PENNSYLVANIA

5600 Weigh & Count Meter

SET-UP, OPERATIONS and CALIBRATION Manual

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INTRODUCTION

The Pennsylvania Model 5600 meter is a high resolution, multi-functional weigh/count digital indicator. Though it is simple and easy to operate its standard bi-directional serial ASCII interface and 5 volt (TTL level) setpoints make it a perfect chioce when creating a complete sale system.

The serial ASCII interface may be easily connected to a printer, computer, or programmable controller. The format for the ASCII output may be selected during programming or sepcific information may be requested through the use of a computer or terminal.

Setpoint values are entered through the front keypad and can be set to respond to either count or weight. An optional Remote Relay box (Pennsylvania P/N 49538-ITEM) is available for directly operating process control equipment.

A large, easy to read, vacuum fluorescent display and two lines of alpha-numeric characters assure maximum readability. The "intelligent" display prompts the user through the steps of the weighing and counting processes to eliminate guesswork and increase accuracy.

The Model 5600 can do simple one-switch counting tasks, as well as being able to accommodate sophisticated keyboard entry of piece weight, digital tare, and selectable sample sizes.

One part in 520,000 internal counts ensures the highest counting accuracy available anywhere.

The front panel MODE switch toggles between GROSS and NET weight, with TARE displayed as the second line on the display, when the meter is in WEIGH ONLY mode. The MODE switch toggles between GROSS, NET, and PIECES when the meter is calibrated for WEIGH AND COUNT mode.

The Model 5600 meter features selectable Percent of Accuracy/Percent of Error of Count. Displayed as a second line in the display during counting operations and selected during calibration, Percent of Accuracy/Percent of Error of Count monitors count accuracy levels.

Available in both AC and AC/DC versions, the 5600 AC provides standard AC power line operation, while the AC/DC provides both battery (DC) and AC power line operation.

All engineering and manufacturing procedures associated with the creation and production of the Pennsylvania Model 5600 were done with pride and the Pennsylvania commitment to quality in our Leola, Pennsylvania, offices and factory.

The Model 5600 meter is guaranteed under the Pennsylvania Scale Company two-year warranty plan. Contact your Pennsylvania distributor for more information concerning the terms and conditions of the warranty.

UNPACKING AND SET-UP INSTRUCTIONS

The Model 5600 Weigh/Count Meter has been packaged for shipment to ensure safe, damage-free arrival. Carefully unpack all items from the shipping container; retain the original packaging materials in case reshipment is required.

SHIPMENT CAUTION: When shipping the Model 5600 meter with a DC option installed, ALWAYS DISCONNECT THE BATTERY. Pennsylvania Scale Company is not responsible for a battery that has been damaged by deep discharge and will not replace it free of charge. The battery is NOT covered by the standard Pennsylvania Scale Company Warranty.

SET-UP

1. Carefully remove the unit from its shipping container and set it on a flat, steady work surface.

   TO PROTECT THE WARRANTY, FILL OUT AND RETURN THE WARRANTY CARD AND ELECTRONIC SCALE CONDITION REPORT.

2. To activate the meter, proceed as follows:

   a. AC UNITS - Unwrap the line cord and attach the connector end to the receptacle on the bottom panel of the meter. Connect the plug to a grounded outlet/receptacle. THERE IS NO ON/OFF SWITCH ON AC UNITS.

   b. AC/DC UNITS - AC/DC units are shipped with the battery disconnected inside the meter. Connect the battery by plugging the battery connector into the mating receptacle inside the meter. Model 5600 meters with factory installed DC options will have an ON/OFF switch. Plug the line cord into the receptacle on the side of the meter and flip the ON/Off switch momentarily to the ON position for AC operation. DC operation requires only that the switch be turned ON.

CHARGING THE BATTERY

Connect the AC line cord to the meter and to a grounded outlet/receptacle. The battery is charging whenever the scale is plugged in, whether it is on or off.

NOTE: The meter may be used when the battery is charging.

To fully charge the battery, leave the system in the charge condition overnight or until the annunciator illuminates on the lower left side of the display.

NOTE: The annunciator indicates that the battery is fully charged and maintained in a float-charge state.

Charging time is approximately nine hours (seven hours typical). The meter can be left in a fully charged condition until needed for portable operation.

WARNING: Battery life is greatly decreased when the battery is left in a discharged state for any length of time.

3. For both AC and AC/DC units:

   a. Turn on the meter and allow it to warm up for 20 - 30 minutes. Once turned on, the following occurs:

   b. The meter counts down from 9 to 0 while displaying the message "Performing Diagnostic."

   c. The system executes a zero operation (if enabled during calibration).

LOAD CELL BASE INTERFACE

The standard Model 5600 meter is shipped with a CPC style male connector, which may be found on the bottom of the meter. All Pennsylvania Scale non-washdown bases are shipped with the proper mating connector and need only be plugged into the standard 5600 meter. The Stainless Steel 5600 meter does not have an external connector but is provided with a water tight heyco bushing in-which to feed the base cable.

Follow the load cell interface wiring table below as a guide to connect a base to the Stainless Steel meter.

A four-wire hook-up may be used but is not recommended as errors may be introduced by the change in resistance of excitation wires. If a four-wire hook-up must be used, short pin 6 to 7 on the connector.

LOAD CELL INTERFACE WIRING TABLE

Connector Pin #	Wire Color *	Function
1	Green	+ Sig
2	White	- Sig
3	Shield	
4	Black	- Sense
5	Blue	- Excitation
6	Red	+ Sense
7	Orange or Brown	+ Excitation

* Note the colors listed are for Pennsylvania Scale bases.

Set jumpers J11 and J12 to the appropriate positions. For 1mv/v bases, use 1mv/v position. For 2 and 3mv/v bases, use 2mv/v position.

ATTACHING NON-PENNSYLVANIA BASES

If the 5600 AC meter is to be matched to a base of some other manufacture a mating CPC connector will have to be ordered. Order Pennsylvania part number 48445. CPC connector wiring assignments are as follows:

Connector Pin #	Function
1	+ Signal
2	- Signal
3	Ground
4	Key
5	- Sense
6	- Excitation
7	+ Sense
8	+ Excitation

NOTE: If a four wire hook up is to be used the + Sense and + Excitation must be shorted together.

UNIQUE FEATURES OF THE PENNSYLVANIA MODEL 5600 METER

WEIGH ONLY MODE / WEIGH & COUNT MODE

The 5600 meter can operate either as a WEIGH ONLY meter or a WEIGH AND COUNT meter. The method of operation is selected during calibration.

When the meter is calibrated for WEIGH ONLY, the MODE switch toggles the display between GROSS and NET weights. When a tare value is entered into the scale, the tare value is constantly shown as a second line on the display. Blue vinyl key covers are provided with each meter so that the keys used in counting operations can be covered (SET SAMPLE and PIECE WEIGHT.) These keys are disabled in the "weigh only" mode.

When the meter is calibrated for WEIGH AND COUNT, the MODE switch toggles between three different displays: (1) number of pieces (count) on the first line of the display and % of Error / % of Accuracy on the second line, (2) the Gross Weight, and (3) the Net weight.

THREE-SPEED, SELECTABLE FILTER

The 5600 Meter has a three speed filter; select the appropriate filtering speed -- slow, medium, or fast -- for your application during calibration. A slower filtering speed may be desirable to regulate meter response time in weighing applications where unstable items are being placed on the platform. In addition, filtering speed can help to minimize the effects of industrial noise and vibrations on weighing applications.

"SALES & SERVICE" MESSAGE

After performing its diagnostic countdown, a 10 second message appears on the display to indicate the phone number a customer should call for sales and service. This number is entered during calibration.

"FAST CAL"

"FAST CAL," one of several ways the Model 5600 meter can be calibrated, is for when the Model 5600 meter will be used as a truck scale meter. "FAST CAL" allows a single weight to be used for calibration and eliminates the need for potentiometer adjustments; weight values can be entered through the keypad.

5600 TEN-TARE FEATURE

The 5600 can be configured to allow keyboard entry of ten tare weights. This feature is selected during calibration in the "MANUAL CAL" mode, under the step labeled "TARE TYPE". Selecting "MULTIPLE" will enable this function. Operation of this feature is slightly different between the "Weigh Only" and the "Weigh & Count" modes.

WEIGH ONLY MODE

Tare weights are entered into the system as follows:

1. Press the "DIGITAL TARE" switch. The top line of the display will indicate "Digital Tare X" (X is one of the ten tares, 0-9). The bottom line will show either zero, of a previously entered tare weight. (Keyed in tare weights will appear on this display). Repeated pressing of the "Digital Tare" switch will successively display the ten tare weights.

NOTE: When the 5600 is calibrated for "Weigh Only" operation, the displayed tare and keyed in tares will be rounded to the current display resolution, Also, any tares entered that exceed full capacity will be rejected. This is required by HB-44.

2. Key in the tare weight using the numeric keypad. If an incorrect tare weight is entered, press the ".\CLEAR" key. If no decimal point was entered, press it twice. Key in the new value.

3. Press the "ENTER" switch. The bottom display will show the tare weight, and the top display will show the net weight. The TARE annunciator will also be lit. The scale is now ready for operation. Pressing the "MODE" switch will scroll between gross and net weight on the top display.

4. To change a tare weight, repeat steps 1-3.

WEIGHT & COUNT MODE

1. Press the "Digital Tare" switch. The top line of the display will indicate "Digital Tare X" (X is one of the ten tares, 0-9). The bottom line will show either zero, or a previously entered tare weight. (Keyed in tare weights will appear on this display). Repeated pressing of the "DIGITAL TARE" switch will successively display the ten tare weights.

NOTE: When the 5600 is calibrated for "Weigh & Count" operation, the displayed tare and keyed in tare weights are NOT rounded to the display resolution. This will eliminate the possibility of losing a few pieces of your count, due to the rounding action of the software.

2. Key in the tare weight using the numeric keypad. If an incorrect tare weight is entered, press the ".\CLEAR" key. If no decimal point was entered, press it twice. Key in the new value.

3. Press the "ENTER" switch. The top display will show the net weight and the TARE annunciator will also be lit. The bottom display will be blank. The scale is now ready for operation. Pressing the "MODE" switch will scroll between gross and net weight on the top display if no count is present. If a count is present, the "MODE" switch will scroll between gross, net, and count.

4. To change a tare weight, repeat steps 1-3.

5. To view the tare value, press the "DIGITAL TARE" switch. Press "ENTER" to return to normal operation.

SETPOINTS

The 5600 has eight setpoints standard with several user-programmable operating features. These Include:

- Choice of gross weight, net weight , or count setpoint type.
- Choice of whether setpoint recognizes negative and positive weights, (unsigned setpoint) or only positive weights (signed setpoints).
- Choice of absolute or relative setpoint data.
- All setpoint data is retained during power failures.
- Setpoint output is 5V TTL level.
- Setpoint outputs are compatible with the Pennsylvania Scale Company's Remote Relay Option.

AUTOMATIC OPERATION

The 5600 meter can be programmed to automatically accumulate, print, or accumulate and print on stable non-zero weights.

CALIBRATION

The Model 5600 count/weigh meter is shipped from the factory in Leola, PA., fully programmed to the default parameters listed on the following pages. THERE IS NO NEED TO PROGARM THE METER UNLESS YOU WANT TO CHANGE ONE OR MORE OF THE METER'S FEATURES. However this meter has not necessarily been calibrated to your weighing platform, unless the platform and meter were shipped from the factory at the same time and calibration was requested at the time of the order.

TO ENTER CALIBRATION MODE: With the Calibration jumper on the PCB in the Enable position, press and hold the "4" key on the front panel for 15 seconds to enter calibration. The current full capacity is the first step after entering calibration. Select the appropriate value through the keypad or accept the previous entry by pressing ENTER. To delete an error before ENTER is pressed, press CLEAR.

The service phone number is the next selection in calibration. Complete this step as done with the full capacity value and press ENTER.

Next, the calibration types are selected. The possible selections are Manual, Auto, RS-232, Setpoint, Print, Load Cell, and Exit calibration. To see the available calibration entries, press UNITS. After the desired selection is displayed, choose it by pressing ENTER. After completing selected calibration, another calibration may be chosen. If desired, calibration can be left by choosing "Exit Cal".

DISPLAY	CALIBRATION DESCRIPTION - (DEFAULT VALUES ARE SHOWN IN PARENTHESES)
MANUAL CAL	Cal type
Primary Units	Select primary weighing units with "UNITS" key (lb)
Pri Resolution	Enter primary weighing resolution (divide the full capacity by 5000 and round to the nearest 1, 2, or 5)
Secondary Units	Select secondary weighing units with "UNITS" key (g or kg)
Sec Resolution	Enter secondary weighing resolution (divide full capacity by 5000 and round to the nearest 1, 2, or 5)
Stable Threshold	Enter stable threshold (1/4 of display resolution)
Zero Range	Enter zero range (full capacity)
Zero Tracking	Enter zero tracking (1/4 of display resolution)

Creep Time	Enter creep time (15 secs)
Sample Size #1	Enter sample size #1 (10)
Sample Size #2	Enter sample size #2 (20)
Sample Size #3	Enter sample size #3 (50)
Sample Size #4	Enter sample size #4 (100)
Count Operation	Select One Switch / Two Switch (1 switch)
Wt / 1000 Pieces	Select Yes / No with "UNITS" key (no)
Power-on Zero	Select Yes / No with "UNITS" key (no)
Canadian Spec	Select Yes / No with "UNITS" key (no)
Count Percent	Select Error / Accuracy with "UNITS key (error)
Accumulate Mode	Select Weight / Count with "UNITS" key (weight)
Auto Operation	Select None / Accum / Print / Accum/Print with "UNITS" key (None)
Meter Type	Select Weigh Only / Weigh and Count with "UNITS" key (Weigh and Count)
Filter Speed	Select Fast Filter / Medium Filter / Slow Filter with "UNITS" key (Fast)
Weigh Cal Type *	Select Normal / Fast with the "UNITS" key (Normal)
Done Cal Type	Meter will prompt will "Load Cell Cal"
AUTO CAL	Cal type
Done Cal Type	Meter will prompt with "Load Cell Cal"
RS-232 CAL	Cal type **
Clock Mode **	Select type of clock with "UNITS" key
Cal-Alert Date **	Key in date of next calibration
Baud rate	Select baud rate with "UNITS" key (300)
Word length	Select word length with "UNITS" key (8)
Stop bits	Select number of stop bits with "UNITS" key (1)
Parity	Select parity with "UNITS" key (None)
Number of nulls	Key in number of nulls (0)
Print enable	Select print enable status
Remote Print	Select enable or disable
Done Cal Type	Meter will prompt with Setpoint Cal
SETPOINT CAL	Cal type ***
Setpoint 1 Type	Select setpoint type
Setpoint 1 Sign	Select Unsigned / Signed (Unsigned)
SP #1 Rel./Abs	Select Relative / Absolute (Absolute)
SP 1 %Hystersis	Enter % of Hystersis (10)
The above four steps are repeated for setpoints 2 through 8	
Done Cal Type	Meter will prompt with Print Cal

PRINT CAL	Cal type **
Print slot 1	Enter print code
Print slot 2	Enter print code
Print slot 3	Enter print code
Print slot 4	Enter print code
Print slot X	Possible 25 print slots available - see Print Cal description below for further explanation.
Print slot 25	Enter print code
Done Cal Type	Meter will prompt with Load Cell Cal
LOAD CELL CAL	Cal type
True Zero	Load cell calibration of true zero. With no weight on the base platform, press "ENTER"
1/2 Capacity	Load cell calibration of 1/2 capacity. Place 1/2 capacity weight on the platform and press "ENTER". (A substitute weight may be used by keying in the amount before pressing "ENTER")****
Full Capacity	Load cell calibration of full capacity. Place full capacity weight on the platform and press "ENTER". (A substitute weight may be used by keying in the amount before pressing "ENTER")****
Remove Weight	Load cell creep compensation. Remove all weight from the platform and press "ENTER".
Done Cal Type	Meter will prompt with Exit Cal
EXIT CAL	Cal type (Exits to normal operating mode)
Cal Completed	Meter will automatically reset after 5 sec

* This step will appear only if "Meter Type" selected is "Weigh Only."

** For more detailed instructions on calibrating the RS-232 serial port see the following section.

*** For more detailed instructions on calibrating the Setpoints see the "Setpoint Description and Setup" section of this manual.

**** This may be done if exactly 1/2 and full weights are not available. Though we do not recomend using less than a total of 25% of capacity.

FAST CAL

"FAST CAL" is a sub-step of Calibration Step "Weigh Cal Type."

1. Before beginning to calibrate the Model 5600 meter as a truck scale, remove all weight from the truck scale platform. Press the "1" key on the front panel of the meter to enter base zero into the system

2. Enter Calibration mode by pressing the "4" key for approximately 15 seconds, and step through calibration by pressing "ENTER" until the "Manual Cal Type" step is reached.

3. Scroll through the steps until "Meter Type" is displayed, choose "Weigh Only".

4. Press "ENTER" two more times until "Weigh Cal Type" appears. Press the "UNITS/6" key to display "FAST" on the display; press "ENTER" to enter FAST CAL.

5. The display will prompt for 1/2 half capacity. One half capacity can now be placed on the platform, or a substitute weight may be used and the new value entered through the keypad. Press "ENTER".

The message "DONE CAL TYPE" will appear.

RS-232

The 5600 meter Bidirectional Serial ASCII Interface is an RS-232C, TTL-compatible, asynchronous serial interface capable of both unidirectional and bidirectional transmission of scale data.

This interface features keypad-programmable baud rates, word lengths, stop bits, parity, and number of nulls to follow carriage returns and line-feeds, abbreviated output mode for fast transfer of scale data to an intelligent device, keypad programmable formatted print operations, and enables or disables the remote print request feature.

The interface provides four basic types of communication with the Model 5600:

1.) Transmission of a predetermined (at set-up time) array of meter information for formatted printing. This may be initiated by pressing the PRINT/0 key or by sending the SRP ("Send Requested Print") command to the serial port.

2.) The continuous transmission of abbreviated scale data to an external device. This may be initiated automatically by pressing the PRINT/0 key after self-diagnostics are performed or by sending the SAO ("Send Abbreviated Output") command to the meter.

3.) Transmission and alteration of specific meter data upon request from an external device.

4.) Alteration of the meter's operating mode upon request from an external device.

RS-232 PIN ASSIGNMENTS AND IMPLEMENTED FUNCTIONS

PIN	EIA CODE	FUNCTION	DIRECTION
1	AA	Chassis Ground	-
2	BA	Receive Data	Input
3	BB	Transmit Data	Output
5	CB	Clear to Send (CTS)	Output
6	CC	Data-Set Ready (DSR)	Output
7	AB	Signal Ground	-
20	CD	Data Transmit Ready (DTR) *	Input
11	--	+5v for Barcode Scanner	Output

* This line is used as the remote print request input when remote print is enabled.

NOTE: All remaining pins are currently unused and unconnected. For simple terminal usage where the data rate does not exceed either machine's capacity to process it, only pins 1, 2, 3, and 7 need to be connected.

RS-232 CALIBRATION PROCEDURE

The Calibration Enable/Disable switch (on the PCB) must be in the Enable position.

Press and hold the "4" key (on the meter front panel) until Calibration mode is entered (approximately 15 seconds).

Press "Enter" to pass over "Full Capacity" and "Service Phone Number."

The next Cal Step is "Cal Type." To access RS-232 interface programming mode, press the "Units/6" key until the display reads "Cal Type - RS-232 Cal." Press ENTER.

After entering the selected value for a particular cal step, press ENTER. If the currently displayed value does not need to be changed, press ENTER.

CLOCK MODE: Select between the following four options:

1.) " Time & Date OK ". Selected when there is no need to change the time and date.

2.) " 24 Hour Mode ". Selected when time or date need to be changed and the final output is to be in a 24 hour time format.

3.) " 12 Hour Mode AM ". Selected when time or date need to be changed, final output is to be in a 12 hour time format, and the current time setting will be in the AM.

4.) " 12 Hour Mode PM ". Selected when the time or date need to be changed, final output is to be in a 12 hour time format, and the current time setting will be in the PM.

These four options can be scrolled through using the "UNITS/6" key. Select the desired setting and press the "ENTER" key. If the " Time & Date OK " is selected the calibration will jump to the " Cal-Alert Date " step. If any of the other three are selected the time and date may be set as described below.

DATE MMDDYY: If date does not need to be changed press enter and calibration will jump to " Time hhmmss ". To change the date key in new date in the "mmddyy" format. For example:

To set the system date to September 9, 1992 enter 90992 and press "ENTER". (The leading zero need not be entered, but it will be displayed.)

To set the system date to October 12, 1992 enter 101292 and press "ENTER".

TIME HHMMSS: If Time does not need to be changed press enter and calibration will jump to " Cal-Alert Date ". To change the time key in new time in the "hhmmss" format, keeping in mind the clock mode selected; ie., 24 hour, 12 hour AM, or 12 hour PM and press the "ENTER" key.

NOTE: The system time is sent to the real-time clock immediately after "ENTER" is pressed. Once the time has been keyed in "ENTER" should be pressed as quickly as possible to accurately set the clock.

CAL-ALERT DATE: The message "??????" will be displayed on the lower line of the 5600 meter. In order to prevent unathorized modification of the entered CAL-ALERT date a pass word must now be entered. The Cal-Alert password is 2653xx, where xx is any 2 digits.

To set or change the Cal-Alert date, key in the password, press "ENTER", key in the new date with a "mmddyy" format and press "ENTER". Beginning on the date entered the service phone number will be flashed on the display every 10 minutes until calibration is entered and the Cal-Alert date is changed.

If a Cal-Alert date does not need to be changed or altered Press "ENTER" with the "??????" showing on the display.

BAUD RATE: Select a baud rate from the available list by pressing the UNITS/6 key to scroll through the options; press ENTER after selecting baud rate.

WORD LENGTH: Select a word length from the available list by pressing the UNITS/6 key to scroll through the options; press ENTER after selecting a word length.

STOP BITS: Select the stop bits from the available list by pressing the UNITS/6 key to scroll through the options; press ENTER after selecting a stop bit.

PARITY: Select the parity from the available list by pressing the UNITS/6 key to scroll through the options; press ENTER after selecting parity.

NUMBER OF NULLS: Select the number of null characters which are to follow each carriage return and line-feed character (minimum = 0, maximum = 99).

PRINT ENABLE: Enter the print enable status.

REMOTE PRINT: Select if the remote print request line is to be enabled. After entering the proper selection, DONE CAL TYPE will be displayed.

PRINT CALIBRATION PROCEDURE

The Calibration Enable/Disable switch (on the PCB) must be in the Enable position.

Press and hold the "4" key (on the meter front panel) until Calibration mode is entered (approximately 15 seconds).

Press "Enter" to pass over "Full Capacity" and "Service Phone Number."

The next Cal Step is "Cal Type." To access print programming mode, press the "UNITS/6" key until the display reads "Cal Type - Print Cal." Press ENTER.

After entering the selected value for a particular cal step, press ENTER. If the currently displayed value does not need to be changed, press ENTER.

The user defined formatted print is built in print slots 1 through 25. A formatted print may consist of up to 25 slots, depending on the amount of scale data and the actual page and line formatting to be included. The print codes are divided into several categories, i.e., prefix and suffix labels, scale data with prefix and suffix labels, ABO output control, page and line formatting characters, and repeat codes.

Select print codes from the Print Code Table; press ENTER after each code is selected.

After the last code is selected, enter 99 and press ENTER to mark the end of the formatted print; DONE CAL TYPE will be displayed.

To exit formatted print building at any time without loss of previously entered print codes, enter 0 and press ENTER (DONE CAL TYPE will be displayed).

EXAMPLE OF BUILDING A FORMATTED PRINT CODE

To build a simple formatted print to be sent to a ticket printer the following print codes should be entered:

```
PRINT SLOT 1 - 65
PRINT SLOT 2 - 30
PRINT SLOT 3 - 65
PRINT SLOT 4 - 32
PRINT SLOT 5 - 65
PRINT SLOT 6 - 31
PRINT SLOT 7 - 65
PRINT SLOT 8 - 65
PRINT SLOT 9 - 38
PRINT SLOT 10 - 65
PRINT SLOT 11 - 99
```

The result of this formatted print is:

```
+--------------------------+
|                          |
|  GROSS   1.205 LB        |
|  NET     0.205 LB        |
|  TARE    1.000 LB        |
|                          |
|  ID    9111920219RS      |
|                          |
+--------------------------+
```

FORMATTED PRINT CODES

Print Prefix and Suffix Formatted Print Codes

```
02 = Print Current Time
03 = Print Current Date
04 = Current weighing unit suffix label
05 = "GROSS     " prefix label
06 = "TARE      " prefix label
07 = "NET       " prefix label
08 = "COUNT         " prefix label
09 = "PIECE WEIGHT " prefix label
10 = "SAMPLE SIZE  " prefix label
11 = "% ERROR      " prefix label
12 = "% ACCURACY   " prefix label
13 = "ID           " prefix label
14 = "ACCUM TOTAL  " prefix label
15 = "TRANSACTIONS " prefix label
19 = "PCS          " suffix label
```

Print Data Only Formatted Print Codes

20 = Print Current gross weight
21 = Print Current tare weight
22 = Print Current net weight
23 = Print Current count
24 = Print Current piece weight
25 = Print Current sample size
26 = Print Current % error
27 = Print Current % accuracy
28 = Print Current Product ID
29 = Print Current Accum Total
40 = Print Transaction Counter Data

Print Prefix, Data, and Suffix Formatted Print Codes

30 = Print Gross Weight prefix, data and suffix
31 = Print Tare Weight prefix, data and suffix
32 = Print Net Weight prefix, data and suffix
33 = Print Count prefix, data and suffix
34 = Print Piece Weight prefix, data and suffix
35 = Print Sample Size prefix, data and suffix
36 = Print % of Error prefix, data and suffix
37 = Print % of Accuracy prefix, data and suffix
38 = Print Part ID prefix, data and suffix
39 = Print Accum Total prefix, data and suffix
41 = Print Transaction Counter prefix, data, and suffix

Abbreviated Output Control Formatted Print Codes

50 = ABO triggered on power up and run continuously uninterrupted
51 = ABO triggered on PRINT key or SAO and run continuously but halted anytime scale outputs data to RS-232 port (i.e., SRP, STW, & SCO)
52 = Send scale status character (see page XXX)
53 = Send ABO checksum (one byte checksum for ABO data)
59 = NO OPERATION

Print Special ASCII Characters Formatted Print Codes

60 = Print an ASCII space (SP)
61 = Print an ASCII horizontal tab (HT)
62 = Print an ASCII line-feed (LF)
63 = Print an ASCII start of header (SOH)
64 = Print an ASCII carriage return (CR)
65 = Print an ASCII carriage return and line feed (CR LF)
66 = Print an ASCII form-fee (FF)
67 = Turn on large print (PA Scale printer)
68 = Turn off large print (PA Scale printer)
69 = Print an ASCII null (NUL)
78 = Turn on inverted print (PA Scale printer)
79 = Turn off inverted print (PA Scale printer)

Formatted Print Codes

0 = Exits building of formatted print without loss of previously entered print codes
91-98 = Repeat Codes
99 = Marks the end of the formatted print

SETPOINT DESCRIPTION AND SETUP

The 5600 Setpoint Option provides eight setpoints and has several user-programmable operating features. These include:

SETPOINT TYPE

The setpoint type determines whether the setpoints are based on the gross weight on the platform, the net weight on the platform, or the number of pieces on the platform. The setpoint type is defined during setup.

SIGNED AND UNSIGNED SETPOINTS

During the set-up procedure, the setpoints must be defined as either signed or unsigned.

Unsigned setpoints are activated when the weight on the platform is positive or negative. Signed setpoints are activated only when the weight on the platform (i.e., gross weight, net weight, or count) is positive.

For example, a setpoint is set up with a value of 4 lb. absolute weight (see below for explanation of absolute and relative weights), and is defined as unsigned. The relay is activated when the weight on the platform reaches +4 lb. and also when the weight on the platform drops to -4 lb.

If the same setpoint is defined as signed, then the relay is activated only when the weight on the platform reaches +4 lb.

ABSOLUTE AND RELATIVE SETPOINTS

Setpoint weights can be entered either in absolute or relative format, depending on how the scale is set up. In the absolute mode, the setpoint data corresponds to the actual setpoint type value (gross weight, net weight, or count) at which the relay activates. In the relative mode, the setpoint data corresponds to the change in the setpoint type values between each setpoint relay activation. Therefore, number one setpoint must always be an absolute setpoint.

For example, to activate relays after the addition of 100 lb., 150 lb., 430 lb., and 20 lb., the following setpoint data would be entered:

Setpoint Number	Absolute Setpoint	Relative Setpoint	Weight on Base
1	100	100	100
2	250	150	250
3	680	430	680
4	700	20	700

HYSTERESIS

The amount of hysteresis can vary from 0% to 100%. For example, a net weight, absolute mode is selected, and the scale is set up for 0.2% hysteresis. A setpoint relay set for 750 lb. activates when the net weight reaches 750 lb. and deactivates only after the net weight falls below 750 lb. - (750 lb. x 0.2%) = 748.5 pounds.

SETUP PROCEDURE

The calibration Enable/Disable switch (on the PCB) must be n the Enable position.

Press and hold the "4" key (on meter front panel) until Calibration mode is entered (approximately 15 seconds).

Press "ENTER" to pass over "Full Capacity" and "Service Phone Number".

The next Cal step is " Cal Type ". To access Setpoint programming mode, press the "UNITS/6" key until the display reads Cal Type - Setpoint Cal ". Press "ENTER".

After entering into setpoint calibration, setpoint number one's current type will be displayed. Use the "UNITS/6" key to select the correct type; gross weight, net weight, or count. Press "ENTER".

SETPOINT 1 SIGN: Select if setpoint 1 is to be signed or unsigned by pressing the "UNITS/6" key.

SP #1 REL./ABS.: Select Absolute or relative status for setpoint number 1 by pressing the "UNITS/6" key.

NOTE: When choosing a relative setpoint, it is always relative to the previous setpoint value. Thus, setpoint number one MUST be chosen as an ABSOLUTE setpoint.

SP 1 %HYSTERSIS: Key in the amount of Hystersis. Remember, this is a percentage of the setpoint target.

After entering the percent of hysteresis, setpoint number two, three, etc., parameters will be selected in the same manner as setpoint number one. Continue to program the setpoints until all eight setpoints have the proper information. The 5600 will display "Done Cal Type". Another calibration may be chosen now, or simply exit to operating mode by choosing "Exit Cal".

WEIGHING WITHOUT TARE

Select primary or secondary weighing units by pressing the UNITS/6 switch.

Establish a base zero by pressing ZERO.

Place the item(s) to be weighed on the platform and read the gross weight on the display.

> NOTE: If very light items are placed on the platform individually, the weight may be zeroed off by the AZT feature. Add light items to the platform simultaneously.

WEIGHING WITH TARE

Select primary or secondary weighing units by pressing the UNITS/6 switch.

Establish the tare weight using one of the following methods:

a.) Place container or object to be tared-off on the platform and press TARE; or

b.) Press Digital Tare, key in the weight of the container to be filled, and press ENTER.

The tare weight value will be displayed as the second line in the Weight Display. Press MODE to return to Gross weight. To see the tare weight as calculated by the scale, press DIGITAL TARE.

Press ENTER to return to GROSS weight. When a tare value is stored in the system, the TARE annunciator will be illuminated.

Place the objects to be weighed in the container and read the net weight on the display. Press MODE switch to toggle between GROSS and NET weight.

To clear a tare value, remove all weight from the scale, press TARE, or press DIGITAL TARE, key in 0, and press ENTER.

COUNTING

NORMAL COUNTING -- NO TARE
(ONE-SWITCH COUNTING SELECTED DURING CALIBRATION)

Press SAMPLE SET/ADV repeatedly until sample size shown equals size of sample to be used; or

Press SAMPLE SET/ADV and key in sample size.

If you make a mistake when entering sample size, press ./CLEAR twice to clear the display, then key in correct number.

Place sample pieces on platform; wait for count and % Error/ % Accuracy to be displayed.

Place parts to be counted on the platform.

To view piece weight as calculated by the Model 5600, press PIECE WT. key. To return to weight display, press ENTER.

Press MODE to toggle between GROSS and PIECES/% ACCURACY or % ERROR information.

To clear count and % Error / % Accuracy data, remove all weight from the platform, then press and hold TARE/RESET for two seconds (until the word "RESET" appears).

NORMAL COUNTING -- WITH TARE
(ONE-SWITCH COUNTING SELECTED DURING CALIBRATION)

Zero the meter by pressing ZERO.

For true one-switch counting, place container to be used on the platform and press SAMPLE SET/ADV. **

Press SAMPLE SET/ADV repeatedly until sample size shown equals size of the sample to be used; or

Press SAMPLE SET/ADV and key in sample size.

If you make a mistake when entering sample size, press ./CLEAR twice to clear the display, then key in correct number.

Place sample pieces in container; wait for count and for % Error/ % Acc.

Place parts to be counted on the platform.

Press MODE to toggle between GROSS, NET, and PIECES information.

To view piece weight as calculated by the Model 5600, press PIECE WT. key. To return to weight display, press ENTER.

To view tare weight as calculated by the Model 5600, press DIGITAL TARE key. To return to weight display, press ENTER.

To clear count and % Error / % Accuracy data, remove all weight from the platform, then press and hold TARE/RESET for two seconds (until the word "RESET" appears).

To clear weight information, remove all weight from the platform and press ZERO.

** NOTE: Pressing SAMPLE SET/ADV does not perform a true tare operation; therefore, the tare value will not be available when DIGITAL TARE or MODE switches are pressed.

Other methods for entering a tare value into the system are available:

1.) Place container to be used on platform and press TARE.

2.) Press DIGITAL TARE and enter the weight of the container to be used through the keypad.

NORMAL COUNTING -- KEYPAD ENTRY OF PIECE WEIGHT
(ONE-SWITCH COUNTING SELECTED DURING CALIBRATION)

Press UNITS/6 to select appropriate weighing units.

Place container on platform (if using); press TARE.

Press PIECE WEIGHT; key in piece weight for one item. Press ENTER.

Piece Weights with 6 digits after the decimal point are available if the first digit is zero (i.e., the weight is less than one pound). If the first digit is not zero (i.e., if the weight is one pound or more), then only five decimal places are available.

Place items to be counted on platform.

If you make a mistake when entering piece weight, press ./CLEAR one time if entry contains a decimal point or two times if entry does not contain a decimal point to clear the display, then key in correct number. Press ENTER.

Press MODE switch to toggle between PIECES, GROSS weight, and NET weight information.

ERROR & % ACCURACY ARE DISABLED WHEN A PIECE WEIGHT IS ENTERED THROUGH THE KEYPAD.

To view tare weight as calculated by the Model 5600, press DIGITAL TARE key. To return to weight display, press ENTER.

To clear count information, remove all weight from platform, press and hold TARE/RESET for two seconds until the word "RESET" appears.

COUNTING BY FIRST DETERMINING PERCENT ERROR OR PERCENT ACCURACY OF COUNT USING AUTOMATIC SAMPLE UPDATE (ONE-SWITCH COUNTING SELECTED DURING CALIBRATION

Place container (if using one) on the platform; press SAMPLE SET/ADV.

Press SAMPLE SET/ADV repeatedly until the sample size displayed is the same as the one to be used; or

Press SAMPLE SET/ADV and key in the sample size.

If you make a mistake when entering sample size, press ./CLEAR twice to clear the display, then key in the correct number.

Place sample pieces in the container.

To decrease % ERROR or increase % ACCURACY, place additional pieces in the container. The meter will display "Update", then the new % numbers.

The number of pieces that may be added cannot exceed two less than the displayed count. If count exceeds this number, sample updating stops. For example, if the sample size on the platform is 10 pieces, you cannot add more than 8 pieces.

NOTE: If pieces are not uniform in size, sample updating may stop.

If % ERROR / % ACCURACY is not acceptable, add more pieces to the sample.

When % of Count numbers are acceptable, place remaining pieces to be counted on the platform.

NOTE: SAMPLE UPDATING IS DISABLED WHEN A PIECE WEIGHT IS ENTERED THROUGH THE KEYPAD. % ERROR and % ACCURACY ARE ALSO DISABLED WHEN A PIECE WEIGHT IS ENTERED THROUGH THE KEYPAD.

NOTE: To view piece weight as calculated by the Model 5600, press PIECE WT. key. To return to weight display, press ENTER.

** NOTE: Pressing SAMPLE SET/ADV does not perform a true tare operation; therefore, the tare value will not be available when DIGITAL TARE or MODE switches are pressed.

Other methods for entering a tare value into the system are available:

1.) Place container to be used on platform and press TARE.

2.) Press DIGITAL TARE and enter the weight of the container to be used through the keypad.

To view tare weight as calculated by the Model 5600, press DIGITAL TARE key. To return to weight display, press ENTER.

NOTE: To clear count and % Error / % Accuracy data, remove all weight from the platform, then press and hold TARE/RESET for two seconds (until the word "RESET" appears).

To clear weight information, remove all weight from the platform and press ZERO.

TOP-END COUNTING -- SAMPLE ADDED
(ONE-SWITCH COUNTING ELECTED DURING CALIBRATION)

Press ZERO.

Place container with parts on the platform.

Press DIGITAL TARE; key in tare weight of container.

Press ENTER.

Remove sample from container.

Press SAMPLE SET/ADV repeatedly until sample size shown equals sample size to be used; or

Press SAMPLE SET/ADV and key in sample size.

If you make a mistake when entering sample size, press ./ CLEAR twice to clear display, then key in correct number.

IMPORTANT: The displayed sample size must equal the number of items removed from the container as a sample.

Return sample pieces removed above to container.

Press MODE to toggle between PIECES, GROSS weight and NET weight information.

NOTE: To clear count and weight information from displays, press and hold TARE/RESET for two seconds until the word "RESET" appears.

COUNTING BY FIRST DETERMINING ERROR OF COUNT (TWO-SWITCH COUNTING SELECTED DURING CALIBRATION)

Place empty container on the platform.

Press SAMPLE SET/ADV** repeatedly until the sample size shown equals the sample size to be used. Press ENTER.

Count out pieces to be used as a sample and place them in the container.

If % Error / % Accuracy is acceptable and the displayed sample size equals the sample on the platform, press ENTER. Place items to be counted on the scale.

If % Error is too high or % Accuracy is too low, add sample pieces until percent of count is acceptable.

If sample size shown equals sample size on the platform, press ENTER.

If the displayed sample size does not equal sample, press SAMPLE SET/ADV and key in sample size. Press ENTER.

If you make a mistake when entering sample size, press ./CLEAR twice to clear the display, then key in the correct number.

Press ENTER.

Place items to be counted on the platform.

Press MODE to toggle between PIECES, GROSS weight and NET weight information.

** Pressing SAMPLE SET/ADV does not perform a true tare operation; therefore, the tare value will not be available when DIGITAL TARE or MODE switches are pressed.

Other methods for entering a tare value into the system are available:

1.) Place container to be used on platform and press TARE.

2.) Press DIGITAL TARE and enter the weight of the container to be used through the keypad.

NOTE: To clear count and % Error / % Accuracy data, remove all weight from the platform, then press and hold TARE/RESET for two seconds (until the word "RESET" appears).

To clear weight information, remove all weight from the platform and press ZERO.

NEGATIVE COUNTING
(TWO-SWITCH COUNTING SELECTED DURING CALIBRATION)

Place container with parts on the platform.

Press SAMPLE SET/ADV.

Remove sample pieces from the container until the % Error / % Accuracy is acceptable.

Press SAMPLE SET/ADV repeatedly until sample size shown equals size of sample removed. Press ENTER; or

Key in sample size. Press ENTER.

If you make a mistake when entering sample size, press ./CLEAR twice to clear the display, then key in the correct number.

Press ENTER.

Remove pieces to increase negative count.

Pressing MODE switch displays negative values during this operation.

NOTE: To clear count and % Error / % Accuracy data, remove all weight from the platform, then press and hold TARE/RESET for two seconds (until the word "RESET" appears).

To clear weight information, remove all weight from the platform and press ZERO.

TOP-END COUNTING -- SAMPLE REMOVED
(TWO-SWITCH COUNTING SELECTED DURING CALIBRATION)

Press Zero.

Press DIGITAL TARE. Key in tare weight of container. Press ENTER.

Place container with parts on the platform. Press SAMPLE SET/ADV.

Remove sample from container (it can be any size).

Press SAMPLE SET/ADV repeatedly until the sample size shown equals the size of the sample removed. Press ENTER; or

Press SAMPLE SET/ADV and key in the sample size. Press ENTER.

If you make a mistake when entering a sample size, press ./CLEAR twice to clear display, then key in correct number.

Return sample pieces to container.

Press MODE to toggle between PIECES, GROSS weight and NET weight information.

NOTE: To clear count and weight information from displays, press and hold TARE/RESET for two seconds (until the word "RESET" appears).

TOP-END COUNTING -- SAMPLE ADDED
(TWO-SWITCH COUNTING SELECTED DURING CALIBRATION)

Press ZERO.

Place container with parts on the platform.

Press DIGITAL TARE; key in tare weight of container.
Press ENTER.

Remove sample from container.

Press SAMPLE SET/ADV repeatedly until sample size shown equals sample size to be used; or

Press SAMPLE SET/ADV and key in sample size.

If you make a mistake when entering sample size, press ./CLEAR twice to clear display, then key in correct number.

IMPORTANT: The displayed sample size must equal the number of items removed from the container as a sample.

Return sample pieces removed above to container; press ENTER.

Press MODE to toggle between PIECES, GROSS weight and NET weight information.

NOTE: To clear count and weight information from displays, remove weight from platform, and press and hold TARE/RESET for two seconds until the word "RESET" appears.

ACCUMULATE FEATURE

The Accumulate Feature in the Model 5600 weigh/count meter performs either a count accumulate or weight accumulate and increments the transaction counter. Select either count or weight accumulation in calibration. Transaction counter data is only available through the RS-232 port, not on the display.

Press and hold ACCUM/2 key to allow continuous display of the accumulated total; otherwise, the accumulate total is displayed for 5 seconds.

HOW TO USE ACCUMULATE

1. Place item to be weighed on platform. When the platform is stable and weight/count is displayed, press ACCUM/2.

2. To accumulate another weight or count, the meter must return to zero.

3. Repeat Step 1.

DISPLAYING THE ACCUMULATED TOTAL

1. Press ACCUM/2 to display the accumulated total for two seconds.

2. Press and hold ACCUM/2 to continuously display the accumulated total. The total will be displayed until the key is released.

CLEARING THE ACCUMULATED TOTAL

The accumulated data can be cleared in two different ways:

1.) By performing a reset; press and hold the TARE/RESET key for two seconds.

NOTE: Any stored piece weight and tare weight data will also be cleared when the meter is reset.

2.) Press ACCUM/2, then the ZERO switch while the accumulated total is being displayed to clear the accumulated total and set the transaction counter to zero.

PART I.D. FEATURE

HOW TO ENTER AND DISPLAY PART I.D. NUMBERS

When I.D./3 is pressed, keypad Entry of up to 12 digit part ID numbers is initiated. Also, stored part ID numbers will be displayed when I.D./3 is pressed.

Part ID numbers can also be entered via the RS-232 port; part numbers entered this way may contain alpha characters.

The system will store only one part ID # at a time.

To enter a part ID, press ID/3, key in the # and press ENTER.

To clear, have part ID # displayed on the screen, press ./CLEAR; or, enter a new part ID # and the old one will be cleared automatically.

Setpoint Feature

**********NOTICE**********

SAFETY WARNING: APPROPRIATE BACK-UP SAFETY SYSTEMS MUST BE SPECIFIED AND IMPLEMENTED BY THE USER TO PREVENT HARM TO THE OPERATOR, OR PROCESS, RESULTING FROM MALFUNCTION OF ANY PENNSYLVANIA SCALE EQUIPMENT USED FOR PROCESS CONTROL APPLICATION. PENNSYLVANIA SCALE ASSUMES NO RESPONSIBILITY IN THESE AREAS.

THE MODEL 5600 OPTION WITH SETPOINTS HAS BUILT-IN TRANSIENT PROTECTION; HOWEVER, YOUR SYSTEM MAY REQUIRE ADDITIONAL PROTECTION THAT IS NOT INCLUDED UNDER THE TERMS OF THE PENNSYLVANIA SCALE WARRANTY.

The 5600 Setpoint Option retains eight independent setpoints. To enter, select, and/or change a particular setpoint value, follow the procedure below.

1. If the setpoint value to be entered is a weight, select the correct weighing unit for the setpoint data by pressing the UNITS switch.

2. Press the 9/SP switch.

3. When "Setpoint ?" is displayed, enter a setpoint number.

4. Key-in the setpoint value for either gross weight, net weight, or count (number of pieces) via the numeric keypad, then press ENTER.

5. If another setpoint value is to be entered, checked, or changed, return to Step 2.

Setpoint Connector Pin Assignments

The 5600 Meter uses a DB-9 style connector to attach to the setpoints. On the AC meter this connector may be found on the bottom of the box and on the AC/DC on the right side. The pin assignments for this connector is as follows:

Pin #1	Black wire	Ground
Pin #2	Red wire	Setpoint #2
Pin #3	Orange wire	Setpoint #3
Pin #4	Yellow wire	Setpoint #4
Pin #5	Green wire	Setpoint #5
Pin #6	Blue wire	Setpoint #6
Pin #7	Violet wire	Setpoint #7
Pin #8	Brown wire	Setpoint #8
Pin #9	White wire	Setpoint #1

We recomend connecting only the Pennsylvania Remote Relay option (part number 49538-ITEM) to the setpoint outputs to provide relays for controling external equipment. Attaching anything other then the Pennsylvania Remote Relay Option may void the warranty on this product.