

TRWS series



Weighing Indicator Service Manual

 **Totalcomp**
Scales & Components
the weigh you want... *today!*

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SECTION 1 INTRODUCTION

The TRWS series of weighing indicator provides an accurate, fast and versatile series of general purpose weighing scale with unit conversion and check-weighing functions.

All the keypads are sealed, color coded membrane switches and the displays are large easy to read liquid crystal type displays (LCD). The LCD's are supplied with a backlight.

All units include automatic zero tracking, unit conversion, audible alarm for pre-set weights, and an accumulation facility that allows the individual weights to be stored and recalled as an accumulated total.

SECTION 2 SPECIFICATIONS

Model	TRWS
Resolution	Up to 30,000
Interface	RS-232 Output
Stabilisation Time	1 Seconds typical
Operating Temperature	0°C - 40°C / 32°F - 104°F
Power supply (external)	115 / 230 Vac, 120 / 240 Vac, 50/60Hz, 10 watts
Calibration	External
Display	6 digits 22mm LCD display, attached backlight
Indicator Housing	Stainless Steel
Zero range	0mV~5mV
Signal input range	0~15mV
ADC	Sigma delta
Internal counts	600,000
ADC update	Max 60 times /second
Load cell drive voltage	Max 5V/150mA
Load cells	Up to four 350 ohms cells

SECTION 3 INSTALLATIONS

GENERAL INSTALLATION

The scales should be sited in a location that will not degrade the accuracy.

Avoid extremes of temperature. Do not place in direct sunlight or near air conditioning vents.

Avoid unsuitable tables. The tables or floor must be rigid and not vibrate. Do not place near vibrating machinery.

Avoid unstable power sources. Do not use near large users of electricity such as welding equipment or large motors.

Avoid high humidity that might cause condensation. Avoid direct contact with water. Do not spray or immerse the scales in water.

Avoid air movement such as from fans or opening doors. Do not place near open windows.

Keep the indicator clean.

Do not stack material on the scales when they are not in use.

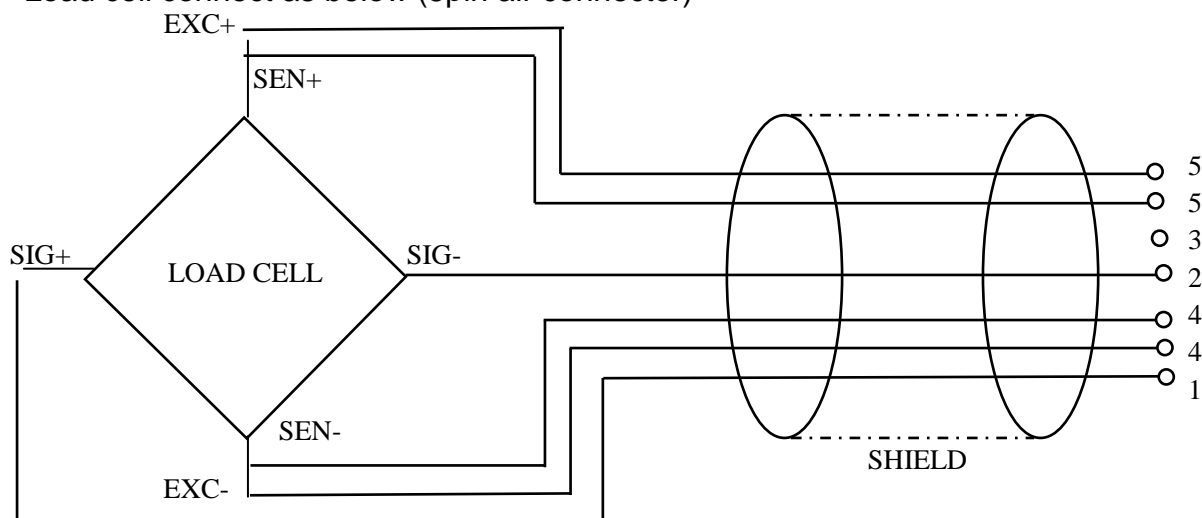
INSTALLATION OF TRWS SERIES

Please make the load cell connector from the load cell follow the drawing below

Attach the AC power adapter to the connector on the back of the indicator.

If you use TRWS for a platform scale, you can use attached indicator bracket.

Load cell connect as below (5pin air connector)



SECTION 4 KEY DESCRIPTIONS


Zero

Set the zero point for all subsequent weighing. The display shows zero.

A secondary function , of "Enter" key when setting parameters or other functions.

Tare

Tare the scale. Stores the current weight in memory as a tare value, subtracts the tare value from the weight and shows the results. This is the net weight. Entering a value using the keypad will store that value as the tare value.

Secondary function, , of incrementing the active digit when setting a value for parameters or other functions.


G/N

Press the key, the scale can to select gross weight or net weight after you tare a weight.

Secondary function , in the setting mode, this key used to move active digits right.

PRINT/M+

To PRINT the results to a PC or Printer using the optional RS-232 interface. It also adds the value to the accumulation memory if the accumulation function is not automatic.

Secondary function (C or ) , is to act as a clear key or to move active digits left when setting values for parameters or other functions.

UNIT

Press this key to select the weight unit. Move the active digit left when setting values for other functions.

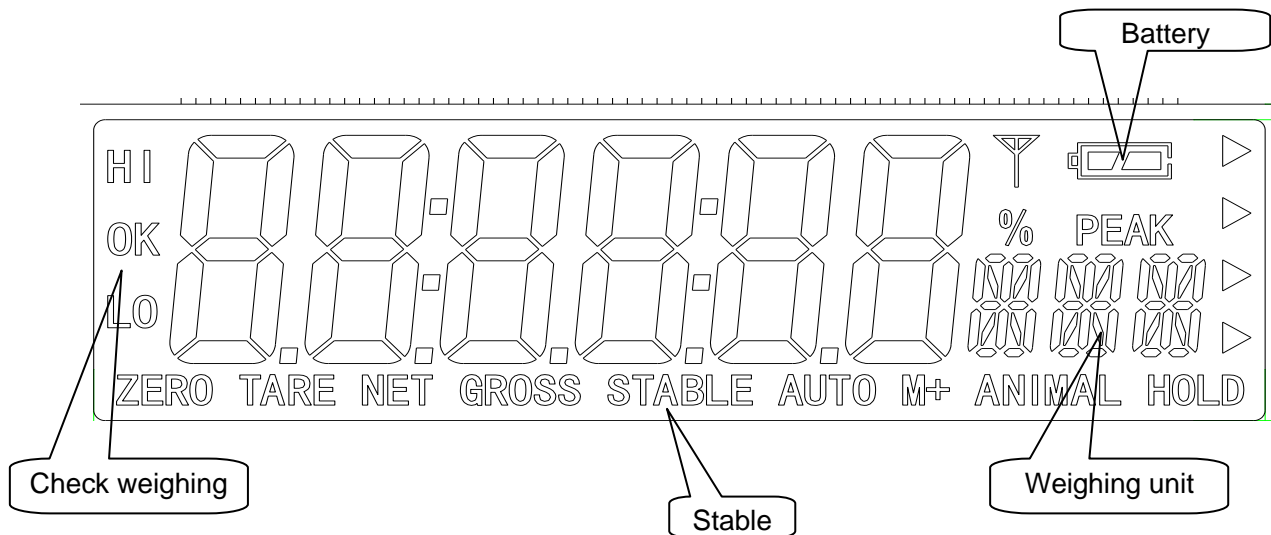
Secondary function (ESC) is to return to normal operation when the scale is in a parameter setting mode.

ON/ OFF

Turn on or off the power.

SECTION 5 DISPLAYS

The LCD display will show a value and a unit to the right of the digits.
 In addition there are labels for TARE, GROSS weight, Zero and for Low battery



SECTION 6 OPERATIONS

6.1 Zeroing the Display

You can press the **ZERO** key at any time to set the zero point from which all other weighing and counting is measured, within 4% of power up zero. This will usually only be necessary when the platform is empty. When the zero point is obtained the display will show the indicator for zero.

The scale has an automatic re-zeroing function to account for minor drifting or accumulation of material on the platform. However you may need to press the **ZERO** key to re-zero the scale if small amounts of weight are shown when the platform is empty.

6.2 Taring

Zero the scale by pressing the **ZERO** key if necessary. The zero indicators will be on.

Place a container on the platform, a value for its weight will be displayed.

Press the **TARE** key to tare the scale. The weight that was displayed is stored as the tare value and that value is subtracted from the display, leaving zero on the display. The "TARE" indicator will be on. As product is added only the weight of the product will be shown. The scale could be tared a second time if another type of product was to be added to the first one. Again only the weight that is added after taring will be displayed.

When the container is removed a negative value will be shown. If the scale was tared off just before removing the container this value is the gross weight of the container plus all products that was removed. The zero indicator will also be on because the platform is back to the same condition it was when the **ZERO** key was last pressed.

6.3 Weighing a sample

To determine the weight of a sample first tare the empty container then place the sample in the container. The display will show the weight and the units of weight currently in use.

6.4 Check-Weighing

6.4.1 about check-weighing

Check-weighing is a procedure to cause an alarm to sound when the weight on the scale meets or exceeds values stored in memory. The memory holds values for a High and low limit

-6-

Check mode 2:

When check range, the display will show OK and the beeper will sound when the weight is between the limits.

Check mode 3:

When check range, the display will show OK and the beeper will sound when the weight is out of the limits.

6.4.2 Set limits

Press the **UNIT** key and **PRINT/M+** key together in the weighing mode, it will display "F0 H-L", press **ZERO** key to enter, use **TARE** key to select "SET HI" or "SET LO", press **ZERO** key to enter, use **G/N** key to move active digit, use **TARE** key to change value, use **UNIT** key to clear value. After you enter the value, press **ZERO** key to enter, press **UNIT** key to escape.

6.4.3 Set check weighing mode

Press the **UNIT** key and **PRINT/M+** key together in the weighing mode to enter setting mode, press **TARE** until display show "F3 OFF", press **ZERO** key to enter, press **TARE** key until display show "BEEP", press **ZERO** key to enter, press **TARE** key to select BP 2 (check mode 2), BP3 (check mode 3), BP1 (no beep), press **ZERO** key to enter, press **UNIT** key to escape.

6.4.4 NOTE

The weight must be greater than 20 scale divisions for the check-weighing to operate. To disable the Check-Weighing function enter zero into both limits by pressing the **UNIT** key and **PRINT/M+** key together in the weighing mode, then the current limits are shown, then set zero and store the zero values.

6.5 Accumulated Total**6.5.1 Note**

The scale can be set to accumulate manually by pressing the **PRINT/M+** key. See the PARAMETERS Section for details of selecting the method using function "F4 P RT". The accumulation function is only available when weighing.

Please note before every accumulate operate, scale need return to zero, and only press **PRINT/M+** key when stable, when weight less than 20d, accumulate operate will be invalid.

6.5.2 Accumulate operate

The weight displayed will be stored in memory when the **PRINT/M+** key is pressed and the Weight is stable.

The display will show "ACC 1" and then the total in memory for 2 seconds before returning to normal. (After do accumulate operate, PRINT indicator will turn on) If the optional RS-232 interface is installed the weight will be output to a Printer or PC.

Remove the weight, allowing the scale to return to zero and put a second weight on. Press the PRINT/M+ key, the display will show "ACC 2" and then the new total.

Continue until all weights have been added.

*Note: after you change weighing unit, accumulate value will be clear.

6.5.3 Memory recall

View the totals in memory press **PRINT/M+** key in zero point (ZERO indicator is on).

6.5.4 Memory clear

To clear the memory, just press **UNIT** key

6.5.5 Automatically accumulate

At first, you need set scale to auto accumulate mode, Press the **UNIT** key and **PRINT/M+** key together in the weighing mode, it will display "FO H-L", press **TARE** key until display show "f4 prt", press **ZERO** key to enter, press **TARE** key to select "p auto", press **ZERO** key to enter, then you need set baud rate and print format, print type, see detail in SECTION 7

After you set AUTO indicator on.

Press weight on platform, after stable, you will hear beep on twice, you can add or remote weight now, scale will beep on again after stable, at last, remove all weight on platform, the last weight value will store in memory

6.6 Animal Scales

TRWS can set as an animal scale, you just need set P4 CHK to mode2, see detail in SECTION12.

Let the animal on the platform, after some time, if reading data change a little, you can hear beep sound and reading data will be locked.

In reading data lock mode, if you add/remove big weight, display will still update and lock new reading data.

6.7 Subtraction scale

This is used for hopper scale, you need set auto zero range to 0 (see detail in SECTION 7) and set scale mode to mode3/mode4 (see detail in SECTION12)

Turn on power, scale will show "err4", then show current total weight on platform, press **TARE** key, display show 0.00, then remove goods in hopper, display will show it's weight in "-" mode, press **PRINT/M+** key, scale will print out weighing ticket, mode3/mode4 only different is print format.

6.8 Peak Hold

TWP can operate peak hold function, maximum reading will be hold and will update automatically when add goods.

For this function, select parameter **P4 CHk** to **Mode 4**

In the normal weighing mode press **TARE** and **ZERO** key together to turn on Peak hold operations, display will be indicate HOLD.

If want to turn off peak function, press **TARE** and **ZERO** key together again

SECTION 7 PARAMETERS

The scale has 6 parameters that can be set by the user plus a method of entering the calibration section.

Press the **UNIT** key and **PRINT/M+** key together in the weighing mode and release it when indicator beeps.

The display will show the first function, "F0 H-L".

Pressing the **TARE** key will cycle through the other functions.

Pressing **ZERO** will allow you to set the function. It may be necessary to either use **TARE** or set a value using the **G/N** key to move the active digit and then using the **TARE** key to increment a digit, followed by the **ZERO** key to enter the value. Use the **UNIT** key to leave a parameter unchanged.

For example when the display shows "F0 H-L" press the **ZERO** key to begin.

The display will show "Set Lo", press the **ZERO** key to set the low limit, or press the **TARE** to skip to the next parameter, "Set Hi" for setting the high limit.

After pressing the **ZERO** key to set a limit, use the **G/N** keys to change the flashing digit, and then use the **TARE** key to increment the flashing digit. Continue to the next digit and set it as needed.

When all digits have been set press the **ZERO** key to store the value. The display will go back to the parameter just set, i.e. "Set Lo". Advance to another parameter if needed or press the **UNIT** key to return to weighing.

FUNCTION MENU SETTINGS

FUNCTION	SUB-FUNCTION	DESCRIPTION	DEFAULT VALUE
F0 H-L	SEt Lo	Set a value for the Low limit.	000000
	SEt HI	Set a value for the High Limit.	000000
F1 toL	to CLr	Clears the accumulation memory without printing the results.	
	to P-C	Prints the Accumulation memory total and then clears the memory.	
	to Prt	Prints the Accumulation Total, does not clear the memory.	
F2 u nt		Sets the displayed unit, you can press TARE key to set ON or OFF, press ZERO key to sure	kilogram, kg, g, oz, tj, hj.
F3 off	bL	Set the backlight to be on, automatic or off, EL on / EL Au / EL off	EL Au
	bEEP	Set the beep mode.(check weighing mode 2, check weighing mode 3, mode 1 (no beep))	

FUNCTION MENU SETTINGS

FUNCTION	SUB-FUNCTION	DESCRIPTION	DEFAULT VALUE
F4 Prt		<p>Set the RS-232 , at first <u>set RS-232 working mode</u> (press TARE key to change, press ZERO key to enter)</p> <p>P Prt: print weighing ticket when the PRINT/M+ key is pressed,</p> <p>P Cont: send weighing data continuously, connect to PC ,</p> <p>ASK: ask and answer mode (bi-direction mode), connect to PC.</p> <p>Command "R": send weighing data to PC</p> <p>Command "T": do tare operate</p> <p>Command "Z": do zero operate</p> <p>P cnt2: send weighing data continuously, connect to PC, the other mode to send data.</p> <p>P stab: print after stable.</p> <p>P auto: auto print mode.</p> <p>Seire: connect with remote display (also send continuously)</p> <p><u>Then set baud rate</u></p> <p>After set working mode, display will show b xxx, this is current baud rate, you select baud rate by TAKE key ad press ZERO to enter.</p> <p>If you set p cont, then need <u>set communication protocol</u>, display will show Con x, con1 is standard protocol, con2 and con3 is other communication protocol, see detail in section 9.</p> <p>If you set printer (P PRT, P AUTO), then you can <u>set print out format</u>.</p> <p>Display show "LAB x", set gross/acc print format, you can see detail below.</p> <p>These parameter only available in MODE0 (normal mode), see detail in section 12.</p> <p><u>set printer type</u>,</p> <p>TY-TP: mini ticket printer</p> <p>TY 711: A711 label printer</p> <p>LP-50: LP-50 label printer</p> <p><u>Then set ACC on/off.</u></p> <p>Acc on: set accumulation and print working at the same time.</p> <p>Acc off: set print without accumulation.</p>	P Prt
Prog	Pin	Enter the programming and calibration menus by entering the correct password. See the section 12.	

Print out format form 1 (for TpuP printer)

lab	0	1	2	3
	GS: 0.888kg	NT: 0.666kg TW: 0.222kg GW: 0.888kg	GS: 0.222kg TOTAL: 0.222kg	NT: 0.222kg TW: 0.666kg GW: 0.888kg TOTAL: 0.222kg

SECTION 8 BATTERY OPERATIONS

The weighing indicator can be operated from the battery if desired. The battery life is approximately 35 hours.

When the battery needs charging a symbol on the weight display will show an empty battery outline symbol. The battery should be charged when the symbol is empty or $\frac{1}{2}$ empty. The scale will still operate for about 10 hours at $\frac{1}{2}$ symbol after which it will automatically switch off to protect the battery.

To charge the battery simply plug into the mains power. The scale does not need to be turned on.

The battery should be charged for 12 hours for full capacity.

When the scale is plugged into the mains power the internal battery will be charge. When turn on the indicator, if the battery indicator is full then the battery has a full charge. If it is half then the battery is nearly discharged and empty indicates the battery should be charged. When the battery almost empty, the indicator LCD will flicker.

As the battery is used it may fail to hold a full charge. If the battery life becomes unacceptable then contact your distributor.

SECTION 9 RS-232 OUTPUT

The TRWS indicator with RS-232 output.

9.1 Basic information

Specifications:

- RS-232 output of weighing data
- ASCII code
- 8 data bits
- No Parity
- Baud rate from 600bps to 9600bps

Connector: 9 pin d-subminiature socket

- Pin 2: Input,
- Pin 3: Output
- Pin 5: Signal Ground

9.2 Normal print out

Data Format for normal weighing operations, parts counting or recalling of totals from memory will all be different. Examples follow:

Normal Output

S/N	The number increments every time a new value is stored in memory
GW	GW for gross weight, NT for net weight and a unit of weight
<lf>	
<lf>	Includes 2 line feeds

When in parts counting, unit weight and count will be printed.

Gross wt: 0.149KG	GW for gross weight, NT for net weight and a unit of weight
Unit wt: 7.4257G	the average piece weight computed by the scale
Quantity: 20PCS	the number of parts counted
<lf>	
<lf>	

When recalling the Total weight stored in the accumulation memory the output format is:

SECTION 10 CALIBRATION

Press **UNIT** key and **PRINT/M+** key together when normal weighing mode and release it when indicator beeps, display shows "F0 H-L", press **TARE** key until display shows "PrOG", press **ZERO** key once, display shows "Pin", press momentarily **G/N**, then **UNIT**, then **ZERO** key to enter setting mode, press **TARE** key until you see "p2 CAL", press **ZERO** key to enter. Press **TARE** key until display is showing "CAL" press the **ZERO** key to enter. The display will show "nonlin" to change that to "Linear" press **TARE** and press **ZERO** to enter.

1. Normal "nonlin" calibration

Press **TARE** key to select "nonlin" then press the **ZERO** key to enter, the display shows: "unload lb", press the **UNIT** key to select calibration unit (kg or lb). Remove any weight from the platform. After stable indicator on, press the **ZERO** key.

Then the display will show the last calibration weight used. If this is correct, you can continue by pressing the **ZERO** key. If it is not correct use the **PRINT/M+**, or **G/N**, or **TARE** (whichever is appropriate) function keys to change the calibration weight value. When LCD display showing the correct weight, press the **ZERO** key.

Then display will show "LoAd kg" or "LoAd lb". Place the calibration weight on the scale. After stable, press the **ZERO** key. Then the calibration has completed.

2. Linear "linear" calibration

Press the **ZERO** key to enter, the display shows: "LoAd 0 lb", press the **UNIT** key to select calibration unit (kg or lb). Remove any weight from the platform. After stable indicator on, press the **ZERO** key (enter).

Then display will show "LoAd 1 kg" or "LoAd 1 lb". Place the 1/3 of capacity calibration weight on the scale. After stable, press the **ZERO** key (enter).

Then display will show "LoAd 2 kg" or "LoAd 1 lb". Place the 2/3 of capacity calibration weight on the scale. After stable, press the **ZERO** key (enter).

Then display will show "LoAd 3 kg" or "LoAd 1 lb". Place the full capacity calibration weight on the scale. After stable, press the **ZERO** key (enter). Then the calibration has completed.

If the calibration is acceptable the display will return to normal. If an error message is shown try calibration again as a disturbance may have prevented a successful calibration.

If the problem persists then contact your dealer.

After calibration the scale should be checked to verify the calibration and linearity is correct. If necessary repeat calibration, especially be certain the scale is stable before accepting any weight.

SECTION 11 ERROR CODES

ERROR CODES	DESCRIPTION	RESOLUTION
-----	Over range	Remove weight from the scale. If the problem persists contact your dealer Totalcomp Inc.
Err 4	Zero Setting Error	The scale was outside the normal zero setting range either when it was turned on or when the ZERO key was pressed. Remove weight from the scale and try again. Use the TARE key to set the display to zero value. If the problem persists contact your dealer Totalcomp Inc.
Err 6	A/D out of range	The values from the A/D converter are outside the normal range. Remove weight from the scale if overloaded; make sure the pan is attached. Indicates the load cell or the electronics may be faulty. If the problem persist contact your dealer Totalcomp Inc.

SECTION 12 TECHNICAL PARAMETERS

Press **UNIT** key and **PRINT/M+** key together when normal weighing mode, display shows "F0 H-L", press **TARE** key until display shows "PrOG", press **ZERO** key, display shows "PIN", press momentarily **G/N**, then **UNIT**, then **ZERO** key to enter setting mode, press **TARE** key to select parameter, press **ZERO** key to enter into Function and Sub-function, press **UNIT** key to escape.

FUNCTION	SUB-FUNCTION	DESCRIPTION
P1 REF	AZN 0	This option is used to select the auto zero range; Options : 0.5d, 1d, 2d, 4d
	0-AUTO	This option is used to select the auto zero range when the indicator is turned on and off. Options : 0%, 2%, 5%, 10%, 20%
	0- RANGE	This option is used to select the manual zero range when press the ZERO key. Options: 2%, 4%, 10%, 20%, 50%, 100%
	speed	Set ADC speed, press U. Wt. Key to select ADC speed, press Tare key to enter 7.5: 7.5 times per second 15: 15 times per second 30: 30 times per second 60: 60 times per second Note: 15 times per second or 30 times per second are recommendatory
P 2 CAL	DECI	This option is used to select the decimal Options : 0, 0.0, 0.00, 0.000
	INC	This option is used to select the division Options : 1, 2, 5, 10, 20, 50
	CAP	This display will show xxxxxx for setting the capacity.
	CAL	linear nonlin
P3 P RO	TRI	This display will show xxxxxx for trimming the load cells, see detail in service manual.
	COUNT	This display will show xxxxxx for indicating the internal counts.
	gra	Set the gravity.
	RESET	This display will show SURE for recovering the factory default setting.
P4 CHK	Mode 1	This is mode of the natural scale
	Mode 2	This is animal scale Scale can lock reading when little unstable
	MODE 3	This is a subtraction scale (PRINT out "-" weight)
	MODE 4	Peak Hold mode. (Scale can hold maximum reading)

Quick Start

TRWS indicator

Load cell Connector (5 pin connector)		RS-232 output		RS-232 Data specifications
EX +	Pin 5	TXD	Pin 3	8 data bits (cannot be changed)
EX -	Pin 4	RXD	Pin 2	No Parity (cannot be changed)
Sig +	Pin 1	GRD	Pin 5	Baud rate adjustable 600 to 9600
Sig -	Pin 2	RS-232 is the 9 pin connector.		

Ticket printers, set printer parameter **F4 Prt** to **P Prt** select baud rate and printing format.

Remote Displays, set printer parameter **F4 Prt** to **SE irE** select baud rate.

Set Up:

Press **UNIT** and **PRINT/M+** button at the same time when you are in weighing mode and release it when indicator beeps.

Press **TARE** until display shows **ProG**

Press **ZERO** key and press **G/N; UNIT; ZERO** to enter into programming.

Press **TARE** to toggle between steps.

P 2 CAL is Shown

Press **ZERO** select **DECi** Press **ZERO** again then press **TARE** to move decimal point, press **ZERO** to save desired decimal point.

Press **TARE** to advance to **inC** division press **ZERO** to enter use **TARE** key to select the desired increments 1;2;5;10;20;50 press **ZERO** to enter (save) desired increment.

Press **TARE** to advance to **CAP**

Press **ZERO** than enter full scale capacity using **G/N** button (toggle between digits), using the **TARE** button (increase the numbers 0-9) after selecting the full scale capacity press **ZERO** to save it.

Calibration:

Press **UNIT** and **PRINT/M+** button at the same time when you are in weighing mode.

Press **TARE** until display shows **ProG**

Press **ZERO** key and press **G/N; UNIT; ZERO** to enter into programming.

Press **TARE** until display shows **P 2 CAL** then press **ZERO**

Press **TARE** until you see **CAL** on the display.

Press **ZERO** to select **nonL in** (not linear calibration, for simple zero and span calibration)

Press **ZERO** display will show **Unload** (at this time you can also choose to calibrate in LB or KG by pressing the **UNIT** button)

Make sure nothing is on the scale then press **ZERO**

Next display will show full scale capacity, if you don't have that much test weight toggle between the digits using the **G/N** button (toggle between digits), using the **Tare** button (increase the numbers 0-9) to enter your actual weight that you will use to calibrate, Then press **ZERO** display will show **LoAd** (LB or KG you can still select the calibration unit by using the **UNIT** button) load test weight on platform and press **ZERO**, display will show **PASS** and automatically restart the indicator.

The product range can be summarized as follows:

- Counting scales for general industrial and warehouse applications.
- Digital weighing/check-weighing scales.
- High performance platform scales with extensive software facilities including parts counting, percent weighing etc.
- Digital electronic scales for medical use.
- Retail price computing scales.
- Floor scales.
- Truck scale.
- Crane scales.
- Weighing indicator for platform scales, floor scales and truck scales.
- Hand push and pull gauge.
- Customize auto weighing systems.

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All information contained within this publication was to the best of our knowledge timely, complete and accurate when issued.