex number OD,OA
4	14	Positively send the Net Weight date with unit. The format is same as serial 3
5	No confirm	**Order Response Mode：** Order mode 02 "Order" 03（Hex） There are 5 pieces order，ASCII code 'A'~'E'. Take gross weight 23.45kg, netweight13.45kg and tare 10.00kg for example 'A':Read gross weight, indicator back:GW:0023.45(kg) 'B':Read net weight, indicator back:NW:0013.45(kg) 'C':Read tare, indicator back:TW:0010.00(kg) 'D':Manually zero, indicator back:'D' 'E':Tare operation, indicator back:'E' **All order back add 02 at the beginning and 03 at the end（Hex）**
6		**Net and total weight can be automatically output in Total operation and the date can be printed if connected with serial printer**

★**Communication is optional function. If not appointed before ordering then this function is not available.**

3.8 Battery Maintenance and Caution

The indicator uses two pcs AA Ni-MH battery or Alkaline battery. If using two pcs 2500mAH batteries, connecting with 1pc 1000ohm load cell and opening power save mode, it can work for 80hours.

The indicator is not with battery recharging circuit. The rechargeable battery must be taken out of the indicator and recharged by the special charger.

Battery is consumable, not including in the guarantee range.

★ **If the indicator is not working for a long time, the battery should be taken out from the indicator.**

★ **When transiting or installing, make sure it is carefully managed. Great Vibration, strike**

or knock should be avoid to prevent the battery short-connected inside or damaged.

3.9 Low Battery Alarm and Auto Turn Off

When battery is low, the"⊏⊐"on the indicator flashes and the indicator will display 【Lo BAt】in every one minute to suggest the user to change battery. When battery is very low, the indicator will turn off automatically.

4.0 Error Notice

Display	Note
Err 01	Exceed the Zero Range
Err 02	Not Meet the Requirement of Total
Err 03	Weight Overloaded or Load Cell not Well Connected
Err 04	Weight not stable during Calibration
Err 05	Load Calibration Error. Too low load or Calibration code too small or AD everse
Err 06	Not Meet the Requirement of Tare Off; Platform is not Stable or Weight Overloaded.
Err 09	Data read verify Error, Data Memory Damaged

Maintenance and Cautions

I. The indicator should be placed flatly and not be in the straight sunshine for clear indication and long-term service life.

II. The indicator should not be placed in a vibrating area full of dust, and not in a sloppy environment.

III.The load cell and indicator should be reliably connected. The system should be grounded, far away from strong electric field, magnetic field, seriously corrosive materials, and flammable & explosive materials.

▲！ **Do not use in the areas of flammable or explosive gases, and pressure vessel.**

▲！ **In the areas of frequent thunders, arrester should be fixed to keep operators' safety, and to avoid damage of devices.**

▲！**Load cell and indicator are static sensitive devices，so static-proof measures should be taken. It is forbidden to do any electric welding or strong electric field actions. In the season of thunder, credible thunder-proof measures should be taken, in order to avoid devices' damage and operators' physical safety.**

IV. Do not use strong solvent (such as：benzene、nitryl oils) to clean the shell。

V. Do not fill in any liquids or electric granule into the system, so as to avoid device damage or

electric shock to the operators.

VI. Before connecting or disconnecting indicator and peripheral equipment, powder supply of the indicator and other devices should be firstly switched off！

▲！ Before connecting or disconnecting load cell wire, powder supply of indicator should be firstly switched off！

▲！ Before connecting printer wire, powder supply of indicator and printer should be firstly switched off！

▲！ Before connecting or disconnecting screen wire, powder supply of indicator and screen should be firstly switched off！

▲！ Before connecting or disconnecting communication wire, powder supply of indicator and host be firstly switched off！

VII. <u>Important advice：Check the indicator before use. As a manufacturer, we are responsible for the indicator quality only. We are not responsible for any problem of system where the indicator is used.</u>

VIII. Regulations about external connection in the manual should be strictly observed. It is not allowed change the connection at random. If any trouble happens during operation, power off immediately and send to special agencies to repair. Nonprofessional factory should no repair to avoid any possible more serious damage. **It is not allowed to open the indicator, or we do not guarantee to repair.**

IX. If not man-made trouble happens within one year after the date of sale under regular service condition, we guarantee to keep it in good repair free of charge for life. Please send the troubled indicator and guarantee card (the serial number should be coincident) to the special repair shop or the supplier.

Special Notice：It is not allowed to unlock the lead seal without any authorization of technical department. Calibrated after open lead seal.

VI 170 Technical Manual

1, **Main Technical Parameter**：

AD Switch Mode： Δ—∑,80times per second

Load Cell Excitation: DC 3.3V，can connect with 1pc 1000Ω strain gauge load cell.

The maximum connect with 6pcs 350Ω strain gauge load cells.
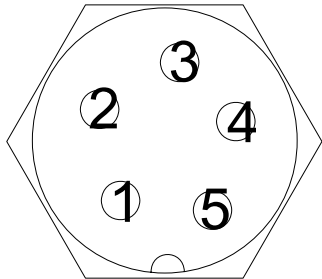
Signal Input Range: -16mV～18mV；

Input Sensitivity: ≥1.5uV/e

Load Cell Connection : Adopts 4 wires type（Customize 6 Long wires with auto compensation

≤30 meters）

Indicator Power Supply：Inside No 5.dry battery with work for 80 hours.

Working Temperature： 0～40 。

2, **Connection with Load Cell**：

	Assignment	
①	+Excitation	
②	-Excitation	
④	+Signal	
⑤	-Signal	

▲！**Connection between load cell and indicator must be reliable, shield wire must be**

connected to ground reliably. Connection or disconnection are not allowed when the

indicator is on, which may damage the indicator or load cells.

▲ ！ **Static protection must be properly adopted as the load cell and indicator are all**

static sensitive equipments. Welding or other strong electricity operation should be strictly forbidden. During thunderstorm season, proper lightening protection should be tanken care of to protect the load cells and indicators from damaging by lightening and to ensure the personal safety and the safely running of the weighing and related equipments.

3, Calibration

Turn on the indicator, after self check it will enter normal weiging display. Warm up for 15~30 minutes and **make sure the indicator of mainboard "JP-CAL" connector with the short circuite cover already.** Calibration with following are the details:

Steps	Operation	Display	Note
1	"Fn"long press	【Fn　SEt】	Entering the parameter setting
2	"↑"to Confirm? "↵"to calibration state	【　CAL　】	Means calibration state has enterred. Press"↵"for next step
3	"↑"to select division "↵" to confirm	【E　　01】	**Divisions Setting**：1、2、5、10、20、50
4	"↑"to select tadix point "↵"to confirm	【dC　　0】	**Radix Point Setting：** Indicator directly shows the Radix Point
5	Full Capacity Setting	【F030.00】	**Full Capacity Setting**: Press "→" the flash digit will move towards right Press " "↑" to increase the number of flash digit Press "↵" to confirm and enter next step such as 3000
6	Press for confirm after date stable	【noLoAd】	**Zero Calibration**：Make indicator under noload status, press "↵"after date stable to confirm Zero
7	Input Loading Weight	【AdLoAd　】 After display for 2 seconds, Auto switch to load input【003.000】	**Linearity Calibration**：Load weight, the closer to the full capacity is better. Operation is same as full capacity setting. Press "↵" to confirm and automatically exit calibration state 5 seconds after the stable indicator light on Such as：3000
8	Back to Working State	【　End　】	After calibration, the current weight will be displayed

		【 3.000】	

★**Notice: Press "Fn" to exit when under calibration state, but changes the parameter do not save automatically.**

4,Setting for Other Calibraion Parameter

After enter the calibration state and display 【CAL】, press"↑"and the indicator will display

【Zero】 and then press "↵" to enter setting for other calibration parameter. Following are the details:

Steps	Operation	Display	Note
		【Zero】	Means other calibration parameter setting has enterred. Press "↙" for next step
1	"↑"to switch "↵"to confirm	【Zot *.*】	<u>Ze</u>ro <u>T</u>race : 0～4d
2	"↑"to switch "↵"to confirm	【nt **】	**Ma<u>n</u>ual Se<u>t</u> Zero :** 0，2，4，10，20，100 % of full capacity
3	"↑"to switch "↵"to confirm	【At **】	<u>A</u>uto Se<u>t</u> Zero : 0，2，4，10，20，100 % of full capacity Select【--】for turn off zero saving function, i.e. the last turn off zero that manually set will be the turn on zero when the indiator turn on next time and the auto zero will not be carried out again.
4	"↑"to switch "↵"to confirm	【FL ***】	(<u>Fi</u>lter) Setting: 【Stb】:(Stable) ; 【SEn】:(Sensitive);
5	"↑"to switch "↵"to confirm	【SPd *】	AD **(<u>Sp</u>ee<u>d</u>)**: 【0】: Slow Speed 【1】: Fast Speed **The slow for normally application, the fast speed for high and special application** **Noted: Spd at 1 that prohibit calibration operations.**