

Innovative Measurement Electronics



PT Ltd.

PT 410
Counting Scale
Operator Manual

Rev.6 101209

Thank you for purchasing a PT Electronic Digital Scale. In order to use the scale properly, please read this Manual carefully before use. If you have a problem concerning the scale, 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 the scale for use

1. Unpack the scale carefully and place it on a firm rigid vibration free table or bench.
2. The PT410 Series comes with a stainless steel platform packed separately. Place the platform in the locating holes on the top cover. Do not press with excessive force as this could damage the load cell inside.
3. Do not place in direct sunlight or near air conditioning vents as these can cause extremes of temperature.
4. Locate the scale away from sources of air currents occurring near open doors and ventilation outlets as this can affect weighing 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. Level the scale by adjusting the four feet. Raise the side or corner opposite the bubble until the bubble comes into the centre circle. Ensure all four of the feet touch the bench. If the scale rocks readjust the feet.
7. The Power switch is located under the right hand side towards the front of the scale. Once the scale has been switched on, it will go through a display test and then re-zero to be ready for use.
8. When the battery needs charging the LED to the right of the weight display will glow red. To recharge the battery, plug the power supply into the socket located under the scale next to the ON/OFF switch and connect to mains power. The recharge light will turn to yellow while it is being charged and turns to green when the battery is fully charged.
9. 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. This Scale has been calibrated for a gravity value (acceleration due to gravity) of $g=9.799 \text{ m/s}^2$. Discrepancies in readings at the location of installation could be due to a different gravity value and adjustment of the scale calibration may be needed.

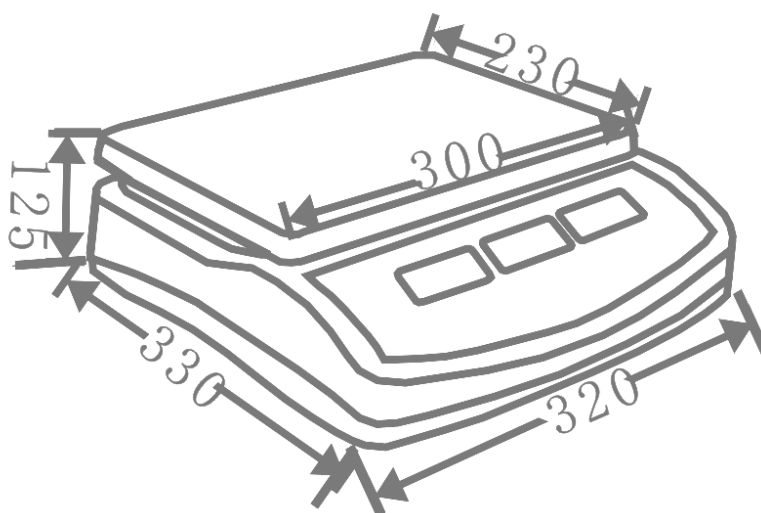
2.2 Care of your scale

1. Do not allow any liquids to get into or come into contact with the scale. If this happens, wipe the scale 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 scale should be kept clean. The scale 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 scale is not going to be used for some time, we recommend that it be cleaned and stored 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 SPECIFICATION

3.1 FEATURES

- The PT410 series of scales provides an accurate, fast and versatile series of counting and check-weighing scales.
- There are 4 models in this series, with capacities up to 30 kg.
- They all have stainless steel weighing platforms on an ABS base assembly.
- 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, audible alarm for pre-set weights, automatic tare, pre-set tare and an accumulation facility that allows the count to be stored and recalled as an accumulated total.



3.2 Specifications

Model	PT410-3kg	PT410-6kg	PT410-15kg	PT410-30kg
Maximum Capacity	3000 g	6000 g	15 kg	30 kg
Readability	0.05g	0.1g	0.2g	0.5g
Tare Range	-1 kg	-6 kg	-10 kg	-10 kg
Repeatability (Std Dev)	0.1 g	0.2 g	0.5 g	1 g
Linearity ±	0.2 g	0.4 g	1 g	2 g
Units of Measure	g		kg	

3.3 Common Specifications

Interface	RS-232 Output
Stabilisation Time	2 Seconds
Operating Temperature	0°C - 40°C (32°F - 104°F)
Power supply	9 VDC 800 mA from external power supply Internal rechargeable battery
Internal Counts	600,000
Calibration	With external weight
Display	3 x 6 digits LCD digital display
Housing Indicator	ABS Plastic, Stainless Steel pan
Pan size	225 x 300mm / 8.9 x 11.8"
Overall dimensions	320 x 340 x 125mm / 12.6 x 13.4 x 4.9"
Net weight	3.8kg / 8.4lb
Applications	Counting Scale
Functions	Weighing, parts counting, accumulating memory, preset count with alarm
Other Features and Specifications	Accuracy enhancement for parts counting, internal rechargeable battery (~70 hours operation)









3.4 Product Package

- One Scale.
- One user manual.
- One power adaptor.
- Please contact your supplier if any of the items mentioned above are missing.

3.5 Power Source

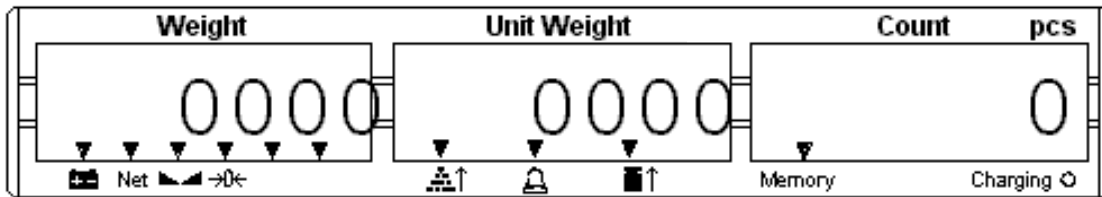
- The internal rechargeable battery
- 9V DC power external adaptor (115 or 230vAC 50/60hz 10 watts)

4 KEYS AND FUNCTIONS

- **0-9, .**
Numeric entry keys, used to manually enter a value for tare weights, unit weight, and sample size.
- **CE C**
Used to clear the unit weight or an erroneous entry.
- **Zero** 
Set the zero point for all subsequent weighing. The display shows zero.
- **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. This is the net weight. Entering a value using the keypad will store that value as the tare value.
- **M+** 
Add the current count to the accumulator. Up to 99 values or full capacity of the weight display can be added.
- **MR** 
To recall the accumulator memory.
- **Smpl** 
Used to input the number of items in a sample.
- **Unit Wt** 
Used to enter the weight of a sample manually.
- **PST or Alr** 
To set the upper limit for the number of items counted. When this upper limit is exceeded the scale will sound the beeper.
- **Print** or  **send**
To print the results to a PC or printer using the optional RS-232 interface

5 DISPLAY

The scales have three display windows- **Weight**, **Unit Weight** and **Count**.



5.1 Weight Window

This consists of a 6 digit display to indicate the weight on the scale. An arrow above the symbols will indicate the following:

- Low battery,
- Net Weight Display, "Net"
- Stability indicator, "Stable"
- Zero indicator, "Zero"

5.2 Unit Weight Window

- This display will show the unit weight of a sample. This value is either input by the user or computed by the scale. The unit of measure is grams on all scales.
- Indicators will show when the scale has determined that there is an insufficient number of samples to accurately determine the count: "Sample" or symbol.
- When the unit weight is not large enough to determine an accurate count, "U. Weight" or symbol.
- In both cases the scale continues to operate and the indications are to alert the user to a potential problem.

5.3 Count Window

- This display will show the number of items on the scale or the value of the accumulated count. See OPERATION section.
- Indicators will show when a value has been entered into memory when the arrow above the "Memory" legend is on.
- Just under the "Count" display is an LED to indicate the status of the battery charging. When the scale is plugged into the main power the internal battery will be charged. If the LED is green, the battery has a full charge. If it is red, the battery requires further charging and yellow indicates the battery is being charged.

6 OPERATION

6.1 Zero 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 Weight display will show the indicator for zero.
- The scale has an automatic rezeroing function to account for minor drifting or accumulation of material on the platform. However you may need to press **ZERO** to rezero the scale if small amounts of weight are shown when the platform is empty.

6.2 Tare

There are two methods to enter a tare value. The first uses the weight on the platform and the second uses a value input by the user.

6.3 Normal Tare

- If necessary, zero the scale by pressing the **ZERO** key. The zero indicator 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 "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 a negative value will be shown. 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. 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.

6.4 Digital Tare

- This method allows you to enter a value for the tare weight from the keypad. This is useful if all containers are the same or if the container is already full but the net weight is required and the tare weight of the container is known.
- Remove all weight from the platform, press the **ZERO** key to zero the display.
- Enter the value for the Tare weight using the keypad, press **TARE** to store the tare value. The weight will show a negative value equal to the tare.
- Place the container on the platform. The display will then show the weight of the container minus the tare weight. Then when the full container is put on the platform the tare value will be subtracted from the gross weight displaying only the net weight of the contents.
- If the tare value keyed into the scale is not rounded to the same resolution as the scale, the scale will round the tare value to the nearest value possible. For example if a tare value of 10.3g is entered onto the 6Kg/0.5g scale then the display will show -10.5g.

7 COUNTING

7.1 Average Unit Weight

In order to do parts counting it is necessary to know the average unit weight of the items to be counted. This can be done by weighing a known number of the items and letting the scale determine the average unit weight or by manually inputting a known unit weight using the keypad.

7.2 Weighing a Sample to Determine Unit Weight

- To determine the average weight of the items to be counted it will be necessary to place a known quantity of the items on the scale and then key in the quantity being weighed. The scale will then divide the total weight by the number of samples and display the average unit weight.
- If necessary, zero the scale by pressing the **ZERO** key. If a container is to be used, place the container on the scale and press the **Tare** key.
- Place a known quantity of items on the scale. After the weight display is stable enter the quantity of items using the numeric keys followed by **SMPL** key. The number of units will be displayed on the "Quantity" display and the computed average weight will be shown on the "Unit Weight" display.
- As more items are added to the scale, the weight and the quantity will increase.
- If the scale is not stable, the calculation will not be completed. If the weight is below zero, the quantity display will show negative count.

7.3 Entering a Known Unit Weight

- If the unit weight is already known then it is possible to enter that value using the keypad.
- Enter the value of the unit weight using the numeric keys then press the **UNIT WT** key. The "Unit Weight " display will show the value as it was entered.
- The sample is then added to the scale and the weight will be displayed as well as the quantity based upon the keyed in unit weight.

7.4 Parts Counting

- After the unit weight has been determined or entered it is possible to use the scale for parts counting. The scale can be tared to account for package weight as discussed in an earlier section.
- After the scale is tared then the items to be counted are added and the "Quantity" display will show the number of items computed using the weight and the unit weight.
- It is possible to increase the accuracy of the unit weight at any time during the counting process by entering the count displayed then pressing the **SMPL** key. You must be certain the quantity displayed matches the quantity on the scale before pressing the key. The unit weight will be adjusted based upon a larger sample quantity. This will give greater accuracy when counting larger sample sizes.

7.5 Automatic Part Weight Updates

- The scales will automatically update the unit weight when a sample equal to less than the count of the initial sample already on the platform is added to that initial sample. A beep will be heard when the value is updated.

- This process has some limitations when there are significant variations in unit weight between individual items. It is prudent to check the quantity is correct when the unit weight has been updated automatically.
- This feature is turned off as soon as the number of items added exceeds the count used as an initial sample.

7.6 Checking the Alarm

- To check the alarm mode press and hold **C** key this will show **check net** which is the weight check alarm. Press and hold the **C** key again and it will show **check pcs** which is the counting alarm. Press and hold again this will show **check off** alarm function off.
- The alarm can be set to **on** for high weight / count , beeps when weight or count is > high set limit. The alarm can be set to **low** for low weight / count , beeps when weight or count is < than low set limit. The alarm can be set to **OK** for weight / count between the high/low range , beeps when weight or count is between the high & low set limits. The alarm can be set to **NG** for weight / count that is higher or lower than the set limits, beeps when weight or count is > or < than the set limits. To change this setting refer to F10 beep in Section 10 Parameters.

7.7 Count Preset or Check-weighing

- This scale can be used to count or check-weigh. When this feature is active an alarm will sound whenever the count or weight equals or exceeds a preset value.
- To set the Hi /Low limits
Press **PST** key display will show **Hi cnt** Enter in high limit for counting alarm press **TARE** key to confirm. Display now shows **Lo cnt** Enter in low count for counting alarm press **TARE** key to confirm. Display now shows **Hi net** Enter in high limit for weighing alarm press **TARE** key to confirm. Display now shows **Lo net** Enter in low limit for weighing alarm press **TARE** key to confirm. Display goes back to normal weighing mode.
- To clear the value from memory, and disable the check-weighing feature, enter the value "0" into the memory.

7.8 Manual Accumulation

- The values (weight and count) shown on the display can be added to the totals in the accumulator by pressing the **M+** key. The "Weight " display will show the total weight, the "Count" display will show the total accumulated count and the "Unit Weight" display shows the number of times items have been added to the accumulation memory. These accumulated totals will be displayed for 2 seconds before returning to normal.
- The scale must return to zero or a negative number before another sample can be added to the memory.
- More product can then be added and the **M+** key pressed again. This can continue for up to 99 entries, or until the capacity weight display is exceeded.
- The total stored can be recalled at any time by press the **MR** key. The totals will be displayed for 2 seconds.
- To clear the memory press **MR** to recall the totals from memory and then press the **CE** key to clear all values from memory.

7.9 Automatic Accumulated Totals

- The scale can be set to automatically accumulate totals when a weight is placed on the scale. This eliminates the need to press the **M+** key to store values into memory. Each value will be stored after the scale returns to zero. However the **M+** key is still active and can be pressed to store any value immediately. As the scale is programmed to store the weight once only, that value will not be stored a second time when the scale returns to zero.
- See the PARAMETERS Section for details of how to enable Automatic Accumulation

8 BATTERY OPERATION

The scales can be operated from the battery if desired. The battery life is approximately 100 hours.

When the battery needs charging the arrow above the low battery symbol under the weight display will turn on. The battery should be charged as soon as the arrow above the symbol is on. The scale will still operate for about 10 hours after which it will automatically switch off to protect the battery.

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

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

An LED located just under the quantity display indicates the status of battery charging. When the scale is plugged into the mains power the internal battery will be charged. If the LED is green the battery has a full charge. If it is Red the battery is nearly discharged and yellow indicates the battery is being charged.

The battery is shipped partially charged. To maximise its life and performance it should be fully charged before use. Many batteries of this type show an improved performance if they are subject to full charge and discharge to low battery warning for the first few cycles.

Batteries do not last forever and will eventually hold less and less charge or will take longer to come to full charge. The battery should be replaced once either of these conditions becomes unacceptable.

10 PARAMETERS

The parameters can be set from a secure menu. This is done by entering a password number when requested.

To enter the parameter menus press the **TARE** key during the initial counting of the display after power turned on. The Weight Display will show "PIn" requesting the password number to be entered.

The default password is "0000" but other numbers can be set using the parameter menus. Press the "**O**" key four times. The display will show "PIn- - -", Press the **TARE** key.

The Parameter menu has 11 functions that can be accessed using the **Unit Wt.** key to cycle through the choices. The Weight Display will show the name of the functions. To enter a function press the **TARE** key. At any time press the **ZERO** key to return to weighing.

Weight Display	Description
F1 CAL	See the calibration section for details
F2 dl	Set the scale increment. Press the Unit Wt. key to cycle through the options. Press TARE to accept the selection.
F3 Cnt	Displays the A/D counts. Press Tare to return to menu.
F4 Au	Press the Unit Wt. key to show the options. Select automatic accumulation (Au ON) when the scale becomes stable, or Manual accumulation (Au OFF), when the user must press the M+ key to accumulate data. Also you can set this parameter as P CONT, RS-2323 will send data continuously.
F5 AZN	Set the auto zero range, Press the Unit Wt. key to cycle through the options(0.5d, 1d, 2d, 4d). Press TARE to accept the selection. ²
F6 PIn	Set a new password number. Display will show "P1 " Enter the new password number then press the TARE key. Display will change to "P2 ", Enter the password again and press TARE again. The display will show "donE" to show the new password has been accepted. Record the new password number in a secure place.
F7 SPD	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
F8 Off	Set auto power off time. Option : 0, 3, 5, 15, 30 minutes
F9 Grv	Set the gravity
F10 Bep	Set Beep mode. Options OK : beep when the value is in the limit range Low: beep when the value is lower than the limit range High: beep when the value is higher than the limit range NG: beep when the value is outside the limit range
F11 Rst	Reset to Factory default parameters.

11 ERROR CODES

During the initial power-on testing or during operation it is possible the scale may show an error message. The meaning of the error messages is described below.

If an error message is shown repeat the procedure that caused the message, turning the balance on, calibration or other functions. If the error message still is shown then contact your dealer for further support.

ERROR CODE	DESCRIPTION	POSSIBLE CAUSES
Err 4	Initial Zero is greater than allowed (4% of maximum capacity) when power is turned on or when the ZERO/ENTER key is pressed,	There is weight on the pan when turning the scale on. The Scale has been zeroed with Excessive weight on the pan. Improper calibration of the scale. Damaged load cell. Damaged Electronics.
Err 5	Keyboard Error.	Improper operation of the scale.
Err 6	A/D count is not correct for Zero when the scale is turned on.	Platform not installed. The Load cell or cable is damaged. The Electronics are faulty.
Err 9	Unstable, can't return to zero	If the internal count is not stable at power on the display will show "Err 9". Please check the platform and load cell to ensure there is no interference. If the problem persists please contact your dealer for assistance.