Weighing Indicator

USER MANUAL



North America Edition | kg / lb

Document Version: ECN2601015

Safety Precautions

Read this section carefully before installing, operating, or servicing this equipment. Failure to observe these warnings may result in equipment damage, metrological inaccuracy, or personal injury.



WARNING — Qualified personnel only

Setup, calibration, inspection, and maintenance of the indicator must be carried out only by qualified, professionally trained personnel. Unauthorized servicing may affect metrological integrity and void the warranty.



WARNING — Protective earth (grounding)

Ensure the indicator and the complete scale system are properly grounded (earthed) during use. A reliable earth connection is essential for measurement accuracy and for protection against electric shock.



WARNING — Electrostatic-sensitive device (ESD)

The indicator contains electrostatic-sensitive components. Switch off and disconnect power before making any electrical connections. Do not touch internal components by hand, and observe appropriate anti-static precautions.

Metrological Sealing Instructions

1. Compliance Statement

When used in Legal-for-Trade applications, this weighing indicator must comply with local legal metrology regulations. It is the user's responsibility to ensure the device is properly sealed in accordance with local requirements.

2. Purpose & Warning

NOTICE: Calibration parameters (C01–C07) are critical to measurement integrity. To prevent unauthorized tampering, these settings must be secured using either a physical lead-wire seal or an electronic security audit trail. Any unauthorized adjustment or broken seal will void the trade compliance and terminate the product warranty.

3. Screw Sealing Procedure



- Threading: thread the anti-corrosion sealing wire through the hole in the designated sealing screw, then route it through the anchoring hole on the chassis (see the left figure).
- Securing: pull the wire tight, insert both ends into the seal, and compress it firmly using sealing pliers to create an irreversible physical lock.

4. Integrity Inspection

- Routine Check: verify that the sealing wire and stamp are intact before each use. If the seal is damaged, immediately stop using the device for trade purposes and contact qualified personnel for re-calibration and re-sealing.

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1. Summary

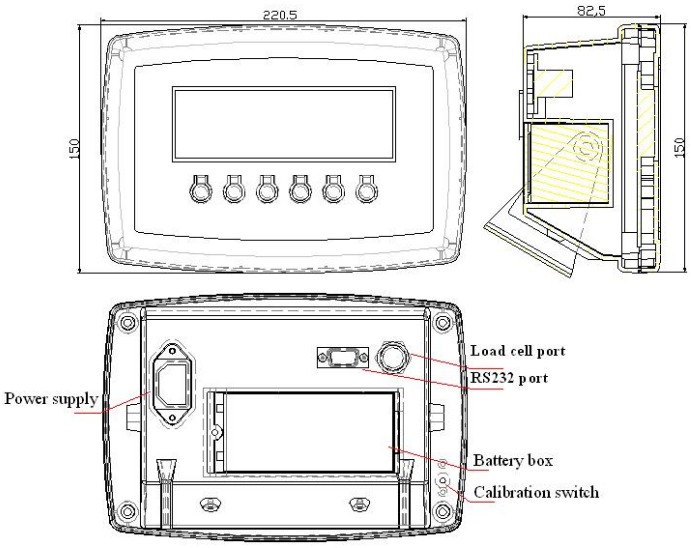
1.1 Main function

- General weighing: zero, tare.
- kg/lb conversion.
- Accumulation.
- Optional RS232 interface.
- Low battery reminder.
- Automatic power-off.

1.2 Technical parameter

Item / Parameter	Specification
Accuracy Class	Class III
Max. Number of Scale Intervals (n_{max})	n = 3,000
Excitation Voltage	+3.3 VDC
A/D Converting Speed	10 SPS
Load Signal Range	0~12.8 mV
Load Capacity	Supports up to 4 × 350 Ω load cells
Weight Unit	kg / lb
Interval	1 / 2 / 5 / 10 / 20 / 50
Display	6-digit LED, 0.8 in digit height; or LCD, 1.0 in digit height
Keys	ON/OFF, TOTAL/HOLD, UNIT, TARE, ZERO, SET
Interface	RS232C, baud rate optional 1200 / 2400 / 4800 / 9600
Operating Temperature	14 °F to 104 °F (−10 °C to +40 °C)
Operating Humidity	≤85% RH (non-condensing)
Optional Power	4 V/4 Ah rechargeable battery or 120 VAC, 60 Hz

1.3 Overall Dimensions (mm)



1.4 Battery Maintenance

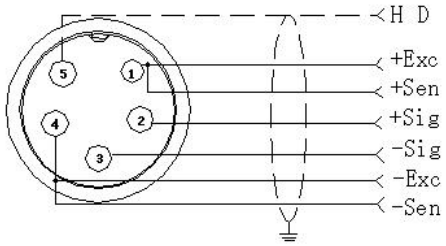
- When using the internal battery for the first time, charge it for 10–12 hours to prevent low voltage caused by self-discharge.
- Battery status can be checked via the display indicator. When voltage is low, the battery icon flashes and “Lobat” appears on screen (or the red LED flashes); recharge immediately.
- A full charge requires 10–12 hours and provides approximately 30 hours of continuous operation.
- When the battery light turns green (LED models) or the battery icon is fully lit (LCD models), charging is complete.
- If the indicator will remain idle for an extended period, remove the battery to avoid damage from leakage.
- To maintain optimal battery performance, charge the battery at least once a quarter (every 3 months).
- Batteries are consumable items and are excluded from the product warranty.

2. Installation and connection

2.1 Connecting the load cell

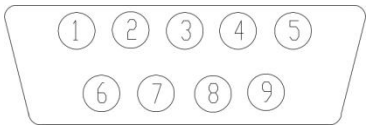
The indicator accepts up to four 350 Ω load cells, supporting both 4-wire and 6-wire (optional) load cells.

Use the supplied quick-disconnect connector to mate with the load cell cable.



Quick-disconnect connector

2.2 Communication interface



DB9 connector pinout

DB9 Pin – Definition	Function
Pin 2 – TXD	Transmit data
Pin 3 – RXD	Receive data
Pin 5 – GND	Ground interface

3. Basic operation

3.1 Keypad

Model A



Model A – LED version



Model A – LCD version

Model B



Model B – LED version



Model B – LCD version

Weighing indicator display instruction

LED Display	Description
	Weight display
kg/lb	Weight unit kg/lb
Tare	Tare status
Net	Net weight indication
Gross	Gross weight indication
	Stable equilibrium indicator
	Zero, indicating zero weight
Battery	Battery status
Hi	Over (upper limit for checkweighing)
OK	Accept (within target range)
Lo	Under (lower limit for checkweighing)
Hold (Model A)	Display hold status
Total (Model B)	Totalization

Keys function

Key	Key name	Key function
	**SET**	Used in combination with ZERO, TARE, and ON/OFF keys to perform various operations.
	**ZERO**	Zeroes the scale within the specified zero range.
	**TARE**	In gross mode, press to set the current weight as tare. In net mode, press to clear the tare and return to gross weight.
	**UNIT**	Switches between weight units (e.g., kg and lb).
	**HOLD (Model A)**	Holding the data.
	**TOTAL (Model B)**	Used in combination with the SET key to perform the accumulation operation.
	**ON/OFF**	1. Press and hold for 2 seconds to power the indicator on or off. 2. Used in combination with the SET key to enter calibration and function settings.

Setup-mode navigation icons

Icon	Function
	ON/OFF – Exit and save setting
	Left
	Right
	Down
	Up
	Confirm, go to next step

3.2 Power on & off

Press and hold [ON/OFF] for 2 seconds. The indicator displays “000000–999999” for a display segment check, then enters standard weighing mode.

3.3 Zero operation

- Initial Zero: automatically zeros the scale at power-on if the load is within the configured initial zero range.
- Manual Zero: when the reading is stable, press the [ZERO] key to clear minor weight deviations.

3.4 Tare function

When the reading is stable, press [TARE] to store the current weight as tare. The display switches to Net weight (“Net” and “Tare” LEDs illuminate). Press [TARE] again with an empty scale to clear the tare and return to Gross mode.

Note: the tare operation is invalid if the weight reading is unstable or negative.

3.5 Hold function (Model A)

- C11=0 – disable hold function.
- C11=1 – peak hold function: shows the maximum data, mainly used for material testing such as tension and pulling force.
- C11=2 – data hold function: shows the current weight value, mainly used for hold weighing.
- C11=3 – automatic hold function: when the load remains stable on the scale, the indicator automatically holds for 6 seconds.
- C11=4 – manual animal weighing: press [HOLD], display shows “LOC”, calculates for 3 seconds, locks the average weight, then press [HOLD] to return to normal weighing.

- C11=5 – automatic animal weighing: operation is based on the weight changing. With an empty scale, after a delay (set in C40), the display shows “LOC”, calculates for a few seconds, and locks the average weight; when the animal steps off the scale, the next cycle unlocks.

3.6 Accumulation operation (Model B)

- Perform Accumulation: load the scale. Once stable, press [TOTAL] → screen shows “n 001” → unload weight to return to zero → load next item → press [TOTAL] → screen shows “n 002” (max. 999 cycles).
- Check Accumulation: press and hold [SET], then press [TOTAL]. The screen shows “n**” (total count), then alternates between the first 4 digits and last 4 digits of the total weight (e.g., “0012” then “34.56” = 1234.56).
- Clear Data & Exit: on the accumulation display, hold [TOTAL] until “clr n” appears. Use [ZERO] to switch to “clr y” (confirm clear), then press [SET] to wipe memory and exit.

3.7 High/Low Limit Alarms

Set parameter C13 for the Upper Limit and C14 for the Lower Limit.

- Above Upper Limit: the HI light turns on and an audible alarm sounds.
- Below Lower Limit: the LO light turns on.
- Within Limits: the OK light turns on.

3.8 Print function

When the weight display is stable and a printer is connected, pressing the [SET] key will output and print the current weight data.

Note: in Tare mode, the system prints the gross weight. Printing is unavailable if the net weight is zero.

4. Calibration & Parameter setting

4.1 Entering the setup menu

There are two ways to enter the setting menu:

Method 1: Standard Settings (C08–C49)

With the indicator powered off, press and hold [SET], then press [ON/OFF] to enter the C08–C49 parameter loop.

Method 2: Calibration Settings (C01–C49)

- Remove the sealing screw on the back of the indicator.
- Press and hold down the internal “Span” switch.
- Simultaneously, press and hold [SET], then press [ON/OFF] to enter the full C01–C49 loop.

4.2 Calibration procedure

According to Method 2, the indicator steps through parameters C01–C49 in sequence:

C01 – Unit

- [C01] → press [CONFIRM] → [C1 1] weight unit is kg | [C1 2] weight unit is lb.
- Press [CONFIRM] to go to the next step.

C02 – Decimal places

- [C02] → press [CONFIRM]. Options: 0 / 1 / 2 / 3.
- [C2 0] no decimal | [C2 1] one decimal | [C2 2] two decimals | [C2 3] three decimals.
- Press [CONFIRM] to go to the next step.

C03 – Select the division (d)

- [C03] → press [CONFIRM]. Options: [C3 1] d=1 | [C3 2] d=2 | [C3 5] d=5 | [C3 10] d=10 | [C3 20] d=20 | [C3 50] d=50.
- Press [CONFIRM] to go to the next step.

C04 – Maximum capacity

- For example, for a maximum weighing of 100 kg, set [0100.00].
- Press [CONFIRM] to go to the next step.

C05 – Zero calibration

- Options: 0 = Skip, 1 = Execute.
- Ensure the scale is completely empty, then select 1 and press [CONFIRM] to begin the countdown. Once complete, the indicator will display [0.00] (assuming a 2-decimal-point configuration).

C06 – Span calibration

- Options: 0 = Skip, 1 = Execute. When [C05] is complete, the display moves to [C06].
- Press [CONFIRM] to view the current setting: [C6 0].

- Press [UP] to change the value to [C6 1], then press [CONFIRM].
- The display will flash [SPAn]. Place a suitable test weight onto the scale.
- Note: for accurate calibration, the test weight should be as close to the maximum capacity as possible, and must be at least 10% of the maximum capacity.
- Use the arrow keys to enter the exact value of the test weight applied (e.g., for an 80 lb weight, enter [0080.00]), then press [CONFIRM].
- The indicator displays a countdown: [0080.00] → [CAL 9] → … → [CAL 0] → [CALEnd].
- Once the countdown finishes, the indicator displays the final loaded weight ([80.00]), signaling that span calibration is complete.
- To set application parameters, press [CONFIRM]. To exit, press [ON/OFF EXIT].

C07 – Restore Default Parameters (Factory Reset)

- 0 = Do not restore default parameters (Skip).
- 1 = Restore default parameters (Factory Reset).

IMPORTANT NOTE

Do not initialize or restore default parameters unless absolutely necessary. Restoring factory defaults will completely overwrite and erase all of your custom configuration and calibration settings.

4.3 User setting

Parameter	Setting	Options
C08	Buzzer	[C8 0] Off [C8 1] On
C09	Auto power-off	[C9 0] 0 = Disabled 10 / 30 / 60 minutes idle shutdown

C10 – Power saving setting

Value	LED Version	LCD Version
[C10 0]	Off	Backlight off
[C10 1]	Close backlight after 3 minutes	Auto backlight
[C10 2]	Close backlight after 5 minutes	Constant backlight

C11 – Hold

Value	C11 – Hold
[C11 0]	Off
[C11 1]	Peak hold
[C11 2]	Data hold
[C11 3]	Auto-hold
[C11 4]	Animal weighing
[C11 5]	Automatic animal weighing

C12 – Model-dependent setting

Value	C12 – Model A (animal hold sample time, if C11=4)	C12 – Model B (unit conversion)
[C12 0]	—	Disable unit conversion
[C12 1]	—	Toggle between kg and lb
[C12 3]	3 seconds	—
[C12 5]	5 seconds	—

Parameter	Setting	Options
C13	Upper limit alarm value	Numeric entry, up to maximum capacity

Parameter	Setting	Options
C14	Low limit alarm value	Numeric entry, up to maximum capacity
C15	Check inner code	Display only
C16	Date setting	Set year / month / day
C17	Time setting	Set hour / minute / second

4.4 Communication setting

Parameter	Setting	Options
C18	Serial output method	[C18 0] Off [C18 1] Continuous (remote display) [C18 2] Print [C18 3] Command [C18 4] PC continuous
C19	Baud rate	[C19 0] 1200 bit/s [C19 1] 2400 bit/s [C19 2] 4800 bit/s [C19 3] 9600 bit/s

4.5 Application setting

Parameter	Setting	Options
C20	Manual zero range	[C20 00] Off [C20 01] ±1% of capacity [C20 02] ±2% of capacity [C20 04] ±4% of capacity [C20 10] ±10% of capacity [C20 20] ±20% of capacity [C20 100] ±100% of capacity
C21	Initial zero range	[C21 0] Off [C21 1] ±1% of capacity [C21 2] ±2% of capacity [C21 5] ±5% of capacity [C21 10] ±10% of capacity [C21 20] ±20% of capacity
C22	Automatic Zero Tracking (AZT) range	[C22 0.0] Off [C22 0.5] ±0.5d [C22 1.0] ±1.0d [C22 2.0] ±2.0d [C22 3.0] ±3.0d [C22 4.0] ±4.0d

Parameter	Setting	Options
		[C22 5.0] ±5.0d
C23	Automatic Zero Tracking (AZT) time	[C23 0] Off [C23 1] 1 second [C23 2] 2 seconds [C23 3] 3 seconds
C24	Overload range	[C24 09] Over 9d than max. capacity
C25	Negative display	[C25 00] −9d [C25 10] −10% of capacity [C25 20] −20% of capacity [C25 50] −50% of capacity [C25 100] −100% of capacity
C26	Stability time	[C26 0] Fast [C26 1] Medium [C26 2] Slow
C27	Stability range	[C27 1] ±1d [C27 2] ±2d [C27 5] ±5d [C27 10] ±10d
C28	Dynamic filter	[C28 0] Off [C28 1] Low dynamic filter [C28 3] Medium dynamic filter [C28 5] High dynamic filter
C29	Noise filter	[C29 0] Off [C29 1] Low noise filter [C29 2] Medium noise filter [C29 3] High noise filter
C30	Date format	[C30 0] yy.mm.dd [C30 1] mm/dd/yyyy [C30 2] dd/mm/yyyy [C30 3] yyyy/mm/dd
C31–C33	Reserved menu	—
C34	Continuous tare	[C34 0] Standard tare (tare and clear) [C34 1] Continuous tare enabled
C35	Print format	Enter 0–99 to select a print template format
C36	Calibration-site gravity	9.7000–9.9999
C37	Destination gravity	9.7000–9.9999
C38	Firmware version	Display only

Parameter	Setting	Options
C39	Negative weighing mode	[C39 0] Normal weighing mode [C39 1] Negative weighing mode (displays weight decrease as a positive reading)
C40	Animal scale hold delay	Enter the stable hold delay time, 0–9 seconds, for livestock weighing
C41	Print mode	[C41 0] Automatic print [C41 1] Gross weight print [C41 2] Net/Tare weight print
C42	Print line feed (post-text)	Enter 0–9 lines to feed the paper after the text is printed
C43	Print left margin (pre-text spaces)	Enter 0–9 spaces to indent before the text on each line
C44	Date Print	[C44 0] Disable [C44 1] Enable
C45	Time Print	[C45 0] Disable [C45 1] Enable
C46	S/N Print	[C46 0] Disable [C46 1] Enable
C47	Automatic accumulation clear	[C47 0] Do not clear accumulation after printing total weight [C47 1] Automatically clear accumulation after printing total weight
C48	Accumulation Print Line Feed	Enter 0–9 lines to feed the paper after printing the accumulation/total text

4.6 Exiting Settings (Save and Exit)

Example: when modifying [C10 1], press [CONFIRM] to confirm and save the current parameter, then press [ON/OFF EXIT] to exit the configuration menu.

5. Output data format

5.1 PC continuous sending format

Frame structure: S1 S2 S3 Data S4 CR LF

		,			,											CR	LF
S1			**S2**			**S3**					**Data**				**S4**		

- S1: weight status — ST = stable, US = unstable (in motion), OL = overload
- S2: weight mode — GS = gross, NT = net
- S3: sign — “+” or “–”
- S4: unit — “kg” or “lb”
- Data: weight value, including decimal point
- CR: carriage return
- LF: line feed

5.2 Remote-Display Continuous Format

The 18-byte continuous output frame is structured as follows:

STX	SWA	SWB	SWC	X	X	X	X	X	X	X	X	X	X	X	X	CR	CKS

State A – decimal point & division

Bit Pattern			Meaning
Bit 0,1,2			
Bit 2	**Bit** 1	**Bit 0**	Decimal point position
0	0	1	XXXXXX0
0	1	0	XXXXXX
0	1	1	XXXXX.X
1	0	0	XXXX.XX
1	0	1	XXX.XXX
1	1	0	XX.XXXX
Bit 3,4			Division
4		**3**	Build code
0		1	X1
1		0	X2
1		1	X5
Bit 5			Constant 1
Bit 6			Constant 0

State B – weight status

Bit	Function
Bit 0	Gross = 0, Net = 1
Bit 1	Symbol: positive = 0, negative = 1
Bit 2	Overload (or under zero) = 1
Bit 3	Motion =1, stable =0
Bit 4	Unit: lb = 0, kg = 1
Bit 5	Constant 1
Bit 6	Constant 0

State C – unit & mode

Bit Pattern		Meaning	
Bit 2	**Bit 1**	**Bit 0**	**Unit**
0	0	0	kg or lb
0	0	1	g
0	1	0	t
Bit 3		printing=1	
Bit 4		Extend display = 1	
Bit 5		Constant 1	
Bit 6		Constant 0	

5.3 Serial Command Set

In command (request) mode, the serial interface accepts the following ASCII commands:

Command	Function
T – Tare	Perform tare or clear tare value.
Z – Zero	Zero the gross weight.
P – Print command	Output and print the current weight data.
R – Reply	Reply the weight.

5.4 Print Format

- Net XX.X lb
- Tare XX.X lb
- Gross XXX.X lb

5.5 Print the accumulated format

- Total: 003 (accumulate times; example for 3 times is 003)
- Total: 2.88 lb (accumulate weight)

6. Maintenance and Troubleshooting

6.1 Error Messages

Display	Probable Cause	Corrective Action
UUUUUU	1. Overload. 2. Incorrect load-cell wiring. 3. A faulty load cell.	1. Reduce the load. 2. Check the load-cell connection. 3. Check the load cell by measuring its input and output resistance.
nnnnnnn	1. Faulty calibration. 2. Incorrect wiring. 3. A faulty load cell.	1. Check that the platform moves freely and the feet are level. 2. Check the connection and the load cell.
ERR1	During calibration, no test weight was added or the value exceeds maximum capacity.	Enter the correct test-weight value.
ERR2	During calibration, the test weight is below the minimum.	Use at least 10% of maximum capacity (recommended 60–80%).
ERR3	During calibration, the input signal is negative.	Check the wiring and that the load cell is undamaged.
ERR4	During calibration, the signal is unstable.	Allow the platform to stabilize, then restart calibration.
ERR5	EEPROM check error.	Contact an authorized service center; EEPROM or PCB replacement may be required.
ERR6	Zero is out of range.	Remove the load from the platform.

6.2 Routine Maintenance

- Sunlight Protection: protect the indicator from direct and intense sunlight to prolong its service life.
- Signal Integrity: ensure a secure and reliable connection between the load cell and the indicator. Keep the entire scale system away from strong electric and magnetic fields to prevent signal interference.
- Lightning Protection: always power off the indicator and disconnect the power supply during electrical storms or lightning activity.
- Hot-Plugging Warning: always turn off the indicator's power before plugging in or unplugging any cables (such as load cell, printer, or serial communication cables).

6.3 Restoring Factory Default Parameters

Enter Menu: enter calibration mode, and navigate to parameter C07. Modify Selection: change the value of C07 to 1 (C07 = 1). Save and Exit: press the [SET] key to confirm, then press the [ON/OFF] (EXIT CALIBRATION) key to save the settings and exit the menu. All parameters will automatically reset to their factory default values.

WARNING

Do NOT restore factory default parameters unless you are qualified and authorized to completely recalibrate the scale system. Restoring defaults will permanently erase all existing weight calibration data and custom application configurations.

Default parameters

Parameter	Instruction	Default
C01	Calibration unit	1
C02	Decimal places	0
C03	Division value	1
C04	Max capacity	10000
C05	Zero calibration	0
C06	Span calibration	0
C07	Restore factory defaults	0
C08	Buzzer	1
C09	Auto power-off	0
C10	Power saving mode	0
C11	Hold function mode	0
C12	Animal hold sample time	0
C13	Upper limit warning	000000
C14	Lower limit warning	000000
C15	Inner code	—
C16	Date setting	—
C17	Time setting	—
C18	Serial output method	0
C19	Baud rate	3 = 9600
C20	Manual zero range	2
C21	Initial zero range	10
C22	Auto zero-tracking range	0.5

Parameter	Instruction	Default
C23	Auto zero-tracking time	1
C24	Overload range	9
C25	Negative display range	10
C26	Stability time	1
C27	Stability range	2
C28	Dynamic filter	0
C29	Noise filter	2
C30	Date format	0
C31	Reserved menu	—
C32	Reserved menu	—
C33	Reserved menu	—
C34	Continuous tare	0
C35	Print format	1
C36	Calibration-site gravity	9.7936
C37	Destination gravity	9.7936
C38	Firmware version	—
C39	Negative weighing mode	0
C40	Animal scale hold delay	3
C41	Print mode	0
C42	Print line feed (post-text)	1
C43	Print left margin (pre-text spaces)	0
C44	Date print	0
C45	Time print	0
C46	S/N Print	0
C47	Automatic accumulation clear	0
C48	Accumulation Print Line Feed	0
C49	Reserved menu	—

6.4 Packing list

S/N	Item	Name	Unit	Qty	Packing
1	Weighing indicator		PCS	1	
2	Packaging Bag		PCS	1	
3	Accessory Bag		PCS	1	
4	Power cable	US	PCS	1	
5	User manual		PCS	1	
6	RS-232 connector	DB9	PCS	1	
7	Load-cell plug	5 PIN quick disconnect	PCS	1	
8	Bracket	Wall-mounted	PCS	1	
9	Packing list		PCS	1	