

# **PIECE COUNTING SCALES**

## **INTRODUCTION**

Contech CT series PIECE COUNTING SCALES use high precision strain gauges to measure precisely the weight of an object to compute number of pieces.

### Features:

- \*\* HIGH INTERNAL RESOLUTION 1/600000
- \*\* CAN STORE UNIT WEIGHT FOR 500 ITEMS.
- \*\* 3 BRIGHT LED DISPLAYS TO DISPLAY WEIGHT, UNIT WEIGHT AND PIECES
- \*\* AUTOMATIC COUNT CALIBRATION MODE.
- \*\* SELECTABLE SAMPLE SIZE.
- \*\* RESETTABLE SET POINTS FOR CHECK COUNTING.
- \*\* NUMERIC KEYBOARD FOR EASY ENTRY OF UNIT WEIGHT/SAMPLES
- \*\* BI DIRECTIONAL RS232 INTERFACE.
- \*\* POWER SAVING MODE
- \*\* COMPARATOR FUNCTION WITH AUDIO INDICATION(BUZZER)
- \*\* OPTIONAL COMPARTOR WITH RELAY OUTPUTS.
- \*\* OPTIONAL IN BUILT BATTERY BACKUP.
- \*\* PRINT OUT OPTION WITH DATE/TIME , COUNT AND WEIGHT.
- \*\* MEMORY ADDITION AND RECALL FUNCTION.

# INSTALLATION

## 1 Unpacking:

Unpack the scale. Save the packing container for future use.

## 2 Electrical requirements:

The scale requires very stable power. It works on 230V AC supply with PROPER EARTHING. The power outlet used for the scale should not be shared with any other devices which draws current in inconsistent manner like Airconditioner or refrigerator etc. Scales supplied with optional inbuilt battery backup

## 3 Environmental requirements:


For best results, the scale should be placed on a level surface which is free from drafts. It should not be exposed to direct sunlight or radiated heat. The scale should not be subjected to sudden ambient temperature changes. Table used for scale should be sturdy and should not transmit vibration from other equipments and free from the movement of people. No vibration producing equipment should be operated on the same platform as scale.

## 4 Start up.

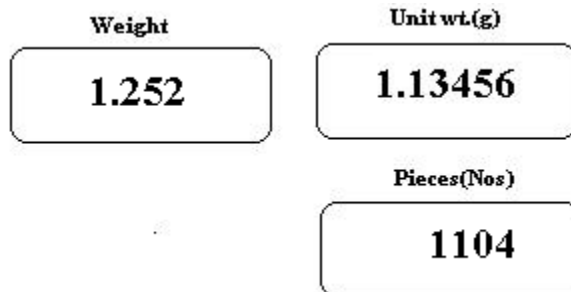
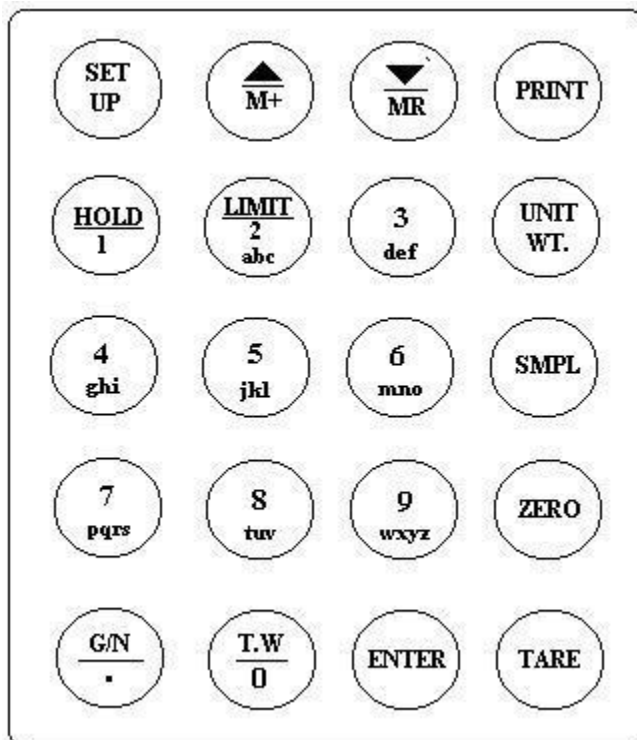
Power is supplied to the scale through a 2 pin dc adaptor supplied along with the scale. Connect the adaptor to the scale to dc jack provided at the side of the scale. Connect the adaptor to an AC mains outlet with proper earthing.

Scale goes through the self test and subsequently starts displaying weight




Press  key to zero the weight, if required.

## COUNTING SCALE KEYBOARD AND DISPLAY



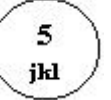



### SWITCHING BETWEEN ITEMS.

Scales have a memory of 500. Unit weights of 500 items can be stored in memory. Scales retain the unit weight value even when it is switched off.

To switch between different items, Press item memory number and press  to select.

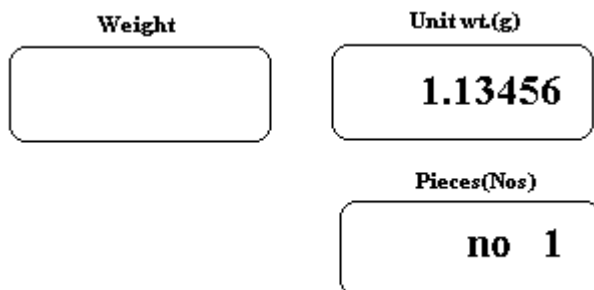
For example to select memory no. 125,

Press    and 


## SETTING UNIT WEIGHT THROUGH KEYBOARD


Unit weight can be either set through the keyboard or scale calculates it with known number of samples.

For Unit weight entry, Press , Scale displays




*Unit wt* display indicates the current unit weight and *pieces* display indicates the memory no.

Use numeric keys to enter new unit weight. Press  key to store new unit weight.

Press  to quit without saving.


## SETTING UNIT WEIGHT WITH KNOWN NO. OF SAMPLES

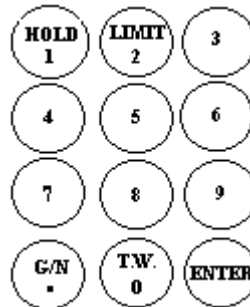
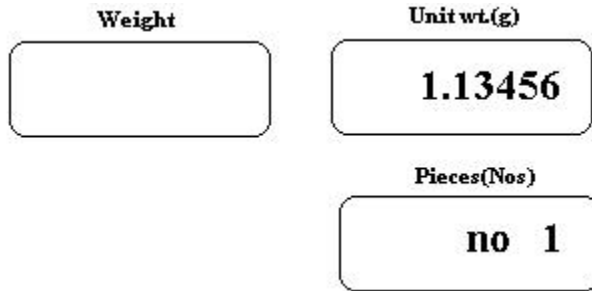
Scale calculates unit weight when known number of samples are on the pan.

Remove all items from the pan and make weight reading zero by pressing  key.


Keep container on the pan, if required, and Press  or  key to zero the weight.

Put known number of samples on the pan.

Press  key. Scale displays




Enter no of samples on the pan using numeric key pad.

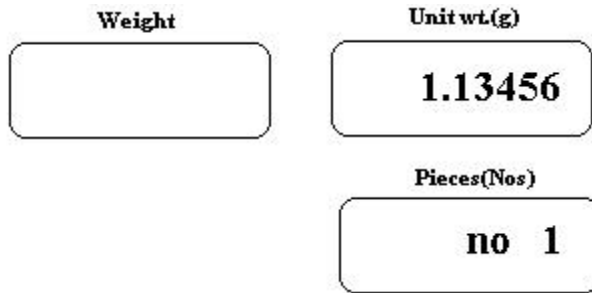
Press  key. Scale calculates the Unit Weight and displays on the Unit Wt. Display.


## **AUTOMATIC COUNT CALIBRATION MODE. (ACCM)**

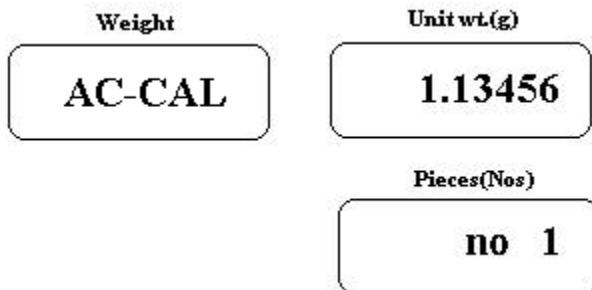
Scale is equipped with a facility to calculate unit weight by averaging over large number of samples without actually counting large quantities manually.

Put known number of samples on the pan.

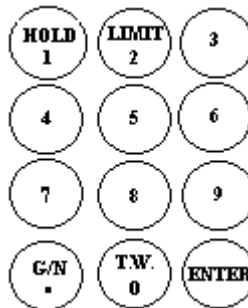
Press  key. Scale displays




Press  key again. Scale displays



Now scale is in automatic count calibration mode.



Enter no of samples on the pan using numeric key pad.


Press  key. Scale calculates the Unit Weight and displays on the Unit Wt. Display.

When scale is in ACCM mode, the piece nos display will be blinking.

Add more sample to the existing no to make number of pieces double the original quantity.


Wait for the weight to become stable. Scale recalculates the unit weight and displays on the Unit weight display.

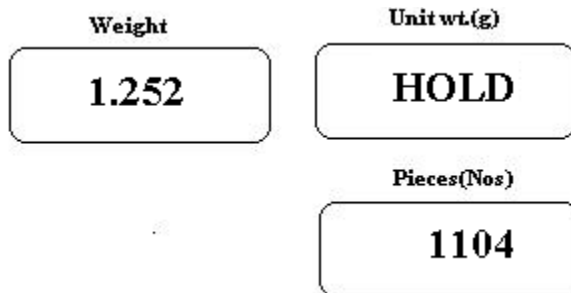
Repeat this procedure till desired number of samples are averaged.


Press  key to quit ACCM mode.

## HOLD FUNCTION


Weighing and counting can be held temporarily by using HOLD function.


Keep the key  pressed for more than 3 sec. Scale will display




Press  key to quit this mode.

## GROSS/NET FUNCTION

Press  key to switch between GROSS and NET weight function. To use this function,

Remove all items from the pan and make weight reading zero by pressing  key.

Keep container on the pan , if required, and Press  key to zero the weight.

Keep sample on the pan.

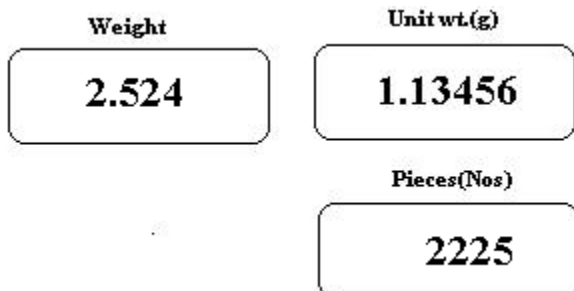
Press  to switch between GROSS and NET weight mode.



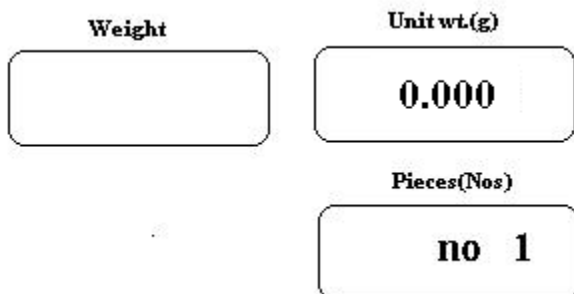
When **ZERO** key is pressed. Scale returns to NET weight mode and container/tare weight will be made zero ,

## TARE/CONTAINER WEIGHT ENTRY

Tare or container weight can be entered directly, if, it is known to the user.  
Keep a container with samples on the pan of the scale. It displays say,

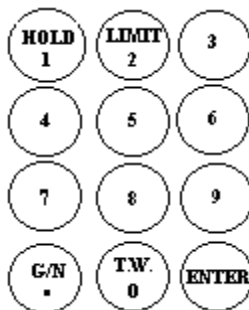


Press **T.W / 0** key. Scale will display



Current container/tare weight will be displayed in the Unit Wt. Display area.


Using numeric keypad, enter container weight in the same unit as weighing  
( If the weighing unit is kg ,  
enter tare weight in kg )  
for eg. 0.125kg(125g)





<b>Weight</b>	<b>Unit wt.(g)</b>
	<b>0.125</b>
	<b>Pieces(Nos)</b>
	<b>no 1</b>



Press  key to store Tare weight.

Scale enters NET weight mode, subtracts Container weight from the total weight and displays.

<b>Weight</b>	<b>Unit wt.(g)</b>
<b>2.399</b>	<b>1.13456</b>
	<b>Pieces(Nos)</b>
	<b>2114</b>

## MEMORY FUNCTION ( M+ and MR)


No. of Pieces counted can be added to its respective memory and can be retrieved if required. For eg.

<b>Weight</b>	<b>Unit wt.(g)</b>
<b>2.399</b>	<b>1.13456</b>
	<b>Pieces(Nos)</b>
	<b>2114</b>




Press  key. Quantity 2114 will added to the memory , say memory 1

<b>Weight</b>	<b>Unit wt.(g)</b>
	2114
	<b>Pieces(Nos)</b>
	tot 1

Press  key again. Quantity 2114 will added to the memory 1


<b>Weight</b>	<b>Unit wt.(g)</b>
	4228
	<b>Pieces(Nos)</b>
	tot 1

To Retrieve the accumulated total, Press  key. It displays


<b>Weight</b>	<b>Unit wt.(g)</b>
	4228
	<b>Pieces(Nos)</b>
	tot 1

For Clearing memory, , Press  key. It displays

<b>Weight</b>	<b>Unit wt.(g)</b>
	4228
	<b>Pieces(Nos)</b>
	tot 1

Immediately Press  key, scale displays

Weight	Unit wt.(g)
	4228
	Pieces(Nos)
	CLEAR



Press  key to clear Memory no. 1


Press  key to quit.

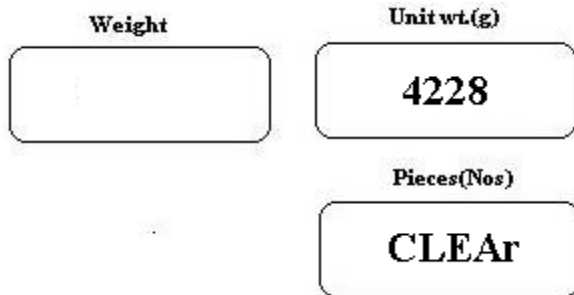
### RECALLING ENTIRE MEMORY.


For Recalling memory, Press  key. Display shows

Weight	Unit wt.(g)
	4228
	Pieces(Nos)
	tot 1

Press  or  key to recall all the stored value of memory.

**TO CLEAR ENTIRE MEMORY** , Press  key, scale displays



Press  key to clear all the memory.

Press  key to quit.


## CHECK COUNTING.

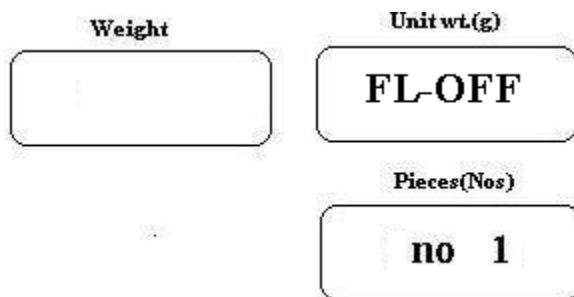
Scales can be used in check counting application, where user can set limits ( 1 or 2) for counting. Once the set limit is reached, scale gives audio indication. 1 or 2 limits can be set based on the requirement.

In case of Single limit, Once the set limit is reached scale emits beep sound.

In case of 2 limits, scale emits beep sound once the count is within the 2 set limits.

**To set limits,**

Press  key for more than 3 seconds, Scale displays



It displays  in *Unit Wt. Display* position, if set limit function is **OFF**. or

displays  in *Unit Wt. Display* position, if set limit function is **ON**.



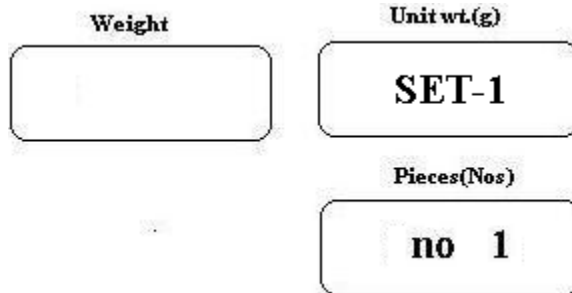
Press

to turn this function **ON** or



to turn this function **OFF**.

If the **LIMIT** function is **ON**, Scale displays



It displays 

**SET-1**

 in *Unit Wt. Display* position, if **SINGLE LIMIT** is selected.

or displays 

**SET-2**

 in *Unit Wt. Display* position, if **2 LIMITS** are selected.



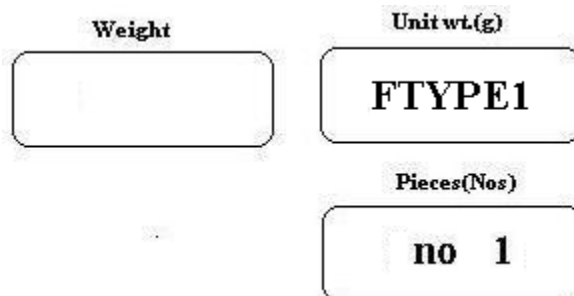
Press

to select **2 LIMITS** or



to select **1 LIMIT**.

Scale further displays



It displays 

**FTYPE1**

 in *Unit Wt. Display* position, if Type1 is selected

Or 

**FTYPE2**

 in *Unit Wt. Display* position, if Type2 is selected



Press

to select **FTYPE2** or



to select **FTYPE1**.

To understand **FTYPE1** AND **FTYPE2**, pl. refer below.

### Set Point 1:

User can set a weight any where in the range of the scale. Depending on the weight on the pan, the following events occur. Buzzer will work only in case of models where buzzer is provided.

<i>Type</i>	<i>Count &lt; Set Wt.</i>	<i>Count = Set Wt.</i>	<i>Count &gt; Set wt.</i>
<b>FTYPE1</b>	Buzzer off	Buzzer off	Buzzer on
<b>FTYPE2</b>	Buzzer on	Buzzer off	Buzzer off

### Set Point 2:

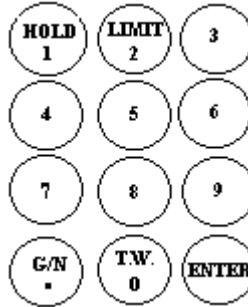
User can set two weights any where in the range of the scale. Depending on the weight on the pan, the following events occur. Buzzer will work only in case of model where buzzer is provided.

<i>Type</i>	<i>Count within Set Limit</i>	<i>Count = lower or Upper limit.</i>	<i>Count is beyond the limits.</i>
<b>FTYPE1</b>	Buzzer off	Buzzer off	Buzzer on
<b>FTYPE2</b>	Buzzer on	Buzzer on	Buzzer off

Scale further displays,

<b>Weight</b>	<b>Unit wt.(g)</b>
<b>SET-1</b>	
	<b>Pieces(Nos)</b>
	<b>100</b>

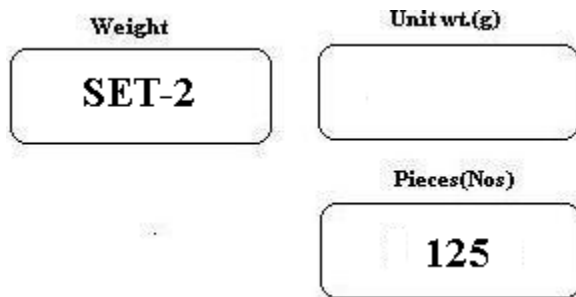
Current First Limit is displayed in Pieces display position.



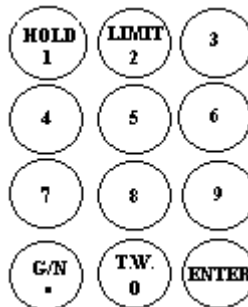
Use numeric key pad to change the limits.

Press  to save.

If Limit is set to 2 ,Scale displays




Current second Limit is displayed in *Pieces display position*.



Use numeric key pad to change the limits.

Press  to save.

# FOR CHANGING DATE, TIME AND SERIAL NO.


Press  key, the Scale displays **SETUP**


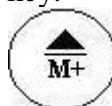

And displays **DATE**



Use  or  to go through the 4 options



**DATE**  
**TIME**  
**Srno**  
**ARCH-ID**



- a) **DATE** for Date entry
- b) **TIME** for Time entry
- c) **Srno** for Serial no. entry
- d) **ARCH-ID** for machine id entry

Select Option by pressing  key.

Press  to make it 0 or use  OR  keys to change

and press  key to store the selected parameters. Press  key to skip and go to next entry.

In case of **ARCH-ID** entry, use  OR  keys to change the blinking character.

Press  to move right and  to move left.





Press to save.


## PRINT OPTION

Counting scales can be attached to a serial printer for your printing needs. Print out can be programmed to suit most of the printing requirements. Printer must have a serial port and baud rate of the balance and printer should be same. Set baud rate 2400 or 4800.



Press key to print weight through the serial port.

Printing option and patterns are controlled by 4 SETUP parameters. They are

- a) **Print**: There are 4 options
- i) **Single** - Press  key to start printing weight and other details programmed as per (b), (c) and (d) below.
  - ii) **Stb** - Printing is initiated when the weight kept on the pan becomes stable.
  - iii) **ALL** - All the displayed weights are printed along with other details programmed as per (b), (c) and (d) below.
- b) **Pr.Fnt**. Printer format. 5 printout formats are available.
- Prf-1** - Count & weight.
  - Prf-2** - Serial no , weight and count
  - Prf-3** - Serial no, Date, weight and count.
  - Prf-4** - Serial no, Time, weight & count
  - Prf-5** - Serial no.,Date, Time weight & Count
- c) **P-TYPE** Print type (Horizontal or Vertical)
- i) **P-TYPE1** - Horizontal  
Details will be printed horizontally.

Sr.No.	Date	Time	Weight	Pcs
001	12.05.2010	13:25:00	2.354 kg	100nos
002	12.05.2010	13:27:05	2.323 kg	99 nos

- ii) **P-tYPE2** – Vertical  
 Details will be printed vertically in a slip form.

For ex. **Sr.No. : 001**  
**Date : 12.05.2010**  
**Time : 13:25:00**  
**Weight : 2.445 kg**  
**Pcs : 100nos**

Set the above parameters (a) to (d) to your requirements and effect printing. These parameters are available in SETUP functions.

## **BIDIRECTIONAL RS-232 INTERFACE.**

Bi-directional RS-232 interface is provided to communicate with peripheral devices like computer, printer etc. The interface is provided through a nine pin D-type connector provided. Connections are as below.

Pin 2 – RXD – Receive Data  
 Pin 3 - TXD – Transmit Data  
 Pin 7 – Ground.

The Serial data transmitted and received are in standard ASCII mode - ASYNCHRONOUS , 8 BITS, NO PARITY, 1 STOP BIT.

Baud rate : 2400 OR 4800 SELECTABLE.

The data format for weight output is

**<+/->WWWW.WWb <UU>bPPPPPPnos <CR><LF>**

where WWWWWW.WW is the weight

PPPPPP - count

b – blank space - 20 hex (32 DEC)

CR- Carriage Return – 0D hex( 13 DEC)

LF – Line feed - 0A hex (10 DEC)

UU – weighing unit ( for example **kg**)

The balance could be controlled by an external device like computer with the

following commands.

**Z - Tares the balance. (Make weight and count reading zero)**


**T - Tares the balance. (Make weight and count reading zero)**

**W1 – Request for weighing and counting data**

However scale can be operated in a continuous data transfer mode when it will send data continuously as it measures. This can be set using scale keyboard.

## SETUP FUNCTIONS

SETUP functions control the basic operation of the SCALE. These parameters can be set by the user to suit the requirements. The following are the parameters.

<u>MENU NAME</u>	<u>FUNCTION</u>	<u>OPTIONS</u>	<u>DESCRIPTION</u>
FACTORY	Factory setting		To select factory set parameters.
BAUD	Baud rate setting	bd2400	To select 2400 baud rate
		bd4800	To select 4800 baud rate
Print	Print modes set.	SINGLE	Send stable weight through serial port when  key is pressed.
		Stb	Send weight through serial port Every time scale reading becomes stable.
		ALL	Send weight continuously.
Auto-0	Auto zero setting. (Ability of the scale to remain at zero, when there is no weight on the pan. )	A-0	Autozero disabled.
		A-1	Autozero to half accuracy of scale.
		A-2	Autozero to full accuracy of scale.
		A-3	Autozero to twice the accuracy of scale.

CAL - Auto calibration

CAL-off Autocalibration disabled

CAL-on Autocalibration enabled

PS $\bar{n}$  - Power saving mode

PS $\bar{n}$ -off Power saving mode disabled

PS $\bar{n}$ -on Power saving mode enabled

3d-SEt - Third decimal mode.

P3d-off Third decimal mode disabled

P3d-on Third decimal mode enabled

t,tLE - Title printing

tLE-off Title printing disabled

tLE-on Title printing enabled

P-tYPE - Select printing mode.

P-tYPE1 Horizontal Printing mode

P-tYPE2 Vertical Printing mode

Pr.F $\bar{n}$ t - Select print formats.

Prf-1 - Count & weight.

Prf-2 - Serial no , weight and count

Prf-3 - Serial no, Date, weight and count.

Prf-4 - Serial no, Time, weight & count

Prf-5 - Serial no.,Date, Time weight & Count

rS232 - Select RS232 mode .

n-tYPE Numeric mode

S-tYPE Standard mode

rESP - Response

r-nor Normal Response

r-FASt Fast Response

-Stb- - Select print formats.

Stb-0 - Stability 0

Stb-1 - Stability 1


Stb-2 - Stability 2

Stb-3 - Stability 3

## ENTERING SETUP MODE

Switch Off the Scale.




Switch on the machine keeping the  key pressed. Do not release this key until the scale displays



SETUP

And subsequently displays

FACTORY


For changing between the menu mentioned above Press , or  or  keys

For selecting the menu, Press  key.

For changing the parameters within a menu,, Press  OR  key and Press



to save.

Press  to quit setup mode.

**\*\*\* PLEASE NOTE THAT SOME FUNCTIONS IN THE SCALE MAY NOT BE LEGAL IN SOME PLACES. THESE FUNCTIONS SHOULD NOT BE MADE AVAILABLE TO THE END USER. THESE UNITS CAN BE SWITCHED OFF BY PROGRAMMING. \*\*\***