

T903
Portable Weight Indicator

Technical Manual

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

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 Please read this manual carefully before operating the indicator.

1 Introduction

1.1 Warnings

Failure to heed may result in serious injury or death.

-  DO NOT allow inexperienced persons to operate the indicator.
-  DO NOT operate without all shields and guards in place.
-  DO NOT step on the unit.
-  DO NOT use for purposes other than weight taking.
-  DO NOT place fingers into slots or possible pinch points.
-  DO NOT use the indicator if any of the components are cracked.
-  DO NOT exceed the rated load limit of the indicator.
-  DO NOT make alterations or modifications to the indicator.
-  DO NOT remove or obscure warning labels or seals.

Before opening the indicator, ensure the power cord is disconnected from the outlet.

1.2 Features

This indicator is an advanced high resolution multi-purpose portable weight indicator. It is housed in IP67 ABS+TPR enclosure with built-in printer. Its top panel consists of a dual-line 15-segment high-contrast BTN LCD display, and 5X4-button flat membrane keypad. With built-in high capacity rechargeable battery, easy-to-use user interface, dedicated powerful axle weighing applications, it is an ideal weight indicator for axle weighing, as well as various weighing scales and applications.

- IP67 ABS+TPR portable housing
- Built-in 58mm thermal or label printer with quick paper installation
- Ultra-contrast 0.8inch/20.32mm white BTN LCD display
- Dual 15-segment display for easy 0~9, a~z, A~Z letter input
- 20-key flat membrane numeric keypad
- Up to 8 loadcells/scales input via cable or wirelessly
- Real-time Clock with Backup Battery
- Built-in 3.7V/4.0Ah high capacity maintenance-free rechargeable battery
- Universal 100-240Vac power supply
- Full duplex RS-232 communication port and various optional I/O ports
- Basic weighing, Multi-channel Axle Weighing, and Axle Sum Weighing
- Dual-line structured menu and user-friendly warning messages
- Alphanumeric input method for typing in up to 7 characters

- Data management of 1024 weighing records
- 4 configurable user-defined function keys
- Various configurable measurement units, percentage and user-defined unit
- Zero calibration, Whole Scale Calibration and Channel Calibration
- Various software and hardware options

1.3 Specifications

Metrology Performance

Accuracy Class	Class III (OIML R76 eqv.)
Number of Cable Channels	8x
Number of RF Channels	12x
Overload Range	100 %F.S.+9e
Underload Range	-20e
Tare Range	100 %F.S.
Auto-Zero Range	+/-20 %F.S. (dft.)
Manual-Zero Range	+/-4 %F.S. (dft.)
Center of Zero	+/-0.25 e
Return-to-Zero Range	5.0 e
Zero-tracking	0.5 e/s (dft.)

User Interface

LCD Display	7-digit White BTN LCD, 0.8inch/20mm 15-segment
Keypad	20-key Flat Membrane Panel
Interface	GX16-5P for RS-232

Serial Communication

Port	Full Duplex RS-232
Baudrate	1200 / 2400 / 4800 / 9600 bps
Data Format	1-bit start, 8-bit data, 1-bit stop
Parity	None Parity
Output Mode	Continuous / Request

Built-in Printer

Printing Method	Thermal
Speed	65 mm/s (max.)
Resolution	8 dot/mm, 384 dot/line
Printing Width	48 mm (max.)
Printing Life	50 km

Paper	Thermal, 57+/-0.5 mm in width, ≤Φ50mm
Paper Cutting Method	Manual

Power Supply

AC Power Voltage	100~240 Vac, 50~60 Hz
Fusing	1.1A PPTC resettable fuse
Built-in Battery	3.7V4.0Ah li-ion rechargeable battery
Low Battery Caution	3.6 Vdc (typ.)
Low Battery Auto Power-Off	3.4 Vdc (typ.)
Battery Life	20 ~ 160 hours (typ.)
Battery Charging Cycles	over 1000 cycles (typ.)
Auto Power-Off Timing	Disabled (dft.)
Sleep Timing	30 s (dft.)

Enclosure

Panel Material	SS304 stainless steel
Indicator Dimensions	335 x 236 x 126 mm (13.2 x 9.3 x 5.0 inch)

Environmental

Operating Temperature	-10 ~ +40 degC (+14 ~ +104 degF)
Storage Temperature	-20 ~ +50 degC (-4 ~ +122 degF)
Operating Humidity	0 ~ 90 % at 20 degC (rel.)

1.4 Options

Free-of-charge options which you may have ordered with this indicator include:

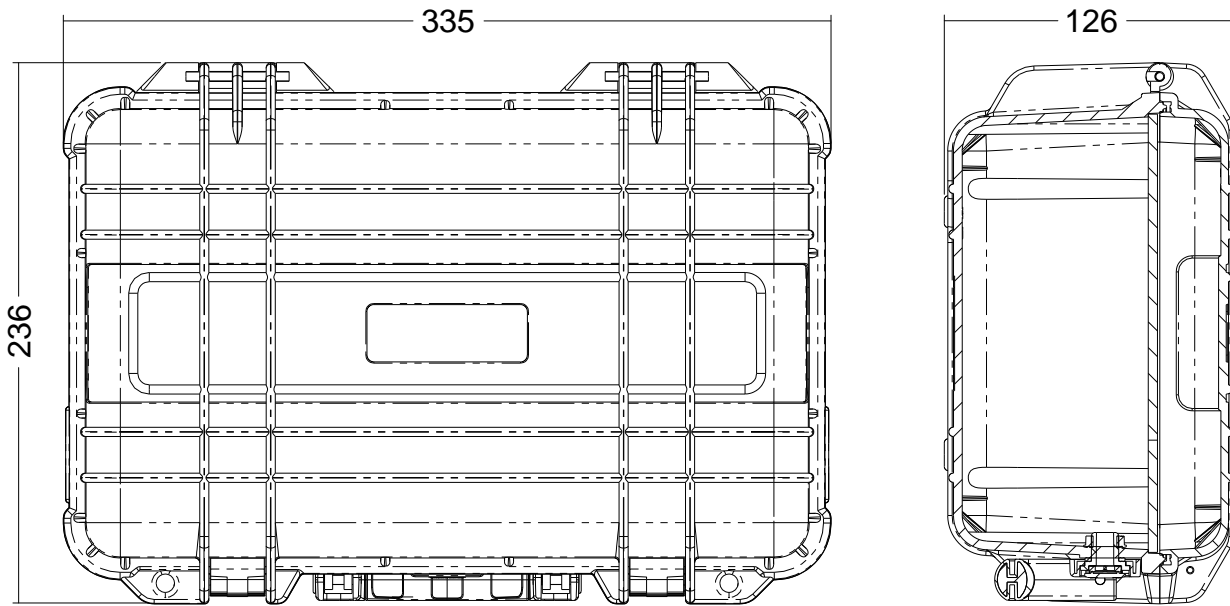
- Auto Store (a)
- Calibration Counter (c)
- Dual Interval (i)
- Preset Tare (t)
- Calibration Switch with Seal Protection (S)

Value-added options which you may have ordered with this indicator include:

- RS-485 communication (8)
- Bluetooth communication for cellphone, pad, and PC (B)
- RF Kit for RF scoreboard or RF transmitter (F)

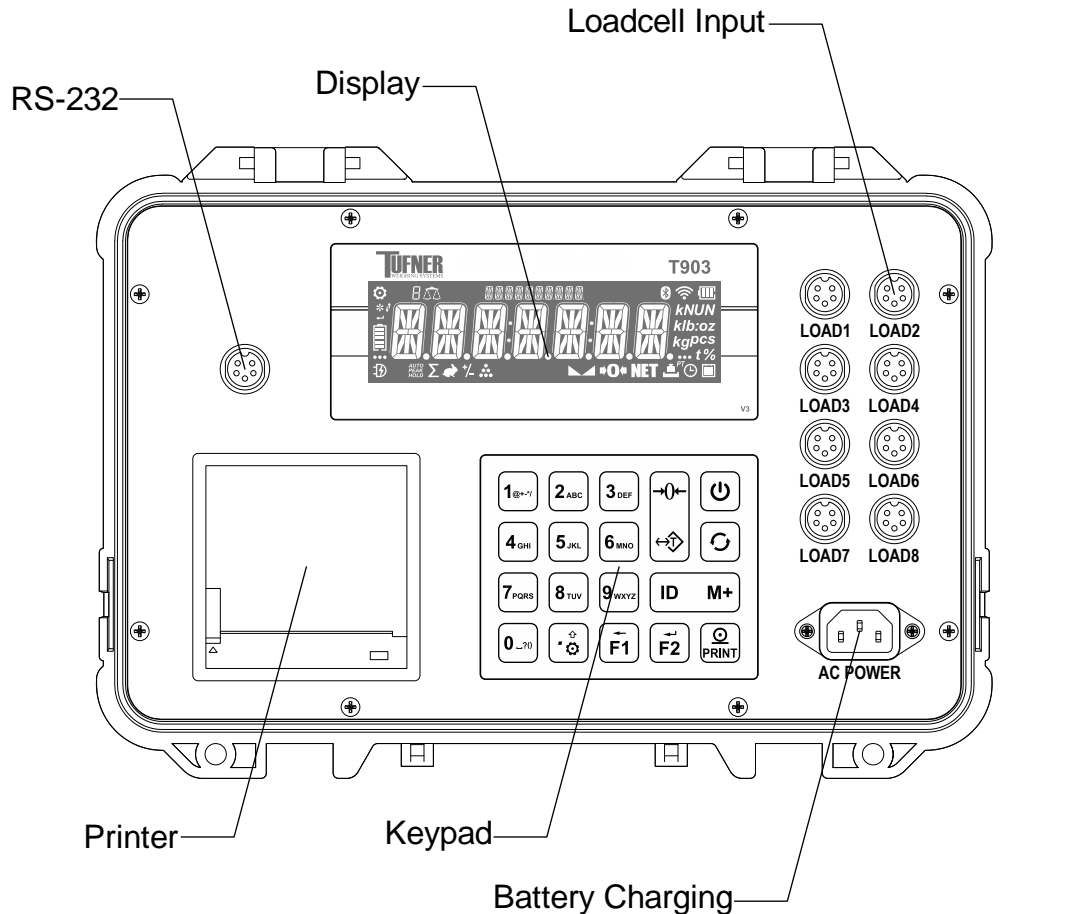
2 Installation

2.1 Dimensions

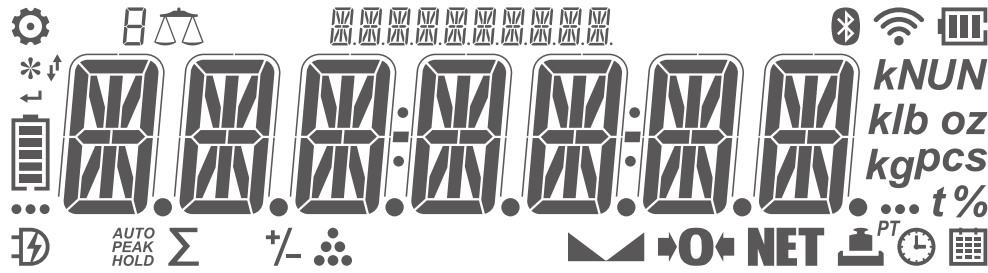


Dimensions in Millimeters

2.2 Top Panel























2.2.1 Display



Section	Display Area
Prompt	
Message	
Unit	<p>kNUN klb oz kgPCS t%</p>
Weighing Status	

2.2.2 Symbol

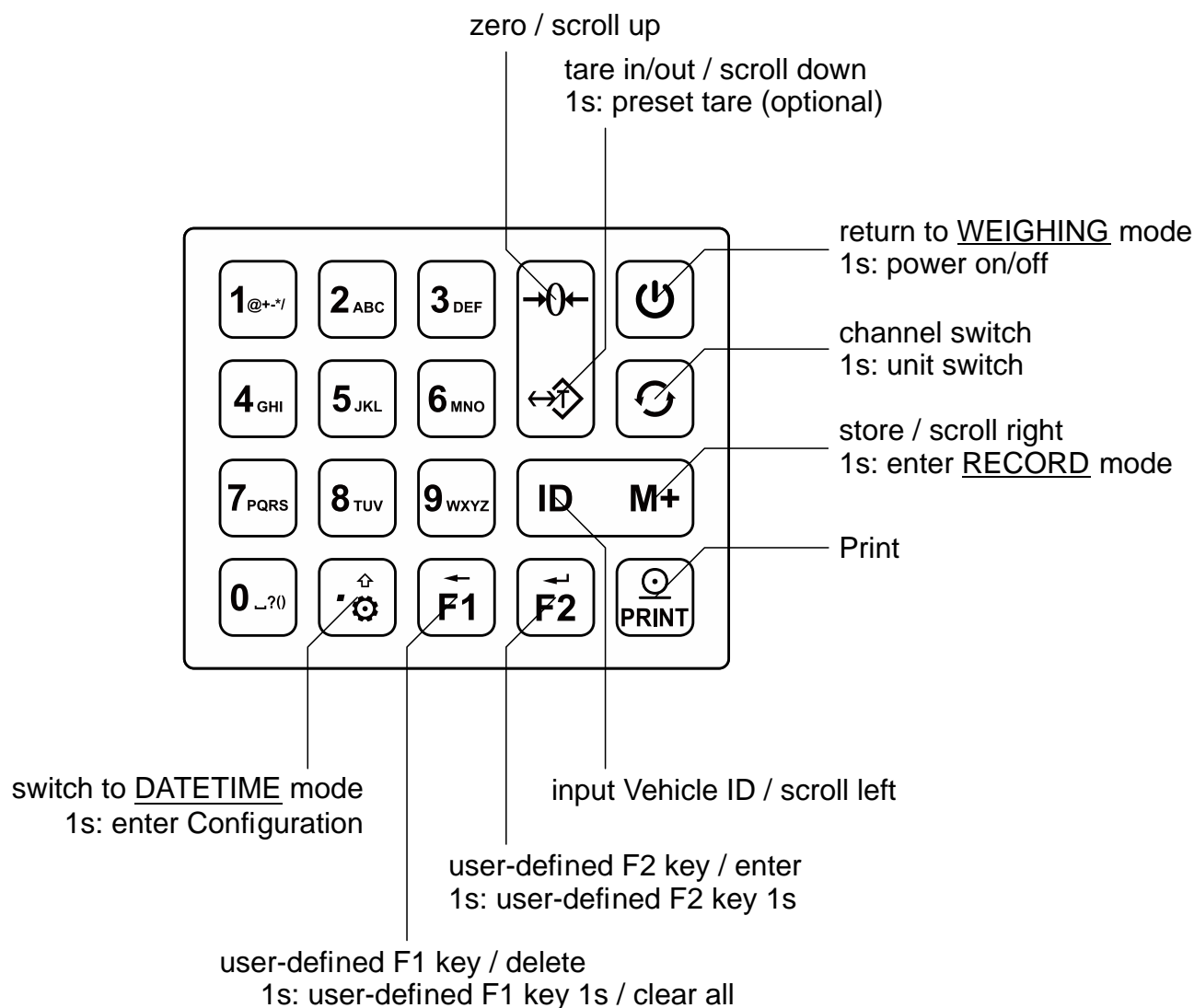
Symbol	Definition	Indication
	Stable	Load is stable.
	Zero	Load is within center of zero (+/-0.25e).
NET	Tared	Load is tared.
	Net	net weight of a record
	Tare	tare weight of a record
	Gross	gross weight of a record
PT	Preset Tare	Load is tared by preset tare.
	Time	time of a record
	Date	date of a record
	Date & Time	DateTime mode
...	More to show	More digits or characters show at left-side or right-side.
t	ton	unit of weight (metric system)
kg	kilo gram	
g	gram	
klb	kilo pound	unit of weight (imperial system)
lb	pound	
oz	ounce	
N	Newton	unit of force

<i>kN</i>	kilo Newton	
<i>UN</i>	user unit	user-defined unit
<i>pcs</i>	piece	unit of piece
%	percent	percentage of full scale
	Configuration	In configuration or calibration menu
*	Capslock	shows if capslock is enabled
	Scroll to Select	selectable parameter value
	Type to Input	user input parameter value
	Battery Status	 shows if battery is dead, charging is needed.
		 shows if battery is less than 20%.
		 shows if battery is less than 40%.
		 shows if battery is less than 60%.
		 shows if battery is less than 80%.
		 shows if battery is full, scrolls if it is being charged.
	AC Power	AC power is supplied.
HOLD	Hold	Weight reading is locked in HOLD mode.
PEAK HOLD	Peak-Hold	Weight reading is locked in PEAK-HOLD mode.
AUTO HOLD	Auto-Hold	Weight reading is locked in AUTO-HOLD mode.
	Total View	in <u>TOTAL VIEW</u> mode
	Animal Weighing	Animal weighing is enabled.
+/-	Check-weighing	Check-weighing is enabled.
	Piece Count	Piece count is enabled.
	Channel	the channel number of multiple load
	Check-weighing Status	Load is greater than high set-point.
		Load is between low and high set-point.
		Load is less than low set-point.
	Bluetooth	Optional Bluetooth connection is enabled.
	Remote Battery	remote device battery status















2.2.3 Keypad

The beeper emits short sound, indicating the pressed key action is valid.

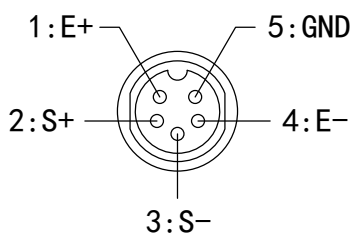
1s: press and keep pressing for 1 second.



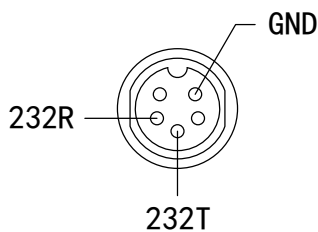
Key	Name	Function
	On/Off	return to <u>WEIGHING</u> mode 1s: power on/off
	Zero	zero / scroll up selection or record 1s: no action
	Tare	tare in/out / scroll down selection or record 1s: preset tare (optional)
	Print	print 1s: no action
	Switch	switch the overall weight and the weight of each channel 1s: unit switch
	Store	store the weighing record / scroll right 1s: enter <u>RECORD VIEW</u> mode

	ID	enter <u>ALPHANUMBERIC INPUT</u> mode to input Vehicle ID / scroll left 1s: no action
	F1	user-defined F1 key / delete 1s: user-defined F1 key 1s / clear all
	F2	user-defined F2 key / enter 1s: user-defined F2 key 1s
	1	input number 1 or @ # \$ % ^ & _ ~ ' | + - * / = < >
	2	input number 2 or a, b, c
	3	input number 3 or d, e, f
	4	input number 4 or g, h, i
	5	input number 5 or j, k, l
	6	input number 6 or m, n, o
	7	input number 7 or p, q, r, s
	8	input number 8 or t, u, v
	9	input number 9 or w, x, y, z
	0	input number 0 or white space , . ; : ! ? () [] { }
	Decimal Point	input decimal point / enter <u>DATETIME</u> mode 1s: enter Configuration

2.3 Interface



- E-: Loadcell Negative Excitation
- E+: Loadcell Positive Excitation
- S-: Loadcell Negative Signal
- S+: Loadcell Positive Signal
- GND: Loadcell Ground



- 232T: RS-232 Transmit
- 232R: RS-232 Receive
- GND: RS-232 Ground

2.4 Built-in Battery

This indicator has a built-in 3.7V4.0Ah rechargeable li-ion battery.


Depending on daily operations, especially printing jobs, and the configuration of display luminance and sleep timing, as well as the loadcell resistance, battery works from

20 hours to 150 hours. When powered by the built-in battery, proper configurations of Auto-Off Timing, Sleep Timing and Display Luminance, helps to reduce power consumption and conserve battery life.

The AC power charges battery automatically. Charging time for a completely discharged battery is approximately 8 to 12 hours, depending on battery's charged cycles and charging temperature.

During battery charging,  scrolls.

After battery is fully charged,  shows.

 To obtain the built-in battery maximum service life, stored indicator shall be re-charged every three months.



3 Operation



The indicator has below modes (marked with underline):


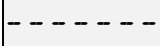







- WEIGHING mode: most commonly used mode in weighing operation.
- DATETIME mode: display shows current date and time.
- PIECE COUNT mode: display shows the quantity of the load.
- NUMBER INPUT mode: input 0~9 and decimal point.
- ALPHANUMBERIC INPUT mode: input a~z, A~Z, 0~9, and various symbols.
- DATE INPUT mode: input date in user configured date format.
- TIME INPUT mode: input time in HH:MM:SS format.
- RECORD VIEW mode: display shows record info.
- TOTAL VIEW mode: display shows total info.

3.1 Power On / Off

When powered off


 Press  1s to power on the indicator.


Indicator starts with power-on beeping, and  to  count-down display test. It then performs weight detection until load becomes stable. Finally, the indicator Auto Zero the scale if properly configured.

-  If  keeps showing, check if the load is in motion, the loadcell cable connection is loose, loadcell is defective, or re-calibrate the scale if necessary.
-  If  keeps showing, check if the RF transmitter is properly working (optional).
-  If the load is out of Auto Zero Range, message  shows.
-  If the Auto Zero Range is configured to , Auto Zero will be skipped.
-  For more info about Auto Zero Range, please refer to Zero functions in

Scale Configuration section.

In WEIGHING mode

Press  1s to power off the indicator.


Message  shows, indicating the indicator is being powered off.

3.2 Zero



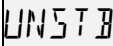







Zero function takes out small deviations in zero when scale is unloaded, and sets a new zero reading of the scale.

In WEIGHING mode

Press  to set the scale to zero.

Symbol  shows, indicating load is within $\pm 0.25e$.



-  If load is unstable ( hides), message  shows.
-  If load is in NET mode (**NET** shows), message  shows.
-  If load is out of Manual Zero Range, message  shows.
-  The Zero function can be disabled by configuring the Manual Zero Range to .
-  For more info about Manual Zero Range, please refer to Zero Functions in Scale Configuration section.

3.3 Tare

Tare is typically used to zero out a known weight such as a packing container or pallet and display the load in NET mode.

Tare will reduce the apparent overloading range of the scale. For example, tare in a 20kg container on a 100kg scale, the scale will overload at a new net weight of 80kg (100kg-20kg) plus 9.0e.



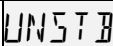

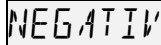


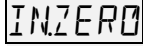


3.3.1 Tare In

In GROSS mode

Press  to tare in the weight.

Symbol **NET** shows, indicating load is in NET mode.



-  If load is unstable ( hides), message  shows.
-  If weight reading is negative, message  shows.
-  If load is within $\pm 0.25e$ ( shows), message  shows.
-  If load is out of full scale, message  shows.

3.3.2 Tare Out

In NET mode

Press  to tare out the weight.

Symbol **NET** hides, indicating load is in GROSS mode.


3.3.3 Preset Tare (optional)

Preset Tare function is used to input a known tare weight (as a packing container or pallet) instead of placing it on the scale and taring manually.

The input tare value is under current measurement unit. For example, if measurement unit is previously switched to oz, then user's input 20 will set the tare as 20oz. Similarly, if measurement unit is %, user's input 20 will actually set the tare as 20% of the target 100% weight.


In GROSS mode

Press  1s to enter NUMBER INPUT mode.

Prompt  shows, waiting for user to input preset tare.

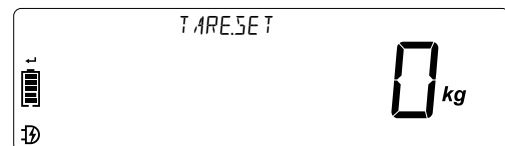
Press            to input the known tare value.



Press  to exit from NUMBER INPUT mode.

Press  to confirm.

Symbol **NET** shows, indicating load is in NET mode.

Symbol *PT* shows, indicating the tare is preset.





 If the load is already in NET mode, Preset Tare is not allowed, and message  shows.

3.4 Channel Switch

The Channel Switch function allows user to view the weight reading or the conversion code of each channel that the indicator is connected with.

Press  to toggle different channel.



Symbol  shows, and the number on the left of this symbol indicates the channel number.

 See Channel Configuration section for more settings of all the channel.


3.5 Unit Switch

The indicator supports various measurement units of metric system, imperial system, force and even user-defined unit.

The indicator's calibration unit is always fixed to kg or lb. The Unit Switch function simply calculates new weight reading as a result of multiplying kg or lb by unit ratio. Therefore, the Unit Switch function does NOT change indicator's verification interval.



Press   1s to toggle various measurement units.

New unit will be activated and saved in nonvolatile memory for next power-up.

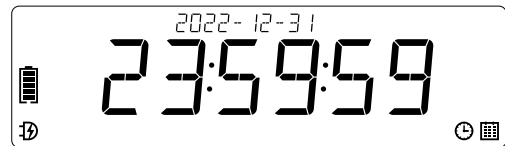
 See Unit Configuration section for all the available measurement units that is allowed to be enabled or disabled.

3.6 Date & Time


In WEIGHING mode

Press   to switch from WEIGHING mode to DATETIME mode.


Symbol   show.



The date is shown in display Prompt section, based on user configured date format.

 Refer to Clock Configuration section for how to configure the date format as one of the YYYY/MM/DD, YYYY-MM-DD, MM/DD/YYYY, MM-DD-YYYY, DD/MM/YYYY, DD-MM-YYYY format.

The time is shown in display Message section, based on user configured time format.


 Refer to Clock Configuration section for how to configure the time format as HH:MM:SS or AHH:MM:SS format.

In DATETIME mode

Press   to switch from DATETIME mode back to WEIGHING mode.

Symbol   hide.








3.7 Print

 Refer to Print Configuration section for more details of printing settings.

Press   to print out a weight bill.

Message **PRINT** shows, indicating the weight bill is printed out.

If the **STORE** parameter in Print Configuration is configured to **EN**, and the weight reading is allowed to be stored, the weight reading will be automatically stored at the same time.

-  If load is unstable ( hides), message **UNST** shows.
-  If load is within +/-0.25e ( shows), message **INZERO** shows.
-  If weight reading is negative, message **NEGATIV** shows.
-  If load is out of full scale, message **OUTFS** shows.
-  If load is less than +5.0e or hasn't returned +5.0e before, message **INV'AL I** shows.

3.8 Input Vehicle ID

This indicator allows user to input Vehicle ID with up to 7 characters.

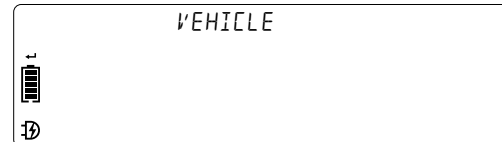
Each character can be any of number 0~9, letter A~Z, and symbols @ # \$ % ^ & _ ~ ' | \ + - * / = < > .

In WEIGHING mode

Press to enter ALPHANUMBERIC INPUT mode.

In ALPHANUMBERIC INPUT mode

Prompt **VEHICLE** and symbol shows, waiting for user to input the Vehicle ID.



Press to input desired character.

The input a~z in lowercase are automatically changed to its uppercase letter.

The input character blinks 2 times before it is selected.

- If the blinking character is the desired one to input, wait until it stops blinking, the character is selected.
- If the blinking character is not the desired one, keep pressing the button to scroll between all the available characters of the button.
- If a new button is pressed, while the previous blinking character is still blinking, the blinking character will stop blinking immediately.

Press to delete the current (rightmost) character.

Press 1s to clear all the characters.

For example, to input the Vehicle ID

“A#HF310”,

1) quickly press the buttons in sequence,

2) wait until “F” stops blinking,

3) quickly press


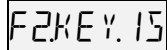
then message **A#HF3 10** shows.








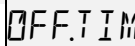











3.9 User-defined Function


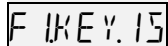
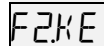
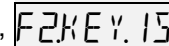
The indicator comes with 4 configurable User-defined Keys, which can be assigned to user preferred functions independently. They are as below:



- quick pressing , shown as **F1KEY** in menu, no function by default;
- quick pressing , shown as **F2KEY** in menu, no function by default;
- pressing 1s, shown as **F1KEY.1S** in menu, no function by default;

- pressing  1s, shown as  in menu, no function by default.


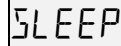
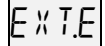





In **WEIGHING** mode

-  Press  1s to enter Configuration.  shows.
-  Press  to enter User Configuration.  shows.
-  Press  /  to scroll to User-defined Key 1.  shows.
-  Press  to enter User-defined F1 Key parameter.
-  Press  /  to select preferred function.
-  Press  to confirm the selection.


 Repeat similar operations, to assign preferred function to the rest User-defined Key , , .

-  Press  to save and return to **WEIGHING** mode.

Available functions can be configured by user are listed as below.



Selection	Function
	No function
	Enter SLEEP mode
	Extended Resolution View
	Conversion Code View
	Weight Hold
	Peak Hold
	Auto Hold
	Axle Set

3.9.1 Sleep

 This function shall be assigned to a User-defined Key first.


The Sleep function switches the indicator to SLEEP mode immediately.

-  Press the assigned User-defined Key to set the indicator to SLEEP mode.

 If load is unstable ( hides), Sleep is not allowed.

In SLEEP mode, the indicator lower the display backlight luminant to save power.


3.9.2 Extended Resolution View

 This function shall be assigned to a User-defined Key first.


Typically used for testing, the Extended Resolution View function enables user to view weight reading in 10 times high division for 5s. After 5s, display interval resumes normal.

-  Press the assigned User-defined Key to start Extended Resolution View.

3.9.3 Conversion Code View

 This function shall be assigned to a User-defined Key first.

Usually used for linearity testing, Conversion Code View enables user to read indicator's internal ADC conversion code for 5s. After 5s, display resumes normal.

 Press the assigned User-defined Key to start Conversion Code View.

The Weighing Status and Set-point Status annunciators all hide.

3.9.4 Hold

 This function shall be assigned to a User-defined Key first.

Hold function is used to pause display refreshing when weight reading is changing or load is removed.

In HOLD mode, the indicator still calculates actual weight in background, therefore, all functions like set-point capturing, serial communication, etc., still work normally.

In WEIGHING mode

 Press the assigned User-defined Key to lock the weight reading.

Message  shows.

Symbol ^{HOLD} shows.

 Press the assigned User-defined Key again to unlock the weight reading.

Symbol ^{HOLD} hides.


3.9.5 Peak Hold

 This function shall be assigned to a User-defined Key first.

Peak Hold is typically used to monitor and capture peak weight. Different from Weight Hold, Peak Hold only locks the maximum weight reading. If new weight comes and is greater than current locked weight reading, display will refresh to the new one.

In WEIGHING mode

 Press the assigned User-defined Key to start the Peak Hold.

Message  shows.

Symbol ^{PEAK HOLD} shows.

 Press the assigned User-defined Key again to stop the Peak Hold.

Symbol ^{PEAK HOLD} hides.

3.9.6 Auto Hold

 This function shall be assigned to a User-defined Key first.

Auto Hold function is used to automatically pause display refreshing when weight reading become stable.

If load is less than 20e, Auto Hold is halted automatically.

In WEIGHING mode

 Press the assigned User-defined Key to start the Auto Hold.


Message **AHOLD** shows.

Symbol ^{AUTO}_{HOLD} shows.

 Press the assigned User-defined Key again to stop the Auto Hold.

Symbol ^{AUTO}_{HOLD} hides.

3.9.7 Axle Set

 This function shall be assigned to a User-defined Key first.

The Axle Set function is used to input the number of axle the vehicle has, when Axle Sum Weighing is enabled.

Valid number of axle is from 2 to 6.

In WEIGHING mode

 Press the assigned User-defined Key to enter NUMBER INPUT mode.


Prompt **AXLE** shows, waiting for user to input

the number of axle.



 Press **2** **3** **4** **5** **6** to input the number.

 Press **F2** to confirm, or press **⏻** to exit from NUMBER INPUT mode.

 If the input number of axle is not between 2 and 6, message **ERROR** shows, indicating the number of axle is not defined.

3.10 Check-weighing

The indicator comes with 2 software set-points, which can fill a variety of applications in control, batching, safety, and informational warnings, etc.

When net weight meets the configured triggering condition, the indicator responds with annunciator indication, beeping alarm and relay logic output (optional).

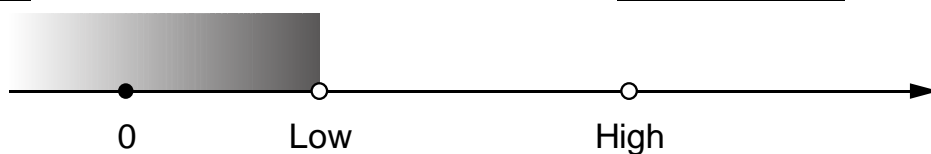
When set-point triggered, indicator can be configured to:

- no response (set-point function disabled),
- optical alert and logic output (optional),
- acoustic, optical alert and logic output (optional).

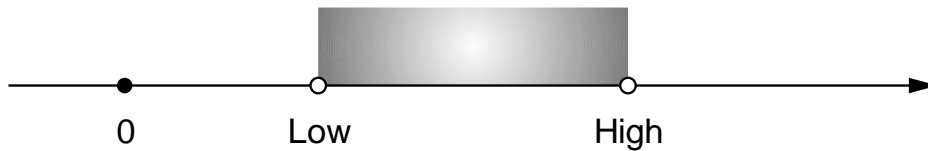
Triggering Condition

There are 4 types of set-point triggering conditions:

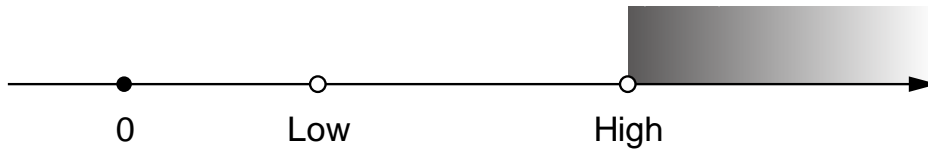
1) **LOW**: triggered if load is less than low set-point, **LOW-----** shows.



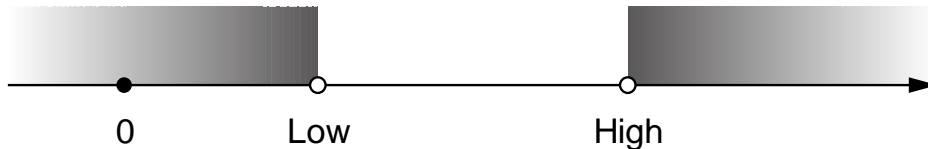
2) **PASS**: triggered if load is in between high and low set-point, **---PASS---** shows.



3) **HIGH**: triggered if load is greater than high set-point, **-----HIGH** shows.



4) **LOWHIGH**: triggered if 1) or 2) satisfied, **LOW-----** or **-----HIGH** shows.



Select Check-weighing Mode

In **WEIGHING** mode

- Press **F1** to enter Configuration. **USER** shows.
- Press **F2** to enter User Configuration. **OFF.TIM** shows.
- Press **←** / **→** to scroll up / down to Set-point Mode parameter. **SPMODE** shows.
- Press **F2** to enter Set-point Mode parameter.
- Press **←** / **→** to scroll up / down to select set-point working mode.

Selectable set-point mode are:

- **DIS**: no response (set-point function disabled),
- **MUTE**: no beeping, only annunciator indication, and relay logic output (optional),
- **LOW / PASS / HIGH / LOWHIGH**: beeping alarm, annunciator indication, and relay output (optional).

Configure Set-point Threshold

- Press **F2** to enter Low Threshold parameter. **SPLOW** shows.
- Press **1** **2** **3** **4** **5** **6** **7** **8** **9** **0** **.** **⊗** to input Low Threshold value.
- Press **F2** to enter High Threshold parameter. **SPHIGH** shows.
- Repeat similar operations, to input High Threshold value.
- Press **⏻** to save and return to **WEIGHING** mode.

3.11 Weighing Record

3.11.1 Store

The indicator requires that the load on the scale falls below +5.0e before next load can be stored. This assures that a load on the scale is stored to the database only once.

In **WEIGHING** mode

- Press **M+** to store current weight record.

Message **STORE** shows, indicating the weight reading is stored.

- ! If load is unstable (▲▲ hides), message **UNST** shows.
- ! If weight reading is negative, message **NEGATIV** shows.
- ! If load is within +/-0.25e (▶0◀ shows), message **INZERO** shows.
- ! If load is out of full scale, message **OUTFS** shows.
- ! If load is less than +5.0e or hasn't returned +5.0e before, message **INVALID** shows.

3.11.2 View Record

In WEIGHING mode

Press **M+** 1s to enter RECORD VIEW mode.

The display Prompt section shows the record's serial no. 151 **0151**, for example.

In RECORD VIEW mode, symbols ▲▲ ▶0◀ **NET** are always hidden.

In RECORD VIEW mode

Press ◀0▶ / ↔ to scroll up / down to previous/next record.

- Message **NOPREV** shows, indicating it is the oldest record, no previous record can be shown anymore.
- Message **NONEXT** shows, indicating it is the latest record, no next record can be shown anymore.

Press ⏪ to scroll between record's gross weight, net weight, tare weight, date, time, and vehicle id (if truck application is enabled).

Symbol ▲ shows when net weight is shown.

Symbol ▲ shows when tare weight is shown.

Symbol ▲ shows when gross weight is shown.

Symbol 📅 shows when date is shown.

Symbol 🕒 shows when time is shown.

The display Prompt section **ID** shows when Vehicle ID is shown.

The display Prompt section **AXLE** shows when the Number of Axle is shown.

The display Prompt section **AXLE.?** shows when the weight of each Axle is shown.

Press ⏻ to exit and return to WEIGHING mode.

3.11.3 View Total

In RECORD VIEW mode

Press **M+** 1s to enter TOTAL VIEW mode.


The display Prompt section shows the number of totals, e.g. **TOTAL 18**.


Symbol ∑ shows, indicating it is in TOTAL VIEW mode.


In TOTAL VIEW mode, symbols ▲▲ ▶0◀ **NET** are always


hidden.

In TOTAL VIEW mode

Press  to switch the weight type of the total weight between total net weight, total gross weight, total tare weight.

Symbol  shows, indicating the weight reading is total net weight.

Symbol  shows, indicating the weight reading is total tare weight.

Symbol  shows, indicating the weight reading is total gross weight.



Press  to exit and return to WEIGHING mode.

Symbol Σ hides, indicating it is in WEIGHING mode.


3.11.4 Delete Record

In RECORD VIEW mode


Press  to delete the Record.

Prompt  and symbol  shows, waiting for user to select  / .

Press  /  to scroll up / down the selection.


Press  to confirm.





If  is selected, the record will be deleted eventually.


If  is selected, the deletion of this record will be cancelled.


3.11.5 Clear All Records

In RECORD VIEW mode


Press  1s to clear all the Records.

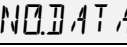
Prompt  and symbol  shows, waiting for user to select  / .

Press  /  to scroll up / down the selection.

Press  to confirm.

If  is selected, all the records will be deleted eventually.


If  is selected, the deletion of all records will be cancelled.

Message  shows, indicating that all the records are cleared. The indicator will return to WEIGHING mode automatically.

3.11.6 Re-print Bill

In RECORD VIEW mode

Press  to re-print current record.

Message  shows, indicating the weight record is re-printed out.

3.11.7 Filter by Date / Vehicle ID

The below conditions can be used or combined in any sequence to view, delete or print records.


Filter by Date

In RECORD VIEW mode


Press  to enter DATE INPUT mode.

In DATE INPUT mode

Press           to input date in user configured date format.

Press  to filter the records by date.

Press  to exit from DATE INPUT mode.

 Message **NOMATCH** shows, indicating the Date is not found in all the records.

 Message **DATECLR** shows, indicating it the Date is cleared as filter.


Filter by Vehicle ID

In RECORD VIEW mode


Press  to enter ALPHANUMBERIC INPUT mode.


In ALPHANUMBERIC INPUT mode

Press            to input Vehicle ID.

Press  to filter records by Vehicle ID.

Press  to exit from ALPHANUMBERIC INPUT mode.


 Message **NOMATCH** shows, indicating the Vehicle ID is not found in all the records.

 Message **VIDCLR** shows, indicating it the Vehicle ID is cleared as filter.

4 Axle Sum Weighing

The Axle Sum Weighing application enables the indicator to enter dedicated Axle Sum mode, so as to sum up the weight of multiple axles of a vehicle, one axle by one each time, when a vehicle drives through a scale.

4.1 Enable Axle Sum

 If the Axle Sum is enabled, Channel 1 & 2 are forced to be enabled and the rest channels are forced to be disabled.

In WEIGHING mode

Press  1s to enter Configuration. **USER** shows.



Press  /  to scroll to Axle Configuration. **AXLE** shows.

Press  to enter Axle Configuration. **AXLESUM** shows.

Press  to enter Axle Sum parameter.

Press  /  to scroll the selection to **EN**.

Press  to confirm the selection. **AXLEPRINT** shows.






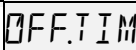



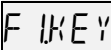





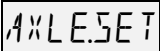




 Press  to exit the Axle Configuration.

4.2 Assign Axle Set Function

In Axle Weighing job, the number of axle of the vehicle needs to be input by user.

The indicator comes with 4 configurable User-defined Keys, which shall be assigned to the Axle Set function firstly so as to input the number of axle.

In WEIGHING mode

-  Press  1s to enter Configuration.  shows.
-  Press  to enter User Configuration.  shows.
-  Press  /  to scroll to (for example) User-defined Key 1.  shows.
-  Press  to enter User-defined F1 Key parameter.
-  Press  /  to select  function.
-  Press  to confirm the selection.
-  Press  to exit the Axle Configuration.

4.3 Perform Axle Sum Weighing




Before a vehicle comes onto the scale, the number of axle needs to be set in advance. Once the number of axle is defined, this number will be applied to next vehicles, until a new number is set.

The following is an example of a typical Axle Sum Weighing sequence.

In WEIGHING mode

Step 1 Zero Scale


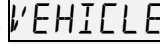

Ensure the indicator reads zero before the vehicle drives onto the scale.

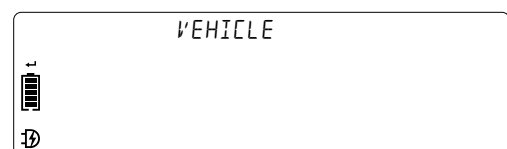
-  Press  to zero the scale, if needed.
- Symbol  shows, indicating load is within $\pm 0.25e$.
















Step 2 Input Vehicle ID

-  Press  to enter ALPHANUMERIC INPUT mode, if needed.

 Prompt  and symbol  shows, waiting for user to input the Vehicle ID.





In ALPHANUMERIC INPUT mode

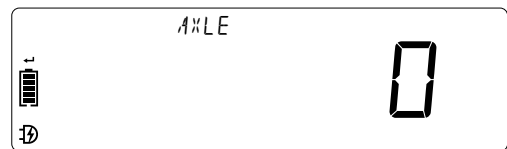
-  Press           to input the Vehicle ID with up to 7 characters.
-  Press  to confirm the input and return to WEIGHING mode.



Step 3 Set the Number of Axle

-  Press (for example)  to enter Axle Set.

Prompt **AXLE** and symbol shows, waiting for user to input the number of axle.



Press **2** **3** **4** **5** **6** to input the number of target axle, 3 (for example).

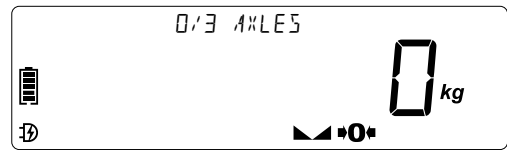
Valid number of axle is from 2 to 6.



Press **F2** to confirm the input.

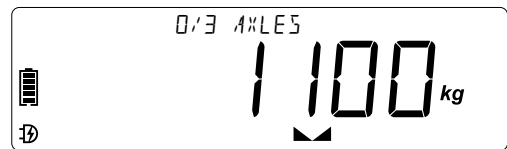
If number is 0, 1, or exceeds 6, message **ERROR** shows, and the number of axle will be set as undefined.

Step 4 Sum Up Axle Weight



Prompt **0/3 AXLES** shows, indicating no axle's weight is stored.
 The weight reading now is the weight of the 1st axle.

Wait until the vehicle's 1st axle stands on the scale without motion.



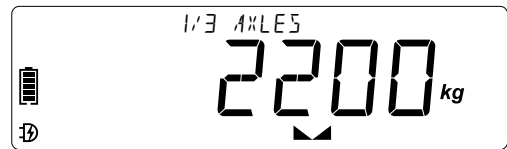
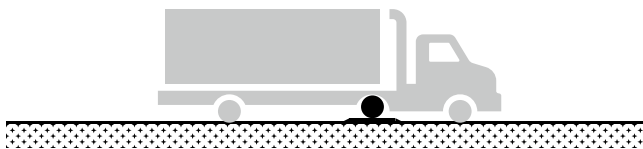
Press to view each channel of the channel 1 & 2 pair, if needed.

Press **M+** to store the weight of the 1st axle, or press to store and print the weight of that at the same time.



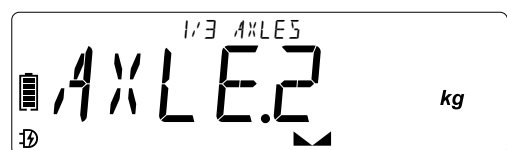
Prompt **1/3 AXLES** shows, indicating 1 axle's weight is stored.
 The weight reading now is the weight of the 2nd axle.

Wait until the vehicle's 2nd axle stands on the scale without motion.



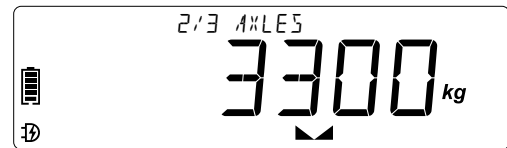
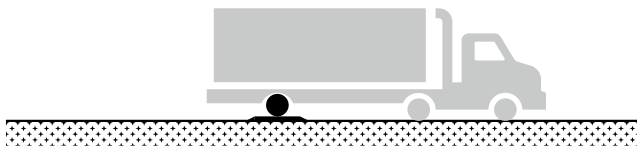
Press to view each channel of the channel 1 & 2 pair, if needed.

Press **M+** to store the weight of the 2nd axle, or press to store and print the weight of that at the same time.



Prompt **2/3 AXLES** shows, indicating 2 axles' weight are stored.
 The weight reading now is the weight of the 2nd axle.

Wait until the vehicle's 3rd axle stands on the scale without motion.



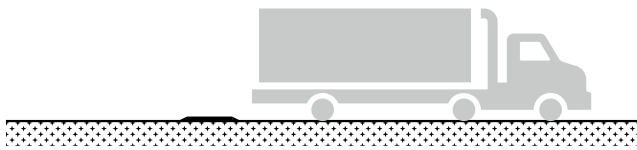
Press to view each channel of the channel 1 & 2 pair, if needed.

Press to store the weight of the 2nd axle, or press to store and print the weight of that at the same time.



Prompt **3/3 TOTAL** shows, indicating 3 axles' weight are stored.
 The weight reading now is fixed with the total weight of the all axles.

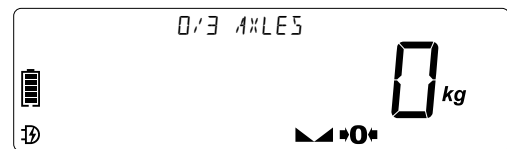
Wait until the vehicle leaves the scale.



Press to view each channel of the channel 1 & 2 pair, if needed.

Press to finish the axle sum weighing.

A new axle sum weighing process can be re-started.



5 Configuration

This chapter details the name, affect and options of all the configurable parameters in this indicator. Some of them are open to user, while some are limited for service and maintenance only, which require password validation or are protected by Calibration Switch with seal protection (optional).

5.1 Menu Navigation

In Configuration, symbol shows.
 If the parameter value can be selected by / , symbol shows.
 If the parameter value can be typed in, symbol shows.

Press to enter or got to next parameter.

Press to save and exit from Configuration immediately.

If the parameter value is selectable.

Press / to scroll up / down the selection.

If the parameter value is be typed in.

Press to input digit.

Press to input decimal point, if applicable.

Display	Name
---------	------

USER	User Configuration
SCALE	Scale Configuration
CHANNEL	Channel Configuration
CAL	Calibration
CLOCK	Date & Time Configuration
UNIT	Measurement Unit Configuration
AXLE	Axle Weighing Application Configuration
RF	RF Configuration
PRINT	Print Configuration

5.2 User Configuration

In WEIGHING mode

 Press  1s to enter menu. **USER** shows.

 Press  to enter User Configuration.

Display	Name	Options
OFF.TIM	Auto- OFF TIM ing	DIS, 3MIN, 5MIN, 10MIN, 15MIN, 30MIN, 60MIN
SLEEP.TIM	SLEEP TIM ing	DIS, 3SEC, 5SEC, 10SEC, 15SEC, 30SEC, 60SEC
LUMIN	Display LUMIN ance	LOW, MEDIUM, HIGH
F1KEY	User-defined F1 KEY	DIS: no function, SLEEP: enter SLEEP mode, EXTE: Extended Resolution View, CODE: Conversion Code View, HOLD: Hold, PHOLD: Peak Hold, AHOLD: Auto Hold, AXLE.SET: Axle Set.
F1KEY.1S	User-defined F1 KEY 1S	
F2KEY	User-defined F2 KEY	
F2KEY.1S	User-defined F2 KEY 1S	
SPMODE	Set-Point MODE	DIS: disabled, MUTE: no beeping, LOW: less than low value, PASS: in between low and high value, HIGH: greater than high value, LOWHIGH: less than low or greater than high value
SPLOW	Set-Point LOW	NUMBER INPUT (0.00000~999999) kg/lb
SPHIGH	Set-Point HIGH	NUMBER INPUT (0.00000~999999) kg/lb

<code>COMMODE</code>	Serial COM MODE	<code>DIS</code> : no output, <code>CONTIN</code> : output continuously, <code>REQ</code> : output upon request
<code>COMBAUD</code>	COM BAUD rate	<code>1200BPS</code> , <code>2400BPS</code> , <code>4800BPS</code> , <code>9600BPS</code>
<code>COMFMT</code>	COM ForMaT	<code>DFT</code> , <code>1</code> , <code>2</code> , <code>3</code> , <code>4</code>

[Selection]: default setting

5.2.1 Power Management

Auto-off Timing

Auto-off Timing maximizes the indicator's built-in battery life against people's carelessness to forget powering off indicator when it's not working.

Auto-off starts countdown timer when there's no action or when load is stable. Any key pressing or motion in load will restart countdown timer.

The selectable Auto-off Timing are: never, 3min, 5min, 10min, 15min, 30min, and 60min.

Sleep Timing

If properly set, the indicator automatically enters SLEEP mode to save battery power after the configured period, when there's no action or the load is stable. Any key pressing or motion in load wakes up the indicator from SLEEP mode.

In SLEEP mode, the indicator lower the display backlight luminant to save power.

The selectable Sleep Timing are: never, 3s, 5s, 10s, 15s, 30s, and 60s.

Display Luminance

Dim the display luminance to save battery power dramatically.

The selectable display backlight luminance are: low, medium and high.

5.2.2 User-defined Functions

See User-defined Functions section for details.

5.2.3 Bluetooth Communication (optional)

See Bluetooth Communication chapter for details.

5.2.4 Serial Communication

Mode

Selectable Serial Communication Mode are:

- `DIS`: serial communication is disabled,
- `CONTIN`: indicator outputs data frame by frame (Continuous mode),
- `REQ`: indicator outputs one frame data right after ASCII code 'r' (0x72) or 'R' (0x52)

is received (Request mode).

Baudrate

Selectable Baudrate are: 1200bps, 2400bps, 4800bps, and 9600bps.

Format

Selectable Format are: Dft, 1, 2, 3, 4.

5.3 Scale Configuration

⚠ It is NOT recommended to access Scale Configuration unless you are authorized from your local representative.

In WEIGHING mode

👉 Press 1s to enter menu. **USER** shows.

👉 Press / to scroll up / down to Scale Configuration. **SCALE** shows.

Scale Configuration Password

If the Calibration Switch (optional) is not ordered with this indicator, correct password is required to enter Scale Configuration.

👉 Press to enter Password mode. **-----** shows.

👉 Press to input the 5-digit password value.

👉 Press to confirm and enter Scale Configuration.

⚠ If the input password is incorrect, message **ERROR** shows, and indicator returns to WEIGHING mode afterward.

Calibration Switch (optional)

If the Calibration Switch (optional) is ordered with this indicator, the password verification is skipped. As OIML and other Legal-for-Trade regulations required, before entering Scale Configuration, the seal must be opened, and the calibration switch must be set to ON (right position).

⚠ Before entering Scale Configuration, the Calibration Switch must be set to ON, otherwise message **CALOFF** shows.

👉 Press to enter Scale Configuration.

After exiting from Scale Configuration, the calibration switch must be set back to OFF (left position).

⚠ After exiting from Scale Configuration, the Calibration Switch must be set back to OFF, otherwise message **CALON** keeps showing.

Display	Name	Options
E	Verification Interval	0.1/2/5, [1]/2/5, 10/20/50 kg/lb
CAP	Maximum CAP acity	<u>NUMBER INPUT</u> (0.00000~999999) kg/lb
SUBE	SUB Interval (optional)	0.1/2/5, [1]/2/5, 10/20/50 kg/lb
SUBRNG	SUB RaNGe (optional)	<u>NUMBER INPUT</u> (0.00000~999999) kg/lb

AUTOZERO	AUTO-ZERO range	DIS, 2FS, 3FS, 4FS, 10FS,
KEYZERO	KEY-ZERO Range	20FS, 50FS, 100FS
ZTRNG	Z ero- T racking Ra NGe	0.1E, 0.2E, 0.3E, 0.5E, 0.75E, 1E, 1.25E, 1.5E, 2E, 2.5E, 3E, 5E, 7E, 10E
ZTSPEED	Z ero- T racking SPEED	DIS, 0.5SEC, 1SEC, 2SEC
FILTER	FILTER	DIS, 1LV, 2LV, 3LV, 4LV, 5LV, 6LV, 7LV
STBTIM	STa ble TIM ing	0.5SEC, 1SEC, 1.5SEC, 2SEC, 3SEC, 5SEC
STBRNG	STa ble Ra NGe	0.1E, 0.2E, 0.3E, 0.5E, 0.75E, 1E, 1.25E, 1.5E, 2E, 2.5E, 3E, 5E, 7E, 10E

[Selection]: default setting

5.3.1 Scale Setting

Verification Interval

Designed to meet the OIML R76's directive, the indicator has the best (default) performance from 2000 to 3000 division.

Its unit is always fixed to kg or lb.

Maximum Capacity

Do NOT attempt to set Maximum Capacity greater than the scale's actual capacity. Overloading causes severe harm to scale and is very dangerous to human life.

Maximum Capacity can be set from 0.00000 to 999999, and its unit is always fixed to kg or lb.

Sub Interval (optional)

In a dual-interval application, that the scale having one weighing range which is divided into two partial ranges each with different scale intervals, with the two partial ranges determined automatically according to the load applied.

The Sub Interval is the scale interval of the lower range, and its unit is always fixed to kg or lb.

Sub Range (optional)

The Sub Range is the lower range in a dual-interval application, and its unit is always fixed to kg or lb.


5.3.2 Zero Functions

Auto Zero Range

Upon powering-up, indicator automatically zero itself if load is stable. Auto Zero Range defines the maximum deviations in zero which Auto Zero function can take out.

The selectable Auto Zero Range are: disabled, +/-2%F.S., +/-3%F.S., +/-4%F.S., +/-10%F.S., +/-20%F.S., +/-50%F.S., and +/-100%F.S..

Manual Zero Range

Manual Zero Range defines the maximum deviations in zero when user press  to set new zero. Manual Zero is allowed only when load is within the Manual Zero Range.

The selectable Manual Zero Range are: disabled, +/-2%F.S., +/-3%F.S., +/-4%F.S., +/-10%F.S., +/-20%F.S., +/-50%F.S., and +/-100%F.S..

Zero-tracking Range

Zero-tracking works in specified range. If properly set, the indicator's Zero-tracking function will enhance scale temperature and drifting performance.

The selectable Zero-tracking Range are: +/-0.1e, +/-0.2e, +/-0.3e, +/-0.5e, +/-0.75e, +/-1e, +/-1.25e, +/-1.5e, +/-2e, +/-2.5e, +/-3e, +/-5e, +/-7e, and +/-10e.

Zero-tracking Speed

Zero-tracking works in specified speed.

The selectable Zero-tracking Speed are: disabled, 0.5s, 1s, and 2s.

5.3.3 Weighing Performance

Filter

At the cost of measuring time, the indicator intelligently settles down weight reading when load is in motion. The weaker filter is, the faster weight reading refreshes, but the longer it takes to get stable weight reading.

The selectable Filter are: dis, 1lv, 2lv, 3lv, 4lv, 5lv, 6lv, and 7lv.

Stable Timing

The stable annunciator  shows when load is detected as standstill.

The selectable Stable Timing are: 0.5s, 1s, 1.5s, 2s, 3s, and 5s.




Stable Range

The selectable Stable Range are: +/-0.1e, +/-0.2e, +/-0.3e, +/-0.5e, +/-0.75e, +/-1e, +/-1.25e, +/-1.5e, +/-2e, +/-2.5e, +/-3e, +/-5e, +/-7e, and +/-10e.

5.4 Channel Configuration

In WEIGHING mode

 Press  1s to enter menu.  shows.

 Press  /  to scroll up / down to Channel Configuration.  shows.

 Press  to enter Channel Configuration.

Display	Name	Options
---------	------	---------

ENABLE	ENABLE	CH.1, CH.12, CH.124, CH.134 CH.1234, CH.1-6, CH.1-8
CH.1ADJ	Channel 1 ADJUSTment	NUMBER INPUT (0.00000~999999)
CH.2ADJ	Channel 2 ADJUSTment	NUMBER INPUT (0.00000~999999)
CH.3ADJ	Channel 3 ADJUSTment	NUMBER INPUT (0.00000~999999)
CH.4ADJ	Channel 4 ADJUSTment	NUMBER INPUT (0.00000~999999)
CH.5ADJ	Channel 5 ADJUSTment	NUMBER INPUT (0.00000~999999)
CH.6ADJ	Channel 6 ADJUSTment	NUMBER INPUT (0.00000~999999)
CH.7ADJ	Channel 7 ADJUSTment	NUMBER INPUT (0.00000~999999)
CH.8ADJ	Channel 8 ADJUSTment	NUMBER INPUT (0.00000~999999)

[Selection]: default setting

5.4.1 Enabled Channel

Enable

The Enable parameter defines which channels are used.

! If the Axle Sum is enabled, Channel 1 & 2 are forced to be enabled and the rest channels are forced to be disabled.

5.4.2 Ratio Adjustment

Channel 1~8 Adjustment

The Channel 1~8 Adjustment parameter controls the gain of each channel.

The adjustment value can be set from 0.00000 to 999999.

By default, they are set to 1.

5.5 Clock Configuration

In WEIGHING mode

Press 1s to enter menu. USER shows.

Press to scroll up / down to Clock Configuration. CLOCK shows.

Press to enter Clock Configuration.

Display	Name	Options
DATEFMT	DATE ForMaT	Y-M-D, Y/M/D, D-M-Y, D/M/Y, M-D-Y, M/D/Y
TIMEFMT	TIME ForMaT	HH:MM:SS, AHH:MM:SS
DATESET	DATE SET	DATE INPUT (in user defined date format)
TIMESET	TIME SET	TIME INPUT (00:00:00~23:59:59)

[Selection]: default setting


5.5.1 Date Format

The Date Format is the format specified in display, communication and printing.

It can be configured to one of the YYYY-MM-DD, YYYY/MM/DD, DD-MM-YYYY, DD/MM/YYYY, MM-DD-YYYY, MM/DD/YYYY format.

YYYY indicates 4-digit year, shown as  in menu.


MM indicates 2-digit month, shown as  in menu.

DD indicates 2-digit day, shown as  in menu.


5.5.2 Time Format


The Time Format is the format specified in display, communication and printing.

It can be configured to one of the HH:MM:SS or AHH:MM:SS format. If AHH:MM:SS format is selected, the printing format of time will be HH:MM:SS am/pm.

HH indicates 2-digit hour, shown as  in menu.


MM indicates 2-digit minute, shown as  in menu.

SS indicates 2-digit second, shown as  in menu.




A indicates 1-character AM or PM, shown as  in menu.

5.5.3 Date Set

Prompt  shows, waiting for user to input Date.

The  blinks to indicate the date value that user need to input.




Press  to input date in user defined Date Format.

-  Valid year value must be among 00 to 99, which indicates 2000-2099.
-  Valid month value must be among 01 to 12.
-  Valid day value must be among 01 to 31.

Press  to confirm.

5.5.4 Time Set

Press  to input date in fixed HH:MM:SS format.

-  Valid hour value must be among 00 to 23.
-  Valid minute value must be among 00 to 59
-  Valid second value must be among 00 to 59

Press  to confirm.

5.6 Unit Configuration

This indicator supports up to 10 measurement unit, as below listed.

- Unit of weight in metric system: **kg** (kilo-gram), **g** (gram), **t** (ton)
- Unit of weight in imperial system: **oz** (ounce), **lb** (pound), **klb** (kilo-pound)
- **UN** (User-Unit)

- % (percentage)
- Unit of force: **N** (Newton), **kN** (kilo-Newton)

Except for the unit kg, which is system unit and always enabled, the rest units can be enabled or disabled individually by user.

- ! The value of User-Unit Ratio must be pre-defined before User-Unit become available.
- ! The value of Gravity must be pre-defined before unit of force N and kN become available.

In **WEIGHING** mode

- Press 1s to enter menu. **USER** shows.
- Press / to scroll up / down to Unit Configuration. **UNIT** shows.
- Press to enter Unit Configuration.

Display	Name	Options
GRAM	GRAM	[DIS], EN
TON	TON	[DIS], EN
OUNCE	OUNCE	[DIS], EN
POUND	POUND	[DIS], EN
KILOPOUND	KILO POUND	[DIS], EN
NEWTON	NEWTON	[DIS], EN
KILONEWTON	KILO NEWTON	[DIS], EN
GRAVITY	GRAVITY	NUMBER INPUT (9.78~9.84 in kg, 4.43~4.47 in lb)
UN	User- UN it	[DIS], EN
UNRATIO	UN RATIO	NUMBER INPUT (0.00000~999999) kg/lb
PERCENT	PERCENT	[DIS], EN
100WEIGHT	100% WEIGHT	NUMBER INPUT (0.00000~999999) kg/lb

[Selection]: default setting

5.6.1 kg

kg is the symbol of kilo-gram. It is the default unit in this indicator, is enabled all the time, and can not be disabled by user.

5.6.2 g

g is the symbol of gram, shown as **GRAM** in menu. 1g = 0.001kg.

5.6.3 t

t is the symbol of ton, shown as **TON** in menu. 1t = 1000kg.

5.6.4 oz

oz is the symbol of ounce, shown as `OUNCE` in menu. $1\text{oz} = 1/16\text{ lb} = 0.02834952\text{kg}$.

5.6.5 lb

lb is the symbol of pound, shown as `POUND` in menu. $1\text{lb} = 0.45359237\text{kg}$.

5.6.6 klb

klb is the symbol of kilo-pound, shown as `KILOPOUND` in menu. $1\text{klb} = 453.59237\text{kg}$.

5.6.7 N

N is the symbol of Newton, shown as `NEWTON` in menu. $1\text{N} = 9.8\text{kgf}$, if the Gravity is set to 9.8.

5.6.8 kN

kN is the symbol of kilo-Newton, shown as `KILONEWTN` in menu. $1\text{kN} = 9800\text{kgf}$, if the Gravity is set to 9.8.

5.6.9 Gravity

Gravity, shown as `GRAVITY` in menu, is the value to define the acceleration of gravity where the scale and indicator is used.

Valid Gravity ranges from 9.78 to 9.84 in kg, or from 4.43 to 4.47 in lb.

By default, the Gravity is set to 9.80665 in kg, or 4.44822 in lb.

5.6.10 User-Unit

User-Unit, shown as `UN` in menu, is a named unit which is usually used in user's region. It is a ratio to the system unit kg/lb. Its symbol in this indicator is UN.

For example, if User-Unit is configured by user as 1.234, then after user switches to User-Unit, the indicator calculates the weight (say 1000kg), and displays the calculated value (1234UN).

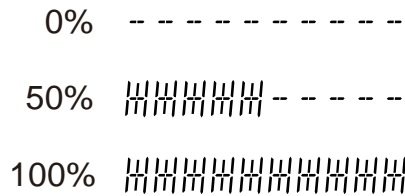
5.6.11 User-Unit Ratio

User-Unit Ratio, shown as `UNRATIO` in menu, defines the UN's ratio to system unit kg/lb. It can be configured from 0.00001 to 999999.

5.6.12 Percentage

Percentage is not a unit technically, shown as `PERCENT` in menu. It allows user to read the weight in XX.X%, rather than that in measurement units.

When switched to Percentage, the display Prompt section shows a progress bar as below.



5.6.13 100% Weight

100% Weight, shown as `100WEIGHT` in menu, defines the target weight in kg/lb when the load reach 100%.

5.7 Axle Configuration

In WEIGHING mode

Press `[F1]` 1s to enter menu. `USER` shows.

Press `[←]` / `[→]` to scroll up / down to Axle Configuration. `AXLE` shows.

Press `[F2]` to enter Axle Configuration.

Display	Name	Options
<code>AXLESUM</code>	<code>AXLE SUM</code>	<code>[DIS]</code> , <code>[EN]</code>
<code>AXLEPRINT</code>	<code>AXLE PRINT</code>	<code>[DIS]</code> , <code>[EN]</code>
<code>NETPRINT</code>	<code>NET PRINT</code>	<code>[DIS]</code> , <code>[EN]</code>
<code>TAREPRINT</code>	<code>TARE PRINT</code>	<code>[DIS]</code> , <code>[EN]</code>

[Selection]: default setting

5.7.1 Axle Sum

The Axle Sum parameter controls if the Axle Sum Weighing application is enabled or not, which enables the indicator to enter dedicated Axle Sum mode, so as to sum up the weight of multiple axles of a vehicle, one axle by one each time, when a vehicle drives through the scale.

5.7.2 Axle Print

The Axle Print parameter controls if the axle weight info will be printed in the bill.

5.7.3 Net Print

The Net Print parameter controls if the net weight info will be printed in the bill.


5.7.4 Tare Print

The Tare Print parameter controls if the tare weight info will be printed in the bill.

5.8 RF Configuration

In WEIGHING mode

Press `[F1]` 1s to enter menu. `USER` shows.

Press  /  to scroll up / down to RF Configuration. **RF** shows.

Press  to enter RF Configuration.


Display	Name	Options
BAND	BAND	1~16
CH.1 ADDR	CH annel 1 ADDR ess	NUMBER INPUT (000~255)
CH.2 ADDR	CH annel 2 ADDR ess	NUMBER INPUT (000~255)
CH.3 ADDR	CH annel 3 ADDR ess	NUMBER INPUT (000~255)
CH.4 ADDR	CH annel 4 ADDR ess	NUMBER INPUT (000~255)
CH.5 ADDR	CH annel 5 ADDR ess	NUMBER INPUT (000~255)
CH.6 ADDR	CH annel 6 ADDR ess	NUMBER INPUT (000~255)
CH.7 ADDR	CH annel 7 ADDR ess	NUMBER INPUT (000~255)
CH.8 ADDR	CH annel 8 ADDR ess	NUMBER INPUT (000~255)
SCAN	SCAN	

[Selection]: default setting

5.8.1 Band

The Band parameter defines the wireless Band.

The Band value can be set from 1 to 16.

 When the wireless signal is weak, it's suggested to change the Band, and perform Scan manually.

5.8.2 Channel Address

The Channel 1~8 Address parameter defines the RF address of each channel.


The address value can be set from 000 to 255.

5.8.3 Scan

The Scan function is used to scan all bands and re-establish the wireless network of indicator and its RF counterparts, if the wireless communication fails or interrupted caused by improperly configuration or signal disturbance.

The display shows the progress of Scan, from 0% to 100%.

If Scan is successful, message **PASS** shows, otherwise message **FAIL** shows.

 If Scan is failed in the halfway, try to re-perform the Scan function until it achieves 100%.

5.9 Print Configuration

In WEIGHING mode

Press  1s to enter menu. **USER** shows.

Press / to scroll up / down to Print Configuration. **PRINT** shows.

Press to enter Print Configuration.

	Name	Options
MODE	Print MODE	DIS , KEY
STORE	STORE before Print	DIS , EN
REPRINT	REPRINT Times	X1 , X2 , X3

[Selection]: default setting

5.9.1 Print Mode

The indicator support several printing modes. They are:

- **DIS**, printing is not allowed.
- **KEY**, a printing job must be started by manual pressing the key.

5.9.2 Store before Print

The Store before Print parameter controls whether the weight to be printed needs to be stored automatically before the manual printing job.

If it is configured to **DIS**, manual printing is allowed at any time in any condition.

If it is configured to **EN**, all the conditions that Store requires will be checked before manual printing. In other words, in any case that Store is not allowed, manual printing is not allowed either.

	If load is unstable (hides), message UNST shows.
	If load is within +/-0.25e (shows), message INZERO shows.
	If weight reading is negative, message NEGATIV shows.
	If load is out of full scale, message OUTFS shows.
	If load is less than +5.0e or hasn't returned +5.0e before, message INVALID shows.

5.9.3 Reprint Times

The Reprint Times controls the number of ticket printed in one ticket printing job.

The selectable Reprint Times are: x1, x2, x3.

5.10 System Configuration

During power-on **9999999** to **0000000** count-down

Press 1s first and then press 1s to enter System Configuration. **575** shows.

Press to enter Password mode. **-----** shows.

Press to input the 5-digit password value.

Press to confirm and enter System Configuration.

Display	Name	Options
---------	------	---------

SYSUNIT	SYSTEM UNIT	[KG], [L]
AUTOSTORE	AUTO STORE	[DIS], [EN]
CALCOUNTER	CALibration COUNTER	[DIS], [EN]
DUALE	DUAL E	[DIS], [EN]
TARESET	TARE SET	[DIS], [EN]
SCALEPWD	SCALE PassWorD	NUMBER INPUT (10000~99999)
CALPWD	CALibration PassWorD	NUMBER INPUT (10000~99999)
VERSION	VERSION	read-only
RESET	RESET	[NO], [YES]

[Selection]: default setting

5.10.1 Metrology Options

Measurement Unit


This parameter defines the measurement unit of the internal system. Parameters like Set-point High/Low Value, Verification Interval, User-Unit Ratio, etc, as well as the weight value that needs to be input during calibration are all based on the unit that this parameter defines.

The selectable measurement units are only kg and lb.


Once this parameter is changed, the indicator will automatically reset itself. All parameters, including calibration data, will be reset to their default value.

Auto Store


If option Auto Store (a) is enabled, the indicator will automatically perform the Store operation once the load becomes stable.

 The Manual Total will be disabled in this case.

In WEIGHING mode

 Press **M+** to start Auto Store.

Message **AUTOON** shows.

 Press **M+** again to pause Auto Store.

Message **AUTOOFF** shows.

Calibration Counter

When option Calibration Counter (c) is enabled, the inner counter will increase automatically every time Calibration is accessed.

The counter record can be tracked as the evidence of user's unauthorized access to the Calibration procedure.

Dual Interval

When option Dual Interval (i) is enabled, the scale's weighing range is divided into two

partial ranges each with different scale intervals, with the two partial ranges determined automatically according to the load applied.

The Sub Interval and Sub Range in Scale Configuration then become accessible.


Preset Tare

When option Preset Tare (t) is enabled, the indicator allows user to input a known tare weight (as a packing container or pallet) instead of placing it on the scale and taring manually.

5.10.2 System Management


Password of Scale Configuration

Valid password is a 5-digit number, from 10000 to 99999.

 If the password value is set to 0, it will skip the password input dialog and enter the Scale Configuration directly.

Password of Calibration

Valid password is a 5-digit number, from 10000 to 99999.

 If the password value is set to 0, it will skip the password input dialog and enter the Calibration directly.

5.10.3 System Info

Version

It is a read-only message, showing indicator's software version.

Reset

All parameters, including calibration data, will be reset to their default value, if is selected and confirmed.

6 Calibration

This chapter details the procedure and operations of Calibration.

This indicator supports several types of calibration, as listed below.

- Zero Calibration: used when the zero of any channel or the whole scale is drifted.
- Channel or Whole Scale Calibration: used to calibrate different channel or combinations of channel of the scale, or calibrate the scale once for all channels.

6.1 Operation

In Calibration

 Press to input digit.

 Press to confirm and go to next step.

6.2 Calibration Access

! It is NOT recommended to do the calibration unless you are authorized from your local representative and with accurate test weight system of adequate capacity.

In **WEIGHING** mode

Press 1s to enter menu. **USER** shows.

Press / to scroll up / down to Calibration. **CAL** shows.

Calibration Password

If the Calibration Switch (optional) is not ordered with this indicator, correct password is required to enter Calibration.

Press to enter Password mode. **-----** shows.

Press to input password value.

Press to confirm and enter Calibration.

! If the input password is incorrect, message **ERROR** shows, and indicator returns to **WEIGHING** mode afterward.

Calibration Switch (optional)

If the Calibration Switch (optional) is ordered with this indicator, the password verification is skipped. As OIML and other Legal-for-Trade regulations required, before entering Calibration, the seal must be opened, and the calibration switch must be set to ON (right position).

! Before entering Calibration, the Calibration Switch must be set to ON, otherwise message **CALOFF** shows.

Press to enter Calibration.

After calibration, the calibration switch must be set to OFF (left position).

! After Calibration, the Calibration Switch must be set back to OFF, otherwise message **CALON** keeps showing.

Press / to scroll up / down to select different Calibration types.

6.3 Zero Calibration

When **ZERO** shows.

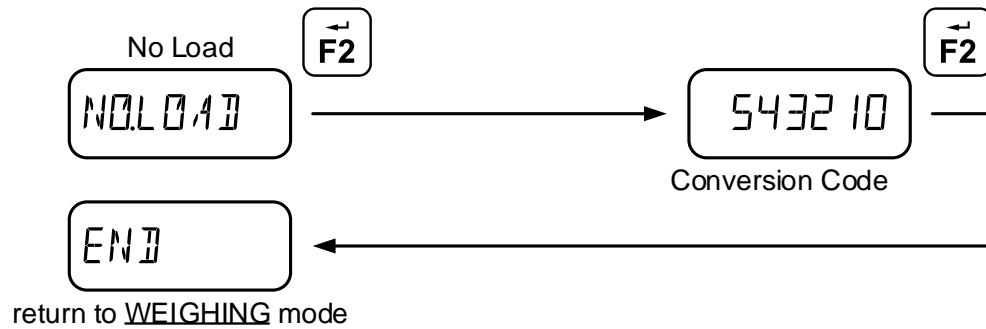
Press to enter Zero Calibration.

When **NOLoad** shows, remove load from the scale, make the scale empty (without any load).

Press to view the conversion code.

Wait until the conversion code is settled down.

Press to finish Calibration, and return to **WEIGHING** mode.



6.4 Channel / Whole Scale Calibration

When [CH.1], [CH.2], [CH.3], [CH.4], [CH.5], [CH.6], [CH.7], [CH.8], [CH.1.2], [CH.3.4], [CH.5.6], [CH.7.8], [CH.1.2.4], [CH.1.3.4], [CH.1.2.3.4], [CH.1-6], [CH.1-8] shows.

Press **F2** to enter corresponding Calibration.

6.4.1 Zero Calibration

When [NOLOAD] shows, remove load from corresponding channels of the scale, make the each channel empty (without any load).

Press **F2** to view the conversion code.

Wait until the conversion code is settled down.

Press **F2** to perform zero calibration.

6.4.2 Weight Calibration

When [LOAD] shows, apply the test weight on corresponding channels of the scale.

Press **F2** to enter NUMBER INPUT mode.

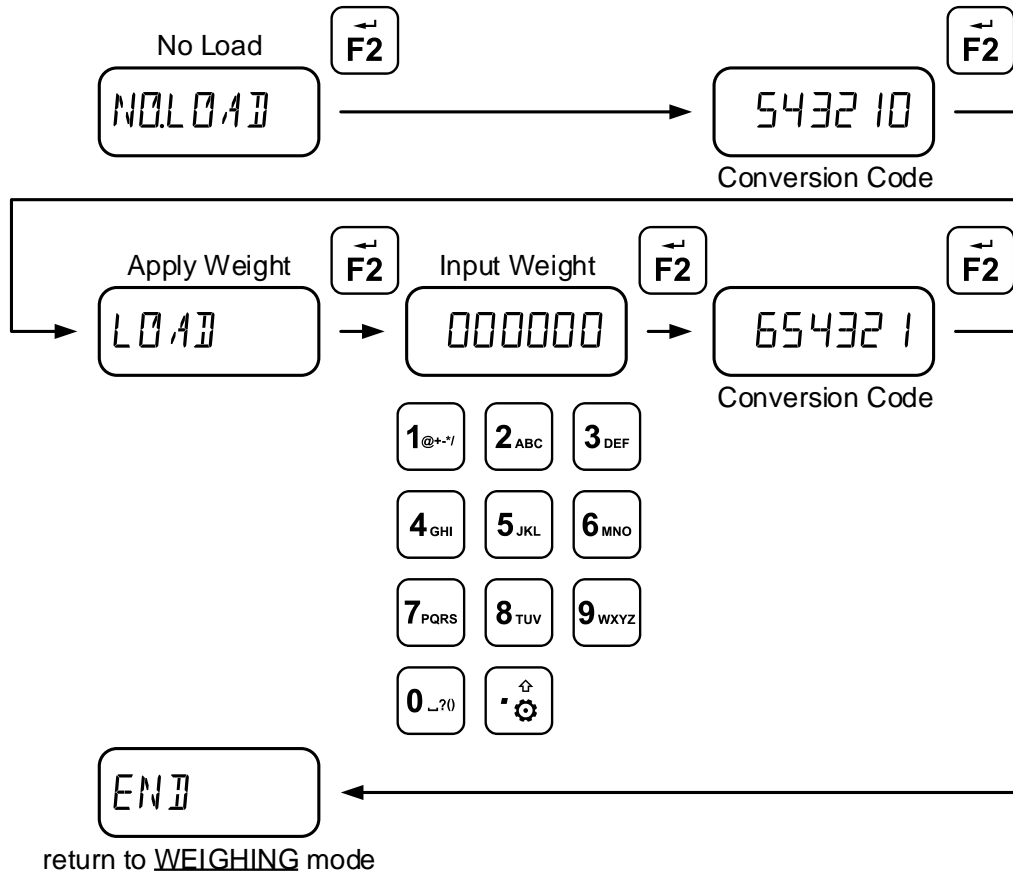
Press **1** **2** **3** **4** **5** **6** **7** **8** **9** **0** **.** to input total value of all the load applied.

The numerical position of decimal point is versatile and easy for user to input floating value in very wide range. For example, to input 150, 150.000, 150.00, 150.0, are all acceptable.

Press **F2** to confirm and view the conversion code.

Wait until the conversion code is settled down.

Press **F2** to finish Calibration, and return to WEIGHING mode.



7 Communication

This indicator is equipped with one standard full duplex RS-232 serial communication port, intended for interfacing extended printer, scoreboard and computer, etc.

Communication state, baudrate and data frame can be configured in User Configuration.

7.1 Byte Format

The indicator outputs data in the format 8N1, which is 1-bit start flag, 8-bit data, 1-bit stop flag, and no checking bit.

7.2 Output Data Frame

The indicator outputs data in frames, and it supports several types of data frames, as below shown.

7.2.1 Default Frame

The Default Frame is consisted of 14 bytes.

1	2	3	4	5	6	7	8	9	10	11	12	13	14
>	S	G	X	X	X	X	X	X	X	k	g	CR	LF

The 1st byte is always fixed to ASCII code 0x3E ('>').

The 2nd byte S/U/V/N indicates the load status.

- [S]: stable
- [M]: motion
- [O]: overload
- [U]: underload

The 3rd byte G/N indicates the weight data type.

- [G]: gross
- [N]: net

From 4th to 10th, 7 bytes are the weight, including negative mark and decimal point.

The 11th and 12th, 2 bytes indicates measurement unit.

- [k][g]: kilo gram
- [][g]: gram
- [][t]: ton
- [o][z]: ounce
- [l][b]: pound
- [k][l]: kilo pound
- [U][N]: User Unit
- [][%]: percentage
- [][N]: Newton
- [k][N]: kilo Newton

The 13th and 14th, 2 bytes are fixed to 0x0D (ASCII CR) and 0x0A (ASCII LF).

7.2.2 Frame 1

The Frame 1 is consisted of 7 bytes.

1	2	3	4	5	6	7
X	X	X	X	X	X	X

From 1st to 7th, 7 bytes are the weight, including negative mark and decimal point.

7.2.3 Frame 2

The Frame 2 is consisted of 9 bytes.

1	2	3	4	5	6	7	8	9
X	X	X	X	X	X	X	CR	LF

From 1st to 7th, 7 bytes are the weight, including negative mark and decimal point.

The 8th and 9th, 2 bytes are fixed to 0x0D (ASCII CR) and 0x0A (ASCII LF).

7.2.4 Frame 3

The Frame 3 is consisted of 11 bytes.

1	2	3	4	5	6	7	8	9	10	11
X	X	X	X	X	X	X	k	g	CR	LF

From 1st to 7th, 7 bytes are the weight, including negative mark and decimal point.

The 8th to 9th, 2 bytes indicates measurement unit.

- [k][g]: kilo gram
- [][g]: gram
- [][t]: ton
- [o][z]: ounce
- [l][b]: pound
- [k][l]: kilo pound
- [U][N]: User Unit
- [][%]: percentage
- [][N]: Newton
- [k][N]: kilo Newton

The 10th and 11th, 2 bytes are fixed to 0x0D (ASCII CR) and 0x0A (ASCII LF).

7.2.5 Frame 4

The Frame 4 is consisted of 12 bytes.

1	2	3	4	5	6	7	8	9	10	11	12
=	X	X	X	X	X	X	X	k	g	CR	LF

The 1st byte is always fixed to ASCII code 0x3D ('=').

From 2nd to 8th, 7 bytes are the weight, including negative mark and decimal point.

The 9th and 10th, 2 bytes indicates measurement unit.

- [k][g]: kilo gram • [][g]: gram • [][t]: ton • [o][z]: ounce
- [l][b]: pound • [k][l]: kilo pound • [U][N]: User Unit • [][%]: percentage
- [][N]: Newton • [k][N]: kilo Newton

The 11th and 12th, 2 bytes are fixed to 0x0D (ASCII CR) and 0x0A (ASCII LF).

7.2.6 Frame 5

The Frame 5 is consisted of 16 bytes.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
ST	-	X	X	X	X	X	X	X	X	k	g	G	M	CR	LF

The 1st byte is always fixed to ASCII code 0x02 (Start of Transmission).

The 2nd byte indicates the weight data polarity.

- [-]: negative • []: positive

From 3rd to 10th, 8 bytes XXXXXXXX are the weight data, including decimal point.

The 11th and 12th, 2 bytes indicates measurement unit.

- [k][g]: kilo gram • [][g]: gram • [][t]: ton • [o][z]: ounce
- [l][b]: pound • [k][l]: kilo pound • [U][N]: User Unit • [][%]: percentage
- [][N]: Newton • [k][N]: kilo Newton

The 13th byte G/N indicates the weight data type.

- [G]: gross • [N]: net

The 14th byte S/U/V/N indicates the load status.

- []: valid • [M]: motion • [O]: overload/underload

The 15th and 16th byte are fixed to 0x0D (ASCII CR) and 0x0A (ASCII LF).

7.2.7 Frame 6

The Frame 6 is consisted of 17 bytes.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
ST	-	X	X	X	X	X	X	X	X	SP	k	g	SP	G	CR	LF

The 1st byte is always fixed to ASCII code 0x02 (Start of Transmission).

The 2nd byte indicates the weight data polarity.

- [-]: negative • []: positive

From 3rd to 10th, 8 bytes XXXXXXXX are the weight data, including decimal point.

The 11th byte is always fixed to SPACE.

The 12th and 13th, 2 bytes indicates measurement unit.

- [k][g]: kilo gram • [][g]: gram • [][t]: ton • [o][z]: ounce
- [l][b]: pound • [k][l]: kilo pound • [U][N]: User Unit • [][%]: percentage
- [][N]: Newton • [k][N]: kilo Newton

The 14th byte is always fixed to SPACE.

The 15th byte G/N indicates the weight data type.

- [G]: gross • [N]: net

The 16th and 17th byte are fixed to 0x0D (ASCII CR) and 0x0A (ASCII LF).

8 Appendix

8.1 Display Character

Display	Character	ASCII	Display	Character	ASCII	Display	Character	ASCII
	(space)	32	@	@	64	`	`	96
!	!	33	A	A	65	a	a	97
"	"	34	B	B	66	b	b	98
#	#	35	C	C	67	c	c	99
\$	\$	36	D	D	68	d	d	100
%	%	37	E	E	69	e	e	101
&	&	38	F	F	70	f	f	102
'	'	39	G	G	71	g	g	103
(	(	40	H	H	72	h	h	104
)	)	41	I	I	73	i	i	105
*	*	42	J	J	74	j	j	106
+	+	43	K	K	75	k	k	107
,	,	44	L	L	76	l	l	108
-	-	45	M	M	77	m	m	109
.	.	46	N	N	78	n	n	110
/	/	47	O	O	79	o	o	111
0	0	48	P	P	80	p	p	112
1	1	49	Q	Q	81	q	q	113
2	2	50	R	R	82	r	r	114
3	3	51	S	S	83	s	s	115
4	4	52	T	T	84	t	t	116
5	5	53	U	U	85	u	u	117

6	6	54	V	V	86	v	118
7	7	55	W	W	87	w	119
8	8	56	X	X	88	x	120
9	9	57	Y	Y	89	y	121
-	:	58	Z	Z	90	z	122
/	;	59	[	[	91	{	123
\	<	60	\	\	92	|	124
=	=	61	]	]	93	}	125
:	>	62	^	^	94	~	126
?	?	63	_	_	95		

8.2 Display Message



Display	Indication
-----	power-up weight detection
AHOLD	Auto HOLD started
ANALOG	ANALOG Configuration (optional)
ANIMAL	ANIMAL Weighing is set to on (enabled)
BATLOW	BAT tery is LOW power, charging is required
BILL	in RECORD VIEW mode, print BILL
CALMODE	CAL ibration MODE
CALOFF	the CAL ibration Switch is OFF . It must be turned on (optional)
CALON	the CAL ibration Switch is ON . It must be turned off (optional)
CAL	CAL ibration
CLEARALL?	CLEAR ALL the records from the database?
CLOCK	CLOCK Configuration
CODE	Conversion CODE is shown
CONFIG	CONFIG uration
COUNT	in COUNT mode, select the sample quantity
DELETE?	DELETE the record from the database?
DIS	DIS abled
EN	EN abled
END	END of configuration or operation, return to WEIGHING mode
ERR.ADC	ERR or is found in ADC circuit
ERR.MEM	ERR or is found in MEM ory circuit
ERR.PRNT	ERR or is found in PRINT circuit

ERRRF	ERR ror is found in RF circuit (optional)
ERROR	input or operation is ERROR
GOODSID	waiting for user to input GOODS ID
HOLD	HOLD started
IDFOUND	the input ID is FOUND in database
IDNEW	the input ID is NEW
INZERO	load is with IN ZERO (+/-0.25e), operation is not allowed
INVALID	INVALID (less than or hasn't returned +5.0e), operation is not allowed
LINEAR	LINEAR ity Calibration
LOAD	apply test LOAD on scale
MEMO	waiting for user to input MEMO
NEGATIV	weight reading is NEGaTIVe (less than 0), operation is not allowed
NO	cancel and stop the operation
NO DATA	NO DATA record are found in database
NOLOAD	in Calibration, remove all loads, keep the scale with NO LOAD
NOMATCH	NO MATCH ed record are found in database
NONEXT	NO NEXT record are found in database
NO PREV	NO PREV ious record are found in database
OFF	indicator is powering OFF
OUTFS	load is OUT of F ull S cale, operation is not allowed
OUTRNG	load is OUT of permitted RaNGE , operation is not allowed
OVER	scale is OVER loading (over 100%F.S.+9e)
PHOLD	P eak HOLD started
PTEST	P rint TEST
PASSWORD	waiting for user to input PASSWORD
PERCENT	waiting for user to input PERCENTAGE
PRINT	PRINT Configuration / weighing data are PRINT ed
REPORT	in RECORD VIEW mode, print REPORT
RESET	all parameters except for calibration data are RESET
RF	RF Configuration (optional)
SAMPLE	waiting for user to input the quantity of SAMPLE
SAVE	the imported printing format string is SAVE d
SCALE	SCALE Configuration
SINGLE	SINGLE Point Calibration
SYS	SY stem Configuration menu

TARE	weight has been TARED (in NET mode), operation is not allowed
TOTAL	weighing data are TOTAL ed in memory
TRUCK.I	waiting for user to input TRUCK ID
TRUCK	TRUCK Configuration
UNDER	scale is UNDER loading (under -20e)
UNIT	UNIT Configuration
UNSTB	load is UNST able (in motion), operation is not allowed
UPDATE?	UPDATE truck record?
USER	USER Configuration
WEIGHT	waiting for user to input WEIGHT
YES	confirm and continue the operation
ZERO	ZERO Calibration

8.3 Troubleshooting

Simple problems can be resolved with below listed solutions. If problems still exist, please contact your local representative for help.

Symptom	Possible Cause	Suggested Solution
not power-on after  key pressed	defective power adaptor	contact representative
	discharged or defective battery	charge battery
	defective power socket	contact representative
	defective  key	press harder and keep pressing for 1s
no action taken after key pressed	defective mainboard	contact representative
	indicator is disturbed	re-boot indicator
weight reading is not stable	defective key	contact representative
	load in motion	wait or keep load stable
	weak filter setting	increase filter level
	damped loadcell or mainboard	dry loadcell or mainboard
weight reading is not zero when no load	defective mainboard	contact representative
	Improper parameter settings	reconfigure or recalibrate
	loadcell stressed too long	unload scale in storage
large error in weight reading	loadcell zero drifts	change Zero-tracking setting
	defective loadcell	contact representative
large error in weight reading	scale not zeroed before loading	zero scale before loading
	improper measurement unit	switch to correct unit

	calibration required	re-calibrate the scale
	defective loadcell or mainboard	contact representative
battery cannot be charged	defective mainboard	contact representative
	defective power adaptor	contact representative
	defective power socket	contact representative
	defective battery	contact representative

8.4 Note
