Innovative Measurement Electronics

PT 250

Scale Indicator
User Manual

Rev.5 14.861

Thank you for purchasing a PT Electronic Digital Indicator. In order to use the indicator properly, please read this Manual carefully before use. If you have a problem concerning the indicator, please contact your supplier.

PT regularly updates and issues new information regarding products, the most up to date information and additional detailed information is located on the PT web site.
www.ptglobal.com

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2 PREPARATION

2.1 Preparing your Indicator for use

1. The PT250 indicator needs to be connected to a scale platform or loadcells. The connector required to do this is included in the package. Multiple loadcells may need a junction box.
2. Attach the AC power adaptor to the connector at the back of the indicator.
3. Once connected, start the indicator and set the Technical Parameters, (12)
4. Avoid placing the scale in direct sunlight, near air conditioning vents or open doors as these can cause extremes of temperature and air currents that can affect stability.
5. Avoid unstable power sources. Large users of electricity such as welding equipment or large motors generate electromagnetic fields that can affect weighing accuracy.
6. The Power switch is located on the front panel. Once the indicator has been switched on, it will go through a display test and then re-zero to be ready for use.
7. The Battery symbol to the top right of the weight display will show a graphic indication of the amount of charge left in the battery. To recharge the battery, plug the power supply into the socket located at the rear of the indicator and connect to mains power. The battery symbol will show the level of charge in the battery.
8. The acceleration due to gravity varies around the world. The force on the scale is a product of the gravity value and the mass placed on the scale to weigh. As the gravity value can vary in different world locations so can the weight displayed for the same mass.
9. Check the contents of the package for any additional instructions regarding installation or use that may be inserted as an addendum to this manual.

2.2 Care of your scale

1. Do not allow any liquids to get into or come into contact with the Indicator. If this happens, wipe dry with a cloth.
2. Avoid objects impacting with the scale. Do not drop loads onto the scale or load with a load that is greater than maximum capacity.
3. The indicator should be kept clean. The indicator can be cleaned with a damp cloth and any cleaning agents should first be applied to a cloth and this cloth then used to clean the scale. Avoid solvents as these can damage the case.
4. If the indicator is not going to be used for some time, we recommend that it be cleaned and stored it in a plastic bag in dry conditions. A desiccant sachet may be included to prevent moisture build up. If the storage period is to be lengthy the battery should also be removed.

3 FEATURES AND SPECIFICATIONS

3.1 Features

- The PT250 indicator provides the basis of an accurate, fast and versatile weighing scale with check-weighing functions.
- All units include automatic zero tracking, audible alarm for pre-set weights, and an accumulation facility that allows the individual weights to be stored and recalled as an accumulated total
- The indicator and load cell(s) combination can be configured for any capacity up to 99990kg and a maximum recommended resolution of 1:30000.
- The PT250 Indicator can drive a maximum of 4 x 350 ohm load cells.
- All the keypads are sealed, colour coded membrane switches and a backlit easy to read liquid crystal type display (LCD).
- Check-weighing function.
- Built in desk stand.
- Peak hold function.

3.2 Specifications

Model	PT250
Maximum Capacity	99990kg
Increments	1, 2, 5 and multiples
Max. Resolution	1:30000 recommended
Operating Conditions	0ºC – 40ºC / 32ºF – 104ºF, <85% RH non-condensing
Display	6 digit LCD display, 22mm high digits with backlight
Indicator	ABS Plastic
Power Supply	Internal battery (typ. 35hrs) and external 115 or 230VAC adaptor
Stabilisation time	1 second typical
Calibration	External
Non-Linearity	<0.01%
Load cell excitation	5VDC 150mA, Up to four 350 ohm cells
Signal Input range	0~15mV
Zero range	0~5mV
Input sensitivity	>0.3μV/div.
Internal counts	600,000
ADC	Sigma delta. Update Max 60 times /second
Interface	RS-232 Output.

3.3 Product Package

- Indicator
- Load cell connector plug, RS232 connector plug.
- One user manual.
- One power adaptor
- Please contact your supplier if any of the items mentioned above are missing.

3.4 Power Source

- The internal rechargeable battery
- 9V DC 800ma / 12V DC 500mA AC powered external adaptor (115 or 230vAC 50/60hz 10 watts)

4 INSTALLATION

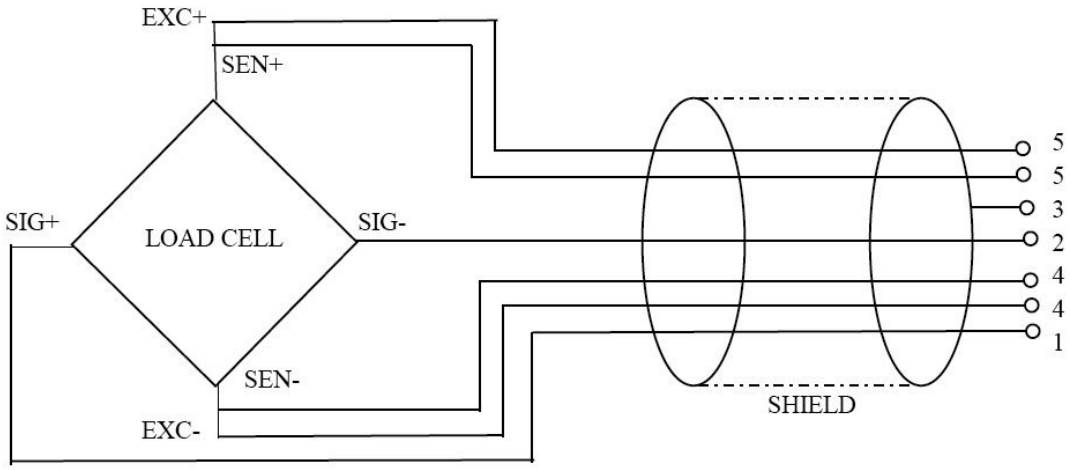
4.1 Installation of the PT250 indicator

Solder the loadcell cable wires to the supplied loadcell 5 pin connector as per the diagram below. Secure the backshell and plug the completed connector into the socket at the rear of the indicator. Attach the AC power adapter to the connector on the back of the indicator. Turn on the indicator, set the parameters and calibrate.

4.2 Indicator Rear View

4.3 Load Cell Connection

Load cell connect as below(5pin air connecter)



5 DISPLAY, KEYS AND FUNCTIONS

5.1 Keys and Functions

- **ON/ OFF** Turns power on or off .
- **ZERO** Set the zero point for all subsequent weighing. The display shows zero.
  - This key has a secondary function of "Enter" key when setting parameters or other functions.
- **TARE** Tares the scale. Stores the current weight in memory as a tare value, subtracts the tare value from the weight and shows the results.
  - The **TARE** key has a secondary function to increment the active digit when setting a value for parameters or other functions.
- **G/N** Press the key , to select gross weight or net weight after you tare a weight.
  - In the setting mode, this key is used to move the active digits right.
- **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.
  - The secondary functions of this key is to act as a clear key.
- **UNIT** Press this key to select the weight unit. Move the active digit left when setting values for other functions.
  - This key has a Secondary function to return to normal operation when the scale is in a parameter setting mode.

5.2 Display

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

6 OPERATION

6.1 Zeroing The Display

You can press the **ZERO** key at any time to set the zero point from which all other weighing is measured. This will usually only be necessary when the platform is empty. When the zero point is obtained the display will show the zero indicator. The amount of re-zero available will depend on the zero range settings in 12 TECHNICAL PARAMETERS.

The indicator 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 Using Tare

Zero the scale by pressing the **ZERO** key if necessary. The zero indicator will display.

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 "NET" 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 the scale will show a negative value. If the scale was tared just before removing the container this value is the gross weight of the container plus all product that was removed from the scale. 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. Press the **TARE** key to clear the stored tare value and return the indictor display to zero.

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 of the sample and the units of weight currently in use.

6.4 Check-weighing

Check-weighing is a procedure to cause an alarm to sound when the weight on the scale meets or is outside limit values stored in memory. The memory can be set with a value for a high limit and for a low limit.

6.4.1 Check-weighing Modes

There are three modes of operation that can be set in Parameters, function F4 OFF, bEEP.

- **Check Mode 1:** When the applied weight is between the check limits, the display will show OK. When the applied weight is outside the check limits, the Display will show Lo or Hi as appropriate, the beeper will not sound. Set F4 OFF, bEEP = bP 1
- **Check mode 2:** When the applied weight is between the check limits, the display will show OK and the beeper will sound a continuous note. When the applied weight is outside the check limits, the Display will show Lo or Hi as appropriate, the beeper will not sound. Set F4 OFF, bEEP = bP 2
- **Check mode 3:** When the applied weight is between the check limits, the display will show OK and the beeper will not sound. When the applied weight is outside the check limits, the Display will show Lo or Hi as appropriate, the beeper will sound a continuous note. Set F4 OFF, bEEP = bP 3

6.4.2 Setting Check Weighing Limits

Press the **UNIT** key and **M+** key together in the weighing mode, The display will show "F0 H-L", press the **ZERO** key to enter, use the **TARE** key to select "SEt HI " or "SEt LO", press the **ZERO** key to enter, use the **G/N** key to move active digit, and the **TARE** key to change value, use the **M+** key to reset the value to zero. After you enter the value, press the **ZERO** key to save the setting, and press the **UNIT** key to escape back to "SEt HI " or "SEt LO". Use the **TARE** key to change to the other limit and set the value of this one using the same procedure.

6.4.3 Set Check Weighing Mode

Press the the **UNIT** key and the **M+** key together in the weighing mode to enter Setting Mode, the display will show "F0 H-L". Press the **TARE** four times until the display shows "F4 OFF". Press the **ZERO** key to enter and press the **TARE** key twice until the display shows "bEEP". Press the **ZERO** key to enter and press the **TARE** key to select "bP 1" (no Beep), "bP 2" (check mode 2), or "bP3" (check mode 3). Press the **ZERO** key to save your selection, and press the **UNIT** key to escape back to other settings. A further press of the **UNIT** key will escape back to weighing mode.

NOTE: The weight must be greater than 20 scale divisions for the check-weighing to operate.

6.4.4 Disable Check-weighing

The Check-Weighing function can be disabled by entering 0 as both the Hi and Lo limit.

6.5 Accumulated Total

The indicator can be set to accumulate manually by pressing the **M+** key or for automatic accumulation. The type of accumulation is set in PARAMETERS function F5 Prt. Set this to P Prt for manual accumulation and P Auto for automatic accumulation. The accumulation function is only available when weighing.

6.5.1 Manual Accumulation

Set the indicator to manual accumulate mode in Parameters. Press the **UNIT** and **M+** keys together in the weighing mode, the display will show F0 H-L, press the **TARE** key five times until display show F5 Prt. Press the **ZERO** key to enter, press the **TARE** key until the display shows P Prt, and press **ZERO** key to save this setting. The baud rate, print M+ format,and print type, will also need to be set if the an RS232 output is required. Once all the required Parameters have been set press the **ZERO** key to save and the **UNITS** key to exit back to weighing mode.

Place a weight on the scale allow to stabilise and press the **M+** key. The display will show ACC 1 then display the total in memory for 2 seconds before returning to normal display. Remove the weight. If the optional RS-232 interface is installed the weight will be output to a printer or PC.

Place a second weight on the scale and allow to stabilise. Press the M+ key, the display will show "ACC 2" and then the new total. Remove the weight.

Repeat until all weights have been added.

6.5.2 Memory recall

Totals in memory can be viewed by pressing the **M+** key while the scale is at net zero (ZERO indicator on).

6.5.3 Memory clear

The memory can be cleared by removing all weight from the scale, press **M+** to recall totals and press the **M+** key again while the totals are being displayed. The display will show ACC 0 then 000 before returning to normal operation.

The memory can also be cleared in Parameters F1 tOL. Press the **UNIT** and **M+** keys together in the weighing mode, the display will show "F0 H-L". Press the **TARE** key once to show F1 tOL. Press the **ZERO** key to enter and the **TARE** key until the display shows t0 CLr. Press the **ZERO** key to clear the totals and then use the **UNITS** key to return to weighing mode.

6.5.4 Automatic Accumulation

Set the indicator to Automatic Accumulation mode in Parameters. Press the **UNIT** and **M+** keys together in the weighing mode, the display will show F0 H-L, press the **TARE** key five times until display show F5 Prt. Press the **ZERO** key to enter, press the **TARE** key until the display shows P AUt0, and press the **ZERO** key to save this setting. The baud rate, print M+ format,and print type, will also need to be set if the an RS232 output is required, see the Parameters 7 for details. Once all parameters have been set press the **UNIT** key to return to weighing mode. The Auto indicator will be illuminated.

Place a weight on the scale and allow to stabilise. The indicator will give two short beeps. Remove the weight. The weight displayed will be stored in memory once the scale returns to zero. The display will show ACC 1 then display the total in memory for 2 seconds before returning to normal. If the optional RS-232 interface is installed the weight will simultaneously be output to a printer or PC. Repeat as required.

To prevent accidentally accumulating the same weight twice the indicator will not store the displayed weight in memory until after the weight has been removed and the display returns to zero.

6.6 Peak Hold

The scale will show the highest peak load that is applied momentarily to the scale. This reading will be held if the load decreases but will increase if a higher load is applied.

To enter peak recording, press **ZERO** and **TARE** together with the scale empty. The scale will be zeroed and the display will show HOLD

The peak is released by pressing the **ZERO** and the **TARE** key together.
While HOLD is displaying, the weight can be accumulated and printed with the **M+** key.

6.7 Weighing Modes

There are four weighing modes, Normal weighing, Animal Weighing, Subtraction Weighing (2 options). The mode of weighing is set in Technical Parameters, PrOG_ P CHH. Refer to Section 12 for instructions on entering and setting these Parameters.

6.7.1 Normal Weighing - Mode 1

This is the normal weighing mode and is the default setting.

6.7.2 Animal Weighing - Mode 2

PT250 can be used as the indicator for an animal scale. This mode is useful wherever there is some motion or vibration and the scale cannot reach a stable weight. The weight display will hold or lock once the fluctuation in readings has reduced to a low level.

Place the animal on the platform. Once the variation in the reading due to animal movement reduces the indicator will beep and the reading will hold or lock. Once the weight has locked adding or removing small amounts of weight will not change the

reading. When the animal is removed the scale will return to zero ready for the next animal.

6.7.3 Subtraction Weighing - Mode 3

This mode is used to measure how much is taken out of or removed from the scale. This is useful for feeding out from a hopper.

On start, the indicator will beep and then show the current weight on the platform. Press the **TARE** key for the display to show 0.00 . The indicator will now show the value of product removed from the scale or hopper as a minus value and weight added as a positive value.

Note: The Net weight shown on the display in this mode after a tare operation is the weight of product removed or added to the scale, not total weight remaining. The gross weight will be the total weight of product on the scale.

Press the **M+** key to output the totals.

6.7.4 Peak Hold - Mode 4

The Scale can be set to display and hold the peak load seen on the scale. The scale will show the highest peak load that is applied momentarily to the scale. This reading will be held if the load decreases but will increase if a higher load is applied.

To enter peak recording, press **ZERO** and **TARE** together with the scale empty. The scale will be zeroed and the display will show HOLD

The peak is released by pressing the **ZERO** and the **TARE** key together.
While HOLD is displaying, the weight can be accumulated and printed with the **M+** key.

7 PARAMETERS

The indicator has six parameters that can be set by the user plus a method of entering the Technical Parameter section (12). The Calibration process is described in Section 11 of the user manual.

7.1 Entering and Setting Commands

Enter the parameter settings by pressing the **UNIT** key and **M+** key together in the weighing mode. The display will show F0 H-L

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

Pressing **ZERO** will allow you to set the function.

Within the function it may be necessary to either use **TARE** to select an option 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 or save the value. Use the **UNIT** key to leave a parameter unchanged.

7.2 Entering and Setting Example

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** key 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, 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 using the **TARE** key or press the **UNIT** key to return to weighing.

7.3 Function Menu Settings

FUNCTION	SUB-FUNCTION	DESCRIPTION	DEFAULT VALUE
F0 H-L	SEt Lo	Set a value for the Low limit.	000.000
	SEt HI	Set a value for the High Limit.	000.000
F1 toL	to CLr	Clears the accumulation memory without printing the totals 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 alternative displayed unit in addition to kg, Press the **ZERO** key to cycle through the available units and press the **TARE** key to set each ON or OFF, press the **ZERO** key to save and exit.	Kg only
F3 oFF	bL	Set the backlight to be on, automatic or off, bL on The Backlight is on all the time bL Au The Backlight turns on with activity. bL oFF The backlight is always off	bL Au
	bEEP	Set the beep mode.(check weighing mode 2 – bP 1, check weighing mode3 – bP 2, no beep – bP 3)	bP 3

FUNCTION	SUB-FUNCTION	DESCRIPTION	DEFAULT VALUE
F4 Prt		Set the RS-232 mode and specification. First <u>set RS-232 working mode</u> (press the **TARE** key to change, press the **ZERO** key to select) PStAb: Print a weighing ticket only when stable P Auto: auto M+ mode. P Prt: print weighing ticket when the **M+** key is pressed, P Cont: send weighing data continuously, connect to PC , SEI rE: connect with remote display (also send continuously) ASK: ask and answer mode (bi-direction mode), connect to a PC. PCnt2:N/A <u>Then set baud rate</u> Press **ZERO** to set the working mode, the display will show b xxx, this is current baud rate. Use the **TARE** key to change to the required Baud rate (600, 1200, 2400, 4800, 9600), and press the **ZERO** key to select. <u>Set the Communication Protocol (PCnt2 only)</u> the display will then display the current communication Protocol. Use the **TARE** key to change to the required protocol and press **ZERO** to select. Options Con1, Con2, Con3, See Section (9) for details. <u>Now set the print out format</u> (for the printer modes only P Prt_, P AUtO). Display will show PR x, to set the row from the print format table on the next page, Then the display shows LAB x, to set the gross/acc print format, details in Section 7.4 below. These parameters are only available in MODE 1 (normal weighing mode), see detail in section 6 and 12 . Then <u>set printer type</u>, TP: mini ticket Printer 711: A711 label Printer LP-50: LP-50 label Printer	P Prt
Prog	P in	Enter the programming and calibration menus by entering the correct password. See the Technical Parameters Section 12 .	

7.4 Print Out Formats for External Printers and RS232

Lab PRT	0	1	2	3
0	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
1	GS: 0.888kg	NT: 0.666kg TW: 0.222Kg GW: 0.888kg	GS: 0.222kg TOTAL: 0.444kg	NT: 0.222kg TW: 0.666kg GW: 0.888kg TOTAL: 0.444kg
2	GS: 0.888kg	NT: 0.666kg TW: 0.222kg GW: 0.888kg	GS: 0.222kg TOTAL: 0.666kg	NT: 0.222kg TW: 0.666kg GW: 0.888kg TOTAL: 0.666kg
3	GS: 0.888kg	NT: 0.666kg TW: 0.222kg GW: 0.888kg	GS: 0.222kg TOTAL: 0.888kg	NT: 0.222kg TW: 0.666kg GW: 0.888kg TOTAL: 0.888kg
4	NO.: 4 GS: 0.888kg	NO. : 4 NT : 0.666kg TW: 0.222kg GW: 0.888kg	NO.: 4 GS: 0.222kg TOTAL: 1.000kg	No.: 4 NT: 0.222kg TW: 0.666kg GW: 0.888kg TOTAL: 1.000kg
5	NO.: 5 GS: 0.888kg	NO.: 5 NT: 0.666kg TW: 0.222kg GW: 0.888kg	NO.: 5 GS: 0.222kg TOTAL: 1.222kg	No.: 5 NT: 0.222kg TW: 0.666kg GW: 0.888kg TOTAL: 1.222kg
6	NO.: 6 GS: 0.888kg	NO.: 6 NT: 0.666kg TW: 0.222kg GW: 0.888kg	NO.: 6 GS: 0.222kg TOTAL: 1.444kg	No.: 6 NT: 0.222kg TW: 0.666kg GW: 0.888kg TOTAL: 1.444kg
7	NO.: 7 GS: 0.888kg	NO.: 7 NT: 0.666kg TW: 0.222kg GW: 0.888kg	NO.: 7 GS: 0.222kg TOTAL: 1.666kg	No.: 7 NT: 0.222kg TW:: 0.666kg GW: 0.888kg TOTAL: 1.666kg

Choose the desired printout format. Use the appropriate LAB (column) and PRT (Row) heading to select the print format in PPrt or PAUt0

Note:Where the format shows GS or NT, this will be GS or NT as determined by whether or not the indicator has been tared and is in gross weight mode or net weight mode.

8 BATTERY OPERATION

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

The LCD display has an battery indicator symbol to indicate the amount of charge remaining in the battery. A fully shaded battery symbol indicates a fully charged battery. A battery symbol that has a small amount of shading in the right hand side is nearly depleted and should be recharged.

The battery needs charging when the battery symbol shows less than one third charge remaining. The scale will still operate for about 10 hours but will eventually automatically switch off to protect the battery.

The battery will automatically charge whenever the mains adaptor is connected to the indicator. The indicator does not need to be turned on during charging. Battery charging and scale operation can occur simultaneously but it will take longer to charge the battery.

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

Batteries do not last forever and will progressively fail to hold a full charge. This will give a reduced battery life between charges. The battery should be replaced once the available life becomes unacceptable.

The battery can be replaced by ordering the replacement part. Carefully remove the screws retaining the back of the indicator in place, open the indicator, replace the battery (take care to check polarity) and reinstall the back of the indicator.

9 RS-232 OPERATION

The PT250 Series of scales can be ordered with an optional RS-232 output. RS-232 is not available concurrent with wireless operation.

9.1 Specifications

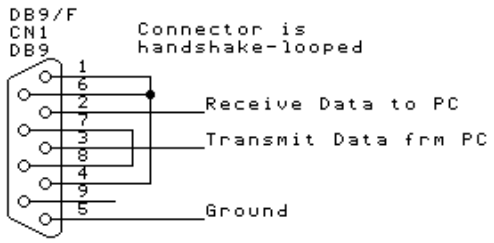
RS-232 output of weighing data
ASCII code 8 data bits
No Parity Baud rate from 600bps to 9600bps

9.2 RS-232 (9 pin connector)

The connection for RS232 is 3 wire. For some situations that cannot disable the use of CTS, RTS, DTR, DSR it is advisable to use a null modem cable or loop wired connector as shown below.

PT250 RS232 Connections			
Pin	**Use**	**Direction**	**Explanation**
2	RXD	Input	Receiving data
3	TXD	Output	Transmission data
5	GND	—	Signal ground

PC DB9 Connector



9.3 Normal Print Out

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

Normal Weighing Output for each Accumulation

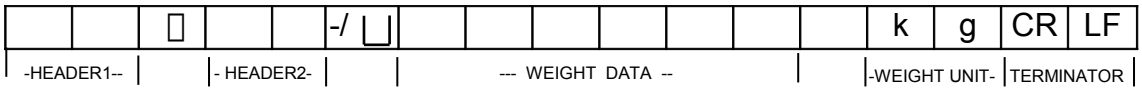
```
**************          A line of stars is shown
GS          2.6kg       GS for gross weight, NT for net weight and a unit of weight
<LF>
<LF>                    Includes 2 line feeds
```

Total Weight output from Accumulated Memory

```
***************         A line of stars is shown
TOTAL
No.         3           Number of weight samples in the accumulation memory
Total    0.447kg        Total Weight of the accumulation memory
<LF>
<LF>
```

9.4 Continuous Output Protocol

Con1: weighing mode



HEADER1: ST=STABLE␣US=UNSTABLE
HEADER2: NT=NET␣GS=GROSS

Con2:

Header0	Header1	Header2	Header3	Weight1	Weight2	Weight3	Weight4	Weight5	Weight6	Tare1	Tare2	Tare3	Tare4	Tare5	Tare6	Terminator1	Terminator2

Header0=02H.
Header1 follow decimal point.
Decimal point=0, header1=22Hex.
Decimal point=1, header1=23Hex.
Decimal point=2, header1=24Hex.
Decimal point=3, header1=25Hex.
Decimal point=4, header1=26Hex.
Header2 follow weigh status, default value=20Hex.
If in net mode (tare value not 0), header2=header2|01Hex.
If gross weight "-", header2=header2|02Hex.
If overload or gross weight "-", header2=header2|04Hex.
If unstable, header2=header2|08Hex.
If weighing unit=kg, header2=header2|10Hex
Header3 follow weighing unit.
If weighing unit=g, header3=21Hex.
If weighing unit=oz, header3=23Hex.
Weight1~weight6: weighing data.
Tare1~tare6: tare value.
Terminator1: 0DHex.
Terminator2: 0AHex.

Con3:

Header0	Header1	Weight1	Weight2	Weight3	Weight4	Weight5	Weight6	Weight7	Unit1	Unit2	Status	Terminator1	Terminator2

Header0=01H
Header1 follow weight "+" or "-"
When weight "+", header1="+", when weight "-", header="-"
Weight1~weight7: weight data (include decimal point)
Unit1~unit2: weight unit
Status: when stable, status=0, when unstable, status=1
Terminator1: 0DHex.
Terminator2: 0AHex.

9.5 Command Mode

A bi-directional Command mode is available when "P4 PrE" is set to "ASH" (ASK). Transmit the character from the table and the indicator will respond accordingly, CR or LF is not required. Three commands are available:

COMMAND	ACTION
R	Sends weighing data from the indicator to the PC
T	Tares the scale. Has the same effect as pressing the TARE key
Z	Zeros the scale. Has the same effect as pressing the ZERO key

10 ERROR MESSAGES

ERROR CODES	DESCRIPTION	RESOLUTION
- - - - -	Over range. The scale has a gross load that exceeds the maximum value.	Remove excessive weight from the scale. Remove excessive Tare. If the problem persists contact your dealer for assistance.
Err 1	N/A	N/A
Err 2	N/A	N/A
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 persist contact your dealer for assistance.
Err 6	A/D out of range.	Remove weight from the scale if overloaded, make sure the pan is attached. Indicates the load cell or the electronics may be faulty, possibly an overloaded load cell. If the problem persist contact your dealer

11 CALIBRATION SETTINGS

11.1 Calibration Methods

The scale can be calibrated by one of two methods, These are:

- A Single point calibration where the scale is calibrated at one known load
- A Linear Calibration where the scale is calibrated at three points through out the capacity, at one third of capacity, two thirds of capacity and at capacity.

11.2 Enter Calibration Mode

In normal weighing mode press the **UNIT** key and the **M+** key together, the display shows F0 H-L. Press the **TARE** key six times until the display shows ProG, press the **ZERO** key, display shows P in. In succession press the **G/N, UNIT** and **ZERO** key to enter setting mode, the display will show P1 rEF. Press the **TARE** key to select P2 CAL and press the **ZERO** key to enter, the display will show dEC 1. Press the **TARE** key three times until the display shows CAL ,press the **ZERO** key to enter. The display will show L inEAr or nonL in.

11.3 Normal Single Point Calibration

This process sets the calibration at a single point between zero and capacity and is suited where there are no linearity errors. Before starting this process ensure that sufficient known and accurate test weights are available to make up a calibration load. While any calibration load between 20d and capacity can be used, best results are obtained when the load is more than 50% of capacity and preferably close to capacity.

If required press the **TARE** key to select nonL in and press the **ZERO** key to enter, the display will show: UnLoAd. Remove any weight from the platform, wait for the Stable Indicator and press the **ZERO** key. The indicator will set the zero point and request a weight.

The display will show the last calibration weight used with the left hand digit flashing. If this is correct, continue by pressing the **ZERO** key. If it is not correct use the **M+, G/N**, **UNIT** & **TARE** keys to change the display to match the actual value of the calibration weight(s) that will be used. When it is correct press the **ZERO** key. Refer 5 DISPLAY, KEYS AND FUNCTIONS

The display will show LoAd. Place the calibration weight(s) on the scale, wait for the stable indication then press the **ZERO** key.

If the calibration is successful the display will show PASS. Remove the weights. The indicator will automatically restart and return to normal weighing.

11.4 Linear Calibration

This process sets the calibration at three equal points along the capacity of the scale and is used where a single point calibration does not produce a linear performance. Before starting this process ensure that sufficient known and accurate calibration weights are available to make up calibration loads equal to one third capacity, two thirds capacity and Capacity. The 1/3 and 2/3 capacity weights need to be accurately 1/3 and 2/3 the full capacity.

If required press the **TARE** key to select L inEAr. Press the **ZERO** key to enter, the display shows: LoAd 0. Remove any weight from the platform, wait for the stable indicator, and press the **ZERO** key. The indicator will set the zero point and request the first weight.

The display will show LoAd 1. Place a load equal to 1/3 of scale capacity on the scale platform, wait for the stable indication and press the **ZERO** key.

Then display will show LoAd 2. Place a load equal to 2/3 of scale capacity on the scale platform, wait for the stable indication and then press the **ZERO** key.

Then display will show LoAd 3. Place a load equal to full scale capacity on the scale platform, wait for the stable indication and then press the **ZERO** key.

The calibration is now complete. If successful the display will show PASS and restart, returning to normal weighing. Remove all weights during the restart process.

If the calibration is unsuccessful an error message will show. Repeat the calibration process as a disturbance may have prevented a successful calibration.

If the problem persist then contact your dealer.

After calibration the scale should be checked to verify the calibration and linearity is correct. If necessary repeat calibration.

Note that the STABLE indication must be on during the zero and calibration setting stages, calibration should not be performed if the reading is not stable.

12 TECHNICAL PARAMETERS

In normal weighing mode, press the **UNIT** and **M+** keys together, the display will show F0 H-L. Press the **TARE** key until display shows PrOG, press **ZERO** key, display shows PIn, You can press **G/N, UNIT** then **ZERO** keys in sequence to enter the setting mode, press the **TARE** key to select a parameter, press the **ZERO** key to enter or accept, press the **UNIT** key to escape.

FUNCTION	SUB-FUNCTION		DESCRIPTION
P1 rEF	AZn 0		This option is used to select the range of auto zero maintenance; Options : 0.5d, 1d, 2d, 4d
	0-AUtO		This option is used to select the auto zero range when the indicator is turned on. Options : 0%, 2%, 5%, 10%, 20%
	0- rAnG		This option is used to select the manual zero range available by pressing the **ZERO** key. Options: 2%, 4%, 10%, 20%, 50%, 100%
	SPEEd		Set ADC speed. SPd 7.5: 7.5 times per second SPd 15: 15 times per second SPd 30: 30 times per second SPd 60: 60 times per second Note 1: 15 times per second or 30 times per second are recommended.
P2 CAL	dECI		This option is used to set the display decimal places Options : 0, 0.0, 0.00, 0.000, 0.0000
	InC		This option is used to select the division size Options : 1, 2, 5, 10, 20, 50
	CAP		This display will show xxxxxx for setting the capacity. Refer 5
	CAL	L inEAr	Calibration: Detailed instructions in section 11 .
		nonL in	
P3 Pro	trI		This display will show xxxxxx for trimming the load cells. This applies a scaling factor to trim the indicator without recalibrating. If N1 is the current value of tri, calculate a new value N2 as follows; N2=N1(1+(K2-K1)/K2)) Where K1 = calibration weight, K2 = displayed weight
	COUnt		This display will show the internal count of the indicator.
	rESEt		This Option resets the indicator to the default factory setting. Press the **ZERO** key to activate this process.

P4 CHH	ModE 1	Standard weigh Scale mode.
	ModE 2	Animal scale mode Scale can lock on a reading when a little unstable
	ModE 3	Subtraction scale Mode (print out “-ve“ weight) M+ format: GROSS: 0.888KG gross for gross weight NET: 0.222KG net for net weight TARE: 0.666KG tare for tare weight
	ModE 4	Peak Hold mode