Avery Weigh-Tronix

PC-802 Counting Scale User's Manual

UNITED STATES

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CANADA

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la Class A prescrites dans le Reglement sur le brouillage radioelectrique que edicte par le ministere des Communications du Canada.

CAUTION

Risk of electrical shock. Do not remove cover. No user serviceable parts inside. Refer servicing to qualified service personnel.

Avery Weigh-Tronix reserves the right to change specifications at any time.

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Specifications

Capacities and Resolutions:

Capacity	Normal Resolution	Expanded Resolution
10 lb	0.001 lb	0.00005 lb
50 lb	0.005 lb	0.0002 lb
100 lb	0.01 lb	0.0005 lb
5 kg	0.005 kg	0.00002 kg
25 kg	0.002 kg	0.0001 kg
50 kg	0.005 kg	0.0002 kg

Overcapacity Limits: Overcapacity indication (upper dashes) will occur at 9 divisions over rated capacity or 102% of full scale capacity.

Internal Resolution: 1 part in 2,000,000 (QDT™)

Filters: Standard digital software filtering

Display: Seven digits of seven-segment, high-contrast black LCD, .5" (1.3 cm) high with blue electro-luminescent backlight

Power: 15VDC at 300mA from a 117VAC 60Hz inline transformer
Optional 12VDC lead acid battery

Output: Bidirectional RS-232 output with selectable baud rate

Operating environment: 14° to 104° F (-10° to 40° C)
10 to 90% relative humidity, non-condensing

Introduction

This manual tells you how to operate the PC-802 high precision counting scale. You can configure your scale for different options and sampling methods. See the *PC-802 Service Manual* for details on configuration and calibration. This scale also has an RS-232 I/O channel for communication with appropriate remote devices.

Keyboard and Display

Figure 1 shows the keyboard and display of the PC-802. The keyboard has five keys:

- ZERO
- TARE
- SAMPLE
- PRINT
- COUNT/WEIGH

The display contains seven digits and has four triangular annunciators:

- COUNT
- WEIGHT
- lb
- kg

and four indicators:

- ZERO
- TARE
- STABLE
- LO BAT

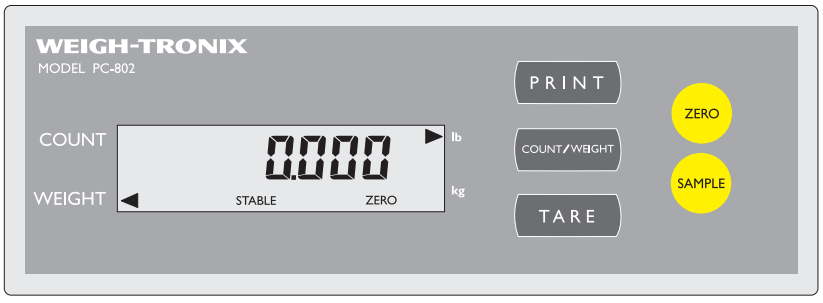


Figure 1
PC-802 Keyboard and Display

Key Functions

ZERO	Zeroes the scale weight or count.
TARE	Tares the weight on the scale.
SAMPLE	Used to select a sample size and to initiate the calculation of sample piece weight.
PRINT	Sends data to RS-232 device.
COUNT/WEIGHT	Toggles between displaying weight and count.

Scale Setup and Operation

Scale Setup

Unpacking the scale

The PC-802 comes with the AC transformer in place beneath the scale. Plug the unit into a grounded 120VAC source.

Battery power option

A PC-802 with the backlight enabled and a fully charged battery may be expected to last 12 hours before recharging is necessary. With the backlight disabled the battery will last approximately 24 hours.

If you are going to use the optional DC battery power, remove the transformer from beneath the scale, place the battery in its place with padding between the battery and the scale base and around the battery. Secure the battery with the restraining strap. Plug the battery cable into the receptacle on the back of the scale.

The battery can be recharged in place by connecting the transformer to a power source and to the scale. The battery will recharge while the scale is being powered by the transformer.

Press any key on the front panel to turn the scale on when powered by the battery. You can set the battery option to shutoff the scale automatically after a period of time. See the *Service Manual* for this information.

Installing the scale

Important!

If the scale has been recalibrated, reset scale resolution to your needs. Calibration automatically sets resolution to 10000 divisions.

Place the scale on a stable, level surface out of the way of air currents. Use the adjustable feet to level the scale. Be sure the scale does not rock back and forth. Lock the feet in position with the locking nuts.

Operation as a Scale

The PC-802 can be used as a bench scale or as a counting scale. The annunciators indicate when you are in the weight mode or count mode and when the unit is configured for pounds or kilograms.

Indicators let you know when the scale is stable (no motion), when the scale is at zero and when a tare is in effect.

Follow these instructions for operating the PC-802 as a scale:

The scale will always power up in normal weighing mode.

1. For AC powered models, plug the unit into a grounded 120VAC source. . .	
For battery powered models, press any key. . .	The scale performs an internal diagnostics test, then displays the weight in the weigh mode. The scale is in the weigh mode when the *WEIGHT* annunciator is lit.
2. Zero the scale by pressing the **ZERO** key. . .	The *ZERO* indicator illuminates.
3. For gross weighing, place the object to be weighed on the scale. . .	Gross weight is displayed.
4. For net weighing, place object to be tared on the scale and press the **TARE** key. . .	The *TARE* annunciator illuminates, and zero weight is displayed.
5. Place material to be weighed on the scale.	Net weight of material is displayed.
6. If your scale is hooked up to a printer, press **PRINT** to print a weight.	Weight information is printed.

Operation as a Counting Scale

The minimum sample size is selectable during configuration.

Bulk Sampling

There are two sampling methods which are selectable during configuration—bulk sampling and dribble sampling. If you use the bulk sampling method, you must place all the sample parts on the scale at the same time. If you use the dribble method, you may place the sample parts onto the scale a few at a time. The two methods are covered below.

1. In weigh or count mode, repeatedly press the **SAMPLE** key until the sample size you want is displayed. . .

   Your display may show ***ZEro*** briefly. This occurs if it takes time for the scale to find the Zero Reference. Your display may show ***no ZEro*** briefly if the scale cannot find a Zero Reference. Check to be sure the scale is stable and retry step #1 if this occurs. If all is OK, you will see the following:

   Add 10 is displayed. ***10*** is the sample size in this example. The minimum sample size can be configured to be 1, 2 , 5, 10, 25, 50 or 100. See the *PC-802 Service Manual* for configuration instructions.

Important!
If the scale has been recalibrated, reset scale resolution to your needs. Calibration automatically sets resolution to 10000 divisions.

If there is no piece weight, the scale will not go into count mode when you press the **COUNT/WEIGHT** *key.*

2. Place 10 sample parts on the scale at the same time. . .

   StAndbY is displayed while the unit computes the weight of the sample and displays the count. If the scale determines that the sample size meets the minimum accuracy requirement, ***10*** will be displayed.

   If the scale determines the sample size does not meet the minimum accuracy requirement, the display will prompt you to ***Add XXX*** more parts. When prompting you, ***Add*** will flash.

When you press the SAMPLE key, the PC-802 performs an autozero operation. So, if you have a container on the scale and press the SAMPLE key, the container weight will be zeroed and when you place the parts to be counted on the scale, only the weight and count of the parts will be computed.

3. Add the requested samples to those already on the scale. Wait for the scale to stabilize, then press the **SAMPLE** key. . .

   StAndbY is displayed while the scale updates the piece weight. If the sample meets the minimum accuracy, the count will be displayed.

Press the **COUNT/WEIGHT** key to toggle between count and weigh mode. You may tare a container while in either mode.

Dribble Sampling

Important!
If the scale has been recalibrated, reset scale resolution to your needs. Calibration automatically sets resolution to 10000 divisions.

1. From weigh or count mode, repeatedly press the **SAMPLE** key until the sample size you want is displayed. . .

Your display may show ***ZEro*** briefly. This occurs if it takes time for the scale to find the Zero Reference. Your display may show ***no ZEro*** briefly if the scale can not find a Zero Reference. Check to be sure the scale is stable and retry step #1 if this occurs. If all is OK, you will see the following:

Add 10 is displayed. ***10*** is the sample size in this example. The minimum sample size can be configured to be 1, 2 , 5, 10, 25, 50 or 100. See the *Service Manual* for configuration instructions.

2. Place 10 sample parts on the scale one at a time or all at once. Wait for the scale to stabilize, then press the **SAMPLE** key. . .

Add will flash until the **SAMPLE** key is pressed, then ***StAndbY*** is displayed while the unit computes the weight of the sample and displays the count.

If the scale determines that the sample size meets the minimum accuracy requirement, ***10*** will be displayed.

If the scale determines the sample size does not meet the minimum accuracy requirement, the display will prompt you to ***Add XXX*** more parts. When prompting you, ***Add*** will flash.

3. Add the requested samples one at a time or all at once to those already on the scale. Wait for the scale to stabilize and press the **SAMPLE** key. . .

StAndbY is displayed while the scale updates the piece weight. If the sample meets the minimum accuracy, the count will be displayed.

Serial Communications

Cable Pinouts

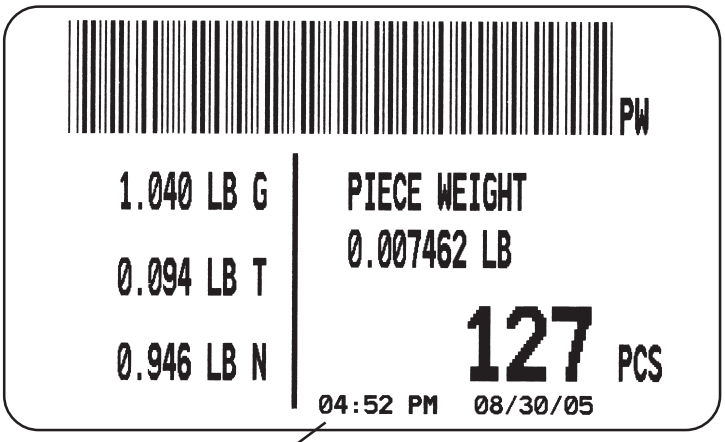
A straight through cable (1 to 1, 2 to 2, etc.) can be used from a 9-pin computer serial port to connect this scale.

Pinout assignments for the serial communication are shown below.

9-pin Female Scale		
Pin	**Name**	**Direction**
2	TXD	OUT
3	RXD	IN
5	SG	-

Zebra 2443 / Orion Printer Fixed Format Label Output

You may choose to print an Orion printer bar code label. This printer has one format shown below. It can be chosen through the configuration menu explained in the Service Manual. The active unit of measure will be printed. This example shows the weight in LB and the time and date line. If your printer is not equipped with time and date capability, the time and date line will not appear on the label.



Time and date line only appear if the printer has time and date capability.

Preset Print Formats

There are eight preset serial print formats. Choose the one you want to use during configuration of the scale. See the *Service Manual* for configuration instructions. The formats are described below.

Abbreviations:
CR = carriage return
LF = line feed
SP = space
U = units character
W = weight character
C = count character
T = tare character
G = gross weight character
P = piece weight character
I = weight type identifier (G for gross, T for tare and N for net)

If the scale is in count mode, displayed weight formats will send weight, not count.

Format 0

Net weight only:

WWWW.WW<CR><LF>

Format 1

Net weight with units:

WWWW.WW<SP>UU<CR><LF>

Format 2

GTN with units:

'G'<SP>GGGG.GG<SP>UU<CR><LF>

'T'<SP>TTTT.TT<SP>UU<CR><LF>

'N'<SP>WWWW.WW<SP>UU<CR><LF>

Format 3

Displayed weight with identifier:

I<SP>WWWW.WW<CR><LF>

Format 4

In Count Mode: **N<SP>CCCC<SP>PCS<CR><LF>**

In Weigh Mode: **I<SP>WWWW.WW<SP>UU<CR><LF>**

Format 5

Net weight with units, count and piece weight:

Net = WWWW.WW<SP>UU<CR><LF> (Net = or Gross =)

Count = CCCCCCC<CR><LF>

Piece Wt = .PPPPPP<SP>UU<CR><LF>

Format 6

Fixed length (nine digits) displayed weight with units.

sxxxxx.xx uu<CR> (**s** = positive (a space) or negative (-) weight)

Format 7

COUNT: CCCC<SP>PCS<CR><LF>

Computer Protocol

The scale's RS-232 bidirectional communication works in a master/slave protocol. A computer or master sends a command code to the scale (slave) which will return a response to the master device or perform a scale function. Commands to the scale are in uppercase, terminated with a carriage return. Scale responses begin with the lowercase equivalent of the command code.

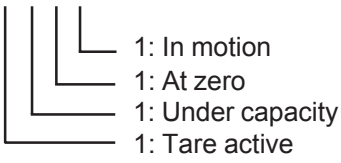
COMMAND	RESPONSE	DESCRIPTION
CA<CR>	none	Clear Sample
CC<CR>	cc_xxxxx<CR>	Request piece count
CP<CR>	cp_x.xxxxxxuu<CR>	Request piece weight value
CM<CR>	none	Switch to count mode
Dlxxxxxxxx<CR>	none	Display Message xxxx (message is 8 characters max)
IC<CR>	none	Reset Scale (warm start)
PWx.xxxxx_uu<CR>	none	Loads x.xxxxx as piece weight
TR<CR>	tr_ _ _ _x.xxxuu<CR>	Request tare value
TZ<CR>	none	Clear the current tare
Txxxx.x_uu<CR>	none	Loads xxxx.x as tare
WD<CR>	wd_ _ _xx.xxx<CR>	Request net weight
WE<CR>	we_ _ _xx.xxxuu<CR>	Request net weight with units
W<CR>	we_ _ _ _x.xxxuuHML<CR>	Request net weight with units and status
WG<CR>	wg_ _ _xx.xxxuu<CR>	Request gross weight with units
WM<CR>	none	Switch to weight mode
WS<CR>	ws_HML<CR>	Request scale status
WZ<CR>	none	Zero the scale

Legend:

1) "_" ..... represents the ASCII space character
2) "u" ..... represents the units of measure character(s):
   ..... "LB" for pounds
   ..... "KG" for kilograms
   ..... "G" for grams
3) <CR> .. represents the ASCII carriage return
4) HML .... represents three bytes of scale status information as described on the next page.
5) Value entered is assumed to be in same units of measure as what the scale is currently in.
6) Display messages are limited to seven characters.

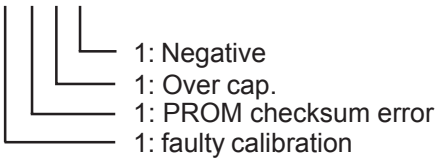
Scale Status Byte H:

BIT: 7 6 5 4 3 2 1 0
0 0 1 1 X X X X



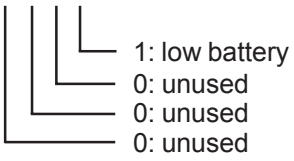
Scale Status Byte M:

BIT: 7 6 5 4 3 2 1 0
0 0 1 1 X X X X



Scale Status Byte L:

BIT: 7 6 5 4 3 2 1 0
0 0 1 1 0 0 0 X



Error Messages

The error messages you might see on the display are shown below.

rA Err	RAM error - press the **TARE** key to acknowledge the error
ro Err	ROM error - press the **TARE** key to acknowledge the error
EPr Err	EEPROM error - press the **TARE** key to acknowledge the error
CAL Err	Calibration error - perform calibration procedure to correct
-------	Middles dashes on power up indicate the scale was not stable or there was too much weight on the scale. Remove the weight or the cause of unstable weight and press the **ZERO** key. If condition persists try relocating scale and/or power down and retry. If condition continues, contact your Avery Weigh-Tronix representative.

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